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FROM THE EDITOR'S DESK

The pandemic COVID-19 has raised several challenges for the entire educational system. Various strategies are being adopted for meeting these unprecedented situations, as life is turning towards "New Normal", yet with an element of uncertainty.

With the implementation of New Education Policy, the educational institutions are required to apply multi-pronged approach to move towards the set goals. This is THE time for the field of Home Science/ Family and Community Sciences to strengthen, enhance and project its potentials towards the achievement of the aims and vision of NEP. Home Science has been following many of the guiding principles suggested in NEP.

It is the need of the hour that "Home Science "is made more visible in the social and economic arena. Each institution has been making efforts to increase enrollment .Now collectively strong efforts need to be taken to publicize various features of Home science not only through various media but also through personal contacts, vocational- guidance, exhibitions/open house of the institution," Alumni –interactions "and the like so as to increase the enrollment.

Wishing best for the new academic session

DR. MANEESHA SHUKUL

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COMPARING INDIAN FEMALES' BODY SIZES FROM THE SIZES OF INDIAN CLOTHING BRANDS AND FINDING THE VARIATIONS IN SIZE-CHARTS OFFERED BY DIFFERENT BRANDS

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ABSTRACT

In India, almost every clothing industry employs a different sizing approach for making readymade garments. Consequently, there is a considerable difference between the sizing of readymade clothes provided by the various apparel manufacturers and the original Indian women's sizes. As a result, finding a satisfactorily fit garment has been challenging, and women have to require endless trials to get the correct one. The present study aimed to measure the differences between Indian females' actual sizes and clothing brands' garment sizes for Indian women. Three thousand data were collected by an anthropometric survey undertaken over Indian females to get the actual body size of Indian women. Furthermore, the variation between the sizing systems of different clothing brands is also investigated.
Keywords- clothing industry, sizing, readymade garments, size-charts

INTRODUCTION

In India, men and women both used to wear draped garments since the Vedic period as it is their traditional clothing. Women and some local tailors did some little stitching. It was the beginning of custom-made wear which gradually turned into readymade wear (Gupta, 2007; Zakaria & Gupta, 2014). With the liberalisation of the economy and trade in the 90s growth of readymade industry increased rapidly (Dhanabhakyam, 2007).

The first and biggest challenge before the industry was to determine the clothing sizes. To fix this issue, they started using size charts of American and European countries. Manufacturers made garments for Indian women by employing sizing charts of foreign women. As time passed by, they made some modifications to make them fit for Indian women's anthropometry. But since the Indian women's sizes are far different in height, weight, body proportions and body types from Western countries, these modified systems could not work. Ashdown (2007) stated that every individual company develops its own sizing system because of the lack of anthropometric data. These systems are mainly built on intuition and common pattern grading practices, possibly modified by data on returns and feedback from their customers. These large numbers of independent sizing systems are confusing to the consumer and do not accomplish their goal of providing good fitting to the range of people to whom the apparel firms wish to market their clothing.

Workman, (1991) stated that manufacturers do not fully support standardised sizing charts because they use sizing as a selling tool to make profits, maintain an identity, and attract return

customers. It has become a way to distinguish one apparel manufacturer from another by establishing consistent sizes upon which customers can rely.

Because of the lack of scientific and systematic nationwide sizing system, many readymade brands privately started doing little anthropometric survey targeting their customers. The study found that there is still a considerable difference between the original sizes of Indian women and those of brand sizes. Brand sizes also showed differences with each other with the distinction of sizes, terminology, and size intervals. In the same brand, a customer has different sizes for different categories of garments. For example, a customer might have a small size (S) for her upper clothing, whereas a large (L) for lower clothing resulting in a dissatisfaction of Indian females towards ready-to-wear. Measures for a specific population (very thin, short or very fat) are also not available in many brands.

Due to the standard sizing system's unavailability and many sizing systems prevailing in the market, customers have to face difficulties to choose correct sized dresses for them (Faust & Carrier, 2010; McCulloch; LaBat, & DeLong, 1990). They are compelled to try innumerable clothes (Gill, 2008). Sizes for a specific population (very thin, short or very fat) are not available in many brands. Due to wrong sizes and unfitting, a huge quantity of clothing is returned to stores and mail-order houses (Beazley,1997; Gupta, 2014) Goldsberry et al., (1996), found that because of the lack of a good fit, consumers don't purchase clothing, and there have been many studies conducted worldwide which have repeatedly shown that a large number of members in a population are dissatisfied by the degree of fit provided by ready to wear clothing. According to Ashdown et al., (2005), Gupta stated, around 35% of dress purchased from catalogues is returned because of problems with garments' sizes.

THE OBJECTIVE OF THE STUDY

This study aimed

1. To measure the differences between Indian females' actual sizes and clothing brands' garment sizes for Indian women
2. To investigate the variation between the sizing systems of different clothing brands

MATERIALS AND METHODS

This study was divided into the following three sections:

Section 1: Anthropometric survey and data analysis

The data were collected by an anthropometric survey, undertaken on 3000 females between the ages of 16 to 80 years from the Prayagraj district of Uttar Pradesh, India by random sampling method. Measurements of the round bust, round waist and round hip were taken, as per the ISO 8559/1989 body measurements standard. Collected data were analysed by descriptive statistics (mean, median and standard deviation). The bust circumference was taken as a key body dimension.

Section 2: Finding the size charts of different brands to compare with data collected by the anthropometric survey

Eleven brands, named as 'Visudh', 'Aks', 'Libas', 'Anouk', 'Fabindia', 'W', 'Indya', 'Chhabra 555', 'Biba', 'Rangmanch', 'Inddus', were taken for the study. Size charts of these brands for women's

kurta were found out from their online shopping sites. These brands were chosen as per their availability and popularity in the market.

Section 3: One-Sample t-Test. The statistical procedure was used to determine whether a sample of females' anthropometric measurements is statistically different from the body sizes mentioned in other clothing brands' size-charts. One sample t-test was calculated as per the following-

$$t = \frac{(\bar{x} - \mu)}{(s/\sqrt{n})}$$

Where,

μ =Proposed constant for the population mean

$\bar{x}$ = Sample mean

n = Sample size

s = Sample standard deviation

$s/\sqrt{n}$= Estimated standard error of the mean

This calculated t value is compared with the critical t value from the t distribution table with degrees of freedom, [df = n-1] and selected confidence interval.

If calculated t value > critical t value, then the null hypothesis is rejected.

Here, the hypothesis is

H_0 = Body dimensions obtained from anthropometric measurements for females are not statistically different from the body sizes mentioned in other clothing brands' size-charts.

Ha = There is a statistically significant difference between body dimensions found from anthropometric measurements and the body sizes mentioned in size-charts of different clothing brands.

1. Different brands' size charts available in India were also compared and found out the result.
2. All analyses were conducted using IBM SPSS Statistics Version 20.

FINDINGS AND DISCUSSION

Results show remarkable differences between the actual Indian sizes and the sizes clothing brands use to make garments for Indian females. Waist and hip sizes of Indian females for corresponding bust sizes are significantly larger or smaller than the sizes clothing brands provide.

Comparison of brands waist sizes and the sizes obtained by anthropometric survey

Table-1. One-Sample t-Test for Comparing Waist Measurements Obtained from Anthropometric Data and Those of Different Brands.

Sr. no	Brands	Bust girth	Waist girth	T	Sig.(3-tailed)	Mean difference
1	Visudh	34	26	24.715	.000	3.07
		36	28	12.56	.000	1.72
		38	30	23.35	.000	4.04
		40	32	10.17	.000	3.74
		42	34	8.196	.000	3.72
2	Aks	34	28	19.04	.000	1.40
		36	30	20.42	.000	1.59
		38	32	17.34	.000	2.04
		40	34	11.02	.000	1.65
		42	36	8.63	.000	2.14
3	Libas	34.5	31	-12.68	.000	-0.87
		36.6	33	-4.861	.000	-0.47
		38.5	35	-3.83	.000	-0.46
		40.5	37	-7.06	.000	-0.90
		42.5	39	0.35	.73	0.09
		44.5	41	-3.68	.001	-0.78
4	Anouk	32	26	22.20	.000	1.21
		34	28	19.03	.000	1.39
		36	30	20.42	.000	1.59
		38	32	17.34	.000	2.04
		40	34	11.02	.000	1.65
		42	36	14.82	.000	2.71
5	Fab India	32	26	22.20	.000	1.21

		34	28	19.03	.000	1.39
		36	30	15.24	.000	1.85
		39	33	18.0	.000	2.08
		42	36	12.4	.000	2.59
		45	39	4.94	.000	1.57
		48	42	9.24	.000	2.35
6	W	33.3	30.5	-21.83	.000	-1.44
		36	33	-9.38	.000	-1.82
		38.3	35.5	-9.55	.000	-1.17
		40	37.5	-11.32	.000	-1.91
		41.5	39.5	-16.59	.000	-2.84
		43	41.5	-8.01	.000	-1.63
		48	46	-6.49	.000	-1.65
7	Indya	32	25	40.13	.000	2.20
		34	26	46.0	.000	3.39
		36	28	46.19	.000	3.59
		38	30	34.34	.000	4.04
		40	32	24.36	.000	3.65
		42	34	24.75	.000	6.14
8	Chhabra	34	32	-35.48	.000	-2.61
		36	34	-31.12	.000	-2.42
		38	36	-16.66	.000	-1.96
		40	38	-15.66	.000	-2.35
		42	40	-7.49	.000	-1.86
		44	42	-14.27	.000	-2.17

9	Biba	35	32	-16.47	.000	-1.70
		37	34	-8.14	.000	-0.70
		40	37	-9.0	.000	-1.35
		42	40	-6.8	.000	-1.42
10	Rangmanch	35	33	-26.18	.000	-2.70
		37	34.5	-18.98	.000	-1.69
		39	36.5	-12.19	.000	-1.62
		41	39	-8.34	.000	-1.58
		44	42	-11.25	.000	-1.87
11	Inddus	34	30	-8.32	.000	-0.61
		36	32	-5.35	.000	-0.42
		38	34	0.34	0.74	0.04
		40	36	-2.32	0.02	-0.35
		42	38	0.58	0.57	0.14

For brands named as 'Visudh', 'Aks', 'Anouk', 'Fabindia', 'Indya'; p-value (p)< 0.001 therefore, there is a significant difference between the actual Indian women's waist measurements and those mentioned in size charts of clothing brands for corresponding bust girth. For these brands-values and mean differences have positive values; it means they have smaller waist measurements in their size charts than waist measurements obtained from anthropometric data for respective sizes of bust girth.

For brands named as, 'W', 'Chhabra 555', 'Biba', 'Rangmanch', 'Inddus' p< 0.001, therefore there is a significant difference between the actual Indian women waist measurements and those mentioned in size charts of clothing brands for corresponding bust girth. For these brands, t-values and mean differences have negative values; it means they have larger waist measurements in their size charts than waist measurements obtained from anthropometric data for respective sizes of bust girth.

For Libas, four waist sizes are significantly different from the actual Indian women waist measurements for corresponding bust girth.

Table-1 shows that waist sizes of 8 brands out of 11 are significantly different for those obtained from anthropometric data for their respective bust circumference sizes. Rest of three brands are also considerably different for waist measurements except some sizes.

Comparison of brands hip sizes and the sizes obtained by anthropometric survey

Table-2: One Sample t-test for Comparing Hip Measurements Obtained by Anthropometric Data and Those of Different Brands

Sr. no	Brands	Bust girth	hip girth	t	Sig.(2-tailed)	Mean difference
1	Visudh	34	36	7.060	.000	1.45
		36	38	16.55	.000	1.71
		38	40	4.28	.000	1.18
		40	42	5.59	.000	1.02
		42	44	5.59	.000	1.44
2	Aks	34	36	21.15	.000	1.79
		36	38	16.54	.000	1.71
		38	40	11.16	.000	1.59
		40	42	5.59	.000	1.02
		42	44	5.59	.000	1.44
3	Libas	34.5	40	-9.73	.000	-2.10
		36.6	42	-10.43	.000	-1.46
		38.5	44	-15.9	.000	-2.21
		40.5	46	-10.9	.000	-2.46
		42.5	48	-6.5	.000	-1.66
		44.5	50	-7.15	.000	-2.95
4	Anouk	32	34	20.21	.000	1.83
		34	36	21.15	.000	1.79
		36	38	16.55	.000	1.71
		38	40	11.10	.000	1.58
		40	42	5.59	.000	1.02
		42	44	5.59	.000	1.44

5	Fab India	32	35	9.17	.000	0.83
		34	37	9.36	.000	0.79
		36	39	9.31	.000	1.11
		39	42	1.90	0.06	0.26
		42	45	3.85	.000	0.86
		45	48	-.289	0.77	-0.13
		48	51	0.06	0.06	1.28
6	W	33.3	37.8	-3.81	.000	-0.51
		36	40.5	-4.40	.000	-0.72
		38.3	42.3	-5.20	.000	-0.80
		40	43.8	-3.87	.000	-0.79
		41.5	45.5	-2.39	0.02	-0.78
		43	47.5	-3.47	.001	-0.84
		48	53	-1.28	0.24	-0.73
7	Indya	32	34	-123.8	.000	-6.80
		34	36	20.21	.000	1.83
		36	38	16.55	.000	1.71
		38	40	11.10	.000	1.58
		40	42	5.59	.000	1.02
		42	44	5.59	.000	1.44
8	Chhabra	34	36	21.15	.000	1.79
		36	38	16.55	.000	1.71
		38	40	11.10	.000	1.58
		40	42	5.59	.000	1.02
		42	44	5.59	.000	1.44

		44	48	-2.41	.020	-0.81
9	Biba	35	40	-10.30	.000	-1.46
		37	42	-7.67	.000	-1.16
		40	45	-10.80	.000	-1.98
		42	48	-9.95	.000	-2.56
10	Rangmanch	35	39.5	-6.77	.000	-0.96
		37	41	-1.62	0.11	-0.21
		39	43	-4.88	.000	-1.09
		41	45.5	-4.00	.000	-0.84
		44	48.5	-3.47	.001	-1.03
11	Inddus	34	36	21.15	.000	1.79
		36	38	16.55	.000	1.71
		38	40	11.10	.000	1.58
		40	42	5.59	.000	1.02
		42	44	5.59	.000	1.44

For brands named as 'Visudh', 'Aks', 'Anouk', 'Fabindia', 'Indya', 'Chhabra 555', 'Inddus' p-value(p) <0.001.Therefore there is a significant difference(except one size from 'Fabindia', W and Rangmanch) between the actual Indian women hip measurements and those mentioned in size charts of clothing brands for corresponding bust girth. For these brands, t-values and mean differences have positive values; it means they have smaller hip measurements in their size charts than hip measurements obtained from anthropometric data for respective sizes of bust girth.

For brands named as, 'W',' Biba', 'Rangmanch' 'Libas', $p < 0.001$, therefore there is a significant difference (excepting some sizes from 'W' and 'Rangmanch') between the actual Indian women hip measurements and those mentioned in size charts of clothing brands for corresponding bust girth. For these brands, t-values and mean differences have negative values; it means they have larger hip measurements in their size charts than hip measurements obtained from anthropometric data for respective sizes of bust girth.

Table2. Shows, hip measurements from size charts of 8 brands out of 11 are significantly different for hip measurements obtained from anthropometric data for respective sizes of bust girth. Rest of the three brands are also considerably different for hip measurements except for some sizes.

Since table 1 and table 2 show the difference between the actual and brand sizes. The mean differences of measurements obtained from the difference between the anthropometric survey and brands' size charts have been gone by 6 inches for waist measurements and 4 inches for hip measurements. It shows a considerable difference between the actual Indian sizes and those of brands.

Comparison of waist sizes of different brands

Table- 3. Waist Measurements for Different Brands with Respective Bust Measurements.

Sr no	Bust Measurement (in inches)	Waist measurements &Size designations (in inches)					
		Brands					
		Visudh	Libas	W	Biba	Rangmanch	Inddus
1	32	Size not available	Size not available	Size not available	Size not available	Size not available	Size not available
2	34-35	26 S	31 XS	30.5 XS	32 S	33 XS	30 S
3	36-37	28 M	33 S	33 S	34 M	34.5 S	32 M
4	38-39	30 L	35 M	35.5 M	Size not available	36.5 M	34 L
5	40-41	32 XL	37 L	37.5 L	37 L	39 L	36 XL
6	42	34 XXL	39 XL	39.5 XL	40 XL	Size not available	38 XXL
7	44	Size not available	41 XXL	41.5 XXL	Size not available	42 XL	Size not available

Table 3 shows, waist measurements of different brands with respective of bust girths. According to table 3, every brand differs in terms of waist sizes for corresponding bust girth.

For 34" to 35" bust measurement, the difference (maximum-minimum) of waist measurement is 33"-26" =7"; for 36" to 37" bust measurement, the difference is 34.5"-28" = 6.5"; for 38" to 39" bust measurement, the difference is 36.5"-30" = 6.5"; for 40" to 41" bust measurement, the difference is 39"-32" =7"; for 42"bust measurement, the difference is 40"-34" =6" and for 44" bust measurement, the difference is 42"-41" =1". Here, the differences or span

between the brands in terms of waist measurements for corresponding bust girths has been gone by nearly 7 inches.

Comparison of hip sizes or measurements of different brands

Table-4. Hip Measurements for Different Brands with Respective Bust Measurements.

Sr no	Bust measurements	Hip measurements & Size designations					
		Brands					
		Visudh	Libas	W	Biba	Rangmanch	Inddus
1	32	Size not available	Size not available	Size not available	Size not available	Size not available	Size not available
2	34-35	36 S	40 XS	37.8 XS	40 S	39.5 XS	36 S
3	36-37	38 M	42 S	40.5 S	42 M	41 S	38 M
4	38-39	40 L	44 M	42.3 M	Size not available	43 M	40 L
5	40-41	42 XL	46 L	43.8 L	45 L	45.5 L	42 XL
6	42	44 XXL	48 XL	45.5 XL	48 XL	Size not available	44 XXL
7	44	Size not available	50 XXL	47.5 XXL	Size not available	48.5 XL	Size not available

Table 4 shows, hip measurements of different brands with respective bust girths. According to table 4, every brand differs in terms of hip sizes for corresponding bust girth.

For 34" to 35" bust measurement, the difference (maximum-minimum) of hip measurement is 40"-36" =4"; for 36" to 37" bust measurement, the difference is 42"-38" = 4"; for 38" to 39" bust measurement, the difference is 44"-40" =4"; for 40" to 41" bust measurement, the difference is 46"-42" =4"; for 42" bust measurement, the difference is 48"-44" =4" and for 44" bust measurement, the difference is 50"-47.5" =2.5". Here, the differences or span between the brands in terms of hip measurements for corresponding bust girths has been gone by nearly 4 inches.

Moreover, size designations are also different for different brands. For example, some brands consider 34-35" bust size as 'S' or small size whereas, others designate it as 'XS' or extra small size.

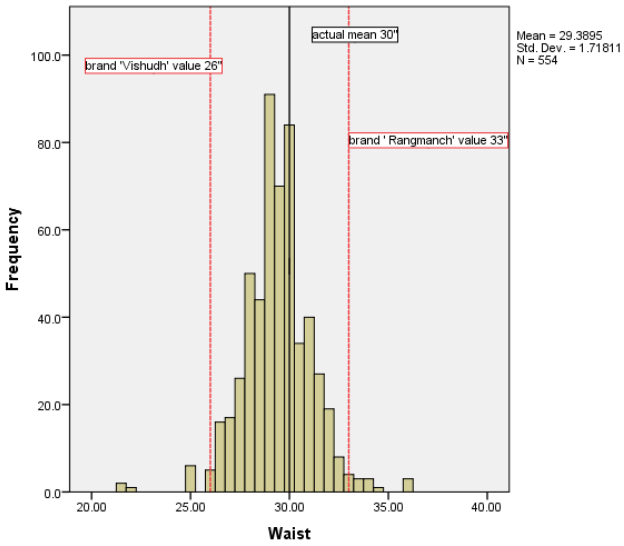

Fig- 1: Distribution of Data for Waist Measurements with Actual Mean and Brand Values (Minimum and Maximum) for Bust Circumference 34 to 35 Inches

Figure 1 shows the mean of actual waist measurement for bust circumference 34-35 inches is 29.4 (nearly 30 inches) whereas for the same bust measurement, waist size is 26" for one brand and the other has 33".The graph also shows that more than 80% sample population have 30" waist measurement for bust circumference from 34 to 35" whereas, less than 7% sample population have waist measurements 26" or 33".

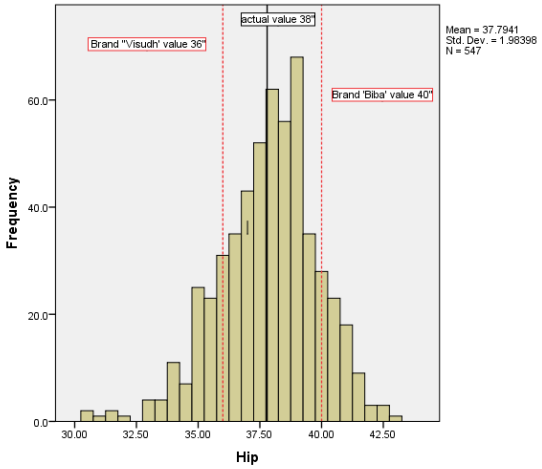

Fig-2: Distribution of Data for Hip Measurements with Actual Mean and Brands Values (Minimum and Maximum) for Bust Circumference 34 to 35 Inches

Figure 2 shows the mean of hip measurements for bust circumference 34-35 inches is 37.8 (nearly 38 inches) whereas for the same bust measurement, hip size is 36" for one brand and the other has 40". The graph also shows that more than 60% sample population have 38" hip measurement for bust circumference from 34 to 35" whereas, less than 28% sample population have hip measurements 36" or 40".

Since, result shows a noticeable difference between the actual Indian women's sizes and those provided by brands. Hence, the null hypothesis (H_0) is rejected and the alternative hypothesis (H_a) is accepted i.e., there is a statistically significant difference between body dimensions found from anthropometric measurements and the body sizes mentioned in size-charts of different clothing brands.

CONCLUSIONS

It is concluded from the study that for the same bust measurement, waist sizes and hip sizes are different for different brands, and the difference is too high. Moreover, this study also shows that other brands use various size labels for the same body measurements. It creates a lot of confusion for the customer and therefore, getting the right size garments is an arduous task for them. Unfortunately, India doesn't have India-specific sizing tables for manufacturing garments, resulting in the availability of as many sizing systems in India's readymade market as several brands. Consequently, lots of confusions about the sizes have been created and so, getting the correct size is a challenge for the consumers.

This study shows the great need for systematic standard sizing systems to make readymade garments followed by every garment manufacturing industry.

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DIFFERENCE IN ATTITUDE OF MALE AND FEMALE TOWARDS ONLINE SHOPPING OF APPAREL AND ACCESSORIES

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ABSTRACT

Few studies discuss gender differences in attitude towards online shopping and very few on attitudes towards shopping of apparel and accessories. This paper explores the differences in attitude of male and female towards online shopping of apparel and accessories. Multilevel sampling was used to collect the sample for the study. As this research focuses on online shoppers, the sample was collected from Jaipur City with the help of the electoral roll available on the official website of the chief electoral office. A sample of 656 respondents was selected who were purchasing apparel and accessories online regularly. A self-structured questionnaire was used to collect the data to study the attitude towards online shopping of apparel and accessories. No significant difference in attitude was found among male and female towards online shopping for apparel and accessories.

Keywords: Online shopping, online apparel shopping, online accessories shopping, attitude, shopping behavior

INTRODUCTION

The rapid growth of internet use has resulted in a phenomenal increase in online shopping. The popularity of online shopping is driven by wider selection and excellent quality of products as compared to a physical store that provides limited choices (Yau, & Tsang,2017). The internet is a useful platform that provides opportunities for both international and national sellers as well as buyers (Lim et al, 2016).

Surveys on internet usage indicate that male internet users outnumbered female counterparts. Use of the internet is regarded as a masculine domain. However, recent surveys point out that the gender gap has been disappearing. Studies indicate that the numbers of male and female internet users are equal (Pew Internet and American Life, 2003). Jackson et al. (2001) indicate that young women and men use the internet equally often, but they use it differently.

Many researchers tended to explore people's motivations to know conceptual factors to understand online buying behavior; nevertheless, the gender difference in motivations of on-line purchasing is comparatively less discussed. Earlier researchers intensively studied the demography of online buyers and the functional benefits of online shopping, few stressed gender differences in online shopping behavior. Very few studies explore gender differences in online buying behavior and attitude towards online shopping.

As a review of available literature guides, this study aims to explore gender differences in buyer's attitudes towards online shopping of apparel and accessories. Unlike previous studies, this study focuses on how male and female buyers differ in their attitudes toward online shopping. Therefore, it is interesting to further discuss gender differences in online buying.

LITERATURE REVIEW

Attitude is defined as "a learned predisposition to behave consistently favorably or unfavorably for a given object" (Schiffman, et al., 2010). Attitude can be demonstrated not only towards behavior but towards an object as well (Taylor &Todd, 1995). Attitude therefore plays an important role to engage in online shopping (Arora & Aggarwal, 2018). A consumer can have negative or positive beliefs about a product or service. A loyal consumer has a positive attitude toward the brand and product.

The drive behind the differences is that more men engage in online shopping than women, as, women prefer face-to-face communication (Dittmar et al., 2004). Considering that Internet shopping, is still at an early stage of development, little is known about consumers' attitude towards adopting this new shopping channel and factors that influence their attitude toward it (Haque et al., 2006).

Although researchers have examined the effects of gender on online shopping behavior (Jarvenpaa, et al., 2000; Sebastianelli, et al., 2008) there is little focus on the attitudinal aspect of online shoppers. There is a gender gap in the manner in which males and females use technology to engage in online shopping (Arora & Aggarwal, 2018).

Hasan (2010) found gender differences in attitude towards online shopping and also suggested further studies about online shopping and attitude based on gender differences.

Dittmar et al., (2004) have revealed that men's attitude stays more or less the same while shopping online whereas women's attitude can change considerably. Attitudes influence decision-making directly (Haque et al., 2006). Attitude is like a bridge between consumers' characteristics and the consumption that satisfies their needs (Shwu-Ing, 2003). According to Armstrong & Kotler, (2000), a person's shopping choices are influenced by four major psychological factors: motivation, learning, and beliefs perception, and attitude. Attitudes are formed and consumers make decisions through motivation and perception. Therefore, it is thus important to recognize that several factors precede attitude formation and change. Nature, personality, online shopping benefits, and perceptions have of customers also been found to influence their online shopping behavior (Goldsmith & Flynn, 2004). Thus, understanding consumer attitudes can help to predict the future growth of online commerce.

OBJECTIVE

To explore gender differences in attitude towards online shopping of apparel and accessories

HYPOTHESIS

The above extensive review led the researcher to make a conceptual framework. Based on the conceptual framework, hypotheses were constructed to test the relationship between independent and dependent variables to see the validity of assumptions.

H1: There is a significant impact of Gender on attitude towards online shopping for apparel

H2: There is a significant impact of Gender on attitude towards online shopping for Accessories

METHODOLOGY

1. Research design

A descriptive research design was adopted, as the study has a clear problem statement, specific hypothesis, and detailed body of knowledge (Malhotra et al., 2004).

2 Questionnaire design

A self-structured questionnaire based on an extensive review of the literature was used to assess the difference in attitude towards online shopping of apparel and accessories. The first part of the questionnaire provides the demographic details of consumers and general information about internet usage behavior; activities are done through the internet, time spent, etc. The second part of the questionnaire investigates the attitude of consumers towards online shopping for apparel and accessories using five-point Likert scales ("strongly agree" to "strongly disagree").

3. Sample for the study

A multilevel -combination of purposive, convenience and snowball sampling was used to collect the data. A sample consisting of 656 respondents was selected who were purchasing apparel and accessories online regularly. Among these respondents 335 were male and 321 were female.

4. Administration of survey

A self-administered survey method was used to collect the data using a multi-level sampling technique. Since there is no list available for the online shoppers of apparels and accessories of Jaipur city, the sample was selected from the voter's list. The voter list available on the chief election commission site was used.

RESULTS

1 Summary of descriptive statistics

The analysis is divided into two sections. The first section is descriptive statistics which was used to study the demographic characteristics and internet usage behavior.

Table – 1 Demographic Profile and internet usage behavior of Online Shoppers

S.No.	Demographic Profile	18-45 Years (n-656)	
		f	*%*
1	**Age (Years)**		
	18-25	278	42.4
	26-35	239	36.4
	35-45	139	21.2
2	**Gender**		
	Male	335	51.1
	Female	321	48.9
3	**Qualification/Education**		
	Sr. Secondary	216	32.9
	Graduation	203	30.9

S.No.	Demographic Profile	18-45 Years (n-656)	
		f	*%*
	Post-graduation	191	29.1
	PhD	18	02.7
	Diploma	28	04.3
4	**Marital status**		
	Married	226	34.5
	Single	421	64.2
	Divorced	4	0.6
	Widowed	5	0.8
	Internet usage behavior		
5	**Internet usage history (since how many years using the internet)**		
	Less than 1 year	39	05.9
	1-3 years	175	26.7
	4- 6 years	247	37.7
	More than 7 years	195	29.7
6	**Online shopping history (since how many years doing online shopping)**		
	Less than 1 year	131	20.0
	1-3 years	331	50.5
	4- 6 years	162	24.7
	More than 7 years	32	04.9
7	**Total Time spent on the internet daily**		
	Only when needed	117	17.8
	10-30 minutes	134	20.4
	1-3 hours	203	30.9
	3-5 hours	167	25.5
	I do it all-day	35	05.3
8	**Access to the internet through**		
	Through Personal Computer	194	29.0
	Through Mobile phone	546	83.2
	Tab/iPad	47	07.2
	Through Computer at cyber café	12	01.8
9	**Activities are done through the internet**		
	Email	611	93.14
	Surfing (for searching information)	563	85.7
	Bill payments- policy premium/electricity/phone/	518	78.8
	Recharge- mobile/ DTH	549	83.3
	Social networking i.e. - Facebook, Twitter, Instagram,	583	88.7

S.No.	Demographic Profile	18-45 Years (n-656)	
		f	%
	LinkedIn, Google circle, etc.		
	Chatting	575	87.5
	Internet calls (voice/ video)	528	80.4
	Reading/watching News	508	77.3
	Downloading and watching movies/music	535	81.4
	Reading and writing blogs	363	55.3
	Buying services online (hotel/ medical policies / shares /e-tickets/ saloons/ tours/ repairing/ servicing cars, electronics etc.	450	68.5
	Buying products of household need online like grocery etc.	367	55.9
	Buying products for personal use like fashion and lifestyle items (apparel, accessories, footwear, cosmetics, etc.).	511	77.8
	Searching for information about fashion and lifestyle.	498	75.8
11	**Online shopping history for Apparels (since how many years doing online shopping for Apparels)**		
	Less than 1 year	118	18.0
	1-3 years	365	55.6
	4- 6 years	153	23.3
	More than 7 years	20	03.0
12	**Online shopping history for Accessories (since how many years doing online shopping for Accessories)**		
	Less than 1 year	177	26.9
	1-3 years	326	49.6
	4- 6 years	131	19.9
	More than 7 years	22	03.3
13	**Frequency of purchase (online shopping for Apparels)**		
	3 items	242	36.8
	3- 5 items	203	30.9
	6 – 10 items	160	24.4
	11 – 20 items	12	07.8
14	**% of Apparels purchased online**		
	Few items (less than 25%)	319	48.6
	Less than half of your needs (26-50%)	126	19.2
	More than half of your needs (51-75%)	163	24.8
	Shop most of the items online (76-100%)	48	07.3
15	**Frequency of purchase (online shopping for Accessories)**		
	3 items	272	41.5
	3- 5 items	202	30.8

S.No.	Demographic Profile	18-45 Years (n-656)	
		f	*%*
	6 – 10 items	150	22.9
	11 – 20 items	32	04.9
16	**Mode of payment while purchasing online**		
	Cash on delivery	379	57.7
	Credit card	123	18.7
	Debit card	152	23.1
	Net banking	88	13.4
	Payment wallet (Paytm, Mobiviki, etc.)	88	13.4

Demographic details-

Table 1 represent the descriptive statistics about the sample population. Results show that the highest percentage (42.4%) of respondents was from age group 18-25 years followed by 26-35 years (36.4%) and 35-45 years (21.2%). The male online shoppers were 51.1% of the sample population. Similar to the youngest age group, the education of the highest percentage of the respondents was up to senior secondary (32.9%) level. The marital status of the respondents showed that, 64.2% sample population was unmarried/single followed by 34.5% married sample population.

Internet usage behavior-

One half (50.5%) of the respondents were using the internet for 4-6 years followed by respondents (29.7%) using the internet for 7 and more years. One half (50.5%) of the population were doing it for 1-3 years of time duration followed by 24.7% of respondents who were doing it for 4-6 years of time duration. While talking about total time spent on the internet it was seen that 30.9% of respondents were spending 1-3 hrs daily. A huge portion (83.1%) of the respondents was using the internet through smart phones followed by a personal computer (29.0%). The sample for the study was selected from the population who were doing online shopping on regular basis .A wide majority (81.1%) engaged in online shopping of tickets (rail, air, movies, events, and shows, etc.) , books (70.6%), electronics (52.1%), medicines and fitness products 56.2%), household supplies (45.7%), apparels (69.3%), accessories (70.8%), cosmetics (56.3%) and footwear (78.1%).

As the study focuses on apparel and accessories shopping, questions regarding online shopping frequency were also asked, more than half (55.6%) of the respondents were shopping apparel for 1-3 years. while only 3% were buying apparel from 7 years and more. Same as apparels, also for accessories the about half of the sample (49.6%) was buying for 1-3 years and only 3.3% sample were buying for 7 and more years.

Various methods/modes of payment make online purchases convenient and the COD (cash on delivery) mode of payment is popular in India (Jain, R., & Kulhar, M., 2015). Majority (57.7%) of the respondents prefer the COD mode of payment followed by (23.1%) through a debit card. Credit cards (18.7%), net banking (13.4%), and payment wallets (13.4%) were less popular.

Reliability-

The constructs were tested for the consistency reliability of the items within the constructs, Cronbach Alpha reliability analysis was used. Cronbach alpha for all the constructs was well above 0.7 as recommended by Cavana, et. al. (2001). In conclusion, the results showed that the scores of the Cronbach alpha for all the items used in this research exceeded the preferable scores of 0.7 and this indicated that the measurement scales of the constructs were consistent and stable.

Validity test-

Construct validity was used to measure validity and factor analysis was used to measure the construct validity (Cavana, et. al., 2001). Table 2 shows the details of the factor analysis. Based on the output shown, factor analysis was appropriate because the value of Kaiser-Meyer-Olkin (KMO) was 0.794 (between 0.5 and 1.0) and the statistical test for Bartlett test of sphericity was significant ($p = 0.000$; d.f. = 6) for all the correlations within a correlation matrix. Based on the principal component analysis and VARIMAX procedure in orthogonal rotation the Eigen values for all the constructs were greater than 1.0, ranging from the lowest 8.210 (online purchase intention) to the highest of 18.131 (online trust). For convergent validity, the factor loadings for all items within a construct were more than 0.50. Discriminated validity showed that all items were allocated according to the construct. Therefore, the items were not overlapping and they supported the respective construct.

Regression analysis

Exploratory factor analysis-

Exploratory Factor Analysis (EFA) was carried out to confirm the existence of components of attitude towards online shopping. Tables 2 & 3 present the results of the EFA and reliability analyses. All the items in the analysis showed high loadings (>0.70) on their intended factors. Croanbach alpha was calculated to evaluate the reliability of the variables considered for the study. All the constructs were found to be reliable having a value of more than 0.70. The KMO measure of sampling adequacy for the items was 0.794 (that is > 0.6), indicating sufficient inter-correlations of Bartlett's Test of Sphericity, which was found to be significant (Chi-square = 1004.561, $p < 0.005$). The univariate normality of the skewness and Kurtosis values are calculated to measure the normality of the data. Studies have suggested the value should lie within the range of ±3 (Churchill, 1995). The values of skewness were in the acceptable zone as the values were between 0.035 and -0.684. The value of kurtosis was between 0.665 and -0.51. Hence all the items had univariate normal distributions.

Table 2: Attitude of the consumers towards online shopping for Apparels

Attitude towards Apparels' online shopping			
	α=.836	Gender	
	Factor loadings	1 Male **M (SD)**	2 Female **M (SD)**
1. 1 Online shopping for Apparel is a good idea.	.848	4.46 (.874)	4.40 (.850)
2. 2 Online Apparel shopping is easy.	.829	4.23 (.969)	4.33 (.886)
3. 3 I like to shop for apparel online.	.819	4.15 (.970)	4.30 (.937)
4. 4 Online Apparel shopping is fun and I enjoy it.	.778	4.00 (1.111)	4.18 (1.057)

Note: N =656 (male=335+female=321)

KMO and Bartlett's Test –Attitude towards online shopping for apparel		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.794
Bartlett's Test of Sphericity	Approx. Chi-Square	1004.561
	df	6
	Sig.	.000

Table 3: Attitude of the consumers towards online shopping for Accessories

Attitude towards Accessories shopping			
	α=.820	Gender	
	Factor loadings	1 Male **M (SD)**	2 Female **M (SD)**
1 Online shopping for Accessories is a good idea.	.807	4.46 (.825)	4.32 (.865)
2 Online Accessories shopping is easy.	.793	4.14 (.904)	4.29 (.901)
3 I like to shop for accessories online.	.840	4.16 (1.029)	4.12 (1.019)
4 Online Accessories shopping is fun and I enjoy it.	.782	3.96 (1.099)	4.09 (1.075)

KMO and Bartlett's Test	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.744

Bartlett's Test of Sphericity	Approx. Chi-Square	935.376
	df	6
	Sig.	.000

RESULTS

To investigate the gender differences in the attitude towards apparels' online shopping, independent samples t-test on the mean scores were adopted. The t-score for online shopping for apparel was -1.359, degree of freedom=652.382 and p=.175which is greater than the level of significance (p<.05), hence hypothesis *H1* is rejected. The results indicate that male and female scores showed no statistical differences. The t-score for online shopping for accessories was -.243, degree of freedom=654, and p=.808 which is greater than the level of significance (p<.05), hence hypothesis *H2* is also rejected. It indicates that male and female scores showed no statistical differences for attitude towards online shopping of accessories.

Table 4 t-test - Gender difference in Attitude towards online shopping

Independent Samples Test- apparel shopping							
	Males		Females		t	df	P
	M	SD	M	SD			
Gender difference in Attitude towards Apparels' shopping	-.0519017	.99590052	.0541653	1.00294666	-1.359	652.382	.175
Independent Samples Test- accessories shopping							
	Males		Females		t	df	P
	M	SD	M	SD			
Gender difference in Attitude towards accessories shopping	-.0092866	.99983164	.0096917	1.00164461	-.243	654	.808

Note: N =656 (male=335+female=321) *p<.05

This finding is inconsistent with previous studies (Swaminathan et al., 1999) suggesting that male shoppers are comparatively more motivated by functional factors than female peers. Prior researches that examined gender-related attitudes and activities on the internet suggests that women are less interested in the internet, spend less time online than men, and less likely to purchase online (Garbarino and Strahilevitz, 2004; Rodgers and Harris, 2003). Researchers reported that attitude of males towards online shopping are more positive than attitudes of females (Yörük, et al, 2011). The prevalence of women shopping online is gradually increasing, although relatively little is known about gender differences when buying on the web. No statistical differences between genders were reported for attitude toward transaction e-loyalty and security. (Cyr and Bonanni, 2005). Still, no research found reporting a difference in attitude towards online shopping for apparel and accessories.

DISCUSSION

The study explored gender differences in attitude towards online shopping for apparel and accessories among consumers of Jaipur city. About differences in attitude towards online shopping for apparel and accessories, the findings of this study are inconsistent with previous research. These findings indicated that there no differences between male and female attitudes towards online shopping for apparel and accessories shopping. The results were contrary to the hypotheses that there are gender differences in attitude towards online shopping, where the available review reported existence of gender differences. These results suggest that by increased use of the internet the gender gap is disappearing from the online shopping trend. Women are becoming as comfortable as men in purchasing products online and higher mean scores (of male and female) indicate their positive attitudes towards online shopping for apparel and accessories.

CONCLUSIONS

Online shopping is the future of retail and is taking huge steps as technology is being redefined with each successive year. The study reveals that gender differences in attitude no more obstacles towards online shopping of apparel and accessories. Indian males and females have an equally positive attitude toward online shopping. India is expected to become one of the world's fastest-growing e-tail markets, driven by robust investment in the sector and a rapid increase in the number of internet users. Apparel is the largest segment of the market with a projected market volume of US$8,680m in 2020. Retailers and marketing managers may benefit from the results reported here. Consumers, especially in tear 2 cities, where the availability of brands and products still a challenge have contributed largely to this channel of purchasing. As this is the new research findings in Jaipur city, it is expected that this information will help the consumers as well as retailers, and the researchers to identify the different aspects of online shopping.

The study exploratory in nature has its limit. Various tests would need to be applied to establish the relationships between the variables.

For those selling to both genders, it would be more economical to be able to use a single, common strategy, approach, and program. Now online retailers might be led to believe that such a unitary approach would be workable. While the shopping gender gap may constitute a complicating factor for consumer marketers, it would be better to recognize the gender differences in other aspects of consumer behavior to better understand the needs of consumers and provide a better-improved shopping environment.

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INFLUENCE OF ORGANIC COTTON/ SILK FIBRE BLENDING ON THE PHYSICAL PROPERTIES OF THE YARN

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ABSTRACT

Cotton and silk both are natural fibers. Both the fibers have different characteristics. Nowadays organic fiber is in focus in relevance with nature. In the present study organic cotton and silk waste fibers have been taken for blending and developing the yarn. Silk has maximum properties but because of high price customers can't afford the pure silk fabric. In the present study it was tried to develop the yarn or fabric with minimum cost and maximum environmental value. To achieve the objective ,5 samples of blended yarns (100% silk waste, 100% organic cotton, 67/33% silk waste+ organic cotton, 33/67% silk waste+ organic cotton, 50/50% silk waste +organic cotton) were prepared under the identical processing condition as blending, carding, drawing, roving, and last spinning and subsequently blended yarns were developed. Physical properties such as single yarn strength, lea strength, breaking force, elongation, twist per inch, hairiness properties of the developed yarns have been analyzed and compared with each other. The results reflect that the blend ratio of 67/33% silk waste and organic cotton yarns showed good result in maximum properties respectively. By blending of these fibers cost effective fabric can be developed and customers can wear the clothes with maximum characteristics and adorable appearance with an effective cost.

Key words: Blending, Organic Cotton, Physical properties, Silk waste

INTRODUCTION

During the early days of existence people were dependent upon animal skins and furs to keep them warm. But as the years passed, human's susceptibilities became more tender. By the time, man found that the long thin fibres produced by plants and animals could be twisted together to form a thread. These threads could then be interlaced to provide a flexible, warm and more comfortable material. He had never known before that natural fibre, any hair like raw material directly obtainable from an animal, vegetable, or mineral source were convertible in to nonwoven fabrics such as felt or paper or, after spinning in to yarns, in to woven cloth.

Nowadays demand of environment friendly and hygienic product is increasing and natural fibre is expected to be the potential contender to consume the majority of the market share. Natural fibre-based textiles are constantly increasing their acceptance among global consumers due to growing awareness towards sustainability. However, global production of textile grade natural fibre is limited and preferential use of these fibres in respective applications can lead to equilibrium between demand and supply. Kilinc et al., (2017) have stated that natural fibers are used for hundreds of years in clothing and sheltering. Excess use of synthetic fiber has reduced the importance of natural fibers towards the end of the 1990s.

But the increasing environmental concerns and depletion of petroleum resources have increased the importance of natural fiber once again. Natural fibers have many mechanical and physical properties and these properties of natural fibers can be used as natural fiber reinforced composite products in various industries such as automotive, building, and furniture.

Blending is the process of combining fibres of different origins, length, thickness, or colour to make yarn. Blending is accomplished before spinning and is performed to impart such desirable characteristics as strength or durability, to reduce cost by combining expensive fibres with less costly types, or to achieve special colour or texture effects.

Few studies on blending of natural fibre with other natural or synthetic fibres have been reported earlier. Saika, S., stated in the paper entitled "A study on blending of regenerated Bamboo with Silk" (2016) that nowadays demand for fabric is not only related with style & durability but it requires hygiene and many other properties as well. It has been observed in the paper that all the blend proportion of bamboo & silk showed better performance required for clothing materials. Organic cotton is grown using methods and materials that have a low impact on the environment. It leaves the soil, air and water free from contaminates that cause the harm. It produces around 46% less CO2e as compared to conventional cotton whereas Silk is an animal fibre. It is based on one insect- the silkworm- as a handy material with which they build their webs, cocoons, and climbing ropes. This insect spins the silk and wraps the fibre round itself in the form of a cocoon in which it can settle down in comfort. Although the silkworm spins its cocoon from a continuous filament of silk, it is fortunate if half of the available silk filament can be used. The rest of the silk is unsuitable for reeling, and it is known as 'Waste Silk'. Waste silk consists of the silk brushed from the outside of the cocoon during reeling, the useless inner portions of the cocoon, broken filaments from damaged cocoons such as those from which the moth has been allowed to emerge, and waste material from the reeling and throwing generally.

Justification of the Study-

Nowadays the desire of the consumer is to buy an eco- friendly product. In the study natural fibres has been used to fulfil the eco-friendly purpose of the product. Also, through the blending of different types of fibres fabric cost can be reduced and the properties of the prepared fabric can be enhanced as well.

OBJECTIVES

- To blend the organic cotton and silk waste fibre
- To develop the yarn by spinning method
- To analyse the physical properties of the prepared yarn

MATERIAL AND METHODS

The research work was based on experimental Research Method. Experimental research is any research conducted with a scientific approach where a set of variables are being measured as the subject of experiment. The main aim of the present research work was to prepare a yarn by the blending of

different fibers and to determine the mechanical and physical properties of the yarn. Two fibers silk waste and organic cotton were taken for the present study.

Materials:

Mulberry silk waste was procured from Silk Trader, Mahalaxmi Traders, Bangalore and the other fiber was organic cotton, which was collected from Chandra Mauli Fiber, Vijayawada, Andhra Pradesh, India. The properties of the fibers were tested in the lab. Properties of both the fibers are shown in the following table:

Table 1. Physical properties of the fibers used in the study

Sr.No.	Test Parameter	Test Method	Test Results	
			Organic Cotton	Silk Waste
1-	Strength	IS 3675	18.59	24.34
2	Elongation	IS 3675	5.20	8.06
3	Moisture Content	IS 199:1989 (RA 2010) Hot Air Method	5.55	3.59

Methods-

1 Blending of Organic Cotton and Silk Waste Fibers:

There is a difficulty in directly blending different fibers in a machine due to variation in fiber characteristics such as length, fineness, elongation etc. To avoid these variations both the fibers were blended by hand. After hand blending fiber lubricant was sprayed over the hand blended fiber and left for 24 hours so that electrical charges in the fiber would not be created. After 24 hours hand blended fiber was passed through the blow room machine. Air was blowing in the machine. With the help of air, fibers were mixed with each other equally. The equally blended fibers came out of the machine in the form of lap that was rolled on the iron rod as shown in the picture.

Figure 1. Blending (lap formation)

Figure 2. Blended Fiber rolled on the rod

2 Development of Yarn:

2.1. Carding:

Prepared lap was passed through the carding machine. After carding of the blended fibers, the fibers mixed equally and became more uniform and straighter and came out as a thick sliver as shown in fig.3.

Figure 3. Carding (thick sliver)

2.2. Drawing:

The thick sliver was then passed through the drawing machine. In drawing machine sliver was passed through the two processes- first was breaker and second was finisher. First slivers were through breaker process in which thick slivers became thin and became more uniform. After that thin sliver were passed through finisher process. By this process thin sliver became more uniform and thinner and very little twist was given to them in this process. In drawing frame there were total 8 dumbles to make the sliver more uniform. In this experiment 6 dumbles were used for making the slivers more uniform.

Figure 4. Drawing Process

2.3. Roving or Speed Frame:

The sliver came from draw frame subsequently gone through roving machine or speed frame machine (brand name of machine). In this process slivers were drawn by using drafting and twisting. Drafting is a process of stretching and twisting the sliver. After roving process sliver become thinner. It looked like a thick yarn.

Figure 5. Roving Process

2.4. Spinning or Ring Frame:

Roving slivers had then undergone through spinning set up (ring frame machine- brand name). During that process again drafting process had been done and slivers were run through in process and produced the final yarn.

Figure 6. Spinning Process

2.5. Physical Analysis of the Developed Yarn:

Physical testing of the prepared yarn was done and analyzed their physical characteristics and also tried to forward that all the present properties were able to develop the unique fabric.

2.6 Methods of Characterization of Fiber and Yarn Properties:

Yarn Count (Ne), Lea Strength (lbs), CSP (IS 1671-1991) and breaking force (gF), RKM (gm/tex), CV% of RKM (IS 1670-1991) of all five types of developed yarn were measured in Lea Strength Fester-KMI and Uster Tensorapid-4 Switzerland UTM-350; SDL, UK for comparative study. For Yarn Count total 80 rounds have been taken in one sample and total 3 samples have been taken for evaluation. For RKM evaluation average 20 readings have been taken. Elongation, CV% of elongation (IS 1670-1991) and twist per inch, CV$% and twist direction (IS 832: Part 2-2011) of the prepared samples were analyzed in Uster Tensorapid-4 Switzerland UTM-350; SDL, UK and twist test was carried out in Electronic Twist Tester-Statex for their evaluation. Uster U%, CVM%, CVb% and imperfection (ISO 16549:2004) in the yarn like thin and thick places, neps and hairiness index (ASTM D 5647:2007) of the yarn has been analyzed. For observation UT-S SA 400 zellweger Uster, Switzerland machine was used. All the properties of the 5 developed yarns have been tested so that the future developed fabric properties would be according to the study and provide comfort to the ultimate consumer.

RESULT AND DISCUSSION

Table-2 Physical properties of the developed yarn

S.N.	Test parameters	Types of yarns				
		33% O.C.+67%S.W.	50% O.C.+50% S.W.	67%O.C.+ 33%S.W.	100%O.C.	100% S.W.
1-	Yarn Count	15.53s	15.59s	16.29s	15.70s	15.79s
2-	Lea Strength	115.33	99.0	84.67	60.0	128.33
3-	CSP	1791.13	1543.41	1379.22	942.0	2026.38
4-	Breaking Force	482.0	453.0	376.3	298.3	504.4
5-	Single Yarn Strength (RKM)	112.68	11.96	10.38	7.93	13.49
6-	CV% of RKM	11.7	13.0	11.3	18.1	10.5
7-	Elongation at break	10.02	8.48	7.66	7.76	13.05
8-	CV% of Elongation	9.6	11.1	8.7	15.1	15.40
9-	Twist (per inch)	19.75	19.62	21.02	26.44	21.24
10-	CV%	8.39	6.39	9.90	10.31	5.79
11-	Twist Direction	Z	Z	Z	Z	Z

1. Effect of Blending of Silk Waste and Organic Cotton on Yarn Properties

1.1. Effect of Blending on Yarn Count, Lea Strength and CSP (Breaking Strength of Yarn Skin Form):

Yarns made out of different proportion of silk waste and organic cotton (100% Silk Waste; 67-33% Silk Waste – Organic Cotton; 50-50% Organic Cotton-Silk Waste; 100% Organic Cotton) under the identical processing parameters were analyzed to observe the effect of blending of both the fibers on yarn properties. It was observed that the count of all the yarns were similar whereas Lea strength of the yarn developed from 100% silk waste was very high (128:33) in comparison to other blended yarn. In the table it was clearly shown that after 100%silk waste yarn, the Lea strength of organic cotton-silk waste and 50-50% organic cotton-silk waste (115.33 and 99.0) were good and the Lea strength of other two blends (67-33% Organic Cotton-Silk Waste) and 100% Organic Cotton were very low (84.67 and 60.00) and also the yarn CSP which was calculated as count (Ne) X breaking strength of lea (in pound). The CSP of all the blended yarns were 100% Silk Waste- 2026.38, 33-67% Organic Cotton- Silk Waste – 1791.13, 50-50% Organic Cotton- Silk Waste – 1543.41, 67-33% Organic Cotton- Silk Waste – 1379.22, 100% Organic Cotton – 942.00. The CSP of 100% Silk Waste was overall good.

1.2 Effect of Blending on Yarn Breaking Force and Single Yarn Strength (RKM):

From the table it has been observed that the breaking force (gf) of 100% Silk Waste Yarn was 504.4 which was better than other blended yarns. The breaking forces of other blended yarns were 482.0, 453.2, 376.3, 298.3 (33-67% Organic Cotton- Silk Waste, 50-50% Organic Cotton- Silk Waste, 67-33% Organic Cotton- Silk Waste, 100% Organic Cotton) and also the single yarn strength RKM (gm/tex) of 100% Silk Waste was maximum 13.49. After 100% Silk, 33-67% Organic Cotton- Silk Waste and 50-50% Organic Cotton- Silk Waste had good single yarn strength whereas 67-33% Organic Cotton- Silk Waste, 100% Organic Cotton has minimum yarn strength, but the CV% of RKM was maximum (18.1) in 100% Organic Cotton as compared to the other. According to the table the CV% of RKM of other blended yarns were 13.0, 11.7, 11.3, 10.5 in (50-50% Organic Cotton- Silk Waste, 33-67% Organic Cotton- Silk Waste, 67-33% Organic Cotton- Silk Waste, 100% Silk Waste).

1.3 Effects of blending on yarns elongation properties-

The yarn made out of 100% silk waste fiber had better elongation property (13.05) among all the blended yarn whereas the elongation property of other blended yarns were as shown in the table 33-67% Organic Cotton- Silk Waste- 10.02%, 50-50% Organic Cotton- Silk Waste- 8.48%, 100% Organic Waste- 7.76% and 67-33% Organic Cotton- Silk Waste- 7.66%. The elongation rate of 67-33% Organic Cotton- Silk Waste was minimum. Also, the CV% of elongation for 100% Silk Waste blended yarn was good (15.40) as compared to other blended yarn. The CV% of elongation for other blended yarns were 15.1 (100% Organic Cotton), 11.1 (50-50% Organic Cotton- Silk Waste), 9.6 (33-67% Organic Cotton- Silk Waste), 8.7 (67-33% Organic Cotton- Silk Waste). It has been analyzed that 67-33% Organic Cotton- Silk Waste had minimum elongation rate and also it had minimum CV% of elongation.

1.4 Effect of Blending on Twist per Inch and its CV%-

For obtaining TPI yarn tension needs to be set-up. When count is high tension should be set to low and when count is low tension should be set to high. After analyzing the table, it has been observed that the TPI of 100% organic cotton was high where as TPI of 50/50% O.C. / S.W. was minimum, which was 19.62. Also, the CV% of all the developed blended yarns were 10.31 (100% O.C.), 9.90 (67/33% O.C.+S.W.), 8.39 (33/67%O.C.+S.W.), 6, 39 (50/50% O.C.+ S.W.) and 5.79 of 100% S.W. Twist direction of all the blended yarns were ‘Z’ twist.

CONCLUSION

In this study 2 natural fibers (Silk waste & Organic cotton) have been blended with different ratios under the identical fiber processing set-up. Total three ratios of blended yarns have been developed (50/50% O.C.+S.W., 67/33% O.C.+ S.W., 33/67% O.C.+S.W.) also the 100% O.C. yarn and 100% silk waste yarn have been developed. All the blended yarns were compared with each other in terms of physical properties such as single yarn strength breaking force of single yarn, lea strength, yarn count, csp, elongation property of the blended yarn, TPI, twist direction, some imperfections of the blended yarn as hairiness index was also analyzed. It was found that count of all the blended yarns were about to similar with each other but significant improvement has been observed in single yarn strength (RKM) in

67/33% S.W./O.C. (12.68) and 50/50% S.W./O.C. (11.96). As silk was good in all the properties it displayed better result in all the related properties and the blended yarns 67/33% S.W./O.C. and 50/50% S.W./O.C. showed significant improvement in the properties respectively. Breaking force of yarn of the blend ratio of (67/33% S.W. / O.C., 50/50% S.W. / O.C.) were also increased. Lea strength and CSP of the same blended ratio yarns also showed the better improvement as compared to other blended yarns. Elongation rate was also found good in 67/33% S.W. /O.C., 50/50% S.W. /O/C. blended yarns where as TPI of all the blended yarns were observed little less than 100% O.C. & 100% S.W. 100% silk fabrics are very high in price so it is generally found that it was out of reach for common customers and there is lack of some properties in organic cotton because it is the staple fiber. Under this study it was tried to blend both the fibers to cope-up with the draw- back of both the fibers. In the study it has been clearly indicated that the blended yarns of ratio 67/33% & 50/50% S. W./O.C. were good in maximum properties which were analyzed. These yarns can be used to make a fabric which may attain the required characteristics for high value textile applications and also this type of fabric proved very fruitful for the environment point of view as well.

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PRÊT GARMENTS: CLOTHING PREFERENCES AND PROBLEMS OF ELDERLY

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ABSTRACT

Clothing is an important part of everyone's life as it pervades all aspects. Every garment tells a story and communicates intentionally or unintentionally about a person's personality. More than a millennium ago, Greek philosopher Heraclitus observed, "Change is the only constant in life." This applies as much to human body, as it does to other facets of life. There are various physiological changes that a person experiences while moving towards the golden phase of life. Many people don't even think about how they dress and undress while for elderly, everyday dressing/undressing presents many issues and challenges. For most of the seniors, comfort is the primary factor that influences their clothing preferences. However, it doesn't necessarily mean that they have lost interest in fashion or that they no longer wish to wear clothes that are in style. With proliferation of ready to wear garments and Prêt garments being affordable and readily available, they are preferred by all including senior population. The present study was an attempt to find out the clothing preferences of elderly. It also explored the clothing related problems that they face while wearing ready to wear garments. The study highlights the pertinent problems faced by elderly in Prêt garments and it proposes that the ageist attitude has to change and inclusiveness in all aspects has to be adopted by the Prêt industry. The findings of this research also indicated that there is a sizeable and receptive market that should be acknowledged and their needs should be satisfactorily met. It is a lucrative niche market segment that ready-to-wear sector in clothing can profitably serve; all they need to do is study the needs, problems and preferences of the senior population and act accordingly.

Keyword: Elderly, Clothing, Preferences**,** Ready to wear/ Prêt

INTRODUCTION

India is one of the largest textiles and garment producer in the world. The ready to wear apparel industry in India largely caters to three consumer categories, namely, Men's wear, Women's wear and children's wear (Naqvi, 2018)

Ageing is a natural biological process of life which is defined in terms of chronological age with seniors being those who are 60 years and above. According to WHO - At the biological level, ageing is a result of the impact of the accumulation of a wide variety of molecular and cellular damage which happens over time. These variety of damages then lead to gradual decrease in physical and mental capacity, thereby increasing the risk of diseases, and ultimately, death. But these changes are neither linear nor consistent, and they are only loosely associated with a person's age in years. While some 70 year-olds enjoy extremely good health and functioning, other 70 year-olds are frail and

require assistance for managing their daily routine/s.Clothes besides fulfilling people's physical and social needs, are also a way of showcasing cultural values and artistic forms of society, they contribute to self-confidence and bring cheer to the wearer. Clothing plays an important role in helping seniors maintain a positive self-image in the midst of overwhelming changes. Clothes can help camouflage physical changes occurring in the body due to advancing years and thereby enhance the wearer's physical and psychological well-being.

Majority of the elderly wish to dress comfortably, while aiming to still look good. They prefer clothes that are easy to care for, low maintenance and affordable. Due to globalization the present generation of Indian elderly are those who have been wearing prêt apparel and are keen to continue doing so in their golden years. The reason being that Ready to wear (RTW) garments are readily available in various sizes, styles and price range. Presently the RTW industry is catering to the majority population and not considering the special requirements of elderly.

Clothing is an everyday bodily practice which has various influences of fashion, culture, age, identity, etc. Clothes are the principal means through which the body is presented and seen, therefore how dress operates in relation to age, is significant for understanding how cultural expectations act directly at a bodily level. Hence, the present study was undertaken with the following objectives.

OBJECTIVES

1. To identify the types of indigenously available ready to wear apparel worn by seniors in the age group of 60 -80+ years

2. To identify and understand the clothing related problems faced by elderly while wearing ready to wear garments

METHODOLOGY

A cross- sectional study was conducted at various residential localities in Delhi NCR consisting of 9 districts in Delhi, viz. North, North West, North East, South, South West, South East, West, East and Central Delhi, along with NCR Gurugram and Noida.

Apart from the residential localities in Delhi NCR following departments were also visited for data collection;

- Department of Geriatric Medicine, AIIMS, New Delhi
- Geriatric Help desk, HelpAge India, AIIMS, New Delhi
- Physiotherapy laboratory, AIIMS, New Delhi
- Memory clinics, AIIMS, New Delhi

A total of 80 respondents were interviewed to identify clothing related problems faced by them. 10 men and 10 women were selected from the age group categorization given as per WHO guidelines [Early/young-old (60-69 years), Middle-old (70-79 years), Late/old-old (80-89 years), and Very-old

(90+ years)], an effort was also made to interview a few respondents in 90 plus age group. Purposive sampling technique was followed along with snow ball sampling technique to get the requisite number of respondents in all age groups. The final sample comprised of senior people in various age groups with varying levels of activity, health status and presence/absence of specific health related issues that directly or indirectly caused clothing related problems. In order to gain holistic insight about the problems and requirements of elderly, interview schedule, questionnaire and observation technique were used as main tools for data collection. The questions in the interview schedule were purposely kept brief and open ended so as to elicit detailed responses.Care was taken that the questions were not worded in a suggestive manner to avoid bias in responses. Additionally, observation of participants while conducting interviews in comfortable settings was a pertinent source of information and helped in gathering valuable data and insights.

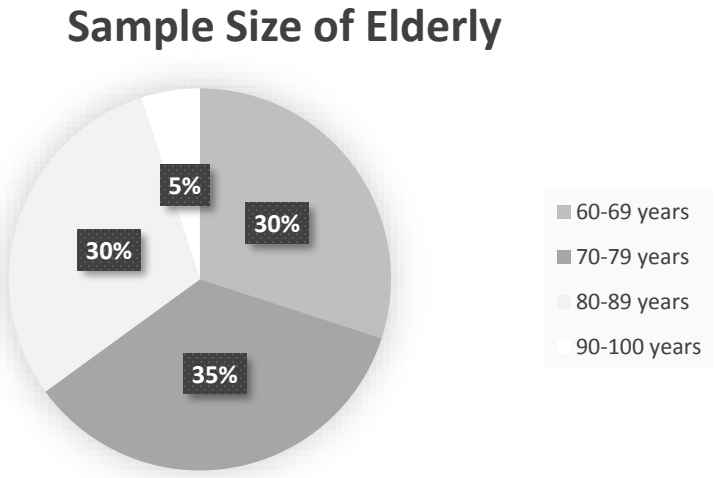

Fig. -1: Percentage of Senior Respondents in Various Age Groups

The actual number of respondents interviewed was more than 80, as, many elderly respondents were interviewed along with their family members and care givers. Fig. -1 shows the percentage distribution of elderly interviewed with respect to age (age group categorization followed was as per WHO guidelines). The highest percentage of respondents were from the age group of 70-79 years and the smallest percentage were from the age group of 90 + years due to non-availability of respondents in this age group despite sincere efforts by the researcher.

RESULT AND DISCUSSION

Physiological changes in the body with age, cause slowing down of anindividual's activities. These physical changes also result in corresponding changes in the clothing related preferences and expectations of elderly. Dressing and undressing, which are an essential everyday task, many a times

become a matter of concern and discomfort with age. This issue is further aggravated in case of seniors who suffers from any additional physiological condition or ailment apart from the common ones that appear with age.

In order to identify the clothing related issues faced by seniors the study focused on two important aspects

- Identifying garments commonly worn by Indian elderly
- Identifying the frequency of clothing related issues faced by elderly in garments commonly worn by them

1. Identification of garments commonly worn by elderly

Garments commonly worn by seniors were identified and listed, through extensive interactions with them, their family members and/or caregivers. The subjects were asked to list the garments they generally wear and also grade them based on their frequency of usage i.e. always, frequently, occasionally, and never.

The findings are listed in Table - 1 (a) & (b)

Table - 1 (a) Usage Frequency of Garments Preferred by Male Respondents

	ALWAYS In %	FREQUENTLY In %	OCCASIONALLY In %	NEVER In %
Shirt	12.5	15	**45**	27.5
T-Shirt	5	15	35	**45**
Kurta	**37.5**	25	22.5	15
Pant	15	25	**45**	15
Pyjama	**60**	25	12.5	2.5

Table - 1 (b) Usage Frequency of Garments Preferred by Female Respondents

	ALWAYS In %	FREQUENTLY In %	OCCASIONALLY In %	NEVER In %
Suit	**50**	10	7.5	**32.5**
Saree & Blouse	**32.5**	15	22.5	**30**
Nighty	**30**	25	17.5	**27.5**

The Table 1(a) and (b)clearly shows that men preferred to wear *kurta-pyjama* the most and least preference was given to t-shirt, shirt and pants whereas, elderly women gave equal preference to *suit* as well as *saree*. Interestingly, the clothing preference could directly be linked to the ethnicity and

cultural background. The senior respondents who preferred saree over *salwar suit* belonged either to the geographical region and/or caste or cultural group where married women were expected to wear *saree* only and wearing *suit* was considered inappropriate. These respondents had worn saree since the time they had got married, they were used to it and continued to prefer it in their senior years over other garments. Interestingly, though none of the respondents could give the reason for its inappropriateness.

Developing India has one of the highest population of young cohorts who are always willing to adopt new fashion and styles of westernized world. However, the Indian elderly population preferred the garments and styles that they have always worn; although a small percentage of elderly respondents shared that they have modified their clothing preferences with time and adopted new popular styles.

2. Identifying the frequency of clothing related issues faced by elderly in garments commonly worn by them

To identify and understand the clothing related issues faced by senior respondents in their commonly worn garments the respondents were interviewed about the outfits in which they frequently faced problem inrelation to dressing, undressing, and/ortoileting.

Table - 2 (a) & (b) lists the commonly worn garments and the frequency of clothing related problems faced by seniors.

Table2 (a) Dress Type and Frequency of Occurrence of Clothing Related Problems (Men)

	ALWAYS In %	FREQUENTLY In %	OCCASIONALLY In %	NEVER In %
Shirt	**37.5**	25	20	17.5
T-Shirt	20	17.5	22.5	**40**
Kurta	**35**	20	25	20
Pant	**37.5**	25	20	17.5
Pyjama	**32.5**	22.5	25	20

Table - 2 (b) Dress Type and Frequency Of Occurrence Of Clothing Related Problems (Women)

	ALWAYS In %	FREQUENTLY In %	OCCASIONALLY In %	NEVER In %
Suit	**50**	22.5	20	7.5
Blouse	27.5	**32.5**	22.5	17.5
Nighty	**10.5**	22.5	25	**42**

The findings indicated that garments like shirt, pants and *pyjama* always posed a problem while dressing, undressing and/or toileting for 38%, 38% and 33% of respondents respectively. In case of elderly women, *salwar suit*, despite being the most frequently worn garment, 50% of senior women posed problems while dressing, undressing and/or toileting while *nighty* (a loose chemise type dress worn by women) was considered to be the most comfortable garment as it never posed any problem according to 42% of women respondents. *Saree* was the second most commonly worn garment but 33% women respondents frequently faced problems specially while wearing or removing the blouse. During the interactions with elderly it was found out that the age group of young elderly i.e.60-70 years, were the major consumers of ready to wear garments that too more in the menswear category. The women however still preferred to get their clothes stitched. In the Mens-wear category also, RTW was preferred for upper garments like t-shirt and shirt whereas for lower garments like pants, seniors preferred to get them stitched. The primary reason given by the respondents for this was fitting issues in prêt apparel.

The respondents in the age of 70 plus years preferred traditional Indian clothing like *kurta-pajama* by men and *salwar suit* and *saree* for women and due to lack of options available in prêt in these categories they preferred to get them stitched.

Even in categories of clothing where RTW was available fitting was a major issue faced by senior respondents. Men generally bought a size bigger than their actual size so that the garment would fit comfortably around the abdomen area and women also bought a size larger than theirs so to facilitate dressing and undressing. However all respondents unanimously agreed that since there are no Prêt garments designed and sold catering to senior population, the garments were provided roominess which eased the dressing/undressing but they gave a poor fit and shabby look to the wearer. All the respondents expressed the need to modify garment style and size to accommodate changes in body with age. The garments currently available and worn by respondents were ill fitting, in case a shirt would fit well over the abdomen in case of men, it would be loose at all the other places. This was also one of the primary reason for preference of custom stitched apparel over Prêt. All the respondents expressed the desire for availability of better fit in RTW, as buying the fabric and getting the garment stitched is a tedious process and off the shelf apparel would be a more practical option.

Comfort in garments was the most important criterion influencing the clothing purchases of elderly even more than the fit and style of an apparel. The tactile appeal of the fabric was of prime importance i.e., the touch of the fabric on their skin. With age the skin becomes sensitive and more prone to irritation therefore they preferred soft and smooth material. In terms of fiber content preference was seen for fabrics made from natural fibers such as cotton and linen also some selective synthetic fabrics were valued for their soft touch and easeof maintenance.

However, in absence of suitable options, most of the respondents pointed out that they have resigned to the situation and wear what is available in the market, albeit unhappily.

CONCLUSION

Clothing performs plethora of functions by providing self-confidence, sense of security, and a positive self-image. Styles that once fitted or 'suited' elderly may no longer do so with advancing age. At a personal level, seniors come to recognize their own ageing through changes in bodily appearance, and these changes may be either reflected or resisted in their clothing choices. Either way, it is important for elderly to feel good about themselves and one of the ways to do this is through clothing. The findings of the research clearly indicated that there are presently no clothes for older people as such, but rather a range of clothing from which individuals make choices according to one's lifestyle, income and aesthetic preferences. They are facing both functional and aesthetic impairment because of non – availability of appropriate clothing. It is a customer segment that is waiting to be acknowledged, studied and served by the marketers.

SCOPE FOR FURTHER WORK

- A study can be undertaken for designing and constructing garments with special features for elderly with physical disabilities
- A detailed demographic study of senior population can be undertaken to identify relationship between various demographic variables like income, education, profession etc. and clothing choices.

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SOCIO-ECONOMIC PROFILE OF WOMEN WEAVERS IN LAKHIMPUR DISTRICT OF ASSAM

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ABSTRACT

Handloom can play a vital role in India's economic upliftment. It is the largest economic activity after agriculture and it provides a greater number of direct employment. The handloom sector has an enormous presence in its socio-economic life of Assam. Handloom is the most popular in rural areas of Assam. In almost every household of rural Assam, there is a handloom for weaving. Handloom weaving is a very respectable day-to-day activity for the Assamese women and this job is considered as an additional household activity to strengthen family incomes as well as increasing standards of living.

Keywords: Handloom, Economic, Assam, Rural, Weaving.

INTRODUCTION

The handloom sector has a long tradition of exceptional craftsmanship in India and it is the second-largest employer next to agriculture (Devi, 2013). It has been the most popular manufacturing sector for centuries and has been the pillar of rural industrialization in India (Raju, 2014).Handloom industry occupies an eminent place in preserving country's heritage and culture, and hence plays a vital role in the economy of the country (Raju & Rao, 2014). It employs a large section of poor people (Narzary, 2013). Across India, nearly 28.2 lakhs of handlooms provide direct and indirect employment to 26.73 lakh weavers. Out of 28.2 lakhs of handlooms, 25.2 lakhs were located in rural areas and 2.9 lakhs were in urban areas and at an aggregate level. Nearly 72% of handloom weavers are women (Handloom Census, 2019).

Since time immemorial, people have been involved in weaving and producing clothes, and the art of weaving cloths have been developed by human civilization since ancient times. India is a colourful country and the weaving, design, or style process is influenced by the culture, tradition, social norms, beliefs, climate, etc. Like other states, Assam is also popular for sericulture and weaving. The Assamese weaver has woven out fine quality handloom products with colourful designs that attract the eyes of people all over the world, particularly handloom products woven out of Assam silk attracts the people (Baruah, 2016).

Handloom weaving is a traditional household women activity that can increase family income and uplift the standard of living. For the Assamese weaver, the weaving activity is for self-consumption as well as for commercial sales. About one-third of India's handloom weavers live in the Northeast,

mainly in Assam (Bajpeyi et al, 2010). The sector has an advantage of being less capital intensive, environment-friendly and flexibility of small production (Humbe & Bhalerao, 2018). Besides, a handloom is an independent and autonomous technology. Zero energy is needed except for the machinery that spins the yarn used (Phukan, 2012).

As the available literature reflects, not many studies have been conducted on socio-economic status of women weavers of Lakhimpur district of Assam. Thus, the researcher choose to explore the three villages of Dhakuakhana block of Lakhimpur district of Assam to understand the livelihood process and economic condition of women weavers with following objective.

OBJECTIVE

- To find out the socio-economic condition of women weavers in Lakhimpur district of Assam

METHODOLOGY

The study is based on both primary and secondary data. To collect the primary data, the interview was conducted on selected 20 women weavers of three villages ,namely, Konwargaon, Hiloidarigaon, and Bantowgaon of Dhakuakhana block of Lakhimpur district of Assam. The majority of people in the selected villages of Lakhimpur District are weavers and both men and women are involved in this profession. As there was the maximum number of men weavers in the selected villages, so only 20 women weavers were selected for this research. A descriptive research design was chosen for this study and an interview method was considered as an appropriate tool for data collection for the present study. Also, the study was carried out by collecting secondary data and information from different books, journals, and the internet.

RESULTS AND DISCUSSION

Table: 1. Age-Wise Classification of The Respondents

Sl.No	Age group	Frequency (n=20)	Percentage
1	16-25	1	5
2	26-35	10	50
3	36-45	8	40
4	Above 46	1	5

From the above table, it is clear that 5% of weavers are in the age group of 16 to 25 years, 50% belonged to the age group of 26-35 years, 40% belonged to the age group between 36 to 45 and 5% of weavers were above 46 years of age. This indicates that the majority of weavers engaged in the handloom industry were in the age group of 25-35 years.

Table: 2. Caste Wise Classification

Sl.No	Cast	Frequency (n=20)	Percentage
1	O.B.C	14	70
2	S.T	6	30
3	S.C	0	0
4	General	0	0
	Total	20	100

The above table reveals that the majority of weavers (70%) belong to the other backward class. Only 30 % of weaver belonged to the scheduled tribe (ST) category in the study area of Lakhimpur district.

Table: 3. Respondents' Educational Levels

Sl.No		Educational level	Frequency (n=20)	Percentage
1		Illiterates	0	0
2		1-5 class	0	0
3		6-10 class	9	45
4		10+2 class	4	20
5		Graduation	7	35
		Total	20	100

Education is very much essential to open the door of life. It can be a powerful tool for weaver's empowerment. Table -3 shows that the majority of respondent's educational levels were 6th to 10th standard ,followed by Graduation and 10th to 12 standard class. None of the respondent was illiterate or had education between 1st to 5th standard.

Table: 4. Type of Family

Sl.No	Type of family	Frequency (n=20)	Percentage
1	Nuclear family	17	85
2	Joint family	3	15
	Total	20	100

Table -4 shows that the maximum families are nuclear i.e. 85% of the respondents lived in the nuclear family and the remaining 15% of the respondents lived in joint family.

Table: 5. Category of weavers

Sl.No	Category	Frequency (n=20)	Percentage
1	Independent weaver	20	100
2	Working under the master weaver	0	0
3	Weaver under Co-operative society	0	0
	Total	20	100

From table-5, it is found that 100% of the respondents are independent weaver.

Table: 6. Living Condition of the Weavers

Sl.No	Type of House	Frequency (n=20)	Percent
1	Thatched	0	0
2	R C C building	1	5
3	Pucca house	19	95
	Total	20	100

According to table- 6, majority of the weavers (95%) were living in pucca houses**.** Only a few respondents (5%) are living in R C C building (more than one story house). It is noticed that none of the respondents lived in a thatched house.

Table: 7. Marketing area

Sl.No	Marketing area	Frequency (n=20)	Percentage
1	Door to door	0	0
2	Social media	5	25
3	Purchase from weaver	15	75
4	Exhibition/ trade fair	0	0
	Total	20	100

From table-7, it is found that a maximum number of weavers (75%) sell their products from home i.e. the customers personally come to the weavers to buy their products where as 25 % of weavers sell their products through social media and none of the weaver sold the products door to door **(**sale by self) and through Exhibition/ trade fair.

Table: 8. The annual income of weavers

Sl.No	The annual income of the respondent	Frequency (n=20)	Percentage
1	Below 1,50,000	**0**	**0**
2	1,50,001-2,50,000	**3**	**15**
3	2,50,001-3,50,000	**12**	**60**
4	Above 3,50,001	**5**	**25**
	Total	**20**	**100**

From table-8,, it is evident that 15% of weavers' annual income is 1,50,001-2,50,000, 25% of weavers' annual income is above Rs 3,50,001 and the majority (60%) of the weavers are earning between Rs 2,50,001-3,50,000 which is quite satisfactory.

Table: 9. Health problem of weavers

Sl.No	Health problem	Frequency(n=20)	Percentage
1	Eye-sight weakness	6	**30**
2	Back pain	5	**25**
3	Knee pain	8	**40**
4	Joint pain	1	**5**
	Total	20	**100**

The majority of weavers are working on traditional looms with jacquard attachments. But these traditional looms are very harmful to health. From this loom, the weaver may suffer from eye-sight weakness, joint pains, back pain, weakness, knee pains, and so on. The majority of the respondent's weavers (40%) are suffering from knee pain. 25% of the respondents are suffering from back pains. 30% of the respondents are suffering from the weakness of the eye-sight.

CONCLUSION

From the present study, it is concluded that the majority 50% of weaver belongs to the age group of 26-35 years. The nuclear family was found to be the highest at about 85 percent. This study shows that the majority of respondent's educational levels were 6th to 10th standard. None of the respondent is illiterate or educated till 5th standard. The majority (70%) of weavers belong to the other backward class. The study also reveals that a total of 100% of the respondents are independent weaver. The majority of the weavers (95%) are living in pucca houses and no one respondents are lives in a thatched house. The study shows that a maximum of 75% of weavers sell their products from home and the majority (60%) of the weaver's annual earnings are between Rs 250001-350000. The majority (40%) of the respondents are suffering from knee pain, 25% are suffering from back pains and 30% are suffering from the weakness of the eye-sight.

IMPLECATIONS

There is a need for redesigning the existing traditional products. The existing traditional motifs can be used for new product development and it will give the product a local identity. The weavers should learn about various finishing techniques and product packaging techniques for better marketing. Also, Government should take initiative in the modernization of loom, equipment, and infrastructure facilities for the betterment of the handloom industry.

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GENDER RESPONSIVE BUDGETING IN EDUCATION: MICRO-IMPLEMENTATION ANALYSIS OF KASTURBA GANDHI SCHOOLS FOR ADOLESCENT GIRLS

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ABSTRACT

The Gender-Responsive Implementation of Sustainable Development Goals does not only facilitate to achieve SDG 5 (Gender Equality) but also to accelerate the progress on all 17 SDGs. The study attempts to understand the implementation of gender responsive budgeting in school education in India. It attempts to draw parallels between the budgets of a government and their direct impact on the resource distribution to end users, primarily focusing on adolescent girls in the educationally backward blocks (EBBs) of the country. Investing in educating adolescent girls helps them make informed decisions about their lives, improves their health and thus creates ripple effect on their families, communities, and society as a whole. A mixed- method study was conducted to understand the benefits and challenges in implementing gender budget released for the residential school scheme for adolescent girls. Kasturba Gandhi Balika Vidyalayas (KGBV) schools were introduced under the gender budget initiatives of the country to fulfil the gender equity commitments. Ten KGBVs, the residential schools in two districts of Rajasthan state (Jaipur and Udaipur) were assessed to gain insights from the Grassroots. Investment in adolescent girls studying in residential schools has proved to be helpful in ensuring greater enrolment and retention of dropout adolescent girls, primarily due to residential facility. This paper, particularly lays focus on the flow of funds and discrepancies affecting the micro-implementation of the program at the school level. It takes into account a multi-stakeholder perspective which was imperative to capture the grassroots realities. There was a huge gap in the funds allocated and the funds spent. Delayed receipt of funds and poor management at school-level were observed to be major reasons of underutilization of funds.

Keywords: KGBV, Education Inequity, Samagra Shiksha Abhiyan, Adolescent Girls, Gender Budget

INTRODUCTION

Background

The omnipresent patriarchal structure, especially in India, is driven on a systematic and unfavourable treatment of individuals on the basis of their gender, denying them rights, opportunities or access to resources (Sen. G, 2000). The global agenda 2030 of Sustainable Development provides a holistic opportunity to improve the lives of adolescent girls. Educating adolescent girls reduces poverty in all its forms (SDG 1) and achieves food security (SDG 2). Providing quality education reduces population rate and lowers infant and maternal mortality rates (SDG 3). Educated mothers ensure better education prospects for their children (SDG 4). Gender equality (SDG 5) can also be achieved by empowering more women and girls. Their education makes it possible for them to access clean water and better sanitation for all (SDG 6). Since education is the prime catalyst for social,

cultural and economic development, it raises economic productivity to a greater level (SDG 12). Thus, the education of girls is widely recognized as the most effective investment to development (IJAERS, 2016).

To back this, women are at the core of the agenda of mainstreaming and in consequence-various efforts have been initiated to empower women. Among those diverse steps, gender budgeting emerges as a critical step for mainstreaming. The budget is a key government activity as it regulates how other government activities will operate (UNIFEM, 2008).

Gender Budgeting in India

A Gender-Responsive Budget is a budget that acknowledges the gendered patterns in society and allocates money to implement policies and programs that will change these patterns towards a more 'gender-just' society. Gender budget is not a separate budget for women or men and it is not about spending the same amount of money on them. It is about taking gender perspectives into consideration; whether spending is adequate to meet the differential needs of men and women. Gender budgets ensure that resource allocation takes place in a gender sensitive manner i.e. all expenditure is examined for its relevance, accessibility, impacts, and consequences for both women and men (Global Journal for Research Analysis, 2014). Also, it enables to track the budget as it calls for monitoring, analysis and reformulating the budget. Thus equity, transparency, efficiency, and accountability are its cardinal values.

India is a unique example of segregating the Gender Budget Statement from the annual expenditure budget and institutionalizing it within the Ministry of Finance by making it mandatory part of the annual budget. Since gender budgeting has been initiated, there has been a gradual shift in the policy making from welfare approach, to the Gender and Development approach. The main objectives of Gender Budgeting include promoting gender equity, ensuring accountability, transparency and participation, efficiency and effectiveness, and good governance.

Need to invest in Adolescent Girls' Education

While female enrolment in schools has increased rapidly since 1990s, there is still a substantial gap in female enrolment at upper-primary and secondary levels (NUEPA, 2008). There is a need for extra initiatives to bring girls to school. This is because cost of bringing in boys or girls to school differs. The research evidence indicates that the schooling is perceived to be more costly by the poor parents for girls because of involvement of direct costs (school fees) as well as opportunity costs (help in household chores, taking care of siblings). Thus, education as a resource can be assessed through two relative sides:

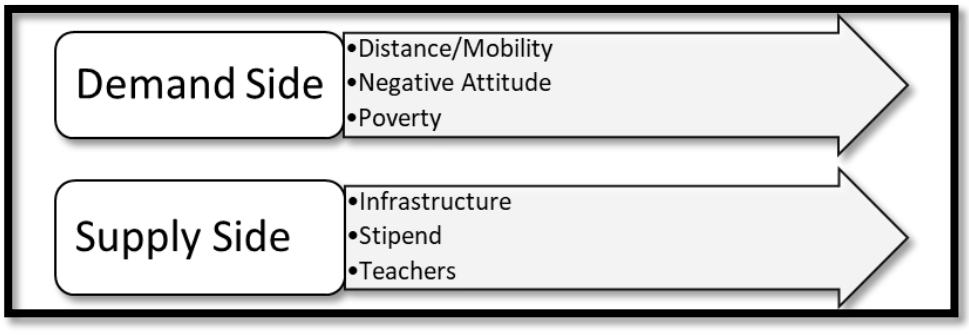

Figure 1: Adapted from Chakraborty, 2014

Budget for Education: Trends and possible implications

Gender budgeting for education is an approach adopted to mainstream the gender dimensions related to education into all stages of budget cycle. This involves integration from planning till implementation stage (Nsapato, 2010). One of the finest measures for judging the spending on education of a country is its ratio to the country's GDP. But how a state decides to use its resources for school education depends on several factors. States having higher GSDP (Gross State Domestic Product) like Maharashtra and Tamil Nadu are spending lower levels on school education as compared to the size of their economy whereas economically-backward states like Bihar, Rajasthan, Uttar Pradesh, and Odisha are spending 4-5 percent of their GSDP on school education (CRY, 2016).

The KGBV scheme is a GRB intervention which is being implemented in the Educationally Backward Blocks at the micro-level and has been one of the main components of Sarva Shiksha Abhiyan since 2007. It has been lately subsumed under Samagra Shiksha Abhiyan since 2018. These schools were set up in the Educationally Backward Blocks which are defined on a composite criterion of blocks with a rural female literacy rate below the national average and gender gap in literacy higher than the national average. Yet, the average public spending, per child, on elementary education is still lower than the average per child costs incurred by parents to send their children to government schools (Sinha, 2012).

According to the 2015-16 allocation plan, the overall education budget was down from Rs. 82,771 cr to Rs. 69,074 cr. The budget of SSA was reduced by 22.14 per cent, funding for the Mid-Day Meal Scheme reduced by 16.41 per cent (Tharoor, 2015). The main and unidentified concern is that low-caste children and those from disadvantaged communities who are disproportionately missing out, still have not been able to take advantage of schemes like the residential school program (Sinha, 2010).

Many researches support that higher budgetary allocation for women per se does not translate itself into higher spending, as there has been significant deviation between budget estimates and budget actuals. These studies recognize that the categorization has to be followed by a number of exercises that examine what "use" has been made of expenditures and what "impact" this has had, that is, from the financial inputs to the gendered outputs and impacts (Chakraborty, 2014).

RATIONALE FOR THE STUDY

Gender Budgeting is emerging as an important strategy for scrutinizing the government budgets and their due contribution towards gender mainstreaming and gender equality. Simple 50-50 distribution of budgets may look equal but it is not equitable or fair because of different individual needs. Thus, it requires special allocation in terms of affirmative action. Gender budgeting looks at every part of the government budget to assess how the different needs of all socio-economic groups are addressed. Gender Budgeting is imperative as in spite of various policies made for sectors like education, health, water and sanitation etc., the question of how much women and girls benefit from them still persists. The effect of macroeconomic policies needs to be realized and highlighted from the microeconomic perspective.

Different states and districts in India have achieved varying levels of development in terms of education. But, the uneven spread of education, low enrolment of backward section of society and low enrolment of girls are some of the problems that are contextual in nature and pose regional variance (Agrawal, 2007). Therefore, it is imperative to understand the budget provisions and allocations of different states and how varied state commitments are strategizing to implement a central scheme and achieve the target of universalization of upper primary level of education for adolescent girls. The residential program for adolescent girls was initiated as a part of gender budget initiatives of the country. It belonged to the "Part-A" of gender responsive budgeting which included 100% women-centric schemes and programmes.

METHODS

The study is a sub-component of a research study which focuses on understanding the effectiveness of KGBV scheme through a gender budgeting lens. The principal focus of this study was to analyse and depict the allocation and expenditure patterns for the micro-implementation of the KGBV scheme for adolescent girls.

Despite financial norms for the programme developed from the perspective of adolescent girls' rights and entitlements, the shortfalls still prevail. In this context, the main objective of the study was to identify the lacunas in receipt and expenditure of allocated budget and their associated reasons affecting the micro-implementation of a gender budget initiative. This was done by adopting a mixed-method approach i.e. quantitative and qualitative in addressing the research objective. The study attempted to identify the bottlenecks and implications of resources rendered by the government on the end users of residential schools.

The study was conducted in the state of Rajasthan. According to census data 2011, Rajasthan witnesses lowest female literacy rate in the country with only 52.1 percent literate females as compared to 79.19 percent male literacy rate. The gender gap in literacy is nearly 31 percentage points; the highest in the country.

Since the gender disparity in literacy rate exists in the state, Rajasthan was purposively selected to understand how KGBV scheme was implemented as an effort to bridge this gender gap in literacy. Ten schools from Rajasthan were purposively selected (five schools each from Jaipur and Udaipur) to understand the flow of funds. The sample within the residential schools was exhaustive i.e. all the students in the senior-most class, coupled with all key stakeholders that is the school Principal, teachers, hostel warden, and accountant were made part of the study. To gain a holistic perspective from the grassroots, in every school, the parents of ten students presently in school and five alumni students were interviewed using an in-depth interview schedule.

In terms of budget analysis, it was realized that it was not enough to analyse the budget allocations and expenditures based on the figures that the government provides through budget documents. So, the study attempted to track and analyse the flow of financial resources till the end users (the school). Additionally, the study attempted to understand the factors that affect the flow of funds from state to district to block level, to understand if the broad goals of Samagra Shiksha Abhiyan are being met by considering the stakeholders perspective- students and implementers (wardens and teachers) at the school level.

FINDINGS AND DISCUSSION

Flow of Funds

The guidelines issued by the government of India hold detailed financial norms for the residential school program, which facilitated the implementation process. The residential school program was conceived as a partnership between the central and state governments. The funds are released based on the approval of the plan by Planning and Budget Committee based on the recommendations of the committee constituted for this purpose by the national mission. The central government releases the funds based on the individual financial commitment by the respective state governments (which has been generally observed to be 65 percent by the state governments and remaining 35 percent by the central government). This percentage contribution has been directly proportional to the gender and budgetary priorities of respective states.

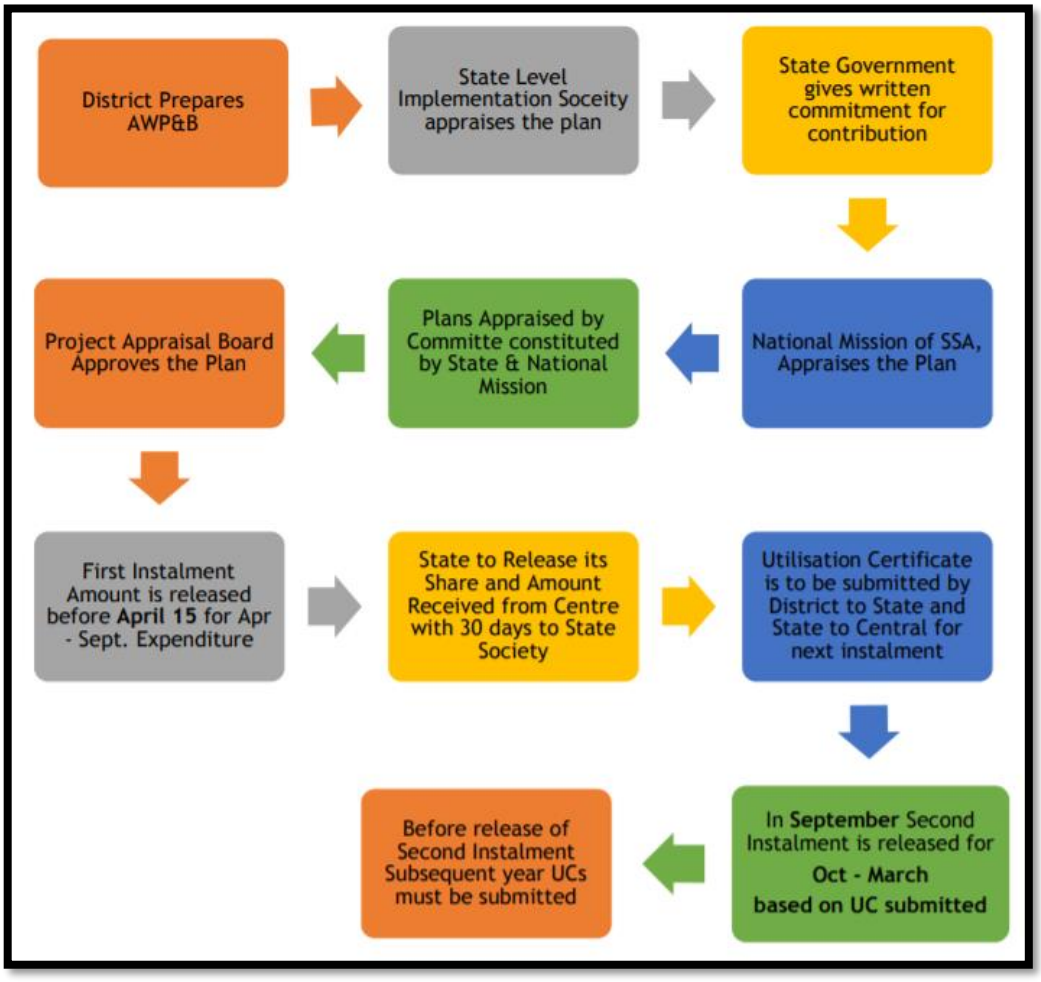

Figure 1: Flow of fund with the timeline (adapted from Ministry of Personnel, Public Grievances and Pensions, Government of India, 2017)

State distribution of resources for education of girls

The share of the approved outlay for girls' education vis-à-vis the total outlay in the national program reflected the priority of states in terms of girls' education. But the priority within different

set of components did not hold clarity. A study conducted by Centre for Budget and Governance Accountability (2019) analysed the different possible set of components for the approved outlay of all girls-specific interventions reported in the Annual Plan and Work Budget of the government.

Table 1: Adapted from Centre for Budget and Governance Accountability, 2019

Broad Category	Interventions Included
Girls' Empowerment	Training in self-defence, Kishori Manch, Resource Material and Behavioural Change and sensitization and special training for strengthening female teacher reform.
Entitlements	Free uniform for girls
Incentives	Stipend for Children with Special Needs (CWSN)
Access and Retention	Girls' hostel, girls' toilets, and furniture for girls' hostel
KGBV	A combination of interventions like infrastructure, meals, incentives etc.

The state specific Education budget targeted for girls by different components revealed different results. With the recent development in the program, the residential schools which were primarily at upper-primary level (class 6 to 8) had been extended till higher secondary level (Class 12). Thus, it was obvious for states to demand more resources for the hostels. The share for residential schools (KGBVs) is depicted in the figure 3. The share of the residential schools was reported to be higher due to construction costs and associated recurring costs for maintaining the school and hostel premises.

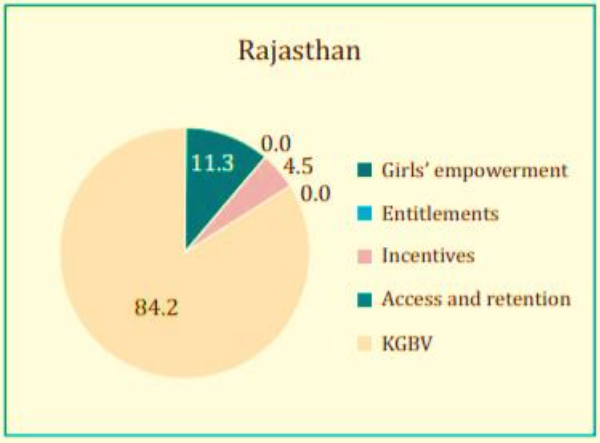

Figure 2: Adapted from Centre for Budget and Governance Accountability, 2019

Distribution of Funds across components

The norms for recurring expenditure for each residential school are enumerated below:

Table 2: Financial norms for recurring costs (Adapted from Government of India, 2019)

Recurring					
Maintenance per girl Per month @ Rs.1500/-		535	9630.00	535	9630.00
Stipend per girl per month @Rs.100/-		535	642.00	535	642.00
Supplementary TLM, Stationery and other educational material		535	535.00	535	535.00
Salaries					
(a) 1 Warden @ Rs. 25,000/- per month		535	1605.00	535	1605.00
(b) 2 Urdu Teachers (only for blocks with muslim population above 20% and selected urban areas). If required @ Rs 12000/- per month per teacher					
(c) 3 Part time teachers @ Rs 5000/- per month per teacher		535	963.00	535	963.00
(d) 1 Full time Accountant @ Rs 10000/- per month		535	642.00	535	642.00
(e) 2 Support Staff - (Accountant / Assistant, Peon, Chowkidar) @ Rs 5000/- per month per staff		535	642.00	535	642.00
(f) 1 Head cook @ Rs 6000/- per month and upto 2 Assistant cooks @ Rs 4500/- per month per cook		535	963.00	535	963.00
Vocational training / specific skill training		535	535.00	535	535.00
Electricity / water charges		535	535.00	535	535.00
Medical care/contingencies @ Rs. 1250/- per girl.		535	668.75	535	668.75
Maintenance		535	401.25	535	401.25
Miscellaneous		535	401.25	535	401.25
Preparatory camps		535	160.50	535	160.50
P.T.A / school functions		535	160.50	535	160.50
Provision of Rent (8 months)					
Capacity Building		535	267.50	535	267.50
Physical/Self Defence training @ Rs. 200/- per child per annum		535	107.00	535	107.00
Sub Total Recurring		**535**	**18858.75**	**535**	**18858.75**
Total – KGBV	**341.29**	**535**	**18858.75**	**535**	**19200.04**

School Amenities

School infrastructure and amenities play an important role in provision of quality education. Availability of basic infrastructure is a prerequisite to create an enabling environment for learning (CRY, 2018). Due to much delayed receipt of funds, the majority of schools lacked amenities at the academic as well as infrastructural level. All schools had a playground space but they were not maintained properly. The toilets on the other hand, were partially maintained and were reported to be regularly cleaned by the students themselves. The lack of funds leads to lack of human resources,

which in turn affected the maintenance of infrastructural facilities. In 50% schools, the boundary walls were reported to be underbuilt. This was precarious in regard to the safety of the adolescent girls staying at the hostel premises. The budget for construction purposes was reported to be inadequate by the school staff.

Image Source: Author

At the academic level, 60% schools had no separate classrooms for the students of various classes. Unavailability of stationery materials like pens and notebooks deeply affected the learning pace and motivation levels of students. Given the limited budget, prioritizing the expenditure budget was imperative. The major amount of money was being spent on food as it could not be compromised. 90% schools reported buying ration for hostel kitchen on credit by establishing relationship with local vendors, leading to an extra expenditure on credit as well as compromising with quality of supplies. This further affected the maintenance patterns of other resources related to academics and infrastructure. The material resources like sewing machines, computer systems, etc. were mostly available in schools but their usability and proper utilization was not observed in many cases as they were not in working condition and were merely utilizing the storage space.

Pupil Teacher Ratio

The pupil teacher ratio was found to be skewed in all the schools visited. There were a maximum of two teachers in each school with approximately 100 students. This skewed ratio of 1:50 affected the performance of students at the academic level. Moreover, there were no separate teachers for vocational and computer training in 80% of the schools. The allocated salary budget for each guest/vocational training teacher was as low as Rs 6000 per month. In most schools, the hostel wardens were also appointed through local agency within the same salary bracket, in virtue of non-availability of a government employee.

Financial Management

Each residential school functioning under the residential school program was expected to maintain the financial records on a regular basis. Upon inquiry, 100% respondents expressed that cash books and transaction details were regularly updated. As per the financial guidelines, schools are required to regularly update cash book, stock book, ledger, daily stock register, voucher book, contingency register, TA bill register, and salary register to maintain all the financial transactions.

Thus, human resource at the school-level needed to be trained well to ensure transparency and accountability (the two important expected outcomes of gender budgeting).

The financial management differed in each school and no uniform process could be found during the research. The government expected the schools to maintain and share records on a monthly basis. In most schools, lack of staff effectuated the head personnel accountable for the students, school resources, infrastructure, finances, and regular maintenance. This in turn disrupted the entire process of accountability and fund flows; causing further delay in the release of budget.

The monthly expenditure against each student's maintenance was Rs 50 per month which was too less. These funds were reported to be insufficient for meeting the recurring and non-recurring expenditures of KGBV students. Moreover, due to absence of proper guidelines for utilization of the budget under each head, it was left to the discretion of the school personnel for its optimum utilization.

Allocated and Expenditure Budget Trends

Though Kasturba Gandhi Balika Vidyalayas have been conceptualized as a major component of Samagra Shiksha Abhiyan in India; they function as a stand-alone institution at the grassroots level. Thus, the challenges of decision-making and governance structures prevail as the school's link to the local community on one hand (including parents of students, community members, resource persons in neighbourhood etc.), and block and district level on the other hand (including district education officer and other relevant stakeholders).

The hostel warden and other members of School Management Committee responsible for daily transactions and management at the school-level lacked training about budget and expenditure management and accounting process. Thus, several discrepancies disrupted the conduct of different activities due to lack of proper management of funds and improper utilization at the block and school-level.

Under-utilization of budget

100% schools reported disruption in the flow of funds. The delayed receipt of funds lead to underutilization of funds. The shortage of funds at the time of utilization affected implementation at all levels. The school staff including cook and warden did not reportedly receive their salaries for a period of six months, which affected their motivation levels.

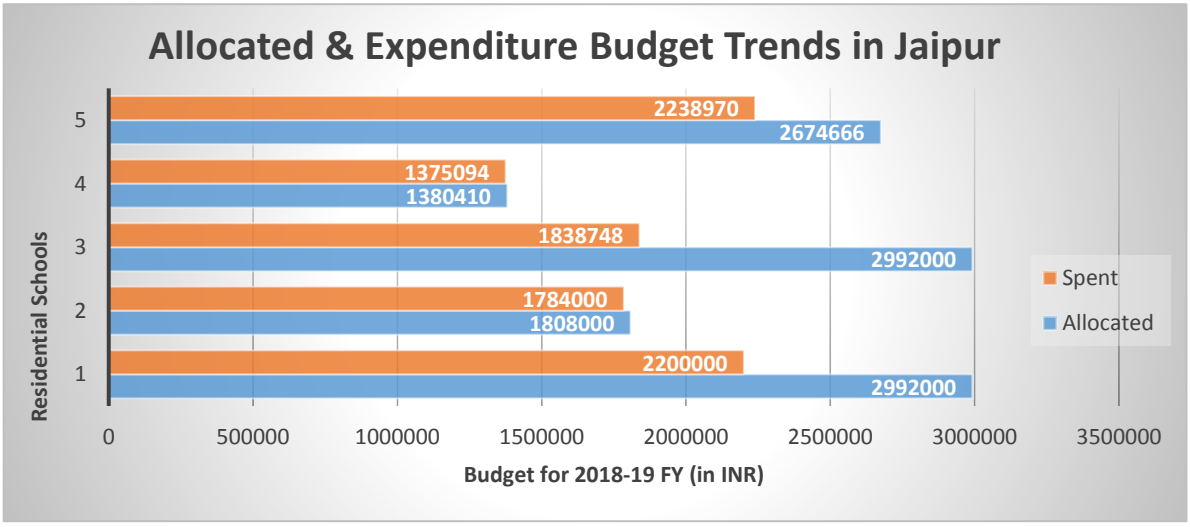

Figure 3 Author

The schools reported a considerable gap in the budget allocation and budget expenditure due to delayed receipt of funds. The funds received at later stages of financial year (April to March cycle) get lapsed as the financial year ends, and thus the money is reported to remain unspent.

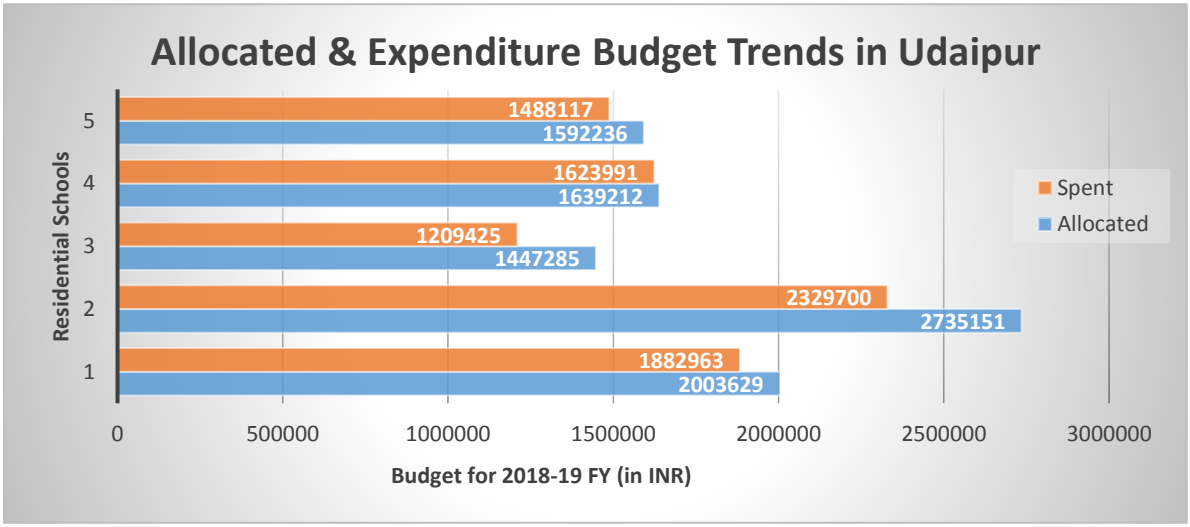

Figure 4 Author

The unspent amount gets adjusted in the next financial year, affecting the entire budget cycle and implementation of management of school. With the absence of specific guidelines to spend under different heads, the funds remain underutilized under various components, primarily due to fear of misappropriation.

RECOMMENDATIONS AND CONCLUSION

The concept of residential schooling for adolescent girls has proved to be critical in furthering the Global agenda of SDGs 2030 of eliminating gender disparities in education and ensuring equal access to education for the vulnerable groups. It can be concluded from the budget review and school visits that more attention needs to be given to the components of the budget, rather than the overall budget size. Through a detailed guideline and orientation for the budget heads, the micro-implementation of Kasturba Gandhi schools can do much better. Since the extra costs required for gender mainstreaming are not included in the national budget plans, the need to increase the gender responsiveness of the government budgets needs to be realized. For this, the capacity building and requisite training of the government officials, field workers, and program implementers needs to be prioritized. This could be the foremost step into the implementation process of gender budgeting and managing scarce financial resources of the country in the most effective, fruitful, and gender equitable manner.

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The Indian Journal of Home Science 2021: 33(2)

EXPLORING THE EXPERIENCES OF OLDER ADULTS ADAPTING TO GAMES FOR IMPROVING MENTAL WELLBEING - A CASE STUDY FROM KERALA

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ABSTRACT

COVID - 19 Pandemic has shattered the life of the people across the globe irrespective of age, gender, caste, colour, creed, or race. All people irrespective of the age group are going through peak of severe mental distress and the mental well-being is a significant area of concern. The later part of a life or a declined period of a lifetime is the aged; they are the most vulnerable section in this period. The present study aims to improve the mental well-being of the older adults through interactive and fun learning intervention programme. The objective of the study was to assess the efficacy of games on mental well-being among the older adults. Hundred samples were collected from the age group of 60+ with the help of online survey, face to face interview and telephonic interview, regarding the baseline information, level of mental health and factors influencing the mental health of the samples. A controlled group of 30 samples were identified by their voluntary willingness for the intervention programme. 5 weeks intervention program were implemented through different games. The efficacy of the intervention was recorded through the evaluation checklist. Though the researcher could not trace crucial changes in the mental well-being of the samples, significant level of happiness, belongingness and a sense of worthiness could be chalked out. They gave suggestions also to continue the games with innovative engagement activities**.**

Key words: Older adults, Mental wellbeing, frame work, games, positive psychology, Kerala

INTRODUCTION

COVID-19 is one of the major challenges faced world-wide in the year 2020 completely. The pandemic has brought a global uncertainty, which has significant impact on every population. Every population is under a disgusted state by various kinds of thoughts and worries about diverse reasons. This has created a sort of anxiety, panic disorders and distress among the people and has negative implications among their mental wellbeing. Mental health is an integral part of health and well-being of every individual. It has a positive aspect and which is associated with social and emotional stability among people and community. Mental health is directly or indirectly influenced by various factors such as biological, psychological and environmental in this scenario. Taking care of one's own mental health is one of the major concerns in every individual. Later part of the life span of an individual is the period of interdependency, decline of physical, emotional, social and they are insecure in all respects. Studies shows that the rate of mental health among older adults decreases drastically. A good psychological mind may help to lead a healthier and satisfied life.

In a study by Kappen, Babaei and Nacke in 2018 on designing fitness programmes to combat sedentary lifestyle and foster older adults reported that successfully facilitating physical activity through gamified technology, has significant impact on the interest and active participation of the older adults. This helped the researchers to design strategies to support designers as well as researchers to create meaningful and playful fitness applications for older adults.

Differences in living arrangements among older adults transitioning into the community was studied by Fabius and Robinson in 2019, emphasized the influence of racial diversity in living arrangements and need for affordable and accessible housing options for older adults. It was identified that women living with others are at greater risk of worse quality of life and serious psychological distress than men (Smith, 2016).

Engaging different kinds of activities helps to strengthen the mental well-being among the older adults.

SIGNIFICANCE OF THE STUDY

Kerala, being one of the highly literate State in India and the only State where sex ratio is in favour of women population has many accolades in terms of development parameters, many of which are perhaps at par with International Standards. Over the years, the State has grown to a consumer economy. The recent trends in the inter State migration of the labourers in search of jobs, is on the other hand a sad affair of the State's vulnerability in finding daily labourers for unorganised sectors. Increase in literacy rates and the rapid urbanisation and migration has resulted in Empty Nest Syndrome in many of the households in Kerala. Quite many elderly parents are left alone in homes being assisted by maid or home nurses. The feeling of agony and loneliness is very high among the senior adults. Parents are henceforth, emotionally drained and are subjected to several kinds of economical, psychological, emotional, and physical abuse. Kerala's rate of older adults has exceeded the national average and is estimated that there are 48 lakh people in Kerala above 60 years of age, that is 13.1 percent (Economic Review, 2019) among which 15 percent of them are aged above 80 years of age. The life expectancy of the State is also higher, and women outnumber men at all ages. It is expected to rise to 20 percent by 2030, and will push the State to revamp the present Social Security System. The State has been declared as fastest ageing State in India (Economic Review 2019).

Intervention Studies on the mental wellbeing of the older adults is at its infancy in India, and Kerala being one of the State with increasing number of the older population, it is a dire need to provide helping hands to this segment of the population of a State and it is the duty of the local citizens to treat them in a better and healthy manner so that both get mutually benefitted. Hence, the present study will explore the practice based interdisciplinary approach on mental wellbeing of the older adults. An underlying aim is to break all the stereotypes about the older adults by awakening them through various fun oriented activities. The study will be an experimental research in this field and can be placed as a model for other parts of the State and country to imitate. This research study aimed at supporting the initiative of Government of Kerala, India to make the place "Senior citizen friendly" and for a graceful ageing.

OBJECTIVES OF THE STUDY

The study explored the experiences of the older adults in adapting to various fun oriented games and activities for improving their mental wellbeing, with the following objectives.

- To analyse the demographic profile of the older adults.
- To assess the level of mental health among older adults.
- To find out the factors influencing the mental health.
- To design, develop and promote games for the older adults.

METHODOLOGY AND RESEARCH PLAN

The methodology adopted for the research work is as follows:

1. Locale of the study: The locale selected for the study was Thiruvananthapuram, the capital district of Kerala, where the older population outnumber the National average. The share of Kerala's elderly in the total elderly population of India is four percent.

Fig 1 Locale of the Study

2. Universe of the study: The study comprised of two groups: An experimental group and a controlled group. One hundred elderly in the age group of 60+ years of age selected as the Experimental group for the study by using simple random sampling method for the initial phase of the study. Equal considerations were given to both the genders.

3. Design of the study: The present study was based on an action research, with the specific objectives of analysing the level of mental health, factors influencing the mental health, designing and dissemination of games to ensure better mental health among the older adults. Separate tools were used to collect relevant data from the samples. Apart from the online survey, face to face interview, tele phonic interview method and focal group discussions (on virtual platform such as WhatsApp group) were also done to ensure proper participation of the samples.

❖ GERIATRIC DEPRESSION SCALE AND QUESTIONNAIRE

Geriatric Depression Scale by Yesavage et. Al (1982) was used to collect the data regarding level of mental health. The GDS is a 30- item questionnaire. Each question is answered as 'Yes' or

'No' Each question carries a score of 1 if the response is toward diagnosis of depression and 0 if against depression. All items' scores are added to get the final score. The total score is 30. According to the total score, the person is classified as normal (0-10) borderline (11- 13) or having depression (above 14). The GDS takes 8-10 min to complete the assessment.

A well-structured questionnaire was also prepared and used to collect the data regarding the baseline information and factors influencing the mental health of the samples.

4. Design of intervention: A cohort of 30 older adults who expressed their willingness to participate in the study was selected for the controlled study.

RESULT AND DISCUSSION

Demographic profile

Demographic profile such as age and gender of the samples are given below

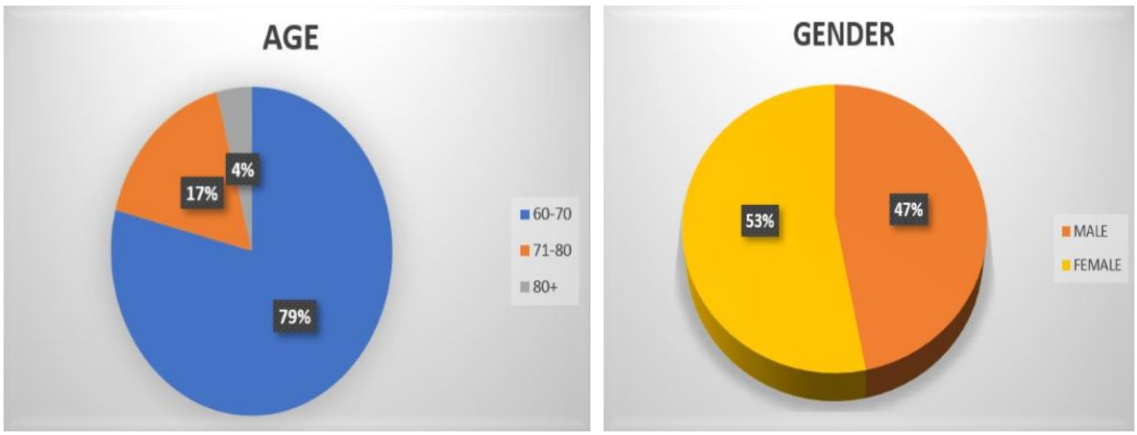

Fig 2 Demographic Profile

The study comprised of a whooping majority of samples from the age group of 60- 70 (young-old) years of age, and seventeen percent of the samples belonging to the age group of 71-80 years of age and only four percent of the sample come under the age group of above 80 years and above. It was observed during the study that, the samples in the young-old category were more active and enthusiastic in completing the activities and games in time and were not at all hesitant in sharing their experiences with others.

The study comprised of fifty three percent of female older adults and forty-seven male older adults.

Employment Status; Employment keeps the older adults busy, entertained as well as providing them with the feeling of social relevance.

Fig 3 Employment status

Regarding the level of employment of the samples, a substantial majority of female older adults were never employed in their life time. Twenty six percent of the samples worked once in their life time and are now retired and currently not working. About twenty one percent of the samples were engaged in self -employment, whereas nineteen percent were doing business or daily labour. Only two percent of them were doing private jobs.

SOURCES OF INCOME

Income plays an important role in human life. The feeling of acquiring of more income is the thought of the most middle- aged people. Even it varies among them. A significant source of income for the absolute majority of older adults was either pension, agriculture, or from children. The situation is not different in the present context as well.

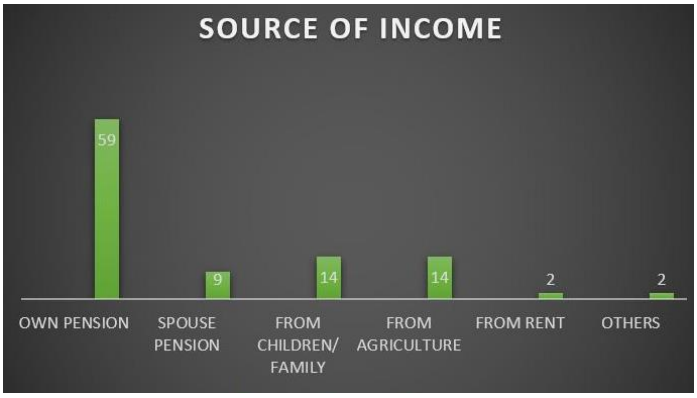

Fig 4 Source of income

A crushing majority of fifty nine percent depended on their own pension as their primary source of income, followed by dependency in agriculture and from children or family (14 percent respectively).

TYPE OF LIVING

Type of living plays an important role in everyone's life. Kind of living influence the physical as well as mental health of an individual.

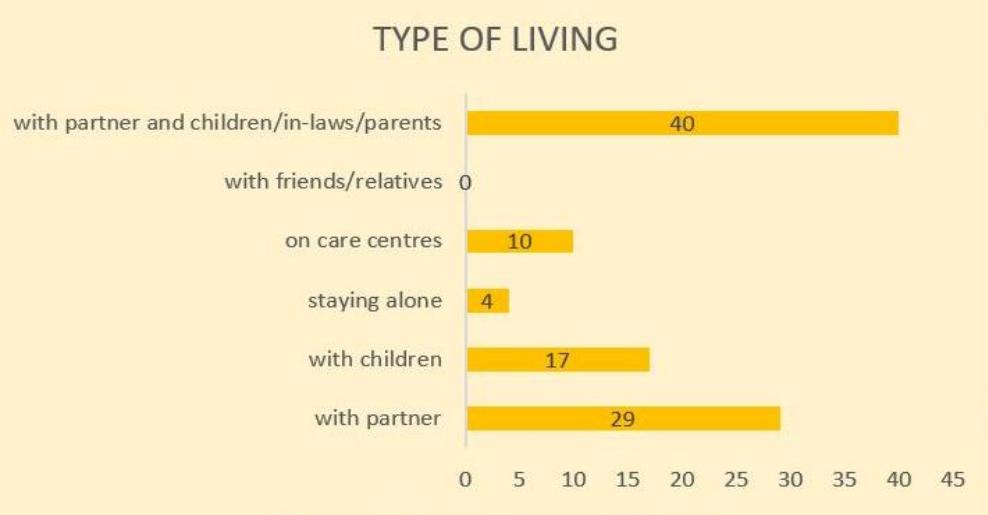

Fig 5 Type of living

Forty percent of the respondents were living jointly with their partner and children or with their in-laws and twenty-nine percent of them were living with their partner alone. About ten percent of the samples depended on –"care centres" for their day time stay and four percent of them were staying alone.

LEVEL OF MENTAL HEALTH

Geriatric Depression Scale (GDS) developed and validated by Yesavage et al. in 1982 for the screening of depression in older adults, was used for the present study, to extract the level of mental wellbeing enjoyed by the older adults. The GDS has been widely used globally for screening of depression in elderly person, both in the rural and urban setting. The GDS is a 30-item questionnaire, where each question is answered as 'Yes' or 'No' and carries a score of 1 if the response is toward diagnosis of depression and 0 if against depression. All the items' scores are added to get the final score. The total score is 30. According to the total score, the person is classified as normal (0-9) borderline (11-13) or having depression (above 14) and the GDS is the original scoring for the scale. The score 0-9 shows normal level of mental health, and the score 10-19 shows mild depression and the score above 20 shows severe depression. Based on this scale, the samples of the present study were further categorized as follows.

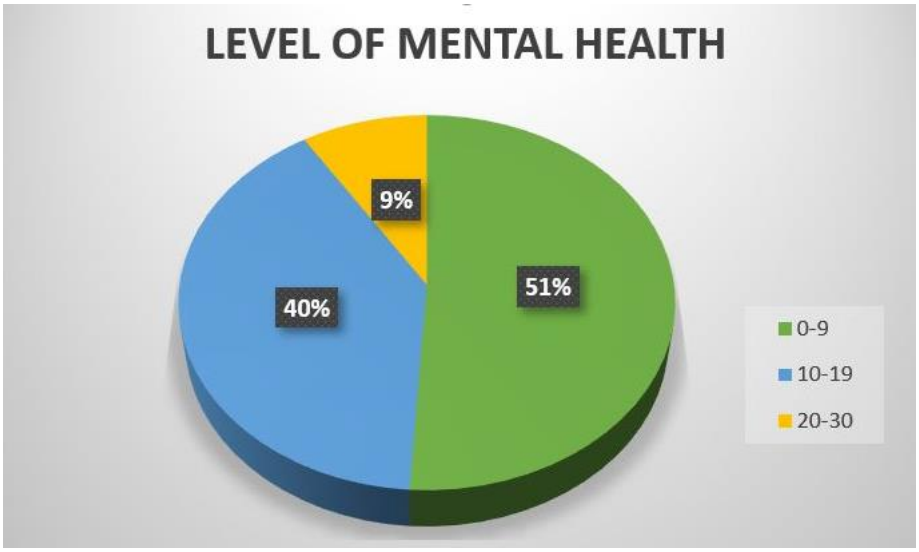

Fig 6 level of mental health

It was understood that a wide majority of the samples (51percent) had normal level of mental health. Forty percent possess mild depression and only nine percent expressed severe depression. Thenumber of samples falling in the category levels of mild and severe depression should not be treated as negligible, and requires severe attention of interventions and follow ups to assist them to overcome these situations and to cope up with the life further.

MAJOR RESULTS OF THE INTERVENTION

Five weeks intervention programme was carried out for the samples. It was a combination of fun learning activities and interesting brain games. The participants were asked to keep a journal to record the observations that they make to themselves. They were further requested to share their thoughts and emotions in the WhatsApp group as well. All the games and activities need to be completed within the stipulated time and can be carried out with or without the support of another family member.

In the first week, the activities were based on a title ‘Connect with Nature’ and where given activities on getting an indoor plant, get some sun shine, watch the sunset or sunrise, try an outdoor exercise and create wealth from waste or plastic. In the second week, pretested brain games were given to the samples, to do it either with the help of the family members or to do it alone. From third week onwards, the cohorts were given puzzles, bingos, snake and ladder and Cross words through the WhatsApp group. The instructions on playing the games, and doing the activities were shared clearly through video and audio instructions. During the fourth week, a set of activities based on the title ‘Back to the Ester years’ were given and that includes singing a favourite song, sharing traditional tips and tricks of better home and a letter to a childhood friend. The fifth week was meant for interaction and an online Antakshari, story-telling and experience sharing were made. The participants were regularly monitored and the feedback was collected.

An evaluation scale was developed and the participants were asked to provide the feedback of the intervention and the experiences gained.

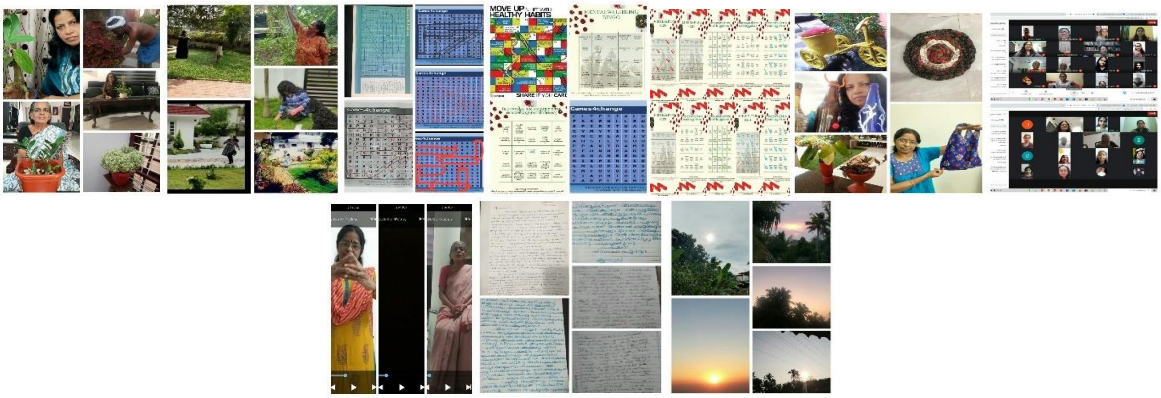

Fig 7 Games and activities engaged by the samples

CONCLUSION

With the ever-increasing population of older people in Kerala, particularly in Thiruvananthapuram, it is important to understand whether physical activity and associated fun learning activities could be a way to improve the quality of life through positive mental health and wellbeing outcomes in older adults. The factors like physical activity, regularity, pleasure seeking and engagement activities seem to have a positive impact on mental health and wellbeing of older adults. Likewise, any kind of intervention, which got older people to be more active, was found to be positively contributed to their mental health and wellbeing as long as it was within a reasonable intensity. Though the researchers could not trace crucial changes in the mental well-being of the samples, significant level of happiness, belongingness and a sense of worthinesswas identified and reported by all the samples participated in the study. They gave suggestions also to continue the games with innovative engagement activities. The factors influencing mental health of the older adults were age, physical health status, chronic diseases, family relationship and membership or participation in a civic or social group.

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AN ASSESSMENT OF TRAINING NEED AND INTEREST OF SELF-HELP GROUP (SHGS) MEMBERS REGARDING APPAREL DESIGNING FOR ECONOMIC EMPOWERMENT OF WOMEN

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ABSTRACT

Over the past three decades, women's empowerment has been increasingly recognized as a crucial factor glove for any country holistic and sustainable development. Several programs and projects across the world have been launched and are currently in progress to bring social, economic and political equity and broader access to basic livelihood needs. In this contest, the present study was undertaken in Varanasi district of Uttar Pradesh with two randomly selected NGOs. The lists of SHGs were obtained from the selected NGOs and then five SHGs were randomly selected from each NGO. Total 184 women respondents were selected from ten SHGs for interventions. The results clearly show that about 80.0% of selected females opined the major reasons for joining skill training programme for money earning, supplementary income and learning new and developed skills. Majority of females belong to below poverty line in study area were interested in learning new skills regarding apparel designing for money saving. The significant association exists between educational status and benefits of learning new skills.

Key words: Apparel designing, Empowerment, Skill, SHGs, Training, Women.

INTRODUCTION

In the last of 19th century' India lives in its villages' - this axiom is as true today as it was when the country became independent 73 years ago. Over the past three decades, women's empowerment has been recognized as a crucial factor for any country's holistic and sustainable development. Several programs and projects across the world have been launched and are currently in progress to bring social, economic and political equity and broader access to basic livelihood needs. According to the World Bank under-investment in women restricts economic growth and poverty reduction. Empirical evidence shows a positive correlation between women's earnings, their productivity and poverty alleviation (World Bank and Gender Equality, 2010-08-10). In the report of World Survey on the Role of Women in Development (UN DESA, 2009) that there are positive multiplier effects for overall social and economic development when women, in the same extent as men, access economic and financial resources. Income generating activities can be defined as assisting women to secure income through their own efforts (Ayanwuyi and Akintonde, 2011). Income generation activities of poor women help them to raise their overall status in a family and society (Satya Narayana and Rao, 2012). Vijaya and Lokhandha (2013) suggested that skill development will boost the women empowerment with high productivity and earnings. Skills

lead to confidence among them to be more innovative. Kittur Praveen (2014) concluded that in order to encourage women entrepreneurship, a special training course for women entrepreneurs must be started to improve their skills. Kennedy *et al*. (2014) reported that income generation interventions influence behaviors and outcomes is inconclusive. Aysha *et al.* (2018) concluded that empowerment of women can be increased by providing training on different income generating activities.

JUSTIFICATION OF THE STUDY

The earlier studies have concentrated on development of rural women, but later on there is a shift from development to empowerment of women, through income generating activities. The study has been designed to focus on the contribution of socio-economic characteristics of rural women towards the extent of empowerment and increase their skill and knowledge about apparel design. The study sought to add more knowledge about skill, such as the Basic Needs Approach, by exploring the notion that it is not a matter of merely supplying the basic needs of individuals that will aid in poverty alleviation, but that it is also necessary to empower them so that they can, in a sustainable manner, access resources and skills to address their basic needs and improve their livelihoods.

OBJECTIVES OF THE STUDY

1. To study the socio-economic status, income generating and leisure time activities of selected SHGs members,
2. To assess the training need and interest of SHGs members regarding apparel designing.

RESEARCH METHODOLOGY

The study was undertaken in Varanasi district of Uttar Pradesh with two randomly selected NGOs (World Literacy of Canada, Gangamahal Ghat, Varanasi and Yuva Gramya Vikash Samiti, Basani, Varanasi). The lists of SHGs were obtained from the selected NGOs and then five SHGs from each NGO were selected with simple random sampling technique. Total ten SHGs were selected for interventions and out of these. Total 184 women respondents were selected for the study. The selected women were interviewed with a structured interview schedule developed for this purpose. The research design adopted for the present study was action research design. In first phase of study base line data was collected to assess the knowledge and skill of respondent on the basis of skill training need of respondents were assessed. Local language was used for impartation of training.

RESULT AND DISCUSSION

Willingness to learn developed stitching pattern

The data in table 1 reflects that majority of females (90.8%) had willingness to learn developed stitching pattern among which proportion of females were 95.6 and 86.2 percent in NGO-I and NGO-II respectively. The difference between the values was significant ($P<0.05$).

Age wise distribution was the maximum (93.9%) in females of age group 21 – 35 years and the minimum (82.4%) of females having > 35 years of age group for willingness to learn

stitching pattern. An increasing trend in learning of developed stitching pattern of female was seen with increased levels of their educational status. The proportion of females of APL had apparently interested to learn stitching of garments through developed pattern. The result clearly shows that the females of NGO-I, belong to age group 21 – 35 years, educated at intermediate and above and belong to above poverty line of family were willingness to learn stitching of garments through developed pattern. This finding is corroborating with the results obtained by Soor *et al*. (2010) and Rao (2003).

Table: 1. Distribution of respondent's willingness to learn developed stitching pattern with reference to NGO, Age, Educational status and Economic status

Classification	**Willingness to learn developed stitching pattern**					
	Yes		**No**		**Total**	
	No.	**%**	**No.**	**%**	**No.**	**%**
NGO						
I	86	95.6	04	4.4	90	100.0
II	81	86.2	13	13.8	94	100.0
Total	**167**	**90.8**	**17**	**9.2**	**184**	**100.0**
	χ^2= 4.83, df = 1, P <0.05					
Age						
≤ 20	31	88.6	04	11.4	35	100.0
21-35	108	93.9	07	6.1	115	100.0
> 35	28	82.4	06	17.6	34	100.0
	χ^2 = 4.43, df = 2, P >0.05					
Educational status						
Low	62	88.6	08	11.4	70	100.0
Middle	73	91.2	07	8.8	80	100.0
High	32	94.1	02	5.9	34	100.0
	χ^2 = 0.39, df = 2, P >0.05					
Monthly per capita income						
< 1000	93	89.4	11	10.6	104	100.0
≥ 1000	74	92.5	06	7.5	80	100.0
	χ^2 = 0.88, df = 1, P >0.05					

VARIOUS SKILLS

The data presented in table 2 clearly show that out of total selected females the majority of 78.3, 75.5, 70.7 and 67.4 percent preferred to learn pattern designing, tie and dye, block printing, and cutting and stitching respectively. The preference of embroidery (59.8%) and patch work (31.0%) were comparatively low. This may be concluded that majority of females (more than 67%) preferred to learn cutting and stitching, tie and dye, block printing, embroidery and pattern designing in the present study area. Ahuja *et al.* (2001) stated that training rural girls in sewing be

made by the women self help groups in their villages. The results found in the present study were at par with the findings of Gupta *et al*. (2012), Das (2006) and Deodiya (1992).

Table: 2. Distribution of respondent's willingness to learn various skills

Skills		Willingness to learn					
		Yes		No		Total	
		No.	%	No.	%	No.	%
1.	Cutting and Stitching	124	67.4	60	32.6	184	100.0
2.	Tie and Dye	139	75.5	45	24.5	184	100.0
3.	Block Printing	130	70.7	54	29.3	184	100.0
4.	Batik	52	28.3	132	71.7	184	100.0
5.	Embroidery	110	59.8	74	40.0	184	100.0
6.	Patch work	57	31.0	127	69.0	184	100.0
7.	Pattern designing	144	78.3	40	21.7	184	100.0
8.	Any other	24	13.0	160	87.0	184	100.0

OPINION ABOUT BENEFIT OF LEARNING SKILL

More than one third (37.5%) of females opined purpose of learning to new skills followed by 25.5% for supplementary income and remaining 21.2% and 15.8% for the purpose of money saving and self dependent (table-3). The females who opined to supplementary income and money saving as a cause of learning developed skill was found to be in increasing order with increase of their age status whereas 21 – 35 years of age group of females were interested to learn developed skill for the purpose of learning new things and self dependent in higher proportion than the other age groups of females. Statistical χ^2- test signifies the fact that there was no significant difference among various age group of females according to benefits of learning new and developed skill.

Educational and economic status wise analysis express that an increasing trend was observed with increased levels of educational status among those females who were willingness to learn new skills. Majority of high educated females (26.5%) had interest of learning new skills for money saving whereas; this was least in case of junior high school groups. In case of supplementary income, the proportion of females having junior high school level was found to be higher than other females educated at different levels. Statistical test shows that the significant association exists between educational status and benefits of learning new skill. It was also seen that the females belonging to below poverty line were in higher proportion than female belonging to above poverty line. This finding is closely related with the result reported by Dangol (2010). No any significant ($P<0.05$) association exist of age status and economic status of females with purpose of different types of benefits after learning new and developed stitching pattern in the present study.

Table: 3. Distribution of respondent's opinion about benefit of learning skill with reference to their Age, Educational status, Monthly per capita income

Classification	Benefit of learning skill									
	Learning new thing		Self dependent		Supplementary income		Money saving		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Age										
≤ 20	16	45.7	05	14.3	08	22.9	06	17.1	35	100.0
21-35	42	86.5	20	17.4	30	26.1	23	20.0	115	100.0
> 35	11	32.4	04	11.8	09	26.5	10	29.4	34	100.0
Total	**69**	**37.5**	**29**	**15.8**	**47**	**25.5**	**39**	**21.2**	**184**	**100.0**
	χ^2 = 3.04, df = 6, P > 0.05									
Educational Status										
Low	20	28.6	20	28.6	15	21.4	15	21.4	70	100.0
Middle	34	42.5	08	10.8	23	28.8	15	18.8	80	100.0
High	15	44.1	01	2.9	09	26.5	09	26.5	34	100.0
	χ^2 = 16.41, df = 6, P < 0.05									
Monthly per capita income										
< 1000	40	38.5	14	13.5	26	25.0	24	23.1	104	100.0
≥ 1000	29	36.2	15	18.8	21	26.2	15	18.8	80	100.0
	χ^2 = 1.29, df = 3, P > 0.05									

REASONS FOR JOINING SKILL TRAINING PROGRAMME

The majority of female's preceptor were to join skill training programme due to learning new things and skill (36.4%) and money saving/earning (25.0%) while 17.9% for source of supplementary income, 6.0% for opportunities for outing, 4.9% relief from household works and 3.8% each due to way of entertainment and works preferred (table-4).

The findings revealed that 80.0% of selected females opined the major reasons for joining skill training programme to money earning, supplementary income and learning new and developed skills. Pathak *et al*. (2005) and Bharathamma (2005) also highlighted the need to identify the social profile, purpose behind attending the training programme and expectations of the trainees for determining the format and nature of the training programme suitable to the training needs of the participants.

Table: 4. Distribution of respondents regarding reasons for joining skill training programme

Reasons for joining skill training programme	No.	%
1. Relief from the house hold work	09	4.9
2. Way of entertainment	07	3.8
3. Opportunity for outing	11	6.0
4. Money earning /saving	46	25.0
5. Learning new thing and skill	67	36.4
6. Source of supplementary income	33	17.9
7. Work preferred	07	3.8
8. Any other	04	2.2
Total	**184**	**100.0**

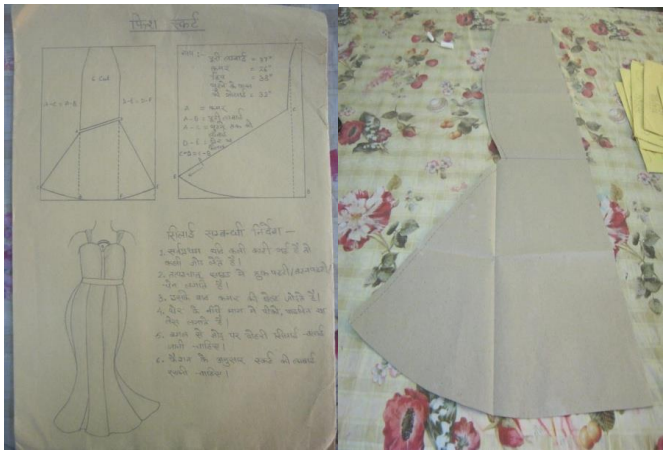
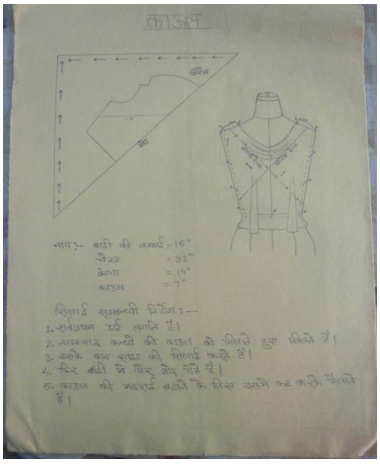
CONCLUSION

It may be concluded that majority of females preferred to learn cutting and stitching, tie and dye, block printing, embroidery and pattern designing in the present study area. The significant association exists between educational status and benefits of learning new skill. Majority of females belonging to below poverty line in study area were interested in learning new skills regarding apparel designing for money saving. The purpose of self dependent and supplementary income was observed in higher proportion among above poverty line females. The respondents were of the opinion that training programme helps to learn new things and developed existing skills, developed new ideas, to become self-dependent and help in source of supplementary income.

Future recommendation: The present study will be of immense help for policy makers and women development programme initiators to plan the future programmes most effectively. So it needs to take proper initiatives so that every woman should be participated in various income generating activities even those who are merely engaged as a housewife should be considered as earning person in the family and then they will be approached into the way to make them empowered in a proper way.

Some photograph of the training programme



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SKILL BUILDING FOR ENTERPRENEURSHIP IN RURAL AREAS OF FEROZEPUR DISTRICT (PUNJAB)

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ABSTRACT

Today's challenging economic situation means that it is no longer sufficient for a new graduate to have knowledge of an academic subject; increasingly it is necessary for students to gain those skills which will enhance their prospects of entrepreneur and employment.

The government is making continued efforts to provide equitable growth opportunities for women, which being reflected among others in increased participation by women in local government and decision-making process, promotion of income generation activities and thrift and is increasing credit self-help groups (SHG's) for women. To keep up with the competitions and to abreast them with the latest of designs and trends and entrepreneurship skills, the project team from DSCW Ferozepur organized Workshops/training programme. During these workshops on food preservations, squash making,pickle making, sewing skills, embroidery skills,jewelry designing etc., the artisans are helped to reinvent themselves as per the current trends to make them more commercially viable and then they are provided with the promotional platforms like exhibition and craft bazaars etc.

A detailed survey of the area was made to access the existing traditional skills, the available resources, technical inputs, production process and marketability of product etc. for the development of new entrepreneurial skills. The main objective of this paper is to prepare an effective and feasible strategy document for creating suitable employment in rural areas. For that purpose, some villages were selected randomly as per convenience and training programmes were conducted in those areas on courses like food preservation- squashes, Pickles, Papad and Wari making, sewing techniques-quilting, stitching, embroidery, painting and Tie & Dye etc., mud toy making techniques, Jewelry designing techniques etc. It would be helpful in removing intra –regional imbalances in the state. The outcome of the study would also be helpful to the Govt of Punjab in developing strategies for generation of productive employment, improvement of quality of life and greater access to the basic necessities of life.

Key words: Entrepreneur, Employment, Traditional Skills

INTRODUCTION

The 21st century has witnessed growing interests in skills development (SD) in emerging economies. Democratic countries like India want to create a knowledge economy with a special emphasis on sustainable growth in service and industry sectors. India is also very keen on adopting proactive strategies for socio-economic empowerment of its citizens in addition to ensuring an inclusive growth trajectory. Nurturing and developing a pool of human talents is key for sustainable growth. Effective and sufficient human capital formation has become key determinant in capturing global opportunities. Creating an atmosphere of workplace learning and

SD boosts socio-economic empowerment of excluded communities. In the last two decades, there has been an enormous growth in the fields of engineering, technology and management. There are anecdotal evidences of Indian engineering graduates who have been unable to secure employment due to curriculum gaps between colleges and industry standards or industry practices. Creative, analytical and leadership skills do not match with industry's expectations. Thus, tertiary institutions play a vital role in bridging the skills gap of fresh graduates. (Blom, A 2011)

Skills development is increasingly being viewed as very important by industry associations and chambers of commerce and industry as their member organizations face skills shortage or skills gap. Their long-term and medium-term projected market expansion is marred by non-availability of skilled manpower in certain formal and informal sectors. Micro, small and medium enterprises (MSME) will be mostly affected as big enterprises can always lure away skilled manpower. This is in addition to exodus of manpower from MSME to big enterprises. In India, the MSME sector is a major job creator. The informal or unorganized sector also plays a role in job creation particularly for poor and marginalized communities. The poor and marginalized communities have very limited access to education in addition to being low-skilled. This means they continue to face difficulties in finding suitable employment. Hence, many resort to taking up odd jobs which fail to provide meaningful SD. (Das Anoopkumar 2015)

The National Skill Development Corporation (NSDC) has been set up under Public-Private-Partnership (PPP) mode which is functioning under the Ministry of Finance to provide viability gap funding and coordinate private sector initiatives. The corporation has constituted Sector Skills Councils for identification of skill development needs, development of a sector skills development plan and establishment of a well-structured sector-specific labor market information system. (NSDC 2011)

Punjab has invested in encouraging skill development and technical education in the state, making it one of the priorities of the 12thfive-year plan (2012-2017). The government of Punjab has been working towards expanding vocational and technical training, under the direction of the department of technical education and industrial training. The objective of the department is to oversee degree and diploma level institutions in the state to hasten the pace of skill development. Courses and training are revised in consultation with the Confederation of Indian industries. The State government, as of 2010, has a capacity to train 300,000 persons annually. The Punjab government aims to skill 15 million people by 2022, keeping pace with the government of India's plans to skill 500 million people by 2022.

NSDC, inter-alia, aims at determining the gaps between the demand and supply of human skills at micro level through survey studies (NSDC 2013). NSDC, has identify 21 high growth sectors and formulated action plan for skill development in those sectors.

NEED OF THE STUDY

The need for developing rural entrepreneurship is to promote rural development in the country. Rural entrepreneurship can generate employment opportunities and contribute in developing the infrastructure and other amenities in the rural areas. It has the potential of protecting and promoting traditional artistic activities, art, craft and handicraft of the rural areas. Thus, Rural entrepreneurship can ensure the most efficient and effective use of limited resources by the entrepreneurs that can contribute to the overall economic development of rural areas. Ferozepur district of Punjab state is particularly selected as a target group for skill mapping and to update the rural women for entrepreneurship.

OBJECTIVES

The main objectives of the paper are:

i) To assess the status of the existing traditional skills and potential for expansion.

ii) To conduct training programmes for improving entrepreneurial skills in rural areas.

LITERATURE REVIEW

Socio-economic empowerment of citizens in developing countries has become a key concern particularly among marginalized communities through widening of access to learning and training in SD. Many developed countries are now facing the challenges of aging population while and low-skilled jobs in developing countries cannot serve the purpose of socio-economic empowerment and the poor will remain trapped in poverty.

Latest writings and studies have identified several driving forces for SD in India. These works had analyzed how mission-mode SD programmes can promote social inclusiveness at the National and Local level.

Scholars such as Bryceson (2002) and Scoones (2009) adopted an ethnography angle to study perspectives and challenges of the rural population while reorienting their livelihoods to achieve development in sub-Saharan Africa and other LDCs.

Jamal and Mandal (2013) and Chenoy (2012) examined the key actors under the National Skill Development Mission 2010 while Mehrotra, Gandhi and Sahoo (2013) examined official projection of manpower requirement in 2022 and how this figure was derived at during the planning phase.

The Organisation for Economic Cooperation and Development (OECD) and the International Labour Organization (ILO) (2011) jointly drafted the *OECD-ILO Strategies for Local Job Creation, Skills Development and Social Protection*, which is a set of 10 key principles and policy suggestions for governments and non-government actors including private players. One of the principles and policy suggestions for their member countries is to emphasize on "Maximizing Skills Development and Training". Thus, SD of youth has been made an essential parameter to strategically position a country higher in a competitive globalized world order. At the national level, many key initiatives were planned under the Eleventh and the Twelfth Five Year Plan periods aimed at enhancing access to skills building and learning vocational and technical skills.

Scholars have introduced various effective approaches to skills building and achieve viable livelihoods in different segments including fisheries, forestry, village industries and food processing industries. Similar approaches have been mooted such as those contained in OECD's latest strategic document published in 2012 titled "Better Skills, Better Jobs, Better Lives: A Strategic Approach to Skills Policies".

The Planning Commission's (2007) *Report of the Task Force on Skill Development* considers SD of youth will help in sustaining the economic momentum of the country in a globalized world. Livelihood's development or livelihoods promotion is usually linked with socio-economic empowerment, regional development and rural development. Livelihood's development comes with appropriate SD of marginalized communities in developing countries and least developed countries (LDCs). Marginalized communities have been displaced for decades from their original habitats, aggravated after the Second World War due to widespread deforestation, land acquisition

for industrialization, global warming and other severe ecological or environmental conflicts. These communities need access to alternative livelihoods to ensure a sustainable future.

The UNESCO's *EFA* (Education for All) *Global Monitoring Report 2012* affirmed the importance of SD for youths around the world to ensure a better and secure future.

The World Bank publication titled World Development Report 2013: Jobs started a debate on "skills or jobs – what comes first?" The report highlighted that "jobs need skills, pull skills, and build skills" and emphasized that "employment opportunities increase the demand for education, which systems then have to meet. The role of policy here is to ensure that signals are adequately transmitted, providing incentives to continue skill accumulation by the young and those of working age alike.… In India, informing rural women about job opportunities led to increased schooling for girls and delayed marriage and childbearing for women. On the other hand, privilege in access to jobs distorts the signals. It hurts and discourages, rather than encourages, the building of skills."

RESEARCH METHODOLOGY

Dimensions to assess skill gaps

Skill gaps were assessed under two dimensions, each of which required a different approach

i.Need for manpower skill development in organized sector: This involved understanding skill gaps for formal/informal employment in both private and public enterprises among key manufacturing and services sectors in Ferozepur district.

ii. Need for manpower skill development for livelihood trades***:*** This involved understanding skill requirements to foster local livelihoods in primary, unorganized secondary and unorganized tertiary sectors in the district.

Collection of primary data

The method adopted for investigation was survey method. Primary data was collected through structured questionnaire. Separate questionnaires were designed for Vocational Training Providers (VTPs) and Establishments. To solicit the qualitative information various stakeholders were contacted such as government departments, representatives of industries, financial institutions, NGOs, Self Help Groups (SHGs), VTPs etc. 6 villages of Ferozepur District were selected randomly as per convenience. A project team of 3 members conducted field visits to analyze the existing traditional crafts in that particular area. Around 30-35 respondents from each village were selected randomly by contacting sarpanch of respective village. Traditional activities were discussed with the selected respondents along with their growth potential and training programmes were organized to enhance their entrepreneurial skills.

Collection of secondary data

Quantitative and qualitative secondary data were collected from different sources including MIS (Management Information System) reports generated by the implementing agencies and host ministries of the respective SD missions. The Planning Commission of India also compiled several datasets for strategic planning of National missions. Data sources for tables and figures are mentioned in the appropriate sections of this project.

RESULTS AND DISCUSSIONS

Skill Gap Assessment of Ferozepur District

4.1 Administrative Profile

Almost 11 km from the Hussainiwala border on the west and 121 km from Ludhiana in the east lies the City of Ferozepur, the headquarters of the District administration. By road, it is 116 km from Amritsar, 130 km from Jalandhar, 122 km from Ludhiana, 103 km from Bathinda (via KotKapura), and 86 km from Fazilka. The city lies on the Ferozepur Cantonment— Ludhiana Branch Line of the Northern Railway.

4.2 Estimation of supply of manpower in the District

District wise skill incremental supply estimates were arrived considering the district level participation rates based on census 2001 data along with LFPR, WPR from NSSO 66th Round Employment Survey.

Ferozepur is a high opportunity within the district for this growing working population have to be addressed through suitable training human resource growth district adding manpower of about 58,000 more than 3 lakhs during 2012-22. The employment, opportunities within the district for this growing working population have to be addressed through suitable training.

Region	Estimated Population (2022)	WorkingAge Population (2022)	Labor Force (2022)	Work Force (2022)	Incremental Supply(2012-22)
Ferozepur	2,236,559	1,476,129	627,909	596,514	58,753
Punjab	30,570,951	20,176,828	8,877,804	8,433,914	830,683

Source: KPMG Analysis

4.3 Skill mapping and developmental concerns

Based on the interactions with the local industries, district administration and other stakeholders involved in skilling, it was felt that the district due to its proximity to the Pakistan border has been able to attract only limited industrial investment and this has had a debilitating effect on the job availability for skilled personnel in the district. Majority of the demand is from the informal sector which is able to absorb graduates from lines like Apparel, I.T sector, Aesthetics and beauty care, hospital administration, carpentry, electrician, plumber etc. Students graduating in more specialized courses like Crane and Machine Operators, Brick Layers, Equipment Technicians etc generally need to migrate to more industrialized districts for employment.

Traditional Skills and Need for their Up-gradation

The district has traditional skills in dari weaving, knitting, phulkari and dasuti embroidery, traditional fan weaving, crochet work and in preparing other handicrafts. Hand and machine embroidery and stitching etc., is generally done by women. It was pointed out that because of consumerism, there is a need for skill up-gradation so that they could learn new designs and make new items according to the latest fashion and market demand. The major problem in sustainability of traditional skills had been the lack of linkages with markets.

From the survey, it was found that there are VTP's or stake holders that provide training in skilled courses at various government and non-government institutions such as schools, Colleges, ITI's and other places. But our target is to prepare an effective and feasible strategy document for

creating suitable employment in rural areas. For that purpose, some villages were selected randomly as per convenience and training programmes were conducted in those areas on courses like food preservation- squashes, Pickles, Papad and Wari making, sewing techniques-quilting, stitching, embroidery, painting and Tie & Dye etc, mud toy making techniques, Jewelry designing techniques etc. By learning these skills, the participants at least by sitting at home can start their own small-scale enterprise as some of these ventures need less investment and some resources can be provided by sarpanches of the villages so that these rural women can uplift their family income and raise their family status. The fees charged were nominal (Rs. 100/- per month) for some courses and the duration of such courses spanned from two to four months. These courses have a good demand for self-employment. These courses were offered in batches of 30-35 trainees and raw materials were also provided by the team members initially in some cases. Selection of villages was generally done on the basis of their contacts with the sarpanch of the respective villages. In certain cases, the sarpanch himself contacted the team members for conducting training programmes. In this way team members adopted 5-6 villages each for such training programmes. It was stated that poor persons cannot buy raw material which is a hindrance in training. Team members also cannot afford raw material for a long time. Government support in such cases is needed.

(I) Makhu

There was one primary school in the village with three teachers. Out of these three teachers, only one was regular, while the other two hardly visited the school. There was a major problem of regular supply of electricity in the village, and the villagers complained that electricity was available only for 3–4 hours during the night. No electricity was available in the village during the day.

1. Training programme on food preservation

Vegetables and fruits can be preserved by making squashes, jam, chutney, pickles etc. Pickle and squash making workshops were organized in the village for the selected respondents. Technique of making guava squash and carrot, radish and turnip pickle was demonstrated. This workshop continued for one week. The details of guava squash are described below.

Table 1: Expense and Earnings in Guava Squash making

Item	Cost/ Price (Rs)
1 kg Guava	20
Sugar	25
Packaging	5
Transportation	25
Total Cost	75
1 bottle squash	150
Net Profit from 1 Bottle squash	75

All the respondents (n=30) showed keen interest in the training programme activities and 70% of them adopted it as a small-scale enterprise.

Fig 1 Demonstration on Guava Squash Making

(I) Mahalam

With more than 8000 population, Mahalam is one of the largest villages in the District, and more than 70 per cent of its population belonged to OBC social group. There are primary, middle, secondary, and higher secondary schools in the village. As in the case of other villages, here too, agriculture is the principal occupation. However, there are no extension services or training facilities available in the village. The gram sewak provides some preliminary information about seeds and pesticides. Adulteration of both seeds and fertilizers was rampant and this is one of the reasons why villagers did not prefer using them. Every seed and fertilizer shop were selling adulterated products and so the villagers have no choice. Along with crop cultivation, animal husbandry is also an important activity in this village.

1. Training Programme on Pickle Making

Pickle making can also be encouraged on a commercial basis as it can employ rural females and empower them economically. In this regard, training on different types of pickles was provided primarily on preservation, packaging, and marketing. Different types of pickles were carrot, radish and turnip pickle, black gram pickle, South Indian lemon pickle, salt, vinegar, oil and sugar were used for preservation of pickles. At the moment, pickle making is carried out at the household level for household consumption. This workshop persisted for three months. About 30 respondents attended this workshop and adopted it as a small business. The details of mango pickle-making is described in table below:

Table 2: Expenses and Earnings in Mango pickle making

Pickle Making	
Item	**Cost/ Price (Rs)**
1 kg Mango	20
Spices	25
Packaging	5
Transportation	25
Total Cost	75
1 kg pickle	150

Net profit from 1 kg pickle	75
2 persons in 4 days can prepare 10 kg pickle	
	Net profit/ earning (Rs)
Net profit from 10 kg pickle	750
Net earnings per person per day	94

During season (3 months), each individual can earn up to Rs. 2800 per month.

2. Training in sewing techniques

In this village, a training programme was organized in sewing techniques and 32 women participated in that training. The duration of the programme was two months. After the programme, trainees were provided loans for entrepreneurship at 33 per cent discount to purchase sewing machines. All these women started part-time home-based shops and started earning Rs. 7500 –8000 per month. They were acquainted with different quilting techniques to prepare baby sets, pillow covers, bed sheets and other household articles. One of the advantages of such kind of training programme is that even if women do not start their own home-based enterprises, they can do the necessary stitching for their own household members and can save some money.

One of the most important advantages of this village is its proximity to the main road. Therefore, a large part of the marketing can be taken up by the villagers themselves. The *Gramsabha* (village committee) can take initiatives in organizing training programmes for the villagers. However, *Gram sabhas* do not perform the functions which they are supposed to, and instead, have become places to settle personal scores.

Fig 2 Workshop on Sewing Techniques

(II) Khusal Singh Wala

There were 32 weaver households in this village (all Muslims) and for them, weaving (using handloom) was the principal occupation till 4 years ago. But this activity has totally stopped in this village since then and now they have to depend on crop cultivation for their survival.

1. **Revival of traditional occupation- Weaving**

Weaving was carried out on piece-rate basis. Traders from outside supplied raw material (threads) and also purchased the finished products (cloth) from the weavers. The price of thread has been increasing for quite some time now as a result of which the occupation was on the decline. High price of raw material pushed out weavers from their traditional occupation. Finally, since the last 4 years, it has stopped totally. If the weavers are provided with credit, this activity can resume in this village. Marketing will not be a problem because they can sell their product in the local market.

[2 persons in 1 day can weave 8 pieces of cloth (each can be sold at Rs. 75), and the amount of thread required to prepare it is 4 kg (cost Rs. 175). So, 2 persons can earn a net income of Rs. 225 (400-175) in one day. Therefore, each person can earn a net income of Rs. 112 per day from this activity]

The team members organized a training programme, in which the trainees got a stipend of Rs. 75 per day. This training was quite useful because most of the present-day weavers got formal in-hand training through this programme. Therefore, in addition to providing credit, formal training in weaving,fan making and hand embroidery was provided to enhance the income earning potential of these trainees.

CONCLUSION

The findings of this project indicated that the National Skill Development Mission (NSDM) is the major SD initiatives in India launched in recent times. It is true that with the establishment of new industries in the region, there will be a growing demand for technical skills. However, industries cannot absorb the growing labor force entirely, and therefore, alternative sources of non-agricultural employment have to be encouraged. In this project we have tried to identify traditional skills which has good scope of development in future. With knowledge about traditional skills already in place, it is only a matter of appropriate training and financial support towards the traditional artisans which can really enhance economic development of the people in this region. Training programmes would improve the achievement of learning outcomes and employability in the open market. The basic objective of the training programmes is to set the rural industries-traditional and non-traditional on a path of growth so that they are able to compete with the urban industries. Thus, entrepreneurial success in rural areas will assist in eradicating rural poverty, increase employment opportunities, raise the per capita income level and improve living standards significantly.

RECOMMENDATIONS

The government should set up Skill and Entrepreneurial Development Centres in each block where rural youth is imparted training in various identified skills. Besides these rural Skill and Entrepreneurial Development Centres the government should ask the associations of existing major industries in the state to start industry specific Training Institutes. These institutes can then give training to both rural and urban youth in the skills required for work force in these industries. Industry Specific Associations should be persuaded to start such institutes under the Corporate Social Responsibility and give training and stipends to the trainees. To conclude an integrated and

multidimensional approach is required for the growth of entrepreneurship in backward areas and for identifying opportunities that have growth prospects based on local resources.

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EFFECT OF TREATMENT, RESIDENTIAL BACKGROUND, SES AND THEIR VARIOUS INTERACTIONS ON INTELLECTUAL SELF-CONCEPT OF FEMALE STUDENTS

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ABSTRACT

Self-concept plays an important role in life. It is important to know one's strengths and weaknesses. This helps in taking appropriate decisions in life. Intellectual Self-Concept is one dimension of Self-concept. By doing exercises one may improve one's Reasoning Ability. Similarly Intellectual Self-Concept may also be improved by doing appropriate exercises. With this in mind, the effect of Treatment, Residential Background, SES and their Interaction on Intellectual Positive Self-Concept was studied. Treatment consisted of 40 specially designed exercises for 40 working days at the rate of 45-60 minutes per day. This Treatment was termed as "Self-Concept Enhancement Programme" (SCEP). Experimental Group was treated though SCEP along with routine activities of the Institute whereas the Control Group continued with the routine activities of the Institute. The size of the sample was 154 undergraduate female students. It was designed on the lines of Post-test Only Control Group Design. 2X2X2 Factorial Design Analysis of Variance was used for analyzing the data. The findings were: (1) SCEP was found to be superior to Lecture Method in facilitating Intellectual Positive Self-Concept of Female students. (2) Self-Concept Enhancement Programme was found to suit significantly more to Rural Area Female students rather than Urban Area Female students. (3) Intellectual Positive Self-concept of Female students was found to the independent of their Residential Background, SES, interaction between Treatment and SES, interaction between Residential Background and SES, and interaction among Treatment, Residential Background and SES.

KEY WORDS: Treatment, Residential Background, Socio-Economic Status, Intellectual Self-Concept

INTRODUCTION

Self-concept plays an important role in life. It is important to know one's strengths and weaknesses. This helps in taking appropriate decisions in life. Intellectual Self-Concept is one dimension of Self-concept. Self-Concept is an image of a person of what one thinks of oneself. It includes what people come to know about themselves through experience, reflection and feedback from others. Self-concept is a multi-dimensional construct that mentions individual's perception of self in relation to any number of appearances; such as academics, gender roles and sexuality, racial identity, and numerous others (Shavelson, Hubner & Stanton, 1976; Shavelson & Bolus, 1982; Bong & Clark, 1999). Self-Concept did not remain static and show gradual development up to the end of pre-adolescent period but family factors and school factors were associated with Self-Concept (Kale, 1982). Self-concept developed as a student progresses from childhood, through adolescence, and into adulthood (Elbaum & Vaughn, 2001). Hence, it is the prime responsibility of parents and teachers to help the child to develop a favorable Self-Concept.

Further, various researches have been conducted to assess the effect of different approaches, strategies and methods on the facilitation of the Self-Concept. Washington (1994), Thompson (1995), Gürler & Konca (2016), and Verma et al. (2019) reported that Treatment had positive effect on Self-Concept of subjects. On the other hand, Stein (1994), Meeks (1995), and Miller (1995) found no significant change in Self-Concept after Treatment. Review of related literature revealed that a large number of researches related to Self-Concept and its correlates were conducted. However, researches were not available where effect of Treatment, Residential Background, SES and their various interactions on Intellectual Self-Concept was studied. To fill this gap the present study was undertaken.

OBJECTIVE

To study the effect of Treatment, Residential Background, SES and their various interactions on Intellectual Positive Self-Concept and its dimensions separately.

HYPOTHESIS

There is no significant effect of Treatment, Residential Background, SES and their various interactions on Intellectual Positive Self-Concept and its dimensions separately.

METHODOLOGY

Research Design

The present study was experimental in nature. The study was designed on the basis of posttest only Control Group Design. The sample of the study was divided randomly in two groups. Of these one randomly selected group was termed as 'Experimental Group'. This group was given the treatment termed as "Self-Concept Enhancement Programme" (SCEP) along with routine and conventional activities of the Institute. While other group continued only with the routine and conventional activities of the institute and termed as 'Control Group'. Treatment consisted of 40 specially designed exercises and continued for 40 working days at the rate of 45-60 minutes per day. In Experimental Group and Control Group the Self-Concept was assessed at the end of Treatment. During experimentation SES was also assessed using Form 'A' and 'B' by Kulshreshtha (1964).

Sample

The sample of the study comprised of female students studying in Kasturbagram Rural Institute, an autonomous institute, affiliated to Devi Ahilya Vishwavidyalaya, Indore (M.P.). The study was conducted on undergraduate female students of Arts (B.A. II and B.A. III years) as well as Home-Science (B.Sc. Home-Science II and B.Sc. Home-Science III years). The size of the sample was 154 undergraduate female students. Of these, 76 female students (46 from Arts and 30 from Home-Science Discipline) were selected for Experimental Group and 78 female students (48 from Arts and 30 from Home-Science Discipline) were selected for Control Group by using stratified random sampling method. The students belonged to urban and rural areas. Majority of students were from average Socio-Economic Status families. All students were hostliers. Their age

ranged from 17 to 23 years. The medium of instruction was Hindi both in Arts and Home-Science Disciplines.

Tools

The data were collected in respect of Intellectual Self-Concept and Socio-Economic Status (SES). The Self-Concept of students was assessed with the help of Self-Concept List (SCL) by Pratibha Deo (1985). The test-retest reliability coefficient was 0.89. The convergent and discriminant validities were established for this Self-Concept List besides establishing its content validity. For obtaining the convergent validity, another standardized Self-Concept List was used. The convergent correlation between the same dimensions in all cases ranged from 0.12 to 0.89.

For assessing the SES Form 'A' and 'B' by Kulshreshtha (1964) was used. Form 'A' was meant for assessing the SES of urban families whereas Form 'B' for rural families. The test-retest reliability coefficient was found to be 0.87. The scale had content and construct validity. The concurrent validity of Form 'A' was established by using Prateek and Trivedi's Socio-Economic Status Scale and validity coefficient was found to be 0.81. For Form 'B', the concurrent validity was established by using Kuppuswamy's and Pandey's Socio-Economic Status Questionnaire and validity coefficients were found to be 0.57 and 0.89 respectively.

Procedure of Data Collection

For collecting data permission from the college principal was obtained. The sample consisted of 154 female college students. Of these, 76 female students (46 from Arts and 30 from Home-Science Discipline) were in Experimental Group and 78 female students (48 from Arts and 30 from Home-Science Discipline) in Control Group. The students of Experimental Group were briefed about the procedure to be followed under "Self-Concept Enhancement Programme". Self-Concept Enhancement Programme continued for 40 working days at the rate of 45 to 60 minutes per day. Before starting a particular exercise, students were explained about what was to be done. Some exercises were based on group discussion while others required guessing ability or play activity like passing the parcel, sharing the achievements and successes, etc. The Intellectual Positive Self-Concept of Experimental Group was assessed at the end of the Treatment with the help of Self-Concept List. During the process of experimentation, the SES was assessed with the help of standardized tools as mentioned under Tools. The students of Control Group were not given any special Treatment. They continued with their routine activities of the classroom. The SES of Control Group was also assessed with the help of same tool as used with the Experimental Group. The Intellectual Positive Self-Concept of Control Group was also assessed along with Experimental Group with the help of same tool. After administering all the tools, the scoring was done as per instructions given in the respective manuals.

RESULTS AND INTERPRETATION

1.0 Effect of Treatment, Residential Background, SES and Their Various Interactions On Intellectual Positive Self-Concept Of Female Students

Intellectual Positive Self-Concept was one dimension of Intellectual Self-Concept. Self-Concept Enhancement Programme and Lecture Method were the two levels of Treatment. Urban Area and Rural Area were the two levels of Residential Background. Low SES and high SES were two levels of SES. Thus, the data were analyzed with the help of 2X2X2 Factorial Design Analysis of Variance of unequal cell size and the results are given in Table 1.

1.1 Effect of Treatment on Intellectual Positive Self-concept of Female students

From Table 1, it can be observed that F-value for Treatment is 5.77 which is significant at 0.05 with df =1/146. It indicates that there is a significant difference in mean scores of Intellectual Positive Self-concept of Female students treated through Self-Concept Enhancement Programme and Lecture Method. So, there was a significant effect of Treatment on Intellectual Positive Self-concept of Female students. Thus, the null hypothesis that there is no significant effect of Intellectual Positive Self-concept of Female students is rejected. Further the mean score of Intellectual Positive Self-Concept of Female students belonging to Self-Concept Enhancement Programme Group is 26.53 which is significantly higher than those belonging to Lecture Method Group whose mean score of Intellectual Positive Self-Concept is 24.87. It may, therefore, be said that Self-Concept Enhancement Programme was found to improve Intellectual Positive Self-concept of Female students in comparison to Lecture Method.

Table 1: Summary of 2 X 2 X 2 Factorial Design ANOVA of Intellectual Positive Self-Concept of Female students

Source of Variance	df	SS	MSS	F-Value	Remark
Treatment (A)	1	108.48	108.48	5.77	p<0.05
Residential Background (B)	1	1.75	1.75	0.09	ns
SES (C)	1	57.50	57.50	3.06	ns
A X B	1	95.30	95.30	5.07	p<0.05
A X C	1	0.66	0.66	0.04	ns
B X C	1	49.39	49.39	2.63	ns
A X B X C	1	0.27	0.27	0.02	ns
Error	146	2747.38	18.82		
Total	153				

ns= Not Significant

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1.2 Effect of Residential Background on Intellectual Positive Self-concept of Female students

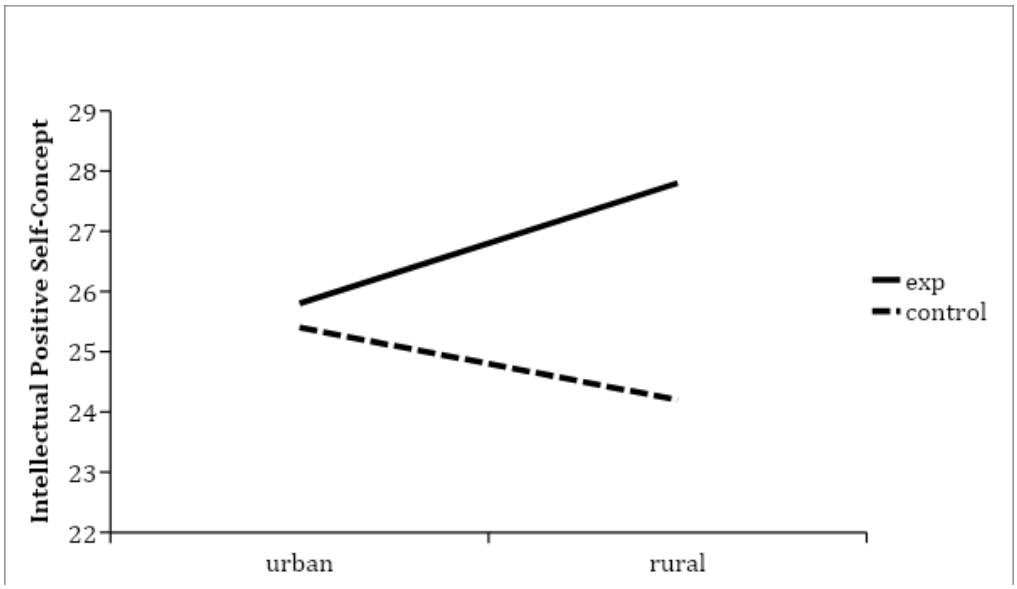
The F-Value for Residential Background is 0.09, which is not significant (Vide Table 1). It shows that there is no significant difference in mean scores of Intellectual Positive Self-concept of Female students belonging to Urban Area and Rural Area. So, there was not significant effect of Residential Background on Intellectual Positive Self-concept of Female students. Thus, the null hypothesis that there is no significant effect of Residential Background on Intellectual Positive Self-concept of Female students is not rejected. It may, therefore, be said that both Urban Area and Rural Area Female students were found to have same degree of Intellectual Positive Self-concept.

1.3 Effect of Socio-Economic Status on Intellectual Positive Self-concept of Female students

The F-Value for Socio-Economic Status is 3.06, which is not significant (Vide Table 1). It shows that there is no significant difference in mean scores of Intellectual Positive Self-concept of Female students belonging to High and Low Socio-Economic Status. So, there was no significant effect of Socio-Economic Status on Intellectual Positive Self-concept of Female students. Thus, the null hypothesis that there is no significant effect of Socio-Economic Status on Intellectual Positive Self-concept of Female students is not rejected. It may, therefore, be said that Female students belonging to High and Low Socio-Economic Status were found to have same degree of Intellectual Positive Self-concept.

1.4 Effect of interaction between Treatment and Residential Background on Intellectual Positive Self-concept of Female students

The F-value for interaction between Treatment and Residential Background is 5.07 which is significant at 0.05 with df =1/146 (Vide Table 1). It indicates that there is a significant difference in mean scores of Intellectual Positive Self-concept of Urban and Rural Female students treated through Self-Concept Enhancement Programme and Lecture Method. So, there was a significant effect of interaction between Treatment and Residential Background on Intellectual Positive Self-concept of Female students. Thus, the null hypothesis that there is no significant effect of interaction between Treatment and Residential Background on Intellectual Positive Self-concept of Female students is rejected. In order to know the trend of effect of interaction between Treatment and Residential Background on Intellectual Positive Self-concept of Female students, Graph 1 has been plotted.



Graph 1: Trend of Effect of Interaction between Treatment and Residential Background on Intellectual Positive Self-concept of Female students

From Graph 1, it can be seen that with the change of Residential Background from Urban to Rural there is a sharp increase in Intellectual Positive Self-concept of Female students treated through Self-Concept Enhancement Programme but there is a decline in Intellectual Positive Self-concept of Female students treated through Lecture Method. It may, therefore, be said that Self-Concept Enhancement Programme was found to suit significantly more to Rural Area Female students rather than Urban Area Female students.

1.5 Effect of interaction between Treatment and Socio-Economic Status on Intellectual Positive Self-concept of Female students

The F-Value for the interaction between Treatment and Socio-Economic Status is 0.04, which is not significant (Vide Table1). It indicates that there is no significant difference in mean scores of Intellectual Positive Self-concept of Female students belonging to High and Low SES treated through Self-Concept Enhancement Programme and Lecture Method. So, there was no significant effect of interaction between Treatment and Socio-Economic Status on Intellectual Positive Self-concept of Female students. Thus, the null hypothesis that there is no significant effect of interaction between Treatment and Socio-Economic Status on Intellectual Positive Self-concept of Female students is not rejected. It may, therefore, be said that Intellectual Positive Self-concept of Female students was found to be independent of interaction between Treatment and Socio-Economic Status.

1.6 Effect of interaction between Residential Background and Socio-Economic Status on Intellectual Positive Self-concept of Female students

The F-Value for the interaction between Residential Background and Socio-Economic Status is 2.63, which is not significant (Vide Table1). It indicates that there is no significant

difference in mean scores of Intellectual Positive Self-concept of Urban and Rural Female students belonging to High and Low SES. So, there was no significant effect of interaction between Residential Background and Socio-Economic Status on Intellectual Positive Self-concept of Female students. Thus, the null hypothesis that there is no significant effect of interaction between Residential Background and Socio-Economic Status on Intellectual Positive Self-concept of Female students is not rejected. It may, therefore, be said that Intellectual Positive Self-concept of Female students was found to be independent of interaction between Residential Background and Socio-Economic Status.

1.7 Effect of interaction among Treatment, Residential Background and Socio-Economic Status on Intellectual Positive Self-concept of Female students

The F-Value for the interaction among Treatment, Residential Background and Socio-Economic Status is 0.02, which is not significant (Vide Table1). It indicates that there is no significant difference in mean scores of Intellectual Positive Self-concept of Urban and Rural Female students belonging to High and Low SES treated through Self-Concept Enhancement Programme and Lecture Method. So, there was no significant effect of interaction among Treatment, Residential Background and Socio-Economic Status on Intellectual Positive Self-concept of Female students. Thus, the null hypothesis that there is no significant effect of interaction among Treatment, Residential Background and Socio-Economic Status on Intellectual Positive Self-concept of Female students is not rejected. It may, therefore, be said that Intellectual Positive Self-concept of Female students was found to be independent of interaction among Treatment, Residential Background and Socio-Economic Status.

DISCUSSION

The study revealed that Self-Concept Enhancement Programme was found to be significantly superior to Lecture Method in enhancing Intellectual Positive Self-concept of undergraduate Female students. One reason might be inclusion of exercises in the Self-Concept Enhancement Programme that helped the Female students to think deeply about themselves, their aspirations, ambitions, future plans and thus reminded them of their potentials, goals, hopes, missions, etc. and helped them to perceive their capabilities and competencies in these contexts. Self-Concept Enhancement Programme provided opportunity to Female students to introspect. Normally, Female students do not get opportunity to know about themselves and share it with others. So, Self-Concept Enhancement Programme may be made part and parcel of academic activities.

Results also indicated that Intellectual Positive Self-Concept was found to be independent of Residential Background. Reason for the above result may be that Female students belonging to Rural and Urban areas were residing in the hostel at least for last one year and had equal educational opportunities. In the college teachers treated them equally well. All of them were involved in same types of educational activities. Their living conditions and interactions with friends did not vary much which might be responsible for no significant difference in Intellectual Positive Self-concept of Female students belonging to Rural and Urban areas. This finding is also supported by Gayen & Behera (2018). Their study revealed that there was no significant difference in Self-concept of students belonging to Rural & Urban Areas.

Further Intellectual Positive Self-Concept was found to be independent of SES. This finding is not supported by Matthew, Toon, and Antony (2020) who reported that Socio- economic

status and the structure of the self-concept played an important role in structuring the self-concept of students. However, they did not conduct their study on only Females. In the present study, Socio-Economic Status reflects upon occupation and educational level of parents, income of family, type of house, number of family members, status in the community etc. However, influence of SES on Female students might have been diluted to some extent because Female students stayed in the hostel where they eat together, studied together, played together, prayed together and had to follow similar rules, regulations and disciplinary measures. This might have been responsible for no significant effect of SES on Intellectual Positive Self-concept. In this study, it was found that the Female students from Rural Area were found to improve their Intellectual Positive Self-Concept after having gone through the present Treatment whereas urban students belonging to Self-Concept Enhancement Programme and Lecture Method were found to possess Intellectual Positive Self-Concept to the same extent. Reason for the above result may be that Female students with rural background in comparison to urban background generally feel conscious and are hesitant in sharing their concern, accomplishments, aims and potentials because college and hostel environments are altogether different than the places from where they come. When Female students with rural background were provided, through the Treatment, an environment of trust and support suitable for self-disclosure, they might have shared their successes, achievements, goals strengths etc. that helped them to realize their capabilities and efficiencies that helped in enhancing their Intellectual Positive Self-Concept. Another reason might be because Rural Area Female students got such opportunity for the first time in their life. They might have taken more interest, became more expressive, and involved in group activities. On the other hand, urban area Female students might not have taken exercises seriously. Urban area Female students normally have high self-esteem and think that they are superior to rural area Female students.

It is clear from the results that students belonging to different levels of Treatment as well as SES were found to exhibit the same level of Intellectual Positive Self-concept. In this study, the Self-Concept Enhancement Programme Group consisted of both high as well as low SES students but the difference in high SES and low SES was not large enough to interact with the Treatment. Moreover, students from high as well as low SES were living in the same hostel, where they all had to wear simple khadi uniform, eat similar food and participate in similar activities, which might have diluted the effect of SES on students.

Analysis of data also revealed that students belonging to different levels of Residential Background as well as SES were found to exhibit separately the same level of Intellectual Positive Self-concept. In the present study Female students with Urban Background were from high as well as low SES. Similarly, Female students with Rural Background were from high as well as low SES. However, all the students taken in the present study were hostlers. On account of staying in the hostel for one or two years, effect of SES and Residential Background might have got diluted to some extent as stated above also. This reason might have been responsible for the present finding.

Lastly, there was no significant effect of interaction among Treatment, Residential Background and SES on Intellectual Positive Self-concept of Female students. It reflects that Female students belonging to different levels of Treatment, Residential Background and SES were found to exhibit the same level of Intellectual Positive Self-concept. This reveals that there was no interdependence among these three variables. So, Treatment benefitted equally the students irrespective of their Residential Background and SES.

CONCLUSION AND IMPLICATIONS

Present study revealed that (1) SCEP was found to be superior to Lecture Method in facilitating Intellectual Positive Self-Concept of Female students. (2) Self-Concept Enhancement Programme was found to suit significantly more to Rural Area Female students rather than Urban Area Female students. (3) Intellectual Positive Self-concept of Female students was found to the independent of their Residential Background, SES, interaction between Treatment and SES, interaction between Residential Background and SES, and interaction among Treatment, Residential Background and SES.

The findings of the present study have strong implications for parents and teachers as they play a very important role in developing and enhancing the Self-Concept of children. Positive feedback, you can do it attitude, listening to them with patience, creating and maintaining a congenial atmosphere are some of the steps that can be taken by parents/teachers to help children develop positive Self-Concept.

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ESTABLISHING XERISCAPE AS AN ENVIRONMENTAL CONTRIBUTION

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ABSTRACT

Globally landscape gardening performs key part in mitigating environmental problems. As water resources are gradually decreasing, Xeriscaping a water-wise landscape design should be considered instead of traditional landscape concepts. The goal of xeriscape is to select plants, for their water efficiency and sustainability. The major objective of this research is to introduce Xeriscaping in the residence. To carry out the study initially the residence of the researcher was selected, located at Vellakovil of Tirupur District. Survey method was used to collect the data on traditional landscape by administrating the interview schedule. The results showed that the study volunteers were interested to grow Xeriscape plants to conserve water as well as preserve the environment.

Key Words: Xeriscaping, Water efficiency, Environment, Gardening.

INTRODUCTION

Landscape gardens have now turned out to be a key part of most people's lives. Even those who cannot meet the expense of an outdoor space for garden put some flower pots in their balconies or window sills as everyone loves to see a plant grow and flower. For the proper growth of plants, regular maintenance is required. Especially watering, this is becoming a sensational topic to speak out. Today water scarcity is the foremost threatening for urban as well as rural people who already have and also wanted to have a garden (Banker, 2011).

Increasing demand for water results in periodic water shortages and restriction on outdoor water use (THE HINDU, 13th July 2012). The plants that consume less or no water for quite longer period of time can be the solution to establish a landscape. Having plants that needs low or no maintenance can save the natural as well as the human resource. Plants like Bougainvillea, Agave, Cactus and Succulents are considered as the xeriscape plants. At the same time it fulfills the craving of the people for garden. If water is not economically utilized, the global water demand is going to be 40 per cent higher than the current supply by the year 2030. In a landscape the xeriscape type of plants reduces outdoor water consumption (as much as 50%) and thereby protects the environment (Singh, and Sisodia, 2017).

The changing environment creates an adverse effect on the lives of man and all living things including plants. Global warming has shown environmental changes that are seriously affecting horticulture, and gardening. Hence drought-resistant plants have to be planted. One may have space, time, opportunity, and other resources for establishing a garden, yet water is a limited factor. As water scarcity is more prominent, nurturing landscape garden is a dream for many

people. But Xeriscaping can be the solution with limited use of water (Çetin, Mansuroğlu et.al, 2018). More number of traditional landscapes requires enormous water resource, and lot of this water is applied uneconomically. Xeriscaping utilize plants that are local to a comparative climate and requires minimal inputs (i.e. fertilizer, pesticides, maintenance, etc.) and furthermore is aesthetically pleasing and utilitarian. It is promoted in areas that do not have easily accessible supplies of freshwater. By adopting xeriscaping, not just one can plan an attractive landscape for home or business; yet in addition to this, it can be done in a less impact, sustainable way of reduction of water and maintenance (Pavithra, Biradar, et.al, 2012).

The general purpose of xeriscaping is to achieve protective vegetation and beautiful landscaping with the minimal amount of water consumption. Since the key focus of xeriscaping is to reduce water usage, it ought to be implemented in place of traditional landscaping to reduce the strain on the water supply and to protect the environment (Davamani, Dhivya, et.al, 2012).

OBJECTIVES OF THE STUDY

- To carry out household survey on the traditional landscape.
- To design and implement the xeriscape landscape.
- To study the biometric parameters and water conservation

METHODOLOGY

The design of the study consisted of two phases- Phase I included household survey to collect information from households of Vellakovil, Tirupur district using purposive sampling method. Totally 50 households having landscape in and around Vellakovil formed the sample size. The interview schedule was prepared to gather the detailed information about the traditional garden. The financial status performs a key role in establishing landscape; hence the investigator chose high income group family. Phase II comprised of setting up a model xeriscape garden to assess the water requirement and growth rate of the low maintenance plants. This not only helps to create awareness among the selected group but also motivate them to grow xeriscape landscaping.

Steps in setting up a xeriscape garden

Step 1: There are various attractive plants available to be used in water-wise landscapes. Having cacti or a few hardy plant varieties may not be a genuine xeriscaping. The native plants which will easily adapt to the natural environment were selected. A subject expert was consulted in this regard. The plants selected for setting up a Xeriscape garden is given below

Selected plants for Xeriscape garden	
Botanical Name: Aloe barbadensis miller **Common name:** Aloe vera 	**Botanical Name:** Dracaena trifasciata **Common name:** Dwarf snake plant 
Botanical Name: Bougainvillea glabra **Common name:** Bougainvillea 	**Botanical Name**: Nerium oleander **Common name:** Oleander 
Botanical Name: Echinocactus grusonii **Common name:** Barrel Cactus 	**Botanical Name:** Opuntia **Common name:** Prickly pear 
Botanical Name: Pachycereus marginatus **Common name:** Mexican fence 	**Botanical Name:** Euphorbia Milii **Common name:** Crown of throns 
Botanical Name: Crassula ovate Gollum **Common name:** Finger plant 	**Botanical Name:** Crassula ovata **Common name:** Jade plant 
Botanical Name: Cissus quadrangularis **Common name:** Adament Creeper (Veldt Grape) 	**Botanical Name:** Basella alba **Common name:** Purslane Leaves (Malabar spinach) 
Botanical Name: Bryophyllum pinnatum **Common name:** Miracle leaf 	**Botanical Name:** Livistona rouundifolia **Common name:** Table palm 

Step 2: Choosing Garden Site. For implementing the xeriscape garden the area chosen is moderately sloped to enhance the drainage. It has partial shade to reduce water evaporation, prevent soil dryness, and promote deep roots. Organic leaf mulch is used to protect the plants from drying out rather than pebble or stone mulch. Pebble or stone mulch will draw and hold heat on top of the soil, drying it out sooner.

Step 3: Drafting the plan. A landscape plan was designed with the assistance of expert, who is commercial and residential architect in Chennai. Using SketchUp software a design was developed.

Figure 1: Front view of the Plan

Step 4: Preparing the land. Before planting soil testing was done, which helps to decide which plants are best adaptable to the soil. The weeds in the soil were removed and turning is done to make the soil aerated. Loosening the soil is carried out, which allows better infiltration of water and air, hence improves root development. Vermi compost and composed coir is added to the soil to build up organic material content as well as to improve the fertility of the soil.

Step 5: Planning the Most Efficient Watering System. The manual irrigation system was chosen as they are easy to handle, require no technical equipment and are therefore generally cheap. Hand watering was done based on the water requirement of the plant in short interval of time. Over watering was avoided because the aim of this study is to conserve water. Watering is done mostly in the evening time to avoid evaporation.

Step 6: Planting the selected species. After the preparation of garden soil selected saplings were planted in the ground. Thorough watering was carried out to make the plants get established in the new surroundings. Adequate sunlight space is allowed around plant. Maintenance in the form of regular weeding and watering is a mandatory.

Figure 2: Layout

RESULTS AND DISCUSSION

The findings of the study were analyzed and presented under the following headings

A. Household Survey

Table 1: Background Information and details of respondents having Traditional Landscape

Particulars	Category	Respondents (in %)
Age (years)	15-25	10
	26-35	40
	36-45	34
	Above 45	16
Occupation	Self employment	84
	Government employee	10
	Private employee	6
Income per month (₹)	<1 lakh	10
	1 – 2 lakhs	26
	2 – 3 lakhs	44
	> 3 lakhs	20
Type of garden	Formal garden	68
	Informal garden	26
	Others (Vegetable garden, Herbal garden)	6
Planning the garden	Architect and builders	18
	Residents	66
	Both	16
Existence of garden	0-2 yrs	18
	3-5 yrs	36
	6-8 yrs	12
	>8 yrs	34

Garden area	<200 sq. ft	28
	200 sq. ft – 300 sq. ft	50
	>300 sq. ft	22
Cost of establishing (₹)	0-10,000	50
	10,001- 20,000	22
	21,000 – 30,000	16
	>30,000	12

Out of 50 households surveyed 68 per cent of them had informal garden. Majority (66 per cent) of their landscape was planned by them and only 18 per cent by the architects and builders. Thirty six and 34 per cent were maintaining the garden between 3-5 years and more than eight years respectively. At the most 200-300 sq. ft was utilized for landscaping. These households were able to spend upto Rs.10, 000 to 30,000 for establishing the garden.

Table 2: Details on Watering – Traditional Garden

Watering time	**Number(n=50)**	**Percent**
Morning	24	48
Evening	21	42
Afternoon	5	10
Frequency of Watering		
Daily	31	62
Weekly once	1	2
Weekly Twice	4	8
Weekly Thrice	14	28
Type of Water		
Recycled Water	6	12
Grey Water	4	8
Fresh Water	40	80
Source of Water		
Bore well	32	64
Corporation Water	10	20
Both	8	16
Irrigation System		
Fully Automatic	5	10
Semi Automatic	11	22
Manual	6	12
Drip	9	18
Hose attached with sprayer	19	38

Watering the garden was done by 62 per cent daily and weekly thrice by 28 per cent. The result showed that 80 per cent of the households use fresh water for gardening. For 64 per cent of

houses their water source was bore well. Most of the households used hose attached with sprayer for irrigation (38 per cent).

Table 3: Sources of Information on Xeriscaping

Source of Information	Number	Percentage
Electronic Media	12	24
Print Media	3	6
Books and journals	1	2
Architects and Builders	2	4
Family member	1	2
Friends and relatives	1	2

Twenty forty per cent gained knowledge on xeriscaping through electronic media which acted as a major source of information, other than that, 6 per cent from print media and four percent from architects and builders.

Table 4: Details on Low Maintenance Plants in Traditional Landscape

Low maintenance plants	N: 50 Already planted (percentage)	N: 50 Interested to plant (percentage)
Agave	-	10
Aloe Vera	60	30
Bougainvillea	22	24
Cactus and Succulent	-	52
Dessert Rose	14	86
Euphorbia	10	74
Jade plant	4	56
Oleander	72	10
Palm-cycads	10	70
Snake plant	10	64
Others (Dragon tree, miracle leaf)	2	40

∗ **Multiple responses**

Seventy-two and 60 per cent of the families already had Aloe Vera and Oleander in their landscape garden respectively. In addition to these 86 and 74 per cent of the households were interested to introduce Dessert Rose and Euphorbia in their Traditional landscape due to its aesthetic appearance.

B. Setting up a Model Xeriscape Garden [Experimental Study]

(i) Biometric parameters of plants

The biometric parameters, specifically, shoot length and number of leaves was observed and showed in tables below

Table 5: Biometric Parameters of Cactus, Succulents, Climbers and Shrubs

S. No	Plants	Shoot Length (in cm)				No. of Leaves			
		1st day	30th day	60th day	90th day	1st day	30th day	60th day	90th day
	Cactus								
1.	Prickly pear	30	33	38	43	4	5	7	10
2.	Mexican fencepost	22	22	24	26	3	3	3	3
3.	Barrel cactus	5	5	5	5	7	7	7	9
	Succulent								
4.	Jade plant	11	11.5	13	14	15	18	25	32
5.	Finger succulent	12	12	14	15	47	50	54	56
6.	Aloe Vera	25	25	28	30	6	9	11	14
7.	Miracle leaf	17	23	30	33	5	8	12	15
8.	Dwarf Snake plant	33	38	41	45	9	15	26	32
	Climbers								
9.	Veldt Grape	33	51	72	97	2	17	34	52
10.	Malabar spinach	22	60	94	127	8	14	24	42
	Shrubs								
11.	Bougainvillea	68	72	81	90	92	128	151	172
12.	Euphorbia	14	18	21	30	13	17	23	28
13.	Table palm	32	32	33	33	5	6	7	7
14.	Oleander	20	24	29	34	30	42	51	65

From the table it is clear that prickly pear showed 10 new leaves and an increase in shoot length of 43cms on the ninetieth day. Inspite of increase in shoot length and number of leaves the

dwarf snake plant and finger succulent showed better growth rate of 45cms shoot length and 32 number of leaves on the ninetieth day. The Malabar spinach had grown to a great extent, which showed a difference in shoot length of nearly 100cms on 90th day when compared to Veldt Grape, 64cms. But Veldt grape showed more leaves nearly 50 on 90th day than that of Malabar spinach. Among the selected shrubs, the shoot length of Bougainvillea showed difference of 22cms and the number of leaves was 80 within the period of 3 months. This was found to be the highest than the other three shrubs. As the table palm needs partial shade, its growth rate was found to be slow compared with other shrubs.

Table 6: Details on Watering the Cacti and Succulents

S.No	Plants	Quantity of water (ml)						
		1st day	52nd day	60th day	62nd day	72nd day	82nd day	Total
	Cacti							
1.	Prickly pear	300		200				500
2.	Mexican fencepost	300		200				500
3.	Barrel cactus	300		200				500
	Succulent							
4.	Jade plant	500	200		250	250	250	1450
5.	Finger Succulent	500	200		250	250	250	1450
6.	Aloe Vera	500	200		250	250	250	1450
7.	Miracle leaf	500	200		250	250	250	1450
8.	Dwarf Snake plant	500	200		250	250	250	1450

The first watering was done to all the plants on the day of plantation. Due to frequent rainfall (November and December) after the saplings being planted, the second irrigation was done on 52nd day to all the plants except cacti (60th day). Further irrigation for plants was done based on the water requirement of the plants and the dryness of the soil.

From the table it is clear that the watering need is very low for cacti and it can endure drought to maximum extent, because these plants are naturally originated from deserts. In winter the cacti need to be watered once in 30 to 40 days whereas in summer the watering can be done once in 15 days. Succulents survived for more than 10 days without watering. The need for watering succulents was also less and it does not need any care and maintenance (pruning, shaping) for growing. It does not allow the water to evaporate from its leaves. Succulents can resist full sun even in the month of summer (Bhanot, 2016).

Table 7: Details on Watering Climbers

Climbers	Quantity of water (ml)									
	1st day	52nd day	59th day	66th day	70th day	73rd day	80th day	87th day	90th day	Total
Veldt grape	500	200	-	-	250	-	250	-	250	1450
Malabar spinach	500	200	250	250	-	250	250	250	-	1950

Table 8: Details on Watering Shrubs

Shrubs	Quantity of water (ml)								
	1st day	52nd day	60 th day	68 th day	70 th day	76th day	80th day	84th day	Total
Bougainvillea	500	200	250	250	-	250	-	250	1700
Euphorbia	500	200	250	-	250	-	250	-	1450
Table palm	500	200	250	250	-	250	-	250	1700
Oleander	500	200	250	250	-	250	-	250	1700

The watering need of the Malabar spinach is high (nearly 500ml) compared with other climbers (Table -7). Even though it is native plant it requires more water during winter. Veldt Grape (Adamant Creeper) can survive in the hot weather without water for several days.

Compared with other shrubs the water evaporation in euphorbia is less because of its thorn and waxy leaves. Table 8 explains that bougainvillea, table palm, oleander need water once in 8 days but Euphorbia can be watered once in 10 days.

CONCLUSION

Water conservation helps in preserving the environment by reducing the usage of natural resources, this result in reduction of global warming, climatic changes and the contamination rate. When houses are planted with low maintenance plants in the form of xeriscape garden, they play an important role of preserving the natural heritage. It is understood that the native plants are mostly water wise plants which conserve water to a large extent. This study will make the households to practice xeriscaping, which will conserve the water as well as the environment and restore the natural habitat with less care and maintenance.

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The Indian Journal of Home Science 2021: 33(2)

INVOLVEMENT OF HUSBANDS IN HOUSEHOLD CHORES (SURVEY BASED ON PATNA REGION, BIHAR)

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ABSTRACT

Household activities are time consuming and monotonous in nature and is a full-time engagement for a home maker. It is the home maker who mostly bears the responsibility of household activities. This was not very strenuous few years back when role of women was confined mostly to homes but nowadays situation has changed and women are not working at homes only but outside too. With passage of time responsibility of woman extended from a sole homemaker to a societal developer. Augmented workload on women made them more stressed and caused exploitation to some extent. Now a woman needs cooperation and assistance of her family specially her husband in pursuing household activities so that she can make a balance between family and professional life. The purpose of this study is to assess the involvement of husbands in various household chores and how their perception towards household task have changed in contemporary world. The present study was conducted in Patna town, Bihar. The sample size comprised of 200 respondents which have been selected randomly.

The study revealed that about 29.0 per cent husbands were not involved in household chores and participated husbands constituted only 71.0 per cent .Further, the investigation reported that maximum involvement of husbands was seen in taking care of children(76.50per cent)followed by cooking(53.50 per cent) and washing clothes(47.50 per cent). Lowest participation was recorded in cleaning of houses (31.00 per cent) and dish washing (44.5 per cent).

It has also been obvious from the study that majority of husbands obliged their wives if they had contributed in household chores.

Keywords: Home maker, societal developer, household chores, perception.

INTRODUCTION

From the very beginning, responsibilities of household chores lie mainly on the shoulders of women. Since many decades back women's participation in workforce was not very viable but with advancement of time and government policies, educational status of women improved drastically and this positive change empowered women in many ways. Improved educational status helped them in their overall development .With this development women extended their role from home makers to societal developers. They started working in organised or unorganised sectors. Increased participation in workforce improved their socio economic status. Undoubtedly today's

women are empowered but dual role of women in the society make them overburdened. Excessive work pressure causes many physical and psychological hazards. Home makers chasing a race to make a balance between home and work place. In spite of having tremendous potential and wide knowledge they are lagging behind in professional lives just because of sole responsibility of their family. It doesn't matter whether woman is working or house wife, she has to perform most of the household activities alone. Though this trend is getting changed and they are getting support and help of their family members specially husbands in reducing their work load but this figure is less. Sudden outbreak of pandemic also acted as an eye opener and many husbands have started realising the household work pressure of home makers. But this is the beginning and needs lot of support and cooperation on the part of Indian husbands.

REVIEW OF LITERATURE

Rajendran et al. (2010) conducted their investigation in Vellore district of Tamil Nadu and the investigation showed that nearly 25.0 per cent of the husbands share miscellaneous domestic works. About 9.6 per cent husbands take care of their children to the schools, 7.6 per cent helps their wives to reduce their workload and only 4.2 per cent shares the work of woman so that they can participate in SHG.

Luke et al. (2014) worked on testing theories of housework among tea plantation workers in India, where women are the main part of the workforce. Survey data from 3,181female workers revealed that although women were mainly responsible for domestic labour, more than half of husbands usually or sometimes helped their wives with cooking, fuel wood collection and child care. The study also found that husbands rarely helped with clothes washing and considered it as the most feminine task.

Carrim (2017) made investigation on cultural identity work of husbands and wives settled in South Africa related to housework and children. Findings based on research revealed that Indian husbands and wives living in South Africa who occupied top management positions had not engaged in household chores and childcare from the time they got married. Further, the study explored that some couples in senior management were from middle –class who upheld the norm that wives had to engage in household chores and cooking. However, the wives indicated that their husbands assisted them to some extent with household chores and childcare when assistance was needed.

In the study it was also reported that some husbands didn't share responsibility for household chores and children because they believed that wives are responsible for household chores and children.

India Today (2020) reported results of a survey conducted by the national Statistical Office which revealed that only 10 per cent Indian men involved in household chores. This survey comprised of 4.5 lakh respondents. The collected data further showed that 84.0 per cent women's working hours are spent on unpaid activities while for men the reverse was true i.e. 80 .0 per cent of their work time was for paid activities.

The survey report also disclosed that only 8 .0 per cent men participated in house cleaning and just 3 per cent in washing clothes.

Kataki (2020) mentioned a report of E Times Lifestyle Twitter account, which revealed that during the lockdown women were more stressed than men because of dual responsibilities of household as well as of office work. During the pandemic women lack much support from their partners. Dr. Samir Parikh, Director of Mental Health and behavioural Sciences, Fortis Healthcare also supported this finding. This has resulted from the absence of any self-corrective measures to correct gender responsibilities. The report also gave emphasis on need to introspect the rigidity around gender responsibilities in the traditional meaning of the term.

OBJECTIVES OF THE STUDY

1. To assess the involvement of husbands in various household chores.
2. To study the extent of participation of husbands in various household activities.
3. To analyse response of husbands after extending help in household chores.

NEED OF THE STUDY

While going through review of literatures it was found that many such researches had been conducted in other states of the country but there is a dearth of such investigation in Bihar. Secondly we always talk about the changing attitude of the society towards stereotype role of women as home makers. So, it was necessary to analyse the real situation whether this is really happening or it is our assumption only.

Thus, these are the two important reasons of choosing this aspect for conducting the present investigation so that factual information can be extracted from the ground level situation.

RESEARCH MATERIALS AND METHODS

The present study was conducted in Patna town of Bihar. The locale of study was purposively selected to carry out the investigation. Sample size comprised of 200 wives as respondents who have been selected randomly. All the required information was collected through pretested schedule. Due to perseverance of the pandemic data was collected through telephonic conversation as well as personal contact according to feasibility of the situation.

Activities included under household chores to make assessment were cooking, dish washing, cleaning of clothes, cleaning of houses and take care of children. Again, husband's expression after helping their wives was also assessed in terms of obligation expressed by them.

Five point rating scale was used to assess the involvement of husbands in household chores namely always, most frequently, sometimes, seldom and never with assigned score 5,4,3,2 and 1 respectively. Frequency and percentage and pi-chart diagram were also used to analyse data.

Table-1: Involvement of husbands in various household chores

Work participation in household chores	Number of respondents N=200	Percentage
Always	34	9. 5
Most frequently	17	16.0
Sometimes	36	18. 0
Seldom	55	27. 5
Never	58	29. 0
Total in Gross	200	100. 0

Data shown in table clearly depicts that only 9.5 per cent husbands always extended their help in household chores while 16.0 per cent helped most frequently, those who extended their help sometimes constituted 18.0 per cent and husbands who helped on seldom basis constituted 27.5 per cent.

Again, data also reveals that about 29.0 per cent of husbands i.e. more than one fourth of husbands never helped in household chores.

Thus, it may be concluded from above data that husbands who always assisted their wives in household chores were very less and those who never helped constituted a higher proportion. This reflects that still a higher proportion of husbands assume household chores as female work.

Table-2: Participation of husbands in various household chores

Household activities	Cooking	Dish washing	Washing clothes	Cleaning of house	Take care of children
Always	0 2 (1.50)	0 2(1.50)	04 (3.00)	02 (1.50)	07 (4.00)
Most frequently	0 9 (6.50)	0 5(3.50)	11(7.50)	03 (2.00)	25(18.00)
Sometimes	40 (28.00)	24(17.00)	20(14.00)	15 (10.50)	49(34.50)
Seldom	25(17.50)	32(22.50)	32(23.00)	24 (17.00)	28(20.00)
Never	66(46.50)	79(55.50)	75(52.50)	98 (69.00)	33(23.50)
Total in Gross	142(100.00)	142(100.00)	142(100.00)	142(100.00)	142(100.00)

Present table gives a description about activity wise participation of husbands in household chores and it is evident from given data that only 1.5 per cent of husbands always helped in cooking,6.5 per cent husbands helped most frequently , 28.0 per cent husbands sometimes helped in cooking while 17.5 per cent husbands rarely involved in cooking . Data also reveals that about 46.5 per cent husbands had never cooked for their families.

Data pertaining to dish washing shows that only 1.50 per cent husbands always helped ,3.50 per cent helped most frequently, 17.00 per cent showed their involvement sometimes and 22.50 per cent shown their participation on seldom basis.

Again, husbands who had never participated in dish washing constituted 55.50 per cent. Thus, it can be said that more than 50.00 per cent husbands never helped in dish washing.

Data related to washing clothes shows that only 3.00 per cent husbands always helped their wives, 7.50 per cent husbands helped most frequently, 14.00 per cent husbands sometimes and 23.00 per cent husbands helped on seldom basis while 52.50 per cent never helped in washing clothes.

During interaction with respondents it was found that most of the families had washing machines and needed little effort to accomplish the work but in spite of that husband's involvement in washing clothes was found very less.

Data regarding cleaning of houses shows that only 1.50 per cent husbands rendered their help in cleaning always, 2.00 per cent cleaned most frequently, 10.50 per cent were involved sometimes, 17.00 per cent helped on seldom basis while those who never rendered their help in cleaning of houses constituted about 69.00 per cent.

It is also obvious from the table that 4.00 per cent, 18.0 0 per cent, 34.50 per cent and 20.0 per cent husbands took care of their children always, most frequently, sometimes and seldom respectively. But, only 23.50 per cent husbands had never taken care of children their children.

Thus, it may be inferred from the table that activities where least involvement of husbands was observed included cleaning of houses at top followed by dish washing, washing clothes and cooking whereas involvement of husbands was seen maximum in case of taking care of children.

Table-3: Response of husbands after extending their helps in household chores

Response of husbands after extending their help	Number of respondents	Percentage
Obliged their wives after extending help	69	49.0
Didn't express any obligation	43	30.0
No response	30	21.0
Total in Gross	142	100.0

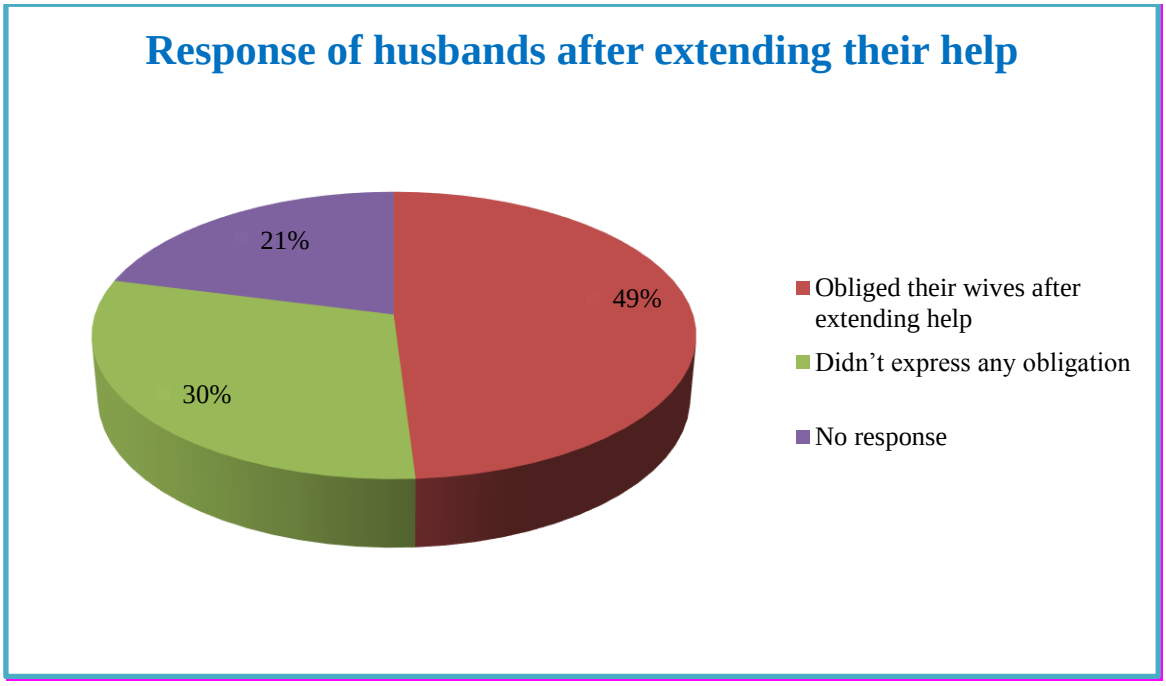

Figure 1: Response of husbands after extending their help

The above table depicts response of husbands after extending their help in household chores and it is very evident from the data that 49.0 per cent husbands obliged their wives if they had helped in household chores. This may be due to the fact that household activities are mainly accustomed as women work. However, about 30.0 per cent husbands didn't express any obligation after rendering their help in household activities because husbands understood their role and were not stereotype husbands.

Again, husbands who remained quiet and had no response comprised of 21.0 per cent of the total figure.

Thus, it may be reached at this conclusion that majority of husbands made their wives obliged after helping in household chores.

CONCLUSIONS

On the basis of data analysed, it has been inferred that more one fourth of husbands (29.0 per cent) had never helped in household activities and those who helped always constituted only 9.0 per cent of the total. Further, about 45.0 per cent husbands had helped their wives sometimes or seldom means mostly household activities were performed by homemakers only.

Activity wise involvement of husbands revealed that highest percentage of involvement was reported (76.50 per cent) in taking care of children followed by cooking (53.50 per cent) and washing clothes (47.50 per cent).

Further, data showed least involvement of husbands in cleaning of houses (31.00 per cent) and dish washing (44.50 per cent).

Since nowadays both parents are very sensitive to their children, this may be one of the reasons of highest participation of husbands in taking care of children. While taking data it was also evolved that most of the husbands participated in cooking sometimes or seldom and they used to do just for a change. During interaction with the respondents it was also realised that majority of husbands help their wives only when asked for and husbands didn't help in household chores willingly.

This findings of the study again asserted that majority of husbands obliged their wives after helping in household chores and those who didn't express any obligation constituted meagre. This reflects the fact that husbands still assume household chores as female responsibility rather than combined.

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The Indian Journal of Home Science 2021: 33(2)

ASSESSMENT OF THE KNOWLEDGE OF THE HOMEMAKERS REGARDING THE USE AND PLACEMENT OF ACCESSORIES

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ABSTRACT

A room without accessories is uninteresting. Having appropriate accessory in a room adds personality and uniqueness to a particular area. A residential area can only be unified with proper use of accessories according to the theme of the room. There are various types of accessories which can be placed in different areas of a residence which makes the space more attractive and aesthetically beautiful. The present research aims to assess the knowledge of the respondents regarding the use and placement of accessories in various areas of a residence. The present study was conducted in Vadodara city. The findings of the study would help the students, residents as well as designers to decorate their spaces with the wise use of accessories.

Key Words: Accessories, Residence, Interior decoration, knowledge

INTRODUCTION

"The icing is the first thing we see when we look at a cake, and accessories are what catch your eye when you walk into a room" (Marsh, K. 2016).

Navin Kanodia, Interior Stylist & Creative head of the brand SPACIO, says, "Ever wondered why some picture of spaces looks so perfect? Why they look so complete? Why they look so warm and inviting. The answer is very simple. The finesse lies in the detailing. It is the coordination of all the little details that finishes the space off so well. The bigger answer to this question is to create a careful balance between the main components of the home (larger pieces of furniture or influences), with the smaller components (decor & accessories)". Some examples of larger sets of furniture are sofa sets, lounge divans, center tables, chest of drawers, storage cabinets, dining tables and chairs. And some examples of smaller components or smaller furniture are lamps, shoe racks, picture frames, flower vases, mirrors, curtains as well as pillows.

The furniture displayed in a showroom may appear monotonous than the same placed in a residential space. Furniture when accompanied with appropriate selection of accessory makes the place appear more charming and elegant. Placing the right choice of accessory enhances the appearance and beauty of the room. In fact, they provide a finishing touch to a room in the same manner as the dress accessories do for the costume. They bring vitality and individuality to a room. The homemaker expresses her personality and originality through the selection and display of

accessories in a room. The right kind of accessories strengthens the style of furnishing and decorative idea of the room (Gandotra et al. 2010).

According to Maria (2016), accessories are considered to be powerful tool for a space because:

- They make your spaces come alive as they add texture, color, pattern and form.
- Accessories aren't just eye candy – objects can be functional in their forms such as vases, books, and bowls.
- Accessories pull your design scheme together.

The most common accessories which are used in interior decoration are photo frames, sculptures, vases, bowls, candle holder, natural objects, flower arrangement, plants, fish, mirror, clock etc. There is a great diversity in size, shape, color and material of these accessories. Hence the selection and placement need special consideration (Gandotra et al. 2010). While selecting and placing an accessory it should be considered that it does not lessen the visual impact of the space. The accessories selected should have a meaning in the area placed.

People nowadays prefer selection and placement of accessories according to the outlets present in showrooms and magazines. It clutters the interior space if not placed and selected according to the location and type of the room. There are a wide range of accessories which can be used in interiors of residence. Each one has diverse characteristic which contribute towards the aesthetics and functional value, out of which some of them can also be used in combination. Therefore, each space can be designed and made unique with the use of proper planning and selection of accessory. Since the investigator belongs to Family and Community Resource Management Department, it has been observed that nowadays many families use inappropriate accessory in various rooms. This research is going to be beneficial to the students pursuing the graduate and post graduate programme in interior designing course as they would get the knowledge about the utilization of accessories in various interior space according to the usage of the room, traffic in the room, theme of the room, color and size of the room. It would also be helpful to the residents to select accessories according to the rooms assigned.

OBJECTIVE

1. To assess the knowledge of the homemakers regarding the use and placement of accessories.
2. To suggest various accessories for different areas of the residence.

METHODOLOGY

A preliminary survey of the existing interiors with accessories was conducted by the researcher from various areas of Vadodara city. The sample of the study comprised of 60 respondents from various areas of Vadodara city. Purposive sampling technique was adopted for selection of the samples. Only those houses were selected which had maximum amount of accessories in every room. A questionnaire sheet was used as an instrument to gather the information from the respondents. The questionnaire comprised of two sections: Section 1 dealt with the background information of the respondents such as age, employment status, educational level, type of family, size of family and

family income whereas section 2 dealt with knowledge of the respondents regarding the use and placement of interior accessories.

MAJOR FINDINGS

Section I- Background Information of the respondents

The mean age of the respondents was found to be 45.76 years. It was found that high majority of the respondents (38.90%) were self-employed and little more than one-fourth of the respondents were in service (27.80%) and one-third of the respondents (33.3%) of the respondents were homemakers. Data revealed that little less than one-half of the respondents (47.80%) were 12^{th} pass and rest (20%) were graduate. It was found that two-third of the respondents (66.7%) lived in nuclear family and remaining respondents (33.3%) lived in joint family. Result also showed that little less than one-half of the respondents (44.4%) lived in small sized family and few of the respondents (20%) lived in large sized family. The total family income of the respondents ranged from ₹12000 to ₹45000 with the mean of ₹ 25678.3.

Section II- Knowledge of the respondents regarding the use and placement of accessories in various rooms

Table 1: Extent of knowledge of the homemakers regarding the use and placement of accessories in residence.

Sr. No	Extent of knowledge of the respondents	Range of Scores	Respondents (n=60)	
			F	%
1.	Low	15-24	39	65.00
2.	Moderate	25-35	13	21.66
3.	High	36-45	8	**13.33**

The result obtained depicted that very few of the respondents of the respondents had high level of knowledge regarding the use and placement of accessories in various rooms, Less than one fourth of the respondents had moderate extent of knowledge and majority of the respondents (65.00%) had low level of knowledge regarding the use and placement of accessories in various rooms.

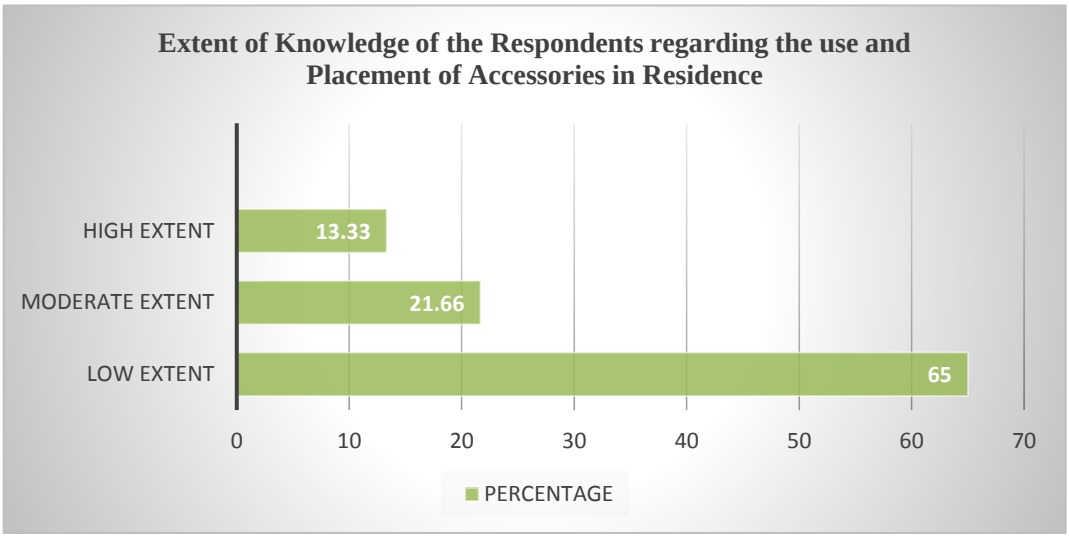

Figure 1: Graphical Representation of the respondents according to the extent of Knowledge of the respondents regarding the use and placement of accessories in residence.

According to the findings for assessing the existing interiors and analyzing the knowledge of the respondents regarding the use and placement of accessories in various rooms, it was depicted that the respondents had good knowledge about the placement and use of common accessories such as photo frames, flower vase, use of curtains, wall clocks and certain show piece in living room but majority of the respondents did not have good knowledge about the use and placement of various trending and eye-catching interior accessories in various rooms such as bedroom, puja room, bathroom, dining area, children's room, study room, staircase, balcony and verandah. The homemakers were not aware about the use of accessories such as plants in kitchens, bathrooms, drawing room, stairs etc. Majority were not aware of the decorative objects use in corridors, balconies, bedrooms etc. Now a days the trendiest accessories is use of book shelves in drawing rooms, open shelves in kitchen, study room and drawing room, plants giving oxygen in drawing rooms, balconies, terrace, bathrooms etc. which the homemakers were not aware. For enhancing the knowledge of the homemaker's certain suggestions were given by the researchers which are as follows:

Foyer

The foyer area can be made look attractive by adding a console table or a bar height table with accessories such as flower vase, frames, short house plants as well as sturdy sculptures. Attractive rugs with pattern and textures can be placed in the foyer area which attracts and directs the guests and residents to the house. Small accessories such as an umbrella holder, key holder, shoe plate etc. should be placed to maintain balance in the foyer area. For the guest to remove and place

their footwear's, a shoe rack or a shoe mat should be placed at a defined spot where the footwear's should go. Chandelier or a pendant light is best if the foyer has high ceiling.

Living room

Sofa, couch, TV, TV unit is basic in living room. The accessories which can be placed on the coffee table for a graceful look are trays, sweet bowls, small houseplants, magazine and remote holder. To make the living room more pleasant and inviting soft rugs of solid pastel colors and soft fluffy pillows on sofas or couch can be placed.

Drawing room

Painting and collection of art or photographs, add shelves for placing books or small souvenirs, use a stylish rug and place it in the center of the room, place floor lamp on the rug which illuminate the room and also sets the mood, sculptures to display something that reflects the interest. Adding leafy and floral plants or wall-hanging planters gives the room a life. Along with small plants place minimalistic decorative pieces and some customized candles in trays on the center table and on shelves which balances the ambience of the room.

Kitchen

Open shelves are the most attractive ones nowadays instead of cabinets. In situation where there is scarce storage space, hang wire racks to hold kitchen goods. Mix and match unique color of crockery and display on open shelves. In a small kitchen to add illusion of extra space a decorative mirror can be hanged. Plants are a great way to decorate such as Aloe Vera, Heartleaf Philodendron, Goldfish plant, Spider plant or Madagascar Jasmine can be placed on the windowsill.

Master bedroom

Make the Bed the Centerpiece, as bed is main in bedroom. Place an ottoman at the foot of a bed, must include rugs in bedroom for more comfort. A night light makes a bedroom relaxing. Mirrors are great for helping it to feel brighter and more spacious. One can add family photographs, frames, decorative wall clocks and plants to decorate bedroom.

Children's bedroom

The bedroom can be decorated by adding aesthetic accessories which can be a decorative wall which matches their imaginative character or favorite color, some glowing dark stars and characters which they can look and improve their imagination power, large monogram letters of their initials which can also be used as a book holder photo frames of family and their childhood, these frames can also be made by the child itself. Toy baskets in which the toys can be easily stored. Floating shelves can be added which uses the wall space and items such as small plantings and mini sculptures can be placed there. A small bulletin board, white board or blackboard can be added to make things learn and understand. By placing a rug which is of softer material and easy to clean should be added to minimize trips and falls of children.

Study room

The study room can be equipped with multipurpose furniture such as built-in bookshelves with foldable desk, stationery holders etc. Posters, photo frames and personalized items that reflect one's own personality such as posters of favorite celebrities, places or sculptures or frame a poster of motivational quote can be used. This helps one feel inspired which will help one work harder and

dedicated. Make focal points in the room by adding accessories that are unique and gains attention of the viewer.

Provide more access to incorporate natural light in the space through the windows and doors. Having natural light in study room reduces the amount of strain on the eye. For artificial light white light bulbs rather than yellow light bulbs should be used.

Pooja room

In Pooja room, a temple should be there, choose the idol or framed photographs of the god/gods to worship. Decorative Pooja lamps looks beautiful in pooja room, they can be floor lamp or hanging lamp.

Bathroom

Adding air purifying plants such as Golden pathos as it is considered one of the most effective indoor air purifiers and keeps the bathroom feel fresh also by adding hanging plants uses less countertop or floor space. Small baskets and trays to organize supplies and toiletries, high hanging shelves which uses available wall space and empty wall space above the toilet can be used. For holding items like hair dryer curling iron attach baskets, clear jars and makeup shelves near the wash basin to keep the products off the counter can be placed. Mirror is the focal point of a bathroom. Hang a large mirror to give an illusion of bigger space. Small accessories like towel rack, door hooks, shower curtain, flower vases and decorative toiletries makes the bathroom more attractive and pleasing.

Staircase

Different size and shapes of the frames can be used which covers the empty wall area. Frames of various size should be used which creates a flow of the area. Small potted plants or hanging plants can be used and it can be well lit by the use of large chandelier and lighting fixtures from the ceiling towards the stairs.

Balcony

In balcony a café table and a chair are good, one can also install Built-in seating and adding bolster pillows in lower seating makes the area appear more comfortable and peaceful. Enhance the look of the balcony by adding more amount of green plants, kitchen plants and flowering plants. If the floor space is less for the placement of plant pots, use plant stands or plant hangers.

Verandah

Fresh green plants are the best plants to be kept in balconies. These plants can be kept in large pots as well as small plants. Potted plants can also be used as edging in the area as it makes the area feel more inviting and intimate. Idols and figures can be placed on the corners along with elegant lighting fixtures.

CONCLUSION

Accessories play a vital role in interiors. This is where one can bring out one's own personality, add finishing touches and create preferred textures, shapes and colors to complete the décor. Accessories are considered to be the final details of an interior space. Nowadays there are various accessories available easily in the market or one can create one's own accessory by

combining some waste products to create an appealing accessory for a space. There are various types of accessories which can be placed in different areas of residence which creates the space more attractive and aesthetically beautiful. Therefore, people can use the given options to decorate their space. The suggestions provided by the researchers for the aesthetic and functional use and placement of accessories in various areas of the residence was suggested through booklet which included the pictures of the accessories and its placement in the residence. The respondents were highly satisfied with the suggestions provided to them and which in turn enhanced their knowledge regarding the purpose of each accessory in the residence.

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INFLUENCE OF SOCIO-ECONOMIC FACTORS ON THE JOB PERFORMANCE OF FEMALE HEALTH WORKERS IN RCH PROGRAMME

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ABSTRACT

The Female Health Workers (FHWs) play a very important role in the delivery of health services especially in Reproductive and Child Health Services. The major objectives of the study were to find out the socio-economic and personal profile, and to evaluate the influence of these variables on the performance of Female Health Workers. The study was conducted in Thiruvananthapuram District of Kerala State. Hundred Female Health Workers were selected by random sampling method. A job performance scale was used to assess the performance level and a questionnaire was constructed to collect the socio economic and personal profile of the respondents. The results of the study revealed that majority of the respondents were moderate performers. There was a significant difference among the three comparison groups with respect to their age and number of members present in their family. Significant difference was also observed among themselves with regard to their self confidence and self concept. As Female Health Worker plays a key role in providing reproductive health care services at the grass root level, job performance of these workers plays a vital role in success of the programme.

Key words: Female Health Worker, Job Performance, Reproductive health.

INTRODUCTION

World Health Organization defines 'Reproductive Health as a state of complete well-being and not merely the absence of disease or infirmity, in all matters relating to the reproductive system and to its functions and processes' (Park, 2019). Reproductive health forms a major and crucial part of general health; and it provides a sound base for human development. The Reproductive and Child Health Programme envisaged to provide client oriented, need based, high quality, integrated services to the beneficiaries. The Female Health Workers (FHWs) or Junior Public Health Nurses (JPHNs), as they are known in Kerala, are expected to provide comprehensive primary health care to the community (Government of Kerala, 2003). Since the Female Health Worker's role is very crucial in enhancing the effectiveness of Reproductive and Child Health Programme, it is important that her proficiency in job performance is raised and maintained at a high level. Therefore, an attempt has to be made to evaluate objectively the job performance of Female Health Workers and to analyze the factors which may influence their performance.

OBJECTIVES

- To find out the socio economic and personal profile of Female Health Workers

- To evaluate the job performance and to assess the influence of socio economic and personal factors on performance of Female Health Workers.

METHODOLOGY

Area and sample -The study was carried out in Kerala, the Southern State of India. The areas selected for the study comprised of Thiruvananthapuram District, the capital of Kerala. The sample for the present study includes 100 Female Health Workers under the Directorate of Health Services, Government of Kerala. Random Sampling method (Best and Khan, 2012) was used for the selection of Female Health Workers.

Tools used – A job performance scale was used to assess the performance level of Female Health Workers. 136 statements pertaining to the job responsibilities under the four components of RCH Programme were elicited. Using 't' test 63 statements were selected for the job performance scale.

Reliability and Validity of the tool - Spearman Brown split half method was used to measure the reliability. The validity of the scale was established through the internal consistency method. On the basis of the total performance score (Total performance score was obtained by summing up the rating scores of each Female Health Worker in the job performance scale), the Female Health Workers were categorized into low performers -Those who obtained values less than mean – 1 standard deviation, moderate performers -Those who obtained values between mean – 1 standard deviation and mean + 1 standard deviation and high performers -Those who obtained values greater than mean + 1 standard deviation. A questionnaire was constructed to collect the socio economic and personal profile of the Female Health Workers.

Statistical Techniques – Statistical techniques used to analyze the data were mean and percentage, and Analysis of Variance (One Way ANOVA) along with Post hoc Scheffe's test.

RESULTS AND DISCUSSION

Socio economic profile of the Female Health Workers

Female Health Worker is the most important functionary in the Reproductive and Child Health Programme at the grass root level and an understanding of the socio economic profile of a sample is highly essential to get a general picture of the sample and also to find out how these characteristics influence their job performance. Variables like age, marital status, nearness to the sub centre, mode of transport, educational qualification, type of family, number of family members, total family income (monthly), social participation and leisure time available etc. have been made use of in drawing a socio economic profile of this grass root functionary and the distribution has been reported in Table 1.

Age - Forty four percent of the selected Female Health Workers were in the age group of 31- 40 years, 43 per cent belonged to the age group of 41- 50 years, 8 per cent were in the age group of 21 - 30 years and remaining 5 per cent of them belonged to the age group of 51- 55 years.

Marital Status - Eighty eight percent of the selected Female Health Workers were married. Five percent of them were unmarried, 4 per cent were divorced and remaining 3per cent were widowed.

Nearness to sub centre - Seventy two percent of the selected Female Health Workers resided near the sub centre and 28 per cent resided far from the sub centre. Some of the Government owned sub centers are constructed for accommodating the Female Health Workers for providing better service round the clock and nearness to the sub centre may help them to save time and deliver the services more quickly.

Table - 1

Socio economic profile of Female Health Workers

Variables	Categories	Percentage	Total
Age (Yrs)	21 - 30	8	100
	31 - 40	44	
	41 - 50	43	
	51 – 55	5	
Marital Status	Married	88	100
	Unmarried	5	
	Divorced	4	
	Widowed	3	
	Separated	0	
Nearness to sub centre	Yes	72	100
	No	28	
Mode of transport	Walking	17	100
	Two wheeler	16	
	Public transport	66	
	Others	1	
Educational Qualification	Xth & Diploma	42	100
	XIIth & Diploma	44	
	Degree & Diploma	13	
	PG & Diploma	1	
Type of Family	Nuclear	85	100
	Joint	11	
	Extended	4	
Number of family members	<4	22	100
	4	50	
	>7	22	
	>10	6	
Total Family Income (monthly)	Below 20000	8	100
	20001 – 25000	37	
	25001 – 35000	45	
	35001 – 40000	9	
	40001 - 50000	1	

Social participation (membership)	Nil	14	100
	One organization	42	
	More than one organization	19	
	Office bearer in one	21	
	Office bearer in more than one	4	
Leisure time	Nil	1	100
	0 -1 hour	65	
	1- 4 hour	23	
	4 hours & above	11	

Mode of Transport - Sixty six percent of the Female Health Workers depended on public transport system for conveyance, 17 per cent walked to the sub centre, 16 per cent used two wheelers and only one percent depended on other modes of transportation like auto, taxi etc. for conveyance.

Educational Qualification - Forty four percent of the Female Health Workers had studied XIIth standard and had a Diploma in Public Health Nursing, 42 per cent of the Female Health Workers had the basic qualification i.e. Xth standard and had a Diploma in Public Health Nursing, 13 per cent had a Degree and had a Diploma in Public Health Nursing and only 1 per cent of them had Post Graduation and had a Diploma in Public Health Nursing.

Type of family - Eighty five percent of the selected Female Health Workers belonged to nuclear families, 11 per cent of them belonged to joint families and remaining 4 per cent belonged to extended families. Majority of the Female Health Workers belonged to nuclear families.

Number of family members - Fifty percent of the respondents belonged to the family of four members. Twenty two percent of the Female Health Workers came under families of less than four members and more than seven family members respectively. Only six percent of them had more than ten members in their family.

Total family Income - The income of the family is an important aspect that governs the quality of life. Forty five percent of the Female Health Workers had a family income of Rs.25,001 – 35,000 per month, 37 per cent had a monthly income of Rs. 20001 – 25,000, 9 per cent had a monthly income of 35,001 -40,000 , 8 per cent had an income below Rs.20000 and only 1 per cent percent of them had a monthly income of Rs. 40,001 – 50,000/-.

Social participation - Forty two percent of the selected Female Health Workers had membership in only one organization, 21 per cent of them held the position as office bearer in one organization and 19 per cent of the Female Health Workers had membership in more than one organization. Fourteen percent of them had not taken membership in any of the organization and remaining 4 per cent of them held the position of office bearer in more than one social organization. Social participation of the Female Health Workers was assessed by finding out whether they were members or officials in organizations.

Leisure time / day - Sixty five percent of the selected Female Health Workers got up to one hour per day as leisure time, 23 per cent of them got up to four hours, 11 per cent got more than four

hours per day and only 1per cent of the Female Health Workers did not get any leisure time during the day time.

Personal profile of the Female Health Workers

In the present study the personal variables studied were self-confidence, self-concept, achievement motivation and intrinsic motivation. Based on the mean and standard deviation of the total scores, the Female Health Workers were classified into three categories. Those who obtained a value less than mean – 1 standard deviation were grouped as 'low', those who obtained a value greater than mean + 1 standard deviation were grouped as 'high', while those who obtained a value between these two groups were classified as 'moderate'. Table 2 shows the distribution of Female Health Workers with respect to their personal variables.

Table - 2

Distribution of Female Health Workers with respect to Personal Variables

Variables	Low (per cent)	Moderate (per cent)	High (per cent)	Mean Value	Total (per cent)
Self confidence	21	62	17	30.97	100
Self concept	20	58	22	32.45	100
Achievement motivation	17	66	17	23.21	100
Intrinsic motivation	3	66	31	17.53	100

Self-Confidence - Sixty two percent of the Female Health Workers showed moderate level of self-confidence, 21 per cent showed lower level of self-confidence and 17 per cent of the selected Female Health Workers showed a higher level of self-confidence. Majority of them had moderate level of self-confidence.

Self Concept - Fifty eight percent of the Female Health Workers got moderate level of self-concept, 20 per cent of the Female Health Workers got lower level of self-concept and 22 per cent of them got a higher level of self-concept. The study shows that majority of the respondents had moderate to high level of self-concept.

Achievement Motivation - Sixty six percent of the selected Female Health Workers belonged to the group 'moderate', 17 per cent belonged to 'high' and 'low' level of achievement motivation respectively. Majority of the respondents had moderate level of achievement motivation.

Intrinsic Motivation - Sixty six percent of the selected Female Health Workers came under the group 'moderate'. Very low percent i.e. only 3 per cent of them got 'low' intrinsic motivational score and 31 per cent got a higher level of intrinsic motivational score. The study shows that majority of the Female Health Workers had moderate to high level of intrinsic motivation.

Job performance of Female Health Workers

On the basis of the total performance score, the Female Health Workers were divided into three categories namely low performers, moderate performers and high performers. The distribution of Female Health Workers under low, moderate and high category in their job performance based on their rating is presented in Table - 3.

Table - 3

Levels of performance of Female Health Workers

Level of Performance	Percentage
Low performers	27
Moderate performers	62
High performers	11
Total	100

From the Table, it may be observed that 62 per cent of the Female Health Workers were moderate performers, 27 per cent were low performers and remaining 11 per cent were high performers. Classification of Female Health Workers was shown in figure1. The performance of Community Health Workers (CHWs), in Kenya revealed that approximately 60 per cent of the Community Health Workers were active performers (Kawakatsu et al, 2012). A study on Experiences of Junior Public Health Nurses in delivery of Maternal Healthcare services to Tribal Women in Kerala revealed that difficulties such as lack of sufficient time for field work, travel difficulties and language barriers affected their performance (Jose et al, 2013). In India, selection criteria and selection methods for Community Health Workers were influential factors in enhancing their performance (Haines et al, 2007).

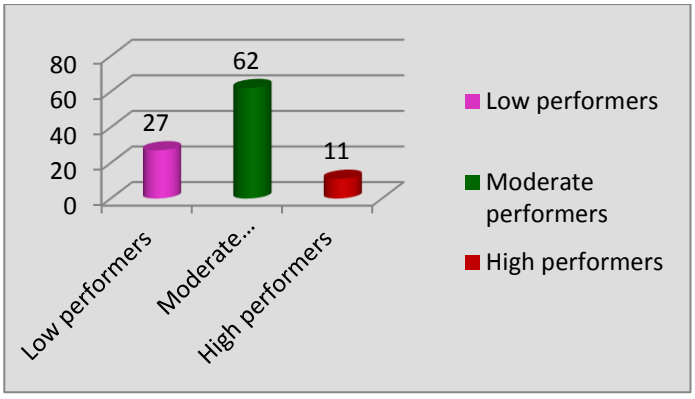

Fig.-1 Levels of performance of Female Health Workers

Relationship between certain Socio - economic and personal variables with Job Performance levels of Female Health Workers

In this section of analysis, an attempt was made to find out whether the Female Health Workers belonging to three performance levels namely low, moderate and high differed significantly with regard to certain socio economic and personal variables.

Certain Socio economic Variables and Job Performance

Table 4 shows the results of the one way ANOVA carried out with regard to the age, number of family members and total family income of the Female Health Workers at the three levels of performance (low, moderate and high).

Table - 4 ANOVA

Job Performance Levels X Socio Economic Variables

Variables		Sum of Squares	df	Mean square	F Ratio	Significance
Age	Between Groups	415.610	2	207.805	4.535*	0.013
	Within Groups	4444.630	97	45.821		
	Total	4860.240	99			
Number of family members	Between Groups	10.718	2	5.359	3.300*	0.041
	Within Groups	157.522	97	1.624		
	Total	168.240	99			
Total family Income	Between Groups	20079313	2	10039656.441	0.274	0.761
	Within Groups	3.5E+009	97	36588737.506		
	Total	3.6E+009	99			

* Significance at 5 per cent level.

From the Table it may be noted that in the case of variables, age and number of family members, the F value turned out to be significant at 5 per cent level. This implied that the respondents at the three different levels of performance differ significantly among themselves with respect to their age and number of members present in their family. Studies among Kenyan Community Health Workers (CHWs) over 40 years of age were likely to display good performance in their job (Kawakatsu et al, 2012).

But in the case of family income, the F value was not significant thereby implying that the respondents at the three performance levels were not significantly different in this variable. In the case of variables age and number of family members, since the F value turned out to be significant, further analysis using Scheffe's test has been performed to find out the direction and significance of the differences. The mean values along with their standard deviation and the results of the Scheffe's test are indicated in Table - 5.

Table – 5 Results of the Scheffe's test indicating the significance of differences among the comparison groups

Variables	Groups	Means	SD	Comparison Groups	Mean difference	Significance
Age	Low	37.07	7.27	1&2	4.0065	0.041*
	Moderate	41.08	6.63	2&3	2.1920	0.614
	High	43.27	6.21	1&3	6.1986	0.042*
Number of family members	Low	4.78	1.50	1&2	0.7893	0.050*
	Moderate	4.04	1.19	2&3	0.0483	0.993
	High	4.00	1.09	1&3	0.7777	0.238

* Significant at 0.05 level.

From the Table it may be noted that in the case of age, the differences of the low performing group from the moderate and high performing group were both significant at 5 per cent level. But in the case of number of members present in the family, only the difference between the low and moderately performing groups turned out to be significant at 5 per cent level.

In order to get an idea regarding the direction of differences, the mean values were scrutinized and it could be seen that the average age of low performing group was 37 years and the average age of moderately performing group was 41 years. The average age of high performing group seems to be 43 years and this may indicate that as the age of the Female Health Worker increases, the performance level also increases.

In the case of number of members present in the family, only a slight difference was observed in the mean values at the three performance levels. Low performing group occupied the first position (4.78) followed by moderately performing group (4.04) and then high performing group (4.00). Here, the low performers had more members in their family than moderate and high performers. Only a slight difference was observed between the mean values of high and moderate performers.

Personal Variables and Job Performance

The relationship between the job performance at the three different levels and personal variables of the Female Health Workers was analyzed using one way ANOVA and the details are depicted in Table - 6.

Table - 6 ANOVA
Job Performance Levels X Personal Variables

Variables		**Sum of squares**	**df**	**Mean Square**	**F Ratio**	**Significance**
Self confidence	Between Groups	278.965	2	139.482	11.890**	0.000
	Within Groups	1137.945	97	11.731		
	Total	1416.910	99			
Self concept	Between Groups	276.340	2	138.170	15.797**	0.000
	Within Groups	848.410	97	8.746		
	Total	1124.750	99			
Achievement motivation	Between Groups	72.872	2	36.436	2.996*	0.050
	Within Groups	1179.718	97	12.162		
	Total	1252.590	99			
Intrinsic motivation	Between Groups	15.463	2	7.732	2.276	0.100
	Within Groups	329.447	97	3.396		
	Total	344.910	99			

* denotes significance at 0.05 level.

** denotes significance at 0.01 level.

From the Table it may be noted that in the case of variables self-confidence and self-concept of the respondents, the F values turned out to be significant at 1per cent level. This implied that the Female Health Workers at the three different levels of performance differed significantly among themselves with respect to their self-confidence and their self-concept. The F value was not significant in the case of intrinsic motivation thereby implying that the respondents at the three different levels of performance were not significantly different with regard to intrinsic motivation.

Having noticed that the respondents at the three levels of performance differed significantly among themselves with respect to most of the personal variables, the next attempt was to find out the nature and extent of this variation. For this purpose the mean and standard deviation were tabulated and presented in Table -7 and also the significance of the direction of differences was tested using Scheffe's test.

Table -7
Results of the Scheffe's test indicating the significance of differences among the comparison groups

Variables	Groups	Means	SD	Comparison Groups	Mean difference	Significance
Self confidence	Low	28.44	3.80	1&2	3.1362	0.000**
	Moderate	31.58	3.28	2&3	2.1466	0.164
	High	33.72	3.19	1&3	5.2828	0.000**
Self concept	Low	30.29	2.70	1&2	2.4456	0.000**
	Moderate	32.74	2.79	2&3	3.3489	0.000**
	High	36.09	4.27	1&3	5.7946	0.000**
Achievement motivation	Low	22.96	2.88	1&2	0.0758	0.991
	Moderate	22.88	3.87	2&3	2.7492	0.061
	High	25.63	2.11	1&3	2.6734	0.101

**denotes that mean difference was significant at 0.01 level

Regarding the self-confidence, differences of the low performing group from moderately and high performing groups were both significant at 1 per cent level. The high performing group occupied the highest position with a mean value of 33.72, the moderately performing group occupied the intermediate position with a mean value of 31.58 and low performing group occupied the lowest position with a mean value of 28.44.

Regarding the variable self-concept, all the three groups performing at different levels were significantly different in all the inter group comparisons at 1 per cent level thereby implying that significant differences were existing between these groups. The mean values seems to be higher in high performing group (36.09), moderate in moderately performing group (32.74), and lower in low performing group (30.29) at the three different levels of performance. The inference that can be drawn is that as the self-concept increases, the level of performance also increases.

Regarding the variable achievement motivation, significant difference was not observed at the three different levels of performance. On the whole, the results in this table indicate that the scores of the high performing groups were definitely higher than moderately performing groups and low performing groups. A study on performance motivation on community health workers in Orissa had found that inadequate healthcare delivery status and certain working modalities reduced their motivation (Gopalan et al, 2012).

CONCLUSION

The results of the present study revealed that majority of the Female Health Workers were moderate performers. Special programmes aiming at the development of attributes like self-confidence, self-concept and intrinsic motivation of the Female Health Workers may be worked out so as to enhance their job performance. This may be achieved through appreciation for the work done, through conducting workshops, personality development programmes etc.

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AN ONLINE SURVEY ON LIFESTYLE AND DIETARY HABITS AS PER AYUSH ADVISORY IN THE PREVENTION OF COVID-19

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ABSTRACT

In the wake of the Covid-19 outbreak, entire mankind across the globe is suffering. Enhancing the body's natural defence system (immunity) plays an important role in maintaining optimum health. As we all know that prevention is better than cure and there is no medicine for COVID-19 as of now, it will be good to take preventive measures which boost our immunity in these times. Ministry of AYUSH has given some self-care guidelines for preventive health measures and boosting immunity. This research was carried out online where 226 respondents (male and female both) agreed to be a part of this study. Respondents were selected randomly (Snow ball Sampling Technique). In the present research, an Online Survey Questionnaire was developed as a tool for collecting data of people taking part in online survey. Majority of respondents (82.3%) are females and mostly (76.1%) belonged to the age group of 18-25 years. Most of the respondents (56.6%) accepted that their lifestyle pattern was affected by lockdown.84.1% respondents reported that they performed physical activities to keep themselves fit during lockdown. Due to Covid-19 the pattern of education also changed it, was found that more than 65% respondents studied through online classes during lockdown. It was also reported that 97.8% respondents spent good time with their families. 94.7% respondents practiced social distancing and wore face masks while going out during lockdown for essential needs which shows that pattern of living has been completely changed by Covid-19. It can be concluded thatCovid-19 has changed the lifestyle pattern and dietary habits of people completely which is very important to stay fit and prevent the spread of Covid-19.

Keywords- Immunity, Health, Preventive Measures, Social Distancing

INTRODUCTION

Corona Virus is associated with acute respiratory deadly disease and it is currently named as Corona Virus Disease -19 (Covid-19) by WHO. This disease has spread from China to all over the world and on 11 March 2020, World Health Organization declared it as pandemic (Sharma, 2020). The epicentre of this disease was found in Wuhan a city of China in December 2019. The disease came into existence in 2019 that's why it is known as Covid-19. Now this disease has spread all over the world and it is at peak in countries like USA, Russia, Brazil, UK, Spain and India (Chattopadhyay, 2020).

The disease spreads primarily from one person to another person through small droplets coming from the nose and mouth of a person suffering with COVID-19 when he coughs, sneezes and speaks. These droplets can land on objects and surfaces around the person such as tables, doorknobs and handrails. People can become infected by touching these objects or surfaces (Smith, 2020).

COVID-19 pandemic has posed many challenges for all the age groups. The rate at which the virus is infecting people globally is alarming. In the absence of a proper cure it has become all the more important to improve one's immunity and prevent the spread of this virus by following social distancing, wearing masks and practicing sanitation and hygiene protocols. This is an unprecedented global pandemic which has affected each and every country of the world and India being the second most populous country of the world is no exception. Every day the number of cases being reported are increasing manifold and leading to an increase in mortality rate also. This situation has changed our lifestyle completely, the way we work, we move out, what we eat. Everything has changed tremendously over the past few months and it seems that this condition will stay for some time. COVID-19 has affected the lifestyle, dietary practices and also increased anxiety and stress levels of one and all in the family. The Ministry of AYUSH has also been imperative and given certain guidelines to improve our immunity by following certain measures. AYUSH Ministry, GOI has advocated drinking warm water throughout the day, daily practice of Yoga and meditation, using turmeric, cumin, coriander and garlic in cooking, consuming Chavanprash, herbal tea or *kadha* made with basil, cinnamon, black pepper along with steam inhalation (Ayurveda's immunity boosting measures for self-care during COVID 19 crisis, 2020)Therefore, it was felt that it is empirical to study the lifestyle and dietary practices of people during this time as per AYUSH advisory.

OBJECTIVES

- To study the demographic profile of people who undertook the online survey.
- To study the lifestyle pattern of respondents who undertook the online survey.
- To study hygiene practice of people who undertook the online survey.
- To study the dietary practices being followed by people in wake of covid-19.
- To study the intake of immunity boosting foods by the survey group.

LIMITATIONS

1. The sample size was limited in number to only 226.
2. The data was collected by online survey method so only people with internet access could become a part of the study.

METHODOLOGY

Selection of locale in the states of Uttar Pradesh, Madhya Pradesh, Karnataka, Haryana and Rajasthan was done by using convenient sampling. The sample was selected by using snow ball random sampling (Uncontrolled Instrument Distribution Technique) which was performed by using online survey questionnaire self-constructed tool on Google Forms. An online survey was easy to administer during this pandemic situation and it saves time, money and is easy to administer. The respondents were taken from different cities of India including Agra, Lucknow, Etah, Aligarh, Firozabad, Mathura, Ghaziabad, Meerut, Kanpur, Jaipur, Noida and many more. The inclusion criteria for online survey was 18-65 years, both male and female, in different occupations like Student, housewife, Teacher, Government Job, MNC/private Job. Data was gathered from the subjects on their demographic profile, lifestyle pattern, dietary habits and consumption of immunity boosting foods. In the present study, demographic profile like Age,

Gender, occupation family type, income group, lifestyle and zone in which they live were taken as independent variable. The dietary intake among the selected population was used as dependent variables in the present study.

An Online Survey Questionnaire was developed using Google Forms as a tool for collecting data of people taking part in online survey. Questionnaire was divided into three sections as Section A and Section B and Section C. In Section-A, demographic profile related questions covered all the necessary information of respondents. In Section B, lifestyle, exercise, time spent online, chronic disease and substance abuse related questions were covered and in Section C, questions related to hygiene practices, dietary practice and consumption of immunity boosting foods were included.

Data collection tool was propagated to people through E-mail, What's app, Telegram and Instagram. Respondent were guided to fill Online Survey Questionnaire through Phone calls and WhatsApp. The data collection in these difficult times was only possible through Google forms without meeting the respondents in person. A pilot survey was conducted with 10 subject matter specialist and general public to check the construct validity.

RESULTS AND DISCUSSION

A total of 226 respondents took part in the online survey. Among the total respondent's majority of them (82.3%) were females and remaining 17.7% were males. The demographic characteristics of the respondents are being depicted in Table 1.

Table 1: Demographic Characteristics of the Respondents

S. No.	Questions	Categories	Respondents		
			Male (%)	Female (%)	Total (%)
1.	Distribution of the respondent according to gender	Gender	17.7	82.3	100
2.	Distribution of the respondents according to age	18-25 years	62.5	79.0	76.1
		26-35 years	25	11.2	13.7
		36-45 years	7.5	4.30	4.9
		46-55 years	5	3.76	4
		55-65 years	0	1.61	1.3
3.	Distribution of the respondents according to their occupation	Student	45	79	73
		Teacher	15	8.1	9.3
		Govt. Job	7.5	3.2	4
		MNC/Private Job	13	4.3	9.3
		Housewife	0	5.4	4.4
4.	Distribution of respondents according to number of family members	More Then 5	37.5	31.7	32.7
		5	20	33.9	31.4

		4	30	22	23.5
		3	12.5	12.4	12.4
5.	Distribution of the respondent according to their type of family	Nuclear Family	57.5	69.4	67.3
		Joint Family	42.5	30.6	32.7
6.	Distribution of the respondent according to income group	LIG	32.5	22.6	24.3
		MIG	65	72.6	71.2
		HIG	2.5	4.8	4.4

Findings related to lifestyle pattern of respondents during lockdown are being depicted in table 2.

Table 2: Distribution of respondents on the basis of lifestyle pattern during lockdown

S. No.	Questions	Categories	Respondents		
			Male (%)	Female (%)	Total (%)
1.	Distribution of respondents according to how the lockdown had affected their daily life	Yes	67.5	54.3	128
		No	20	19.9	19.9
		Sometime	12.5	25.8	25.5
2.	Distribution of the respondent according to physical activity during lockdown	Yes	82.5	157	84.1
		No	17.5	29	15.9
3.	Distribution of the respondents according to time spent on mobile / laptop during lockdown	More than 4 hr	47.5	36	38.1
		4 hr	5	15.6	13.7
		3hr	20	19.9	19.9
		2 hr	20	17.7	18.1
		1 hr	7.5	10.8	10.2
4.	Distribution of the respondent according to attending any online classes during lockdown	Yes	65	66.1	65.9
		No	17.5	12.4	13.3
		Sometime	17.5	21.5	20.8
5.	Distribution of the respondents according to chronic illness	Yes	12.5	6.5	7.5
		No	87.5	93.5	92.5
6.	Distribution of the respondents according to sleep pattern during lockdown	Less than 6 hr	10	20.4	18.6
		6 – 8 hr	55	51.6	52.2
		8 – 10 hr	27.5	23.7	24.3
		More than 10 hr	7.5	4.3	4.9
7.	Distribution of the respondents according to smoking / drinking before the lockdown	Yes	10	0	1.8
		No	90	100	98.2
8.	Distribution of the respondent according to time spent with family during lockdown	Yes	87.5	95.7	94.2
		No	12.5	4.30	5.8

9.	Distribution of the respondents according to any family member being diagnosed as covid-positive	Yes No	0 100	2.2 97.8	1.8 98.2
10.	Distribution of the respondents according to installation of arogyasetu app in their mobile phones	Yes No	72.5 27.5	88.7 11.3	85.8 14.2

Out of the total respondents, majority of them (56.6%) said that their daily life was affected during the lockdown, followed by 23.5% who said that their daily life was somewhat affected due to lockdown and the remaining 19.9% respondents said that lockdown did not affect their daily life. The findings of this research are also in support with the findings of Kaul (2020) who also reported that as India emerges from its nationwide lockdown, it finds itself in uncharted territory, with the pandemic fundamentally altering the way people work, communicate, and lead their daily lives. Majority of respondents (84.1%) said that they did physical activity during lockdown and remaining 15.9% reported that they did not do physical activity during lockdown. Atre et al., (2020) also reported that 64.5% population was exercising during the lockdown. Among the total respondents, majority of them 38.1% spent more than 4 hours on mobile / laptops during lockdown, followed by 19.9% respondents spent 3 hours on mobile / laptop during lockdown, 18.1% respondents spent 2 hour and 13.7% respondents spent 4 hours and remaining 10.2% respondents spent 1 hour on mobile / laptop during lockdown. The findings of this research are also in support with the findings of Westenberg., (2020) as he also reported that more than half (55.6%) of the population of Europe was using their smartphones way more than usual now as they were stuck at home. Out of the total respondents, majority of them (65.9 %) took online classes during lockdown, followed by 20.8% who took online classes sometimes during lockdown and remaining 13.3% did not take any online classes during lockdown.

Out of the total respondents, majority of them (92.5%) reported that they were not suffering from any chronic illness and the remaining 7.5% members reported that they were suffering from some chronic illness. Majority of respondents (52.2%) reported that they slept for 6 to 8 hours during lockdown, followed by 24.3% of respondents who reported that they slept for 8 to 10 hours during lockdown, 18.6% slept for less than 6 hours, and remaining 4.9% slept for more than 10 hours during lockdown. Majority of respondents (94.2 %) reported that they spent more time with family during lockdown and remaining 5.8% reported that they did not spend more time with family during lockdown. Among the total respondents, majority of them (98.2 %) reported that none of the family member were diagnosed as Covid positive and remaining 1.8% reported that a family member was diagnosed with Covid positive. Out of the total respondents, majority of them (85.8%) had downloaded the Arogyasetu app and 14.2% did not have the Arogyasetu app. Kodali et al., (2020) also reported in his research that 83.10% of respondents were using Arogyasetu app.

Findings related to hygiene practices of respondents during lockdown are being depicted in Table 3.

Table 3: Distribution of respondents on the basis of hygiene practices during lockdown

S. No.	Questions	Categories	Respondents		
			Male (%)	Female (%)	Total (%)
1.	Distribution of the respondents according to practice social distancing while going out	Yes	95	94.6	94.7
		No	5	1.6	2.2
		Sometime	0	3.8	3.1
2.	Distribution of the respondents according to wearing mask while going out	Yes	97.5	95.6	96
		No	0	2.2	1.8
		Sometime	2.5	2.2	2.2
3.	Distribution of the respondents according to sanitization / washing of their hands after coming home	Yes	92.5	97.8	96.9
		No	5	0	0.9
		Sometime	2.5	2.2	2.2
4.	Distribution of the respondents according to sanitization of food items purchased from outside before consuming / cooking them	Yes	87.5	94.6	93.4
		No	5	2.2	2.7
		Sometime	7.5	3.2	3.9

Out of the total respondents, majority of them said that they practiced social distancing while going out, 3.1% said they sometimes practiced social distancing while going out and remaining 2.2% said that they did not practice social distancing while going out. It was reported by Well (2020) that one-time social distancing effort of the type currently being employed in most parts of the country will not stop transmission of the virus.

Majority of the respondents (96%) said they wore mask while going out, 2.2% said that they sometime wore mask and remaining 1.8% said that they did not wear mask while going out. Tom Li et al., (2020) found in his research that the percentage of people wearing face mask during Covid-19 depends on different factors, firstly the culture plays an important role like in East Asia wearing face mask is common and accepted by most of the people of that region. Lyu and Wehby (2020) reported that after state mandates for the use of face masks in public, people started wearing face masks on regular basis which helped to prevent the growth of the Virus. Majority of the respondents (96%) said that they sanitize / wash their hands after coming home, 2.2% said that they sometime sanitize / wash their hands after coming home and remaining 0.2% said that they did not wash their hands after coming home. Majority of respondents (93.4%) said that they sanitized food items purchased from outside before consuming / cooking them, 3.9% said that they sometime sanitized food items purchased from outside before consuming / cooking them and remaining 2.7% said that they did not sanitize food items purchased from outside before consuming / cooking them.

Findings related to dietary practices being followed by respondents in wake of COVID-19 are being summarised in Table 4 and Table 5.

Table 4: Distribution of respondents on the basis of dietary practices being followed during lockdown

S. No.	Questions	Categories	Respondents		
			Male (%)	Female (%)	Total (%)
1.	Distribution of the respondents according to dietary practices being followed in wake of covid-19	Vegetarian	55	77.9	73.9
		Vegan	0	0	0
		Non-vegetarian	30	10.8	14.2
		Eggetarian	15	11.3	11.9
2.	Distribution of the respondent according to consumption of water per day (number of glass)	3 – 4	2.5	8.60	7.5
		5 – 6	27.5	16.7	18.6
		6 – 7	15	23.1	21.7
		7 – 8	22.5	19.9	20.4
		More then 8	32.5	31.7	31.9

Out of the total respondents, majority of them 73.9 % were vegetarian.14.2% were non vegetarian and remaining 11.9% were eggetarian. Among the total respondents, majority of them 31.9 % reported that they drank more than 8 glass of water, 21.7% reported that they drank 6 to 7 glass of water, 20.4% had 7 to 8 glasses, 18.6% had 5 to 6 glass and remaining 7.5% drank 3 to 4 glass of water per day.

Table 5: Distribution of respondents according to consumption of immunity boosting foods during lockdown

S. No.	Questions	Categories	Respondents		
			Male (%)	Female (%)	Total (%)
1.	Distribution of the respondents according to consumption of clove (long) everyday	Yes	20	34.9	32.3
		No	27.5	29.6	29.2
		Sometimes	52.5	35.5	38.5
2.	Distribution of the respondents according to consumption of cinnamon (dalchini) everyday	Yes	17.5	30.7	28.3
		No	40	34.9	35.8
		Sometime	42.5	34.4	35.9

3.	Distribution of the respondents according to consumption of dry ginger (sonth) everyday	Yes	35	48.4	46
		No	30	23.7	24.8
		Sometime	35	27.9	29.2
4.	Distribution of the respondents according to consumption of black pepper (kali mirch) everyday	Yes	42.5	46.8	46
		No	17.5	18.8	18.6
		Sometime	40	34.4	35.4
5.	Distribution of the respondents according to including cumin (jeera) in their diet everyday	Yes	77.5	89.2	87.2
		No	5	2.2	2.6
		Sometime	17.5	8.6	10.2
6.	Distribution of the respondents according to including coriander (dhaniya) in their diet everyday	Yes	75	84.4	82.7
		No	10	5.4	6.2
		Sometime	15	10.2	11.1
7.	Distribution of the respondents according to including fenugreek seeds (methi dana) in their diet everyday	Yes	30	33.3	32.7
		No	25	17.2	18.6
		Sometime	45	49.5	48.7
8.	Distribution of the respondents according to consumption of basil (tulsi) daily	Yes	42.5	42.5	42.5
		No	17.5	21.5	20.8
		Sometime	40	36	36.7
9.	Distribution of the respondents according to consumption of turmeric (haldi) daily	Yes	85	86	85.8
		No	7.5	4.3	4.9
		Sometime	7.5	9.7	9.3
10.	Distribution of the respondents according to consumption of curry leaves daily	Yes	20	15.6	16.4
		No	62.5	47.3	50
		Sometime	17.5	37.1	33.6
11.	Distribution of the respondents according to consumption of chyawanprash daily	Yes	27.5	32.8	31.9
		No	25	20.4	21.2
		Sometime	47.5	46.8	46.9

Out of the total respondents, 38.5% reported that they sometimes consumed clove (loung), followed by 32.3% who reported that they consumed clove (loung) every day and remaining 29.5% said that they did not consume clove (loung) every day. Bharadwaj (2020) claims that consuming

whole cloves can help boost the immune system. Plus, the spice has benefits for your oral health and consumption of clove is help in boosting immunity to fight against Covid-19.

Among the total respondents, 35.9% reported that they sometime consumed cinnamon (dalchini) followed by 35.8% who reported that they did not consumed cinnamon (dalchini) every day and remaining 28.3% said that they consumed cinnamon (dalchini) every day. Senger (2020) reported that consumption of cinnamon increased among the population because of its immunity boosting benefits.

Many of respondents (46%) reported that they consumed dry ginger (Sonth) everyday, followed by 29.2% reported that they sometime consumed dry ginger (Sonth) and remaining 24.8% said that they did not consume dry ginger (Sonth) every day. Out of the total respondents nearly half of them (46%) reported that they consumed black paper (kali mirch) everyday, followed by 35.4% who reported that they sometime consumed black paper (kali mirch) and remaining 18.6% said that they did not consume black pepper (kali mirch) every day. Bhardwaj (2020) stated that black peppercorn has antioxidant, antimicrobial, and gastro-protective properties that help in building our immunity–especially when it comes to throat which is most affected by coronavirus.

Nearly one half of respondents (48.7%) said that they sometimes included fenugreek seeds (methi dana) in their diet, followed by 32.7% reported that they included fenugreek seeds (methi dana) in their diet every day and remaining 18.6% reported that they did not include fenugreek seeds in their diet.

Out of the total respondents, many of them (42%) reported that they consumed Basil (Tulsi) everyday, followed by 36.7% reported that they sometime consumed Basil (Tulsi) and remaining 20.8% said that they did not consume Basil (Tulsi) every day. Among the total respondents, majority of them (85.8%) reported that they consumed Turmeric (haldi) everyday, followed by 9.3% reported that they sometimes consumed Turmeric (haldi) and remaining 4.9% said that they did not consume Turmeric (haldi) every day. Findings are supported by Gupta et al., (2020) reported that turmeric has been used for centuries with a good safety profile. It has shown promising efficacy against influenza a viral infection by regulating the immune response to prevent injury to pulmonary tissue. Turmeric is very useful to boost immunity to fight against Covid-19.

Out of the total respondents, one half of them (50%) reported that they sometimes consumed Curry leaves, followed by 16.4% who reported that they consumed Curry leaves every day and remaining 50% said that they did not consume Curry leaves every day. Sampath (2014) has reported that kadipatta is a very effective home remedy to relieve the symptoms of wet cough, sinusitis or chest congestion.

Many of the respondents (46.9%) reported that they sometimes consumed Chyawanprash, followed by 31.9% who reported that they consumed Chyawanprash every day and remaining 21.2% said that they did not consume Chyawanprash every day. The findings are in support with the findings of Biswas (2020) as he reported that Chyawanprash sales across the country grew 283% in June, 2020.

CONCLUSION

COVID-19 pandemic has affected the lifestyle and dietary habits of people is clearly visible from this study. The use of laptop and mobile phone also increased in population during the lockdown. Most of the respondents found changes in their sleep pattern. It was also found that more time was spent with family during lockdown. Many respondents downloaded the AarogyaSetu app. It was also found that respondents were practicing social distancing, using face mask and sanitizer. Majority of respondents started consuming immunity boosting foods like dry ginger, black pepper, basil, fenugreek seeds, turmeric and Chavanprash during the lockdown.

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The Indian Journal of Home Science 2021: 33(2)

DIETARY INTAKE AND NUTRITIONAL STATUS OF ADOLESCENT GIRLS BENEFICIARIES OF SABLA/SAG SCHEME OF ICDS

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ABSTRACT

Young girls who have inadequate nutrition do not grow well and become stunted women. Adolescent girls often suffer from anaemia because of poor consumption of iron rich foods and also due to worm infestation and frequent infections. Because of severe malnutrition and repeated illness, the growth spurt in early adolescence does not occur and a slower and prolonged pubertal growth period is seen in adolescents from lower socio-economic status. Hence, any damage to the body physiology during adolescence, which places extra nutritional demand on the body, like early pregnancy, is detrimental, as, growth of the body is still to be attained. Adolescent mothers are more likely to deliver low birth babies. Hence the present study was undertaken with the objective to assess the dietary intake and pattern and their Nutritional status of Adolescent girls enrolled at AWCs under SABLA Scheme. Methods and tools adopted for this study were Anthropometry measurement, 24-hour dietary recall method including Take Home Ration of SABLA Scheme, SABLA Kishori Card, Observation & Questionnaire. In the study the Dietary intake & pattern were found to be the same. More than 70% AGLs of the both the group were not getting sufficient amount of macro & micro nutrition. 79% girls were underweight in which73% were moderately underweight and 6% were severely i.e. very low weight, only 21 % were normal. The indicators of Height for their age shows 67% girls were stunted in which 56% were moderately and 11% were severely stunted i.e. the girls had not achieved their standard height. When the weight for their height was analysed, it showed that only 31% AGLs were normal. The levels of the Body Mass Index showed that only 15% girls were normal.

Key Words: Dietary Intake, Nutrition, Adolescent Girls, Dietary habit, Under-nutrition

INTRODUCTION

Poor nutrition is more common among rural areas and large families with uneducated or unskilled parents from lower-income households. With changing diets and physical activity levels, overweight and obesity are also emerging problems, particularly among urban residents and wealthier households. The consumption of processed foods, high in fat and sugar, is rising, and adolescents and adults are becoming increasingly sedentary. Young girls who have inadequate nutrition do not grow well and become stunted women. Adolescent girls often suffer from anaemia because of poor consumption of iron rich foods and also due to worm infestation and frequent infections. Because of severe malnutrition and repeated illness, the growth spurt in early adolescence does not occur and a slower and prolonged pubertal growth period is seen in adolescents from lower socio-economic status. Hence, any damage to the body physiology during adolescence, which places extra nutritional demand on the body, like early pregnancy, is detrimental, as, growth is still to be attained. Adolescent mothers are more likely to deliver low weight babies. Due to poor milk production the infant may not be able

to gain enough weight and remain malnourished. If these babies are girls, they are likely to continue the cycle by being stunted in adulthood, and so on, if something is not done to break this cycle. Support is needed for nutrition at all stages - infancy, childhood, adolescence and adulthood.

Nutritional requirements peak during adolescence and, in absolute terms, are higher than at any other stage of life. Malnutrition at this stage leads to stunting of growth, repeated infections and places constraints on full physical and psychological development. The current nutritional status of the population reflects the lack of progress over time, despite a number of national level programmes and policies.

Nutrition constitutes the foundation for human development by reducing susceptibility to infections, reducing the related morbidity, disability and mortality burden and enhancing cumulative lifelong learning capacities as an adult. Nutritional status is based on specific indicators like height and weight, anaemia, iodization of household cooking salt, utilization of nutrition programmes, information on child feeding practices and vitamin A supplementation (Arnold et al. 2009). Deficiencies of micronutrients continue to impose a substantial health, economic, and social burden worldwide. Globally 60%–80% of adolescents suffer from micronutrient deficiencies. Fluctuations in the status of one or more micronutrients may reasonably be expected to alter the metabolism of the other, particularly in adolescents (Shashi et al. 2012). Additionally, India being in a state of nutritional transition is facing the dual burden of malnutrition along with emerging problems of over nutrition and obesity. The government has put in place a number of programmes and policies aimed at improving nutritional status among adolescents, specifically the girls. Various programmes are implemented by the Ministry of Women and Child Development, Ministry of Health and Family Welfare, the Department of School Education and Literacy (under Ministry of Human Resource Development), and the Ministry of Youth Affairs and Sports. The National Nutrition Policy 1993 was instrumental in setting nutrition goals to control and prevent malnutrition in the country. The policy sought to create a balance between the short-term direct nutrition interventions and long-term institutional/structural changes to improve the nutritional status for all sections of the society. To give due importance to nutrition among adolescent girls, **Kishori Shakti Yojana (KSY**) – part of **the Integrated Child Development Services (ICDS) programme** – was rolled out in 2000. With a focus on girls who are school dropouts (11–18- year olds), KSY provides take-home rations, health package, and non formal education, along with home-based and vocational skills development (ICDS and Planning Commission 2011). In addition to KSY, the government of India started the **Nutrition Programme for Adolescent Girls (NPAG)** in 2002 in 51 districts for adolescent girls and pregnant/lactating women. All adolescent girls in the district were weighed once in three months to identify girls who weighed less than 35 kgs and provided free of cost 6 kg of food grains per month for the next three months. In 2010 the Ministry of Women and Child Development rolled out the **Rajiv Gandhi Scheme for Empowerment of Adolescent Girls (RGSEAG) – the SABLA** programme to provide supplementary nutrition to adolescent girls (11–18 years). This scheme merged the KSY and NPAG in order to address the multidimensional needs of the adolescent girls. Out-of-school girls are also provided two adult Iron Folic Acid tablets per week along with nutrition and health education. (Implementation Guidelines for SABLA Programme, Ministry of Women and Child Development 2010). The **Mid-Day Meal Scheme**, run by the Department of School Education and Literacy, started in 1995 and revised in 2001 provides young people (9–14-year-old from classes 1–8 in government and aided schools and Education Guarantee Scheme (EGS)/Alternative and Innovative

Education (AIE) centres) a cooked mid-day meal where 300 calories and 8–12 grams of protein is provided.

OBJECTIVE

The objective of the research study were

- To assess the dietary intake and pattern and their Nutritional status of Adolescent Girls the age group of 11-14 yrs, enrolled at AWCs under SABLA Scheme of Banka District.
- To study the effect of Supplementary Nutrition provided by ICDS through Anganwadi Centers under SABLA.

MATERIALS & METHODS

For this cross-sectional research study 600 Adolescent Girls were randomly selected. The quantitative instrument was used to collect the information on Demographic Profile of the respondents, Dietary Intake and Pattern of the AGLs and Anthropometric Parameters, Clinical Investigation. The qualitative instrument was used to understand the service and system of the Supplementary Nutrition of the SABLA. The Information was collected by a pre-designed & pre-tested questionnaire developed for this purpose taking account of in-depth information to achieve the research objectives. For the assessment of Diet & Nutrition adequacy diet frequency, adequacy and type of diet, 24-hour recall method used. Then the data obtained was calculated, analyzed and compared to RDA and standard value. The collected data was analysed by using statistical method.

RESULT & DISCUSSION

The result of the present study has been analysed and presented under the following heads with figure and graph.

Dietary Intake & Pattern

24-hour recall method were used to assess the dietary intake and their consumption of diet pattern, Diet frequency, adequacy, type of diet and compared to RDA. Kamla Krishnaswammy, RDA, NIN, ICMR, (2011)

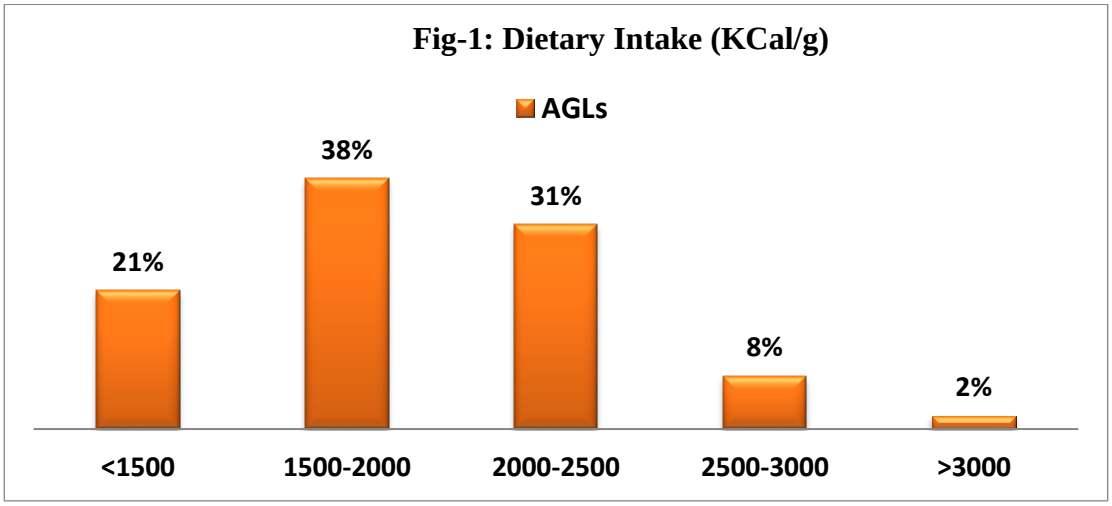


Fig 1 Dietary Intake (24h recall) of AGLs.

The Fig-1 shows that only 8% beneficiary AGLs were getting 2500-3000 Kcal, which is nearer to RDA and meagre 10% beneficiary Adolescent Girls and 2% AGLs get exactly RDA, which is >3000 Kcal. 31%banefaciary AGLs were getting the calories between the 2000-2500 & 38% Adolescent Girls were getting the calories between 1500-2000k/Cal which was highest calories getting group, and rest of the AGLs were far below the RDA i.e. <1500 Kcal.

The obtained data explains that dietary intake of both major groups was not satisfactory within the Kcal of 1500-2000, 10% Adolescent Girls were fortunate enough to get their diet according to RDA.

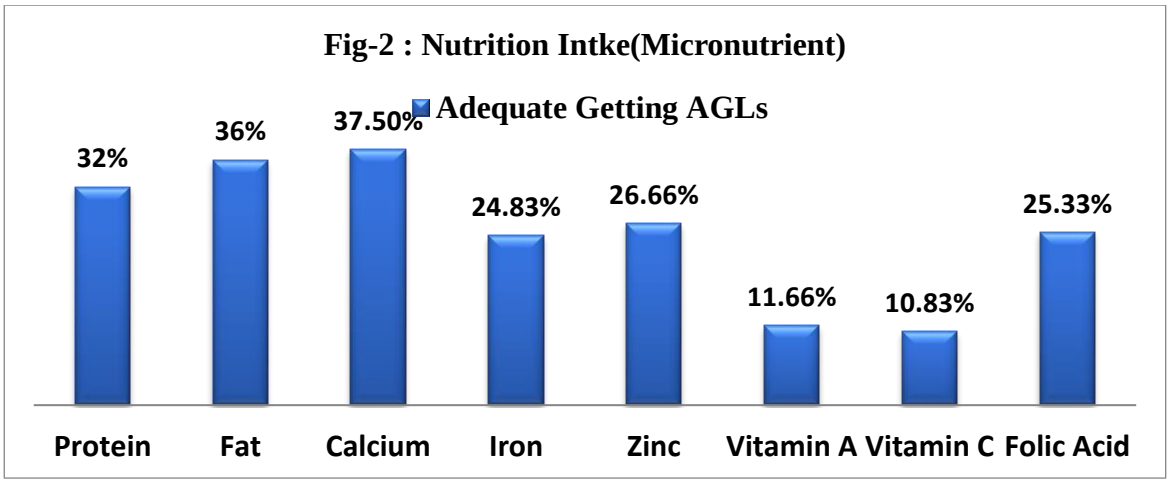


Fig-2: Nutrition Intake/Micronutrient (24 h recall)

The Fig-2 shows that important micro nutrient essential for the Adolescent girls was not available in a recommended amount for the enrolled AGLs of SABLA Scheme of ICDS. When the intake of protein supplementation in daily food habit was calculated, it was found that only 32 % AGLs were getting 40.5-5.5 g/d i.e. RDA of AGLs, whereas only 36% AGLs were getting recommended amount of visible fat i.e. 35g/day. As far as Calcium intake is concerned, only 37.5%

beneficiary AGLs were getting required RDA, i.e. 800mg/day, whereas Iron and Zinc intake of girls was far behind the RDA, in which Iron and Zinc intake of AGLs is 24.83% and 26.66% girls had 27mg & 12mg/day respectively.

As far as consumption of Vitamin A is concerned only 11.66% beneficiary AGLs were consuming according to the RDA i.e. 4800mcg (Beta carotene& 600mcg in form of retinol). A meagre number of AGLS were having non vegetarian diet and that also weekly or once in a month and so the main source of the vitamin A is consumed b-carotene. The table shows that Vitamin C intake was also very poor because only 10.83% Adolescents girls were getting Vitamin C according to RDA i.e. 40mg/day which is very essential micronutrient for absorption of iron in metabolism process in the body.

Actually, speaking more than 70% AGLs were not getting sufficient amount of macro & micro nutrition. Micronutrients are essential for the proper development of adolescent girls, unfortunately it is not fulfilled in their daily dietary intake.

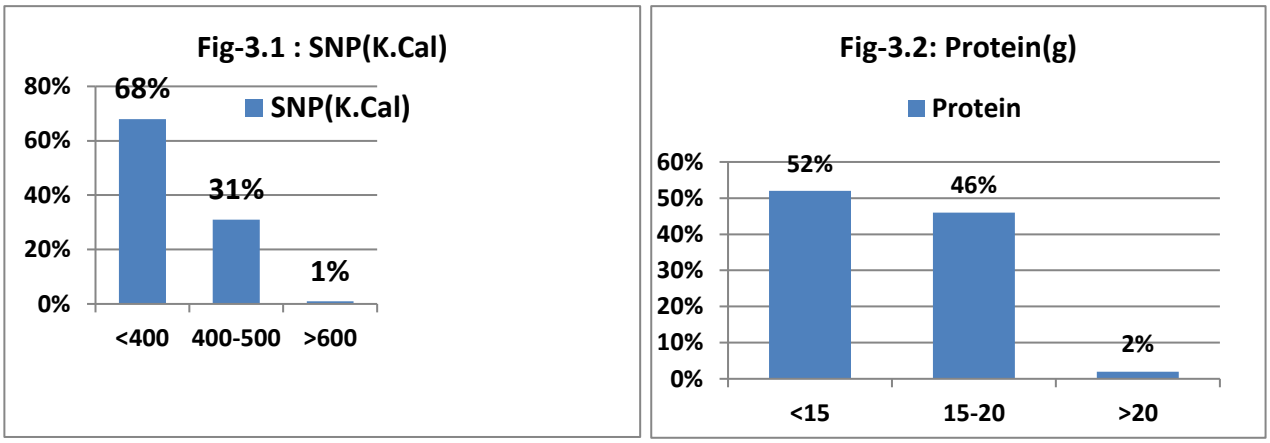


Fig-3 Supplementary Nutrition of SABLA/SAG

In Fig-3 it clear that supplementary nutrition provided at AWCS was behind the recommended norms of SABLA Scheme of ICDS. It can be seen that 68% AGLs of SABLA were getting <400 Kcal , whereas 31% were getting 400-500 Kcal, only 1% AGLs got according to recommended norms i.e. 600 Kcal/day in a 300days of one year.

When the data on a significant nutrient Protein is observed it is clear that only 2% AGLs were getting 20g protein which is adequate as per recommended norms of SABLA in a day, 46% AGLs were getting protein near to norms i.e. 15-20g/d whereas more than 52% of AGLs were found to be having 15g/d. The recommended daily dietary intakes of protein for adolescent girls are 40-55g/d.

On the basis of the findings it may be said that most of the AGLs were neither getting adequate SNP nor the recommended amount of protein according to the norms of SABLA Scheme of ICDS in one time. The SNP was given by AWC under the SABLA Scheme for enrolled AGLs in the form of Take Home Rashan (THR) i.e. raw rice, pulses, soybean bari in a month. The norm of supplementary

nutrition of SABLA Scheme for the AGLs is 600k/cal with Protein 20g/day, which is of 5 rupees /day for each AGL. When the AWW was asked regarding the distribution of THR lower than the norms of scheme ,they told that the cost of recommend amount of THR are much higher as compare to price provided for raw food items like Rice, Pulses and Soybean provided by the scheme.

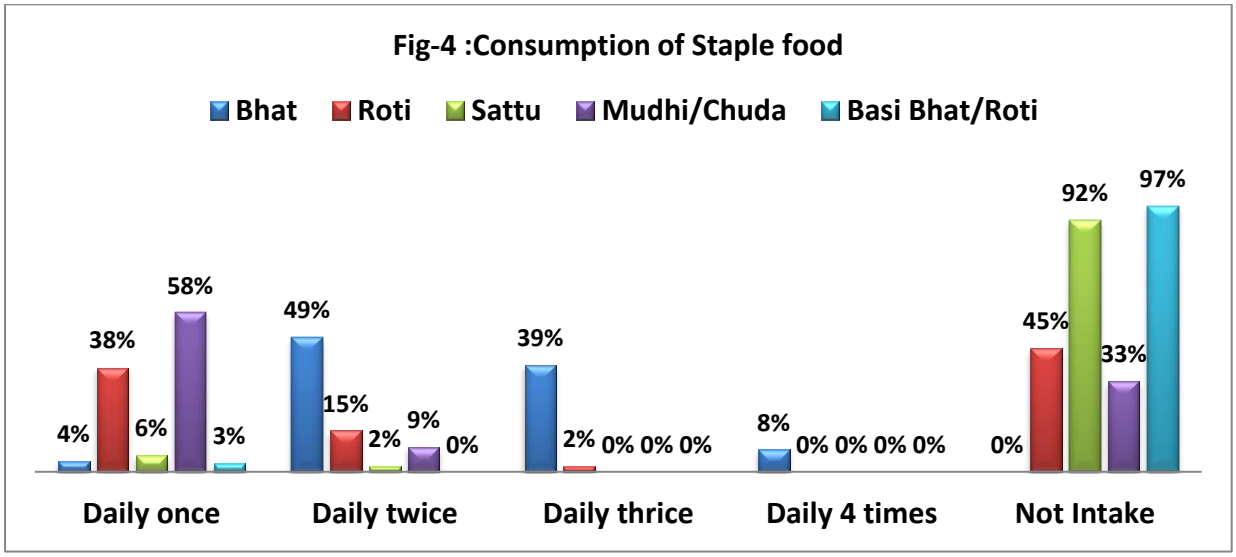


Fig-4 Consumption of Staple Food stuff & their Frequency

Fig-4 shows the consumption of staple food stuff & their frequency. The maximum number of AGLs (49%) was eating Bhat (parboiled Rice) twice daily, 39% took Bhat thrice daily & 4% took once daily. Surprisingly 08% AGLs were consuming this 4 times in a day. As far as the consumption of Roti is concerned 38% Adolescent girls consumed this once daily preferably at night, 15% AGLs took this twice a day & only 02% AGLs ate Roti thrice in a day. Sattu is consumed by 06% AGLs once daily &only by 12% AGLs twice in a day. Rest 92% do not eat Sattu. Mudhi & Chuda (flaked Rice & puffed Rice) were consumed by maximum 58% respondents, particularly as evening snacks, whereas 9% adolescent girls took it twice in a day. Unfortunately, 03% AGLs were consuming Basi Bhat or Roti (Night cooked Rice & Roti) once daily. The findings indicate that Bhat (Basi or Taza) is the main diet of adolescent girls, then comes Roti Snacks like Mudhi & Chuda have third position. Thus Sattu is far behind.

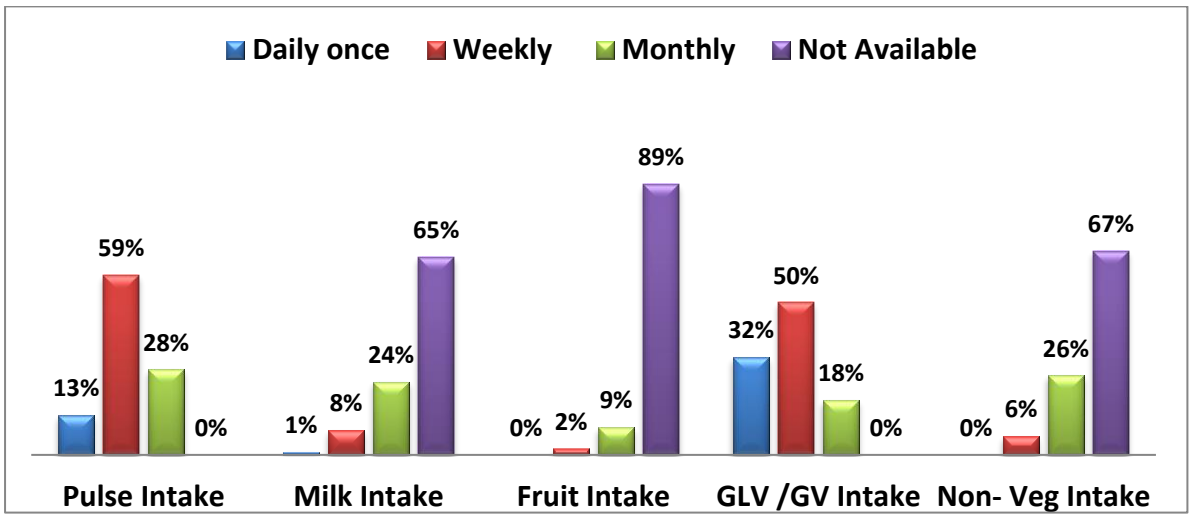


Fig- 5 Pattern of Dietary Consumption

Table- 5 represents the pattern of dietary consumption by AGLs. Out of 600 beneficiary adolescent girls Pulse was consumed daily by only 13% AGLs whereas 59% AGLs were getting the Pulse twice or thrice in a week, 28% beneficiary AGLS took the pulse weekly.

The score of Green/Green leafy Vegetable consumption shows that very few i.e. Only 32% adolescent girls consumed GLF daily. Half of AGLs i.e. 50 % consumed GLF 2-3 days in a week & 18% weekly. Green leafy vegetable is essential for the development for adolescent age because it is a good source for the micronutrient specially calcium, iron, folic acid and other minerals and vitamins.

The data of consumption of milk shows that only 01% beneficiary AGLs were getting the milk daily. 02% AGLs got the milk twice or thrice in a week, whereas 8% adolescent girls get this weekly. 24% AGLs took the milk once in a month. Surprisingly maximum number of AGLs were not fortunate to get even a drop of milk ever, which is essential for proper development because it is a very good source of calcium and protein.

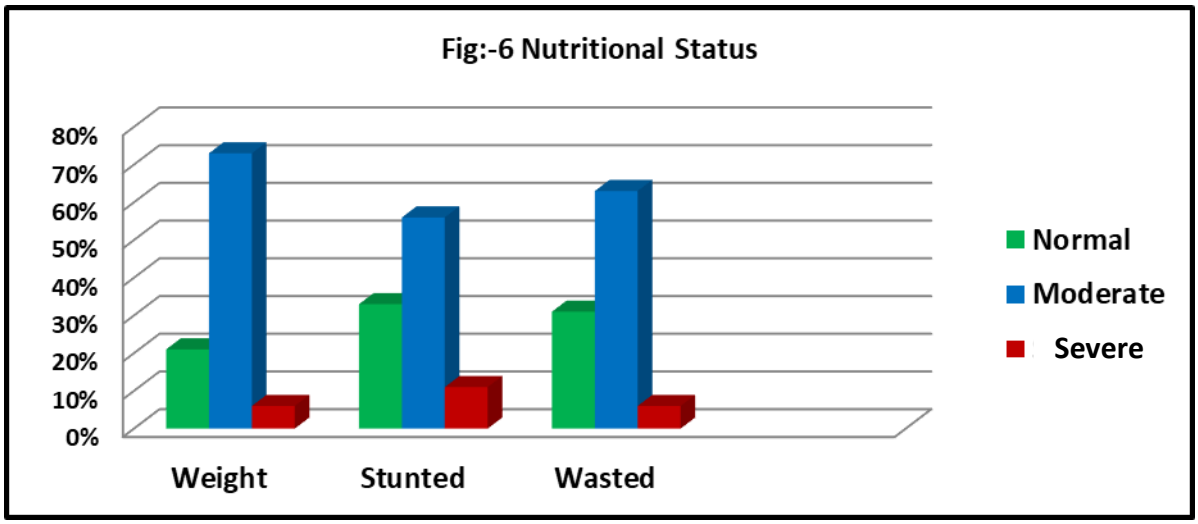
The score of Fruit consumption indicates that none of the AGLs consumed the fruit daily or 2-3 days in a week. Only 2 % beneficiary adolescent girls got a fruit weekly whereas 9% AGLs got the fruit once in a month. Maximum no. 89% adolescent girls were unfortunate who were not getting any fruit ever.

As the consumption or availability of non-vegetarian food is concerned not a single AGLs in either group was getting egg/meat/fish daily. 1% AGLS got 2 or 3 times in a week. Only 6% AGLs get it weekly and 26% adolescent girls get it monthly. Maximum 67% AGLs were not getting any non-vegetarian food. When the data on dietary pattern was assessed, the researcher found that the percentage of non-vegetarians in the muslin community were more than in Hindu community.

The data on consumption of chocolates & biscuit shows that 03% AGLs consumed it daily, 22% AGLs consumed it twice or thrice in a week ,43% adolescent girls took it weekly, whereas 32% adolescent girls got it monthly.

As the pattern of dietary intake consumption have been shown by the data of fig-6, it may be analysed in the way that most significant food stuff for vulnerable group of adolescent age – the consumption of Pulses, GLF, Milk, Fruit, Egg/Meat/Fish, was very poor. It is a known the fact how valuable these food stuffs are for the physical & metal development of the AGLs.

NUTRITIONAL STATUS



Nutritional status (**Fig: 6)** shows the fact of the adolescents' girls of rural areas. Compared with WHO nutritional indicator, 79% girls are underweight for their age in which 73% are moderately underweight and 6% are severely i.e. very low weight, only 21 % are normal. The indicators of Height for their age shows 67% girls are stunted in which 56% are moderately and 11% are severely stunted i.e. the girls have not achieved their standard height. When the weight for their height analysed, it shows that only 31% AGLs are normal i.e. their weight for height are normal whereas 63% are moderately wasted and 6% are severe. The data shows that out of 600 Adolescents girls under the scheme more than 70% are undernourished which is the major threat to their physical and mental development.

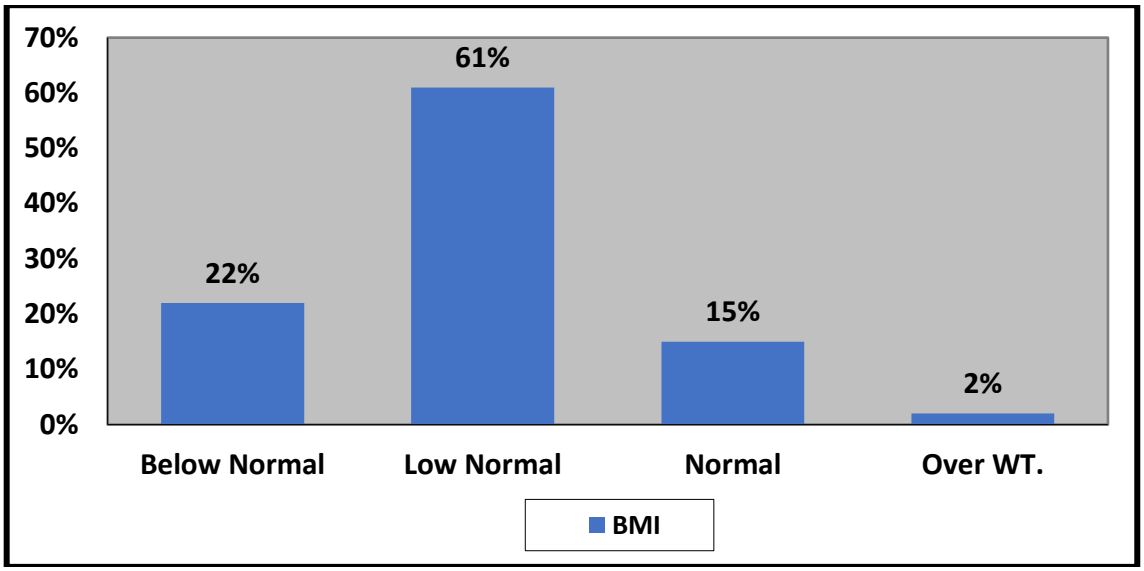


Fig-7 Body Mass Index (BMI)

The data in Fig-**7**: shows the levels of the Body Mass Index. It shows that only 15% girls are normal i.e. ≥20.0 -<25.0, whereas 61% are Low normal i.e. ≥18.5 - <20.0. 22% AGLs are below the normal range i.e. <18.5 and only 2% are overweight i.e. in range of ≥25.0 - <30.0. No one is obese i.e. above the >30. The data of BMI shows that more the AGLs are undernourished i.e. 83% in which 22% are severely undernourished i.e. <18.5. Only 15% are normal in range of BMI i.e. ≥20.0 -<25.0.

CONCLUSION

The findings of this research study show that Accessibility, Availability of adequate amount of staple food is not available in the diet, while protein-based diet, minerals and vitamins-based food was also not enough. Supplements given as THR by the ICDS under SABLA/SAG Scheme were not able to meet their nutritional needs. Regarding the pattern of eating, it was found that even though some nutritious foods were available, they were not in their eating habits like the inclusion of green vegetables in the food. The study of Dietary Intake of Adolescents Girls shows that the dietary intake of both major groups was not satisfactory, 10% Adolescent Girls were fortunate enough to get their diet according to RDA. As per the WHO indicator of assessment of nutritional status i.e. underweight, stunted and wasted, out of 600 Adolescents girls under the scheme more than 70% are undernourished which is the major threat to their physical and mental development. According to research finding, there is a need for inclusion of more food groups in daily diet and behavioural change towards food habits with awareness of balanced foods for better health of adolescent girls.

Suggestions for future Research

In this research, the nutritional status of the Adolescent Girls is not satisfactory whereas according to NFHS-5 about 60% of the Adolescent Girls is currently suffering from anaemia. For the expected improvement in the nutritional status of adolescent girls, there is a need to conduct research on the impact of relevant government scheme and related to transition of the dietary habit of adolescent girls.

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The Indian Journal of Home Science 2021: 33(2)

ASSOCIATION OF DEMOGRAPHIC FACTORS WITH THE PREVALENCE OF ANEMIA AMONG PREGNANT WOMEN

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ABSTRACT

In both the developed as well as developing countries anemia continues to be a major public health problem. (Mangla M *et al* 2016). Maternal anemia is one of the most common maternal problems in India and has varied in etiology and severity (Fayet Moore *et al*2014). Anemia during pregnancy is a major health concern. Globally, anemia affects 1.62 billion people (25%), among which 56 million are pregnant women (Addis Alene *et al* 2014). According to National Family Health Survey (NFHS-4, 2015-2016) the prevalence of anemia in pregnant women aged between15-49 is 50.4%. In order to find the association of anemia with demographic factors a hospital-based study was conducted amongst 420 randomly selected pregnant women of 1st, 2nd and 3rdtrimester visiting government hospitals, Chandigarh. Anemia was assessed by the presence of general and clinical symptoms and biochemical assessment of hemoglobin levels. The results of the present study revealed that the grades of anemia were associated with different demographic factors such as age, education, occupation and monthly income. Nearly 50% of pregnant women (n=194) studied were found to be anemic. The prevalence of clinical signs and general symptoms of anemia was n= 87(20.71%) and n= 269(64.64 %.). The prevalence of anemia amongst pregnant women was found to be high. Certain efforts must be initiated for adopting specific interventional measures with regard to nutritional education, special diets and anemia prophylaxis program to reduce the prevalence of anemia.

Key words: Maternal Anemia, Hospital Based, Pregnant Women, Anemia Prevalence, Demographic factors

INTRODUCTION

One fifth of the maternal deaths are caused due to anemia during pregnancy and is a major cause contributing to low birth weight. Despite of the availability of low cost interventional programs taken by the government to combat anemia it continues to be a major problem. Unfavorable socio demographic factors contribute to be a major hurdle to the efforts taken for the prevention of maternal anemia. (Lokare P.O. *et al* 2012)

A decreased concentration of blood hemoglobin levels in the body is known as anemia. It globally affects more than quarter of World's population and is the most prevailing nutritional deficiencies disease. Globally, anemia affects 1.62 billion people (25%), among which 56 million are pregnant women (Addis Alene *et al* 2014). Mostly

Pregnant women are vulnerable to anemia, and it is one of the major underlying causes of maternal mortality. The causes of maternal anemia often are lack of appropriate nutrients, such as iron, folic acid, and vitamin B12. It can also be due to parasitic infections (helminthes and plasmodia) (Diamond Smith*et al 2016*).

Anemia during pregnancy is a main challenge worldwide particularly in developing countries. Maternal anemia is one of the most common problems in India and has varied in etiology and severity. Anemia in pregnancy is defined as hemoglobin< 11g/Dl according to WHO. Iron Deficiency Anemia (IDA) has been linked to impaired cognitive function and poor pregnancy outcomes including low birth weight (Fayet Moore 2014).

Anemia, a common outcome of the iron deficiency, is therefore unsurprisingly prevalent in expectant mothers, affecting nearly half of all pregnant women worldwide. Maternal iron deficiency anemia during pregnancy has been linked to higher risk of pre term delivery, low birth weight and infant IDA, which successively can permanently impair intelligence, motor and behavioral development, and increase the risk of future IDA in the off spring (Alwan*et al* 2015).The iron requirements of mother are greater than average absorbable iron intakes. If the diet of a woman does not contain sufficient iron to meet these needs, the body can meet fetal requirements only by drawing upon maternal iron stores. The demands of the developing fetus may cause the mother to develop nutritional iron deficiency anemia (Adikari*et al* 2016).

Characteristics of populations such as age, sex, socioeconomic status and bio-demographic factors like pregnancy and lactation also considerably affect the prevalence of anemia. Due to higher physiological and nutritional requirements the women in the reproductive age group are more vulnerable to iron deficiency resulting in anemia (Siddiqui *et al* 2017).

India has always been a country with high prevalence of anemia (Kundap RP *et al* 2016). According to NFHS-4 the prevalence of anemia is 50.4 percent among pregnant women in India. There are a number of health and nutrition programs in India aiming to combating maternal anemia but still the prevalence remains high. Apart from nutrition there are a number of factors that contribute to anemia such as low awareness, low purchasing power, education and occupational status of the individual. Hence being a vulnerable group it is very important to study the overall prevalence of anemia and also to find out various factors contributing to it in order to combat this major public health problem. Hence the present study was undertaken with the following specific objectives.

OBJECTIVES

1. To find the association of anemia with demographic factors age, education, occupation and monthly income.

2. To study the prevalence of anemia among pregnant women.

Hypothesis (H_o): It is assumed that there is an association between socio demographic factors and anemia during pregnancy

METHODOLOGY

Sample size

The present study was conducted on 420 pregnant women in their 1st, 2nd, and 3rd trimesters aged 18-40 years.

Research design

A hospital based, cross-sectional and prospective study was conducted.

Setting

The study was carried amongst randomly selected pregnant women. A total of 420 pregnant women in 1st, 2nd, and 3rd trimester visiting government hospitals were studied. Data was collected using pretested interview administered questionnaire for assessing health status of women and clinical profile with respect to anemia.

Locale of the Study

The present study was conducted in the Government hospitals in Chandigarh, where respondents regularly visited for general and scheduled checkups.

Assessment of anemia

Anemia was assessed by the presence of clinical and general signs/symptoms such as paleness of conjunctiva, paleness of skin, spoon shaped nails, tiredness, fatigue, breathlessness, headache etc. The hemoglobin levels for the assessment of anemia were taken from the reports of tests done by the respondents as advised by the doctors while visiting the hospitals. Anemia was classified according to the WHO (2011) classification. Hemoglobin levels greater than 11g/dl were classified as non-anemic. The grades of anemia were associated with different demographic factors.

Assessment of Dietary Intake

The daily dietary information was calculated using a 24 hour dietary recall method. In this recall method, dietary data is obtained from the respondent through an oral questionnaire of diet survey, using a set of ‘standardized cups’ suited to local condition. For calculating the dietary intake of the respondents software called Diet Cal (version 8.0) was used a tool for dietary assessment and planning. Dietary allowances suggested by Indian Council of Medical Research (ICMR, 2010) for pregnant women (sedentary worker) were utilized to assess the adequacy of nutrient intake by the subjects. The percentage of RDA met was compared with the actual RDA.

Data analysis: Data was summarized using the descriptive statistics of chi-square test, mean, standard deviation and t-test significance. For analysis of data Statistical Package for Social Science (SPSS) version 25.0 (SPSS Inc. 2017) was used. For calculating dietary intake Diet Cal (version 8.0) was used as mentioned above.

RESULTS AND DISCUSSIONS

Socio-Demographic Profile

A total of 420 pregnant women in the age group of 18-40 years constituted the study population. About one half of respondents i.e. 48.09% (n=202) were in the age group 18-25 years, followed by 39.04% (n=164) in the age group 25-30 years. Out of the total respondents, 280 respondents enrolled for the study were found to be living in joint families. Majority of the respondents 64.27% (n=270) were found to be educated up to high school and intermediate level and 26.19% (n= 110) had pursued higher education. Only few respondents that is 9.52% (n= 40) were found to be illiterate. Majority i.e. 88.09% were home maker, rest of the respondents were employed for wages (11.88%). The socio economic status of the respondents as assessed by the Kuppuswamy's Socio Economic Status scale (Thakkar *et al* 2015) showed that half of the respondents enrolled in the study belong to upper lower class followed by upper middle II 24.04%. Hence it can be understood that often the respondents belonging to both HIG and LIG visit the government facility for medical intervention, however, majority of respondents visiting government hospitals belonged to low income group.

Prevalence of Anemia

The mean hemoglobin levels were found to be 11.004 ± 1.360 mg/dl. Nearly 50% of the enrolled respondents (n = 420) were found anemic. From (n=194) those found anemic n= 84(20%) were moderately anemic, and n= 109 (25.95%) were mildly anemic.

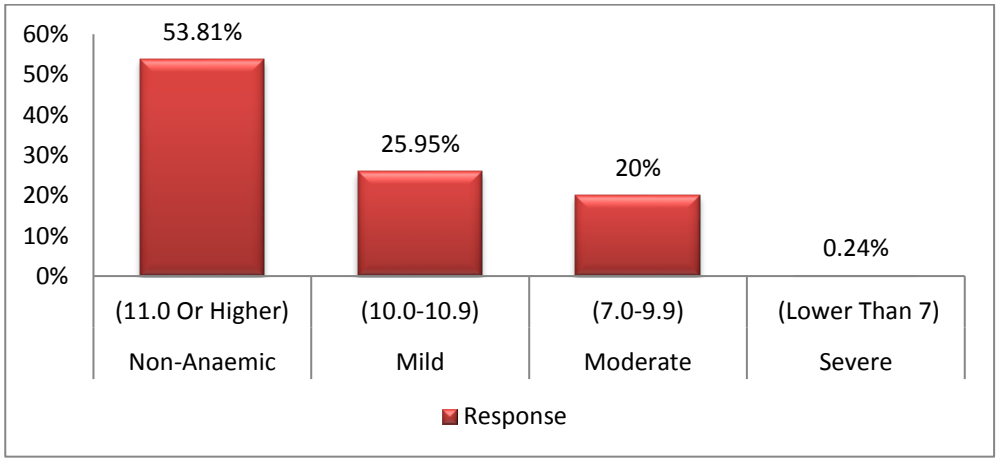

Figure- 1 Distribution of pregnant women according to their haemoglobin levels (n=420)

In a study conducted by Mangla *et al* (2016) the prevalence of anemia was 98% among the pregnant female of rural area in Punjab. They concluded that there was a significantly high prevalence of anemia among pregnant women in rural areas of India. In contrast to this the prevalence of anemia in the present study was almost half i.e. 45.95%. This reflects that prevalence of anemia is higher among rural area than urban areas.

Table-1 Distribution of pregnant women according to presence of general and clinical sign/symptoms of Iron Deficiency Anemia

Sign and symptoms of Iron Deficiency Anemia			
General (G)	No. of observations	Clinical (C)	No. of observations
1.Fatigue	73 (17.38%)	1.Paleness of conjunctiva	19 (4.524%)
2.Breathlessness	15 (3.571%)	2.Spoon shaped nails	9 (2.143%)
3.Dizziness	2 (0.476%)	3.Pitting oedema	1 (0.238%)
4.Palpitation	1 (0.238%)	4.Paleness of skin	42 (10%)
5.Tinnitus	0 (0%)	5.paleness of conjunctiva, paleness of skin	16 (3.81%)
6.Headache	13 (3.095%)	No problem	333 (79.29%)
7.fatigue, breathlessness	63 (15%)	-	-
8.fatigue, breathlessness, headache	102 (24.29%)	-	-
No problem	151 (35.95%)	-	-
Total	420 (100%)	Total	420 (100%)

The prevalence of general symptoms of anemia was found to be 64.04% (n=269). The most common general symptom of anemia was fatigue, breathlessness and headache. The prevalence of clinical symptoms of anemia was found to be 20.71% (n=87). The most common clinical symptom of anemia was paleness of skin and paleness of conjunctiva. Majority of respondents 79.29% (n=333) were having no clinical symptom.

One of the reason for high prevalence of anemia and general/ clinical symptoms among the respondents could be the consumption of low dietary intake of iron as the diet did not meet the recommended dietary allowances as calculated using 24 hour dietary recall method. Another reason could be the consumption of tea along with breakfast and other meals which interferes with the absorption of iron.

Association of grades of anemia with demographic profile

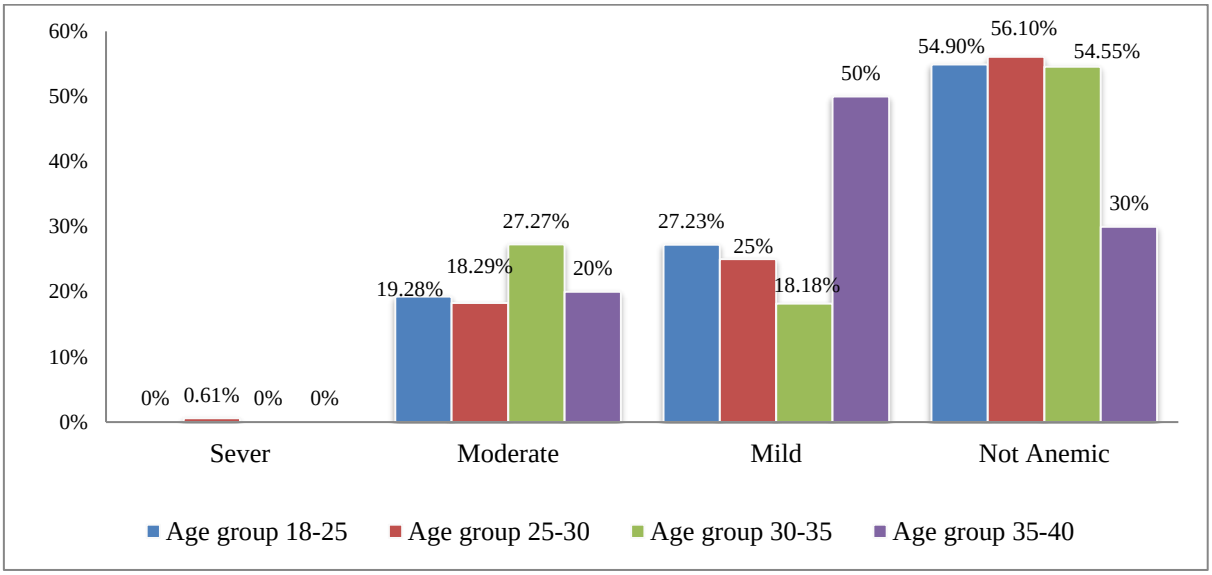

Figure-2 Association of grades of anemia with age

The present study shows that grades of anemia were associated with age of the respondents. Fgure-2 shows that the cases of anemia decreases as the age of the respondent's increases. Prevalence of anemia was found to be maximum (n=95) from age 18-25 and was minimum (n=7) from 35-40. The reason for this could possibly be rapid pregnancies in early twenties and blood loss in each delivery, the body may not be fully mature for conception during early teenage years. Another reason can be consumption of a poor diet lacking in essential nutrients especially iron. A significant association was seen from age 18-35 years. ($p<0.001$)

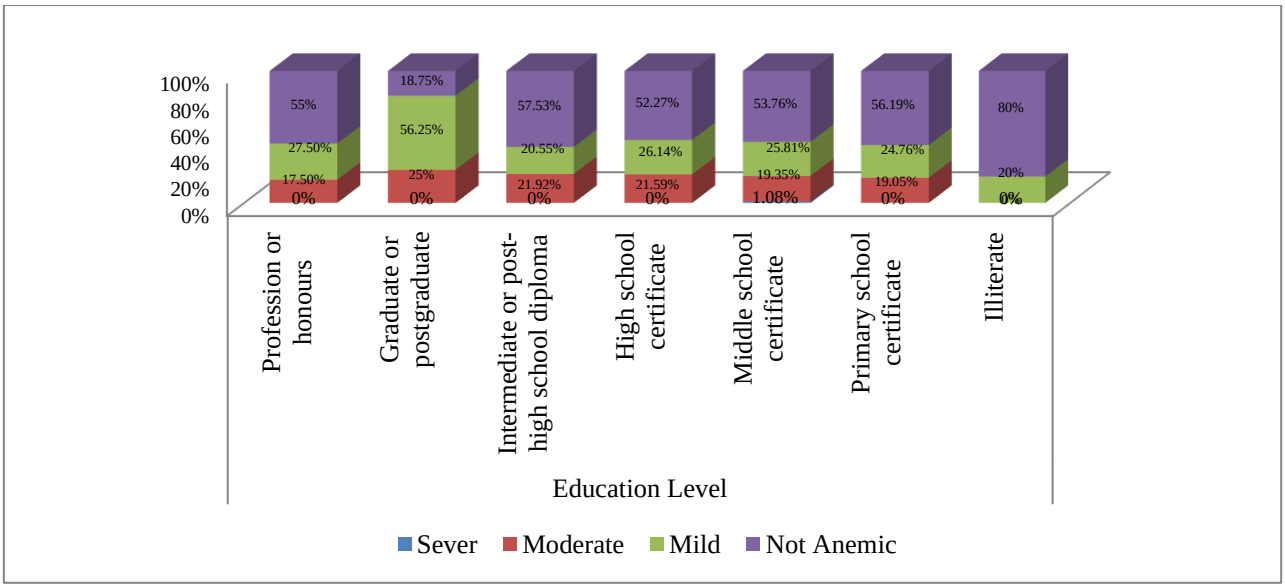

Figure-3 Association of grades of anemia with education

Out of the total respondents maximum cases of moderate and mild anemia were found in respondents having primary school education (n=46). The association shows that education has significant impact on anemia. The chi square test reveals that association of education with grades of anemia is significant. ($p<0.001$) Education affects the anemic status of individual which can be seen from fig. 3, the possible reason behind this could be that well educated women have knowledge about the diet, care, nutrition and rest they require during the period of pregnancy as compared to those women who are not well educated and neglect the adverse consequences of poor maternal health. Women who were educated were found to have better nutritional knowledge regarding balanced diet, sources of iron, calcium, vitamin A and iodine as compared to less educated or illiterate women. Hence it could be said the education level of an individual is linked with knowledge regarding healthy and balanced diet during pregnancy which in turn significantly impact the prevalence of anemia.

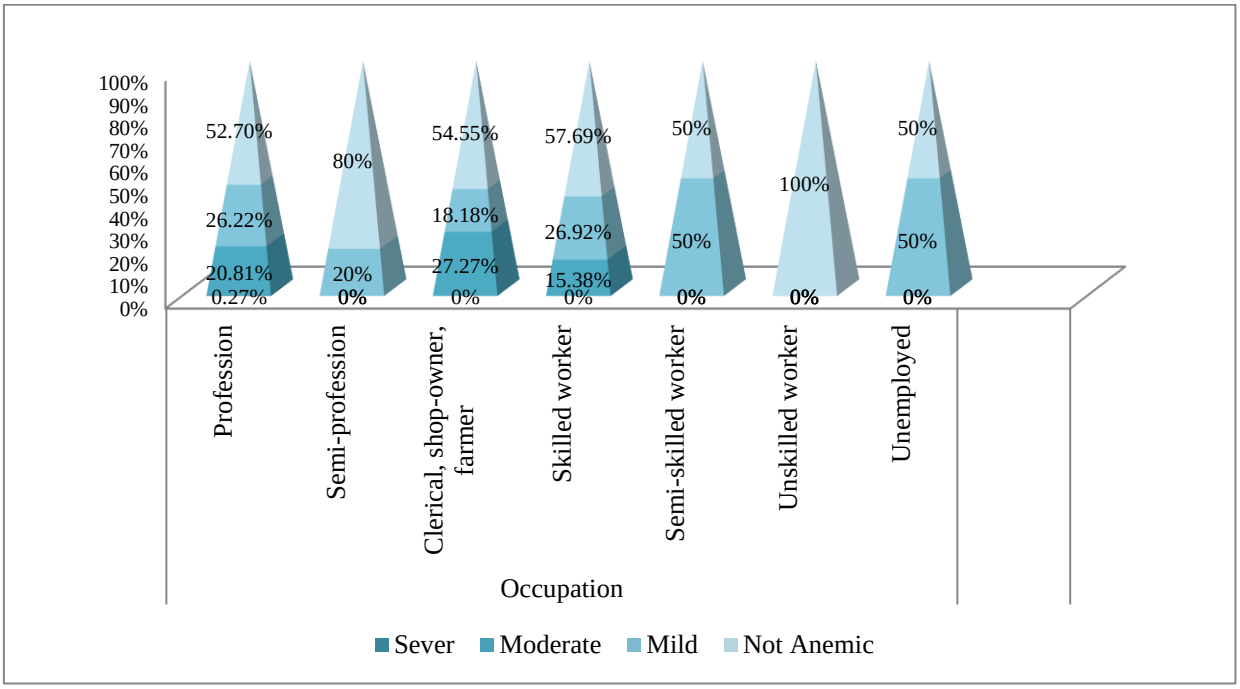

Figure-4 Association of grades of anemia with occupation

The results show that respondents who were engaged in profession such as business, working for long hours in private sectors, working in hospitals and banks were suffering from moderate and mild anemia (n=174). Anemia was found to be significantly associated with type of occupation of the respondents. ($p<0.001$). Women who were employed have a busy schedule and lack time for self-care, as, the respondents reported skipping of meals due to busy schedule and lack of time. Such skipping of meals leads to poor dietary intake by the respondents which may be a reason for high prevalence of anemia among them.

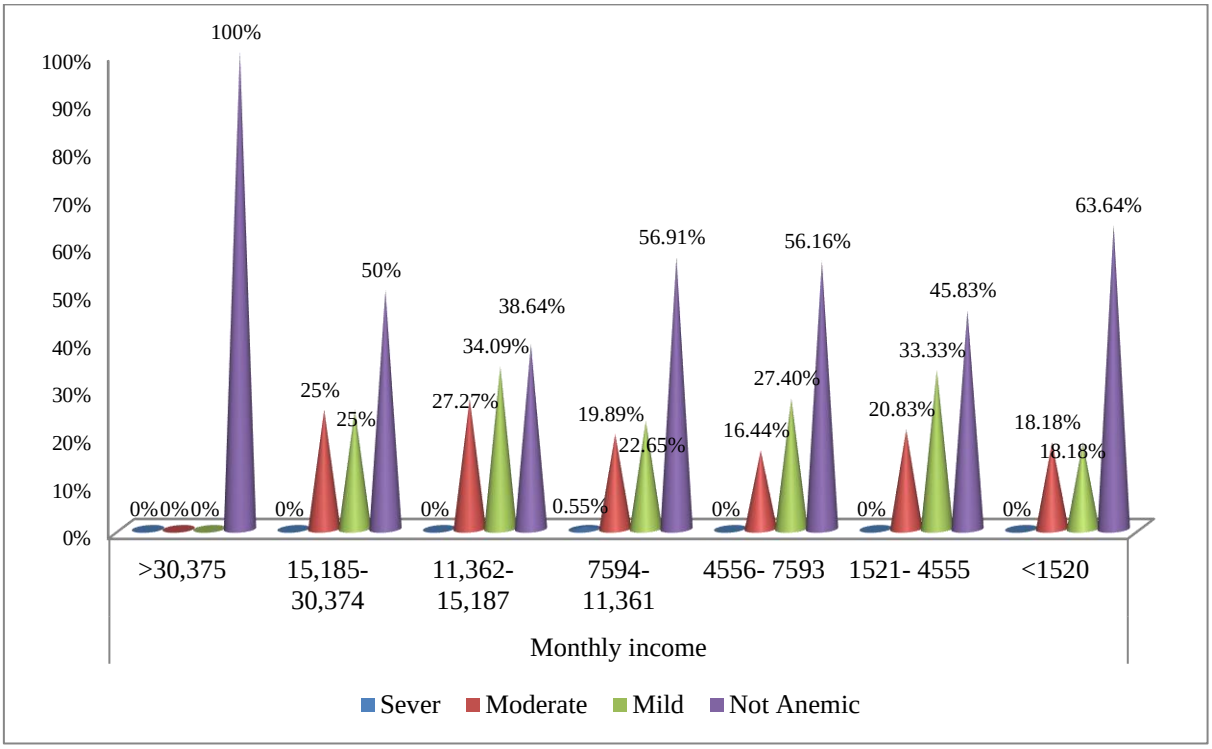

Figure -5 Association of grades of anemia with monthly income

Maximum number of the respondents having income <7594 per month either had mild or moderate anemia. It was interesting to note that respondents having income >30,375 were not found anemic. Suggesting that higher income group have less severity of anemia as compared to low income group, this difference is because of the fact that income influences the purchasing power of the individual. The availability, affordability and accessibility of goods and services are difficult for people belonging to low income group hence affecting their nutritional status. Also in the present study maximum number of respondents was living in joint families and reported that it becomes difficult for them to meet the needs of entire family with such low income hence any special food item is not bought for the pregnant lady. This could be a reason for prevalence of anemia due to poor purchasing power. The grades of anemia were found to be significantly associated with income ($p<0.001$).

Dietary Intake

The nutrient intake recorded by using 24 hour dietary recall method shows that the mean energy intake of pregnant women was 1732.74 kcal/day and the mean protein was 54.21g/day and the percentage of RDA met was 77.01% and 65.95% respectively.

The mean iron intake of pregnant women was 54.21mg/day and the percentage of RDA met was 45.83%. The reason may be consuming a vegetarian diet and not including sufficient iron rich food. Some of the respondents also consumed tea along with some meals which also hinders the absorption of iron. However the iron requirement was being met by the iron supplements provided to them by the hospitals which the respondents were consuming on daily basis. The finding of the

present study is similar to the study conducted by Singh (2009) in which iron deficiency was found to be 36.3% and in a study conducted by Pathak *et al* (2004) the iron and folic acid consumption was 50% less than the RDA. The mean folate intake of pregnant women was 386.51µg/day and the percentage of RDA met was 77.3%. The folate intake of the respondent was found significantly deficient as compared to RDA.

It is very essential to consume a healthy diet during pregnancy in order to meet the need of the mother and the growing foetus. In the present study the dietary intake of iron by the respondents was found to be less than the recommended. This is one of the reasons for the prevalence of anemia among the respondents. Hence proper guidance and counseling regarding the importance of maintaining a good nutritional status and how to prevent anemia is becomes very crucial.

CONCLUSION

Iron Deficiency Anaemia (IDA) during pregnancy is one the most common nutritional deficiency observed which adversely affect the health of the mother and of the growing foetus. Hence due considerations should be given to this issue. In the present study the haemoglobin assessment of the respondents showed that nearly half of the respondents (45.95%) were suffering from mild and moderate anaemia, this may be due to the reason that majority were consuming vegetarian diet contributing to low dietary iron as compared to non- vegetarian diet which has more dietary iron. Another reason could be avoiding certain nutritious food due to taboos that prevail in Indian society regarding the consumption of certain food item during pregnancy. Therefore efforts must be initiated for adopting specific interventional measures with regard to nutritional education, special diets, regular monitoring of the haemoglobin levels and anaemia prophylaxis program to reduce the prevalence of anaemia.

There are many factors that affect the prevalence of anaemia. In the present study also it was seen that the socio economic status, education, occupation and monthly income were found to be significantly associated with grades of anaemia. Certain unfavorable demographic factors act as barriers to the essential steps and measures taken to combat and prevent anemia. Not merely educating the women will solve this problem but in fact the overall literary and education of the family members will surely solve this problem. The type of occupation also affects the food consumption pattern; many respondents reported the skipping of meals due to busy schedule. Similarly the knowledge and purchasing power also affect the consumption of a healthy and nutritious diet. The literacy level of both the husband and wife plays an important role towards the reception of information and advice given by the health care workers. Hence, it could be said that the knowledge of how sociodemographic factors are associated with the prevalence of anemia during pregnancy can be used to plan a multipronged strategy to solve this serious health problem affecting pregnant women.

Dietary intake data indicated poor nutritional intake by the pregnant women possibly due to poor purchasing power or lack of knowledge regarding the consumption of healthy diet. Overall there seems to be a need of strengthening nutritional education in order to improve the nutritional and health status of pregnant women. Improvement in maternal nutrition both diet and nutritional supplements during pregnancy is essential for ensuring the optimum growth of the foetus and health of the mother. The primary health care workers who are the backbone of the health care

system and also the very first contact for pregnant women play a very important role in the identification and management of anemia. They should provide all the necessary information regarding the causes and prevention of anemia to the patients.

In order to prevent the increasing prevalence of anemia certain measures to combat the problem should be implemented. Not only pregnant women but also lactating mothers and adolescent girls must be provided with all the necessary nutrition and health education regarding diet, supplements, how to manage daily routine , medical check-ups and vaccination by the health workers and other stake holders in order to promote optimum nutrition and health status.

Suggestions for future research

The study will improve the understanding and provide data on prevalence of anemia during pregnancy amongst pregnant women. Further, the study has highlighted the role and importance of demographic factors contributing to Anemia amongst pregnant women. The results of the study has provided a useful strategy and scientific background data for the association between anemia and various socio demographic factors for those researchers who further want to explore this area.

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DEVELOPMENT OF NUTRITIVE COOKIES USING *DILLENIA INDICA* (Elephant apple) AND *SYZYGIUM CUMINI* (Black plum)

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ABSTRACT

Cookies are accepted and ingested by almost every age group and thus serve as efficient vehicles for nutritional improvement. Chickpea flour, *Dillenia indica* and *Syzygium cumini*, used in the preparation of the cookies are very nutritive components. The objective of the study was to develop nutritive cookies using *Dillenia indica* and jamun, to evaluate them for their sensory attributes, nutritional components and to conduct storage study of the cookies for a period of one month. It was found that the formulation containing equal amounts of wheat flour and chickpea flour was the most preferred formulation. The sample showed a decent antioxidant property. Also, some phytochemicals were present in the sample. The cookies were intact in their sensory characteristics for a period of one month when stored in air-tight glass and plastic containers. The addition of powders obtained from *Dillenia indica* and seeds of jamun resulted in a significant increase in the phytochemical content of the cookies. The formulated cookies will be a healthy snack alternative for various sections of society. Thus, it can be concluded that the partial substitution of wheat flour with chickpea flour and the powders obtained from the above-mentioned plants can improve the nutritional quality of the cookies without altering their sensory attributes. Also, the potential of these easily accessible sources of natural antioxidants should be explored by the pharmaceutical, medical, and health food industries.

Keywords: Cookies, Nutrition, *Dillenia indica*, *Syzygium cumini*, Chickpea, Alternative snacks

INTRODUCTION

Among all the available bakery products, cookies represent the largest category of ready-to-eat snacks. Cookies may be defined as nutritive snacks produced from the unpalatable dough by its transformation into an appetizing product, by applying heat in an oven [Anozie *et al.*, 2014]. They are a convenient and inexpensive food source, in addition to being ready-to-eat sources. Cookies contain important nutrients such as iron, calcium, proteins, calorie, fiber, and certain vitamins. India ranks second in the manufacture of cookies products, after the USA. About 70% of the bakery industry is ruled by cookies and biscuits, making them India's largest consumer product segment, worth Rs 35,000 crore, as reported by The Economic Times.

In the present times, cookies are consumed by almost every age group and also by all the consumer profiles in almost every country: hence, they serve as an efficient supplementation vehicle for nutritional improvement [Arshad *et al.*, 2007]. However, the close association of wheat consumption to certain health problems such as Celiac disease, makes the utilization of composite flour pertinent in the manufacture of cookies [Kiin-Kabari & Giami, 2015]. Enrichment of cookies through the incorporation of non-wheat flour would serve as an appropriate means for the

improvement of nutritional quality [Okafor *et al.*, 2002]. In recent times, many studies have been done on the preparation and quality assessment of cookies and biscuits from composite flour, some of which include rice-chickpea composite flour, rice-soy bean isolate blends, date fruit pulp, toasted watermelon seeds, and wheat flour composite, etc. [Hamdani *et al.*, 2020] [Ogunbusola *et al.*, 2020]. To enhance the nutritional quality of cookies, composite flour was made using chickpea and wheat in different proportions and fruits such as *Dillenia indica*, commonly known as elephant apple, and the seeds of jamun were incorporated into the cookies.

Despite their immense dietary potential, indigenous plants are either under-exploited or unexploited, *Dillenia indica* being one such plant of North-east India. *Dillenia indica* is a species native to China and tropical Asia. It is an evergreen large shrub or small to a medium-sized semi-deciduous tree, growing to 15m tall. Elephant apple belongs to the family Dilleniaceae. This plant is widely used as an herb by various tribes of North East India, along with Assam.

Dillenia indica is found to have very good therapeutic values in a number of diseases. Almost every part of the plant is used traditionally in the cure of ailments and diseases. Traditionally, the jelly-like content inside the fruit was used to treat dandruff and falling hair [Talukdar *et al.*, 2012]. *Dillenia indica* has proven effective in treating the foremost aspects of diabetes including hyperglycemia and hyperlipidemia. The presence of phenolic compounds in the methanolic extract of the fruit has been confirmed by phytochemical analysis [Gogoi *et al.*,2012].

Syzygium cumini is commonly called black plum or jamun. It belongs to the family Myrtaceae. All parts of the tree are used to treat a wide range of ailments, the most important being diabetes mellitus. *Jamun* is commonly used as an anti-diarrhoeal, digestive, astringent, and an anti-bacterial drug in the Unani system of medicine. The bark of the plant mainly contains carbohydrates and tannins and has been used to treat dysentery. The seeds of jamun have been reported to show anti-inflammatory effects in rat and antioxidant properties in diabetes [Chaudhuri *et al.*, 1990]. Jamboline, a glycoside present in the jamun seed, is considered to have anti-diabetic properties. The ethanolic extract of Jamun seed kernel was found to be effective in lowering the increased oxidative stress involved in pathogenesis and progression of diabetic tissue damage. The alcoholic extract of seeds has been reported to lower the lipid in serum and tissues in alloxan diabetic rats [Sharma *et al.*, 2003].

JUSTIFICATION

Cookies are a class of eatables that are eaten by people of all age groups, starting from children to the aged. Fruits such as *Dillenia indica* (elephant apple) and Jamun are seen to have various nutritive properties. These fruits, if included in the diet, help to relieve a number of health issues, including diabetes. Keeping in view the various nutritive properties of *Dillenia indica* and Jamun, cookies were supplemented with the powders extracted from parts of the mentioned plants, for the topic entitled "**Development of nutritive cookies using *Dillenia indica* and *Syzygium cumini***" with the following objectives:

OBJECTIVES

- To develop nutritive cookies using *Dillenia indica* and *Syzygium cumini.*
- To evaluate the sensory attributes of the product.

- To evaluate the phytochemical properties of the product.
- To study the shelf life of the developed cookies by using different packaging materials.

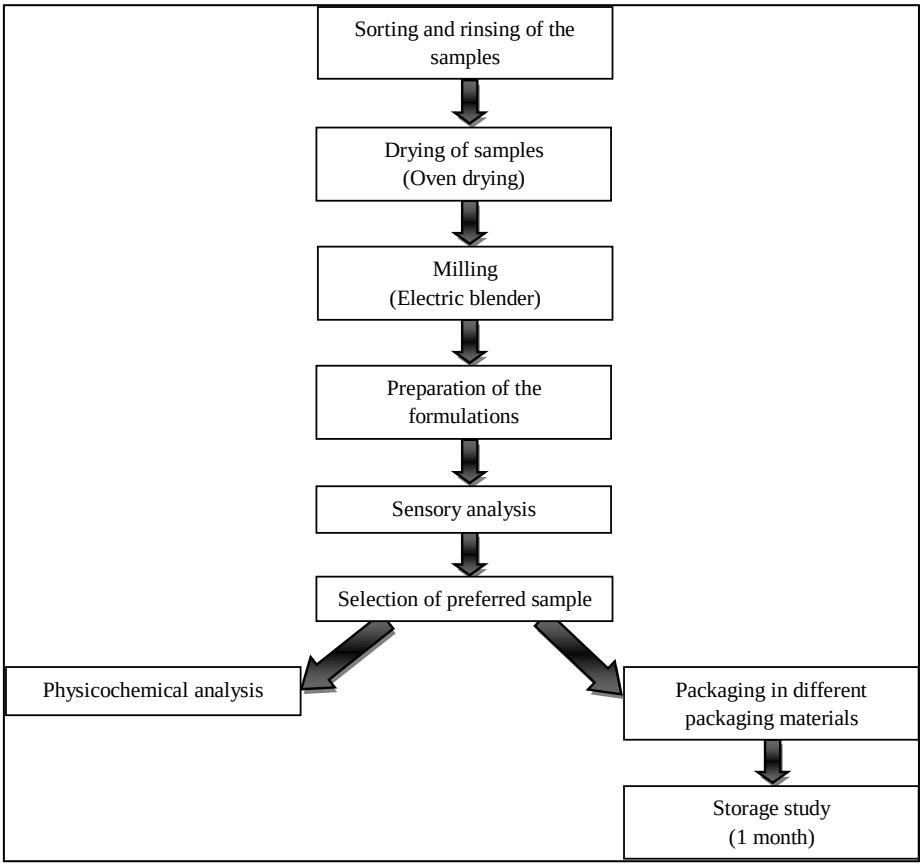
HYPOTHESIS

Development and consumption of nutritive cookies will help to improve the nutritional status of a targeted population, i.e., the general population as well as consumers with health issues such as diabetes.

METHODOLOGY

The study was carried out in the laboratory of Department of Food, Nutrition and Dietetics, Assam Downtown University. The raw materials required for the preparation of cookies were procured from the local markets of Guwahati, thoroughly washed and processed. Table 1 shows the process flowchart for sample processing and preparation.

Table 1: Process Flowchart of Sample Preparation and Processing



Three cookie samples were formulated and standardized taking the control composition as shown in **Table 2**.

Table 2: Composition of the control

CONTROL				
INGREDIENTS USED	REFINED FLOUR	SUGAR	PEANUT BUTTER	RICE BRAN OIL
QUANTITY(in grams/ml)	100	30	25	25

Figure 1 indicates graphically, the composition of the control cookie.

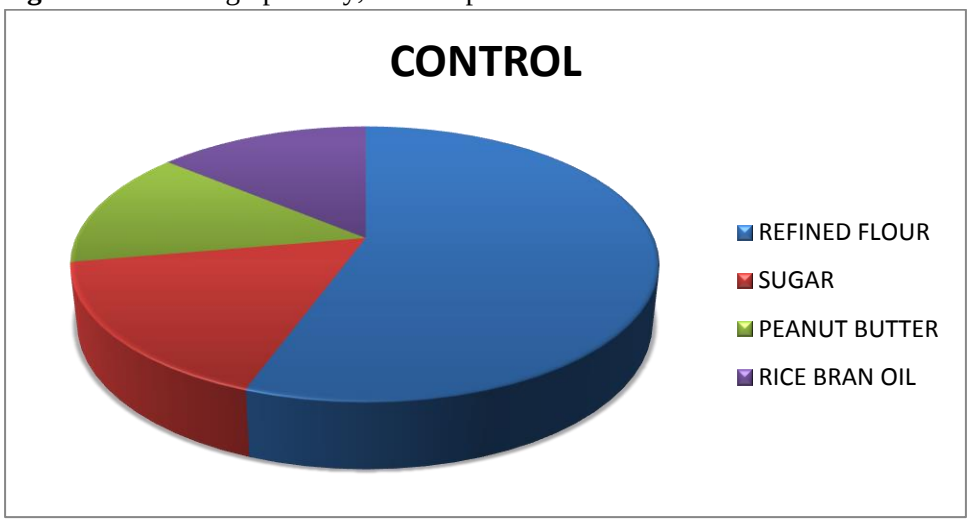


Figure 1: Pie Diagram Showing the Composition of Control Cookie

Taking the standardized cookie, the three variations - F_1, F_2 and F_3 were developed as follows-

F_1: In F_1, an equal proportion, i.e., 40 grams each of chickpea powder (Sattu) and whole wheat flour were used, along with 10 grams each of elephant apple powder and jamun seed powder. In addition to these raw materials, 25 grams of butter, 25 ml of rice bran oil, 30 grams of sugar and 7 ml of milk was used.

F_2: In F_2, 80 grams of whole wheat flour was used, along with 10 grams each of elephant apple powder and jamun seed powder. In addition to these raw materials, 25 grams of butter, 25 ml of rice bran oil, 30 grams of sugar and 5 ml of milk was used.

F_3: In F_3, 80 grams of chickpea powder was used, along with 10 grams each of elephant apple powder and jamun seed powder. In addition to these raw materials, 25 grams of butter, 25 ml of rice bran oil, 30 grams of sugar and 10 ml of milk was used.

Table 3 shows the formulation of the variations.

Table 3: Formulation of the variations

FORMULATIONS	INGREDIENTS USED (in gms)				ADDITIONAL INGREDIENTS			
	SATTU	WHEAT FLOUR	ELEPHANT APPLE POWDER	JAMUN SEED POWDER	BUTTER (g)	RICE BRAN OIL (ml)	SUGAR (g)	MILK (ml)
F_1	40	40	10	10	25	25	30	7
F_2	0	80	10	10	25	25	30	5
F_3	80	0	10	10	25	25	30	10

Figures 2, 3 and **4** show graphical representation of the composition of the cookie variations prepared.

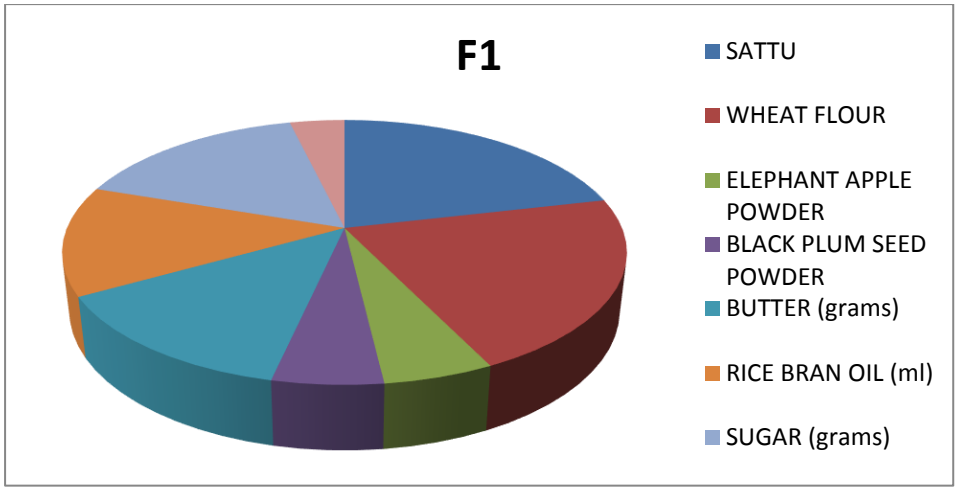


Figure 2: Pie diagram showing the composition of F_1

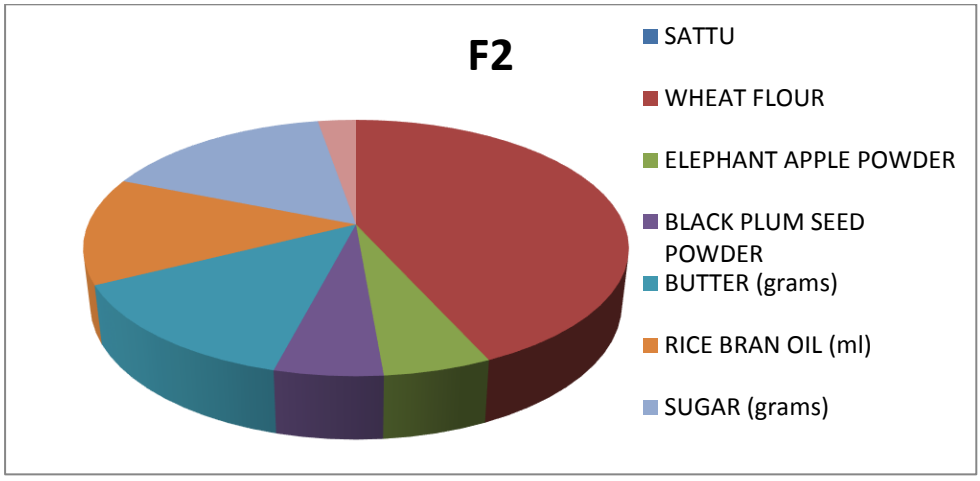


Figure 3: Pie diagram showing the composition of F_2

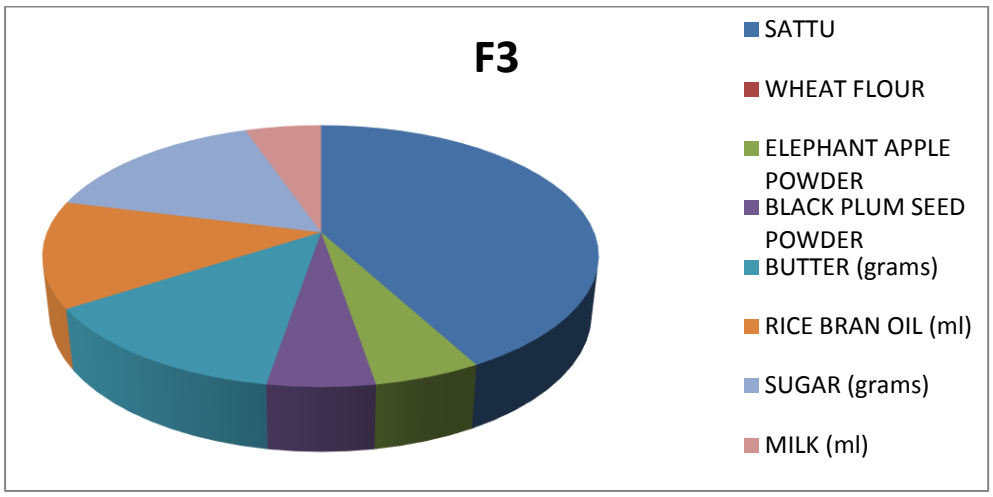


Figure 4: Pie diagram showing the composition of F_3

After formulating the cookies, sensory evaluation of the cookie samples was performed by 30 semi-trained panelists of the age group 20-40, from the Department of FND, Assam Downtown University, using a standard nine-point Hedonic scale, shown in **Table 4**.

Table 4: Standard 9 point Hedonic Scale

Liked extremely	9
Liked very much	8
Liked moderately	7
Like slightly	6
Neither like nor dislike	5
Dislike slightly	4
Dislike moderately	3
Dislike very much	2
Dislike extremely	1

The food samples were prepared in identical sample containers and each sample was presented with a different number. The randomized order of the sample was presented once at a time to each panelist. Panelists were asked to evaluate the coded samples for each sensorial parameter including colour, appearance, taste, texture, flavour and overall acceptance based on their degree of liking. A sample sensory evaluation sheet is shown in **Table 5**.

Table 5: Sensory Evaluation Sheet

DEPARTMENT OF FOOD, NUTRITION AND DIETETICS
ASSAM DOWNTOWN UNIVERSITY
SENSORY EVALUATION SHEET

NAME: DATE:
TIME:

PRODUCT:

You are provided with a sample/samples. Please evaluate the sample for acceptability and allot a score from the Hedonic scale as below:

Liked Extremely: 9

Liked Very much: 8

Liked Moderately: 7

Liked Slightly: 6

Neither Liked nor Disliked: 5

Disliked Slightly: 4

Disliked Moderately: 3

Disliked Very much: 2

Disliked Extremely: 1

PRODUCT	COLOUR	APPEARANCE	TASTE	TEXTURE	FLAVOUR	OVERALL ACCEPTABILITY
1						
2						
3						

REMARKS:

SIGNATURE:

From the results of the acceptance test, one sample was selected for physicochemical analysis. The selected cookie sample was checked for various physicochemical properties, as will be stated ahead. All the data of the chemical analysis and sensory evaluation were statistically analyzed.

Antioxidant profiling:

The sample with the highest acceptance score was evaluated to check its antioxidant capacity. 3 grams of selected powdered sample was measured and mixed with 50 ml methanol. Solvent from the extracted mixture are evaporated to dryness using a rotary evaporator under reduced pressure at 40℃. All dried extracts were then kept in tightly fitted cork bottles and stored at -4℃. The DPPH scavenging activity of the sample was evaluated according to the method of Blois, with slight modifications. A 0.1 mM solution of DPPH in methanol was prepared. In a clear 96 well plate, 100µl of sample in various concentration (1-100µg/ml) and 100µl methanol/water was transferred and then 200µl of 0.1 mM DPPH in methanol solution was added. The reaction mixture was incubated for 30 minutes in the dark at room temperature. The absorbance of each 96 well was measured at 517nm in Thermo Multiskan reader. Ascorbic acid was employed as the reference.

Calculation:

$$DPPH\ scavenging(\%) = \frac{A_{con} - A_{test}}{A_{con}} \times 100$$

where,

A_{con} – Absorbance of the control

A_{test} – Absorbance in the presence of sample

Reference: -Blois MS Antioxidant determinations by the use of a state free radical, Nature. 1958, 29: 1199_1200

Preliminary phytochemical screening:

The selected sample was subjected to phytochemical tests for plant alkaloids, saponins, phenolics, flavonoids and tannins in accordance with standard methodology.

Test methodology:

1. Alkaloids

   1 ml aqueous extract of the sample was prepared, stirred and placed in 1% aqueous hydrochloric acid on a steam bath. 1 ml of the filtrate was then treated with Dragendorff's reagent. Turbidity or orange/orange-red precipitate with this reagent served as evidence for the presence of alkaloids.

2. Saponins

   5 ml of the aqueous extract was vigorously shaken with 10ml of distilled water for about 2 minutes. Appearance of foam and its persistence for 10 minutes indicated the presence of saponins.

3. Phenolics

   An aqueous solution of the extract is prepared and 3-4 drops of ferric chloride solution are added to it. The development of bluish black colouration indicated presence of phenols.

4. Flavonoids

   An aqueous solution of the extract is prepared and treated with 10% ammonium hydroxide solution. Yellow fluorescence indicated the presence of flavonoids.

5. Tannins

   0.5 gram of the powdered sample was weighed and 20ml of distilled water was added to it. The mixture was boiled for about five minutes. A few drops of 0.1% of ferric chloride were then added to it. The solution was observed for brownish green colouration, which indicated presence of tannins.

Total Phenolic Content estimation:

The total phenolic content in the sample was calculated using the Folin-Ciocalteu test, as proposed by Ainsworth and Gillespie, 2007. Different concentrations of gallic acid in methanol, ranging from 125 µg/ml to 1000 µg/ml, were prepared by dissolving in methanol. The sample (1000 µg/ml) under investigation was prepared in methanol. 2 ml of Folin-Ciocalteu reagent (1:10 in de-ionized water) was added to 0.5 ml of test sample/ different concentrations of Gallic acid. Sodium carbonate solution (4 ml) was also added to all the solutions. The solutions were incubated at room temperature for 30 minutes with intermittent shaking. The absorbance of all the solutions was noticed at 765 nm, keeping methanol as blank. The standard curve for Gallic acid concentrations was prepared and the line of regression was found. The absorbance noticed for the test sample was put in the line of regression of standard curve obtained for gallic acid. Total phenolic content in the test sample was thus calculated and expressed as mg/gm or µg/mg gallic acid equivalent.

Storage studies

Shelf life is defined as the time it takes for a product to decline to an unacceptable level of consumption. The cookie samples were stored in different packaging materials, i.e., glass and plastic, at room temperature for studying their shelf life for a period of one month. Over a period of a month, the cookie samples were checked to see which packaging materials best preserved the samples. In order to maintain proper hygiene and sanitation, the samples were packed in air-tight containers for their storage.

Statistical analysis

All the data of the chemical analysis and sensory evaluation were statistically analyzed. The methods applied for the statistical analysis of the recorded data are given below:

1. Mean

Mean is the sum of all observation ($\sum x_i$) divided by the number of observation (N).

2. Standard deviation

Standard deviation is the positive square root of the arithmetic mean of the square of deviation of the given values from arithmetic mean. It measures the average spread around the mean and therefore gives a sense of the ‘typical’ distance from the mean.

RESULTS

Table 6 includes the mean scores for the six sensory attributes i.e., colour, taste, flavour, texture, appearance and overall acceptability.

Table 6: Mean Organoleptic Scores for Cookies' Sensory Attributes

Sample	Colour	Taste	Flavour	Texture	Appearance	Overall Acceptability
F_1	7.87±0.90	7.6±0.72	7.87±0.63	7.83±0.69	7.67±0.67	7.87±0.90
F_2	7.6±0.56	7.5±0.51	7.5±0.51	7.47±0.63	7.73±0.58	7.6±0.56
F_3	7.3±0.75	7.53±1.04	7.77±0.73	7.77±0.68	7.47±0.90	7.3±0.75

Antioxidant capacity of the extract was evaluated using ascorbic acid as the reference, by employing the method of DPPH. The selected sample exhibited significant DPPH radical inhibition. The IC50 value obtained for the methanolic extract of the sample was 2.607±0.03 µg/ml (**Table 7 and Figure 5**) and its scavenging effect was compared with standard ascorbic acid with IC50 8.020±0.099 µg/ml (**Table 8 and Figure 6**).The results thus confirm the antioxidant activity of the selected cookie sample.

Table 7: % inhibition and IC50 by the methanolic extract of the selected cookie sample by DPPH

Sl. No.	Concentration (µg/ml)	% inhibition	IC50	SD
1	0.3125	25.87106	2.607206	0.031063
2	0.625	31.13902		
3	1.25	40.33755		
4	2.5	49.92801		
5	5	71.10062		

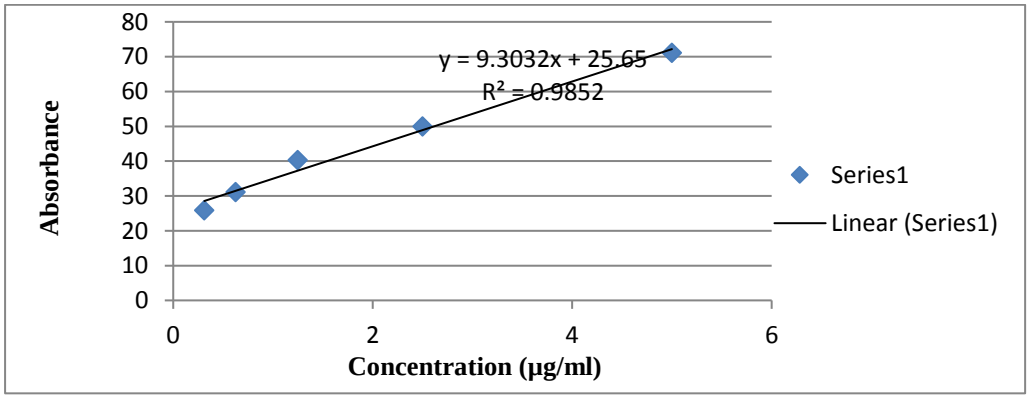


Figure 5: Regression curve of methanolic extract of the selected cookie sample by DPPH assay method

Table 8: % inhibition and IC50 by ascorbic acid by DPPH

Sl. No.	Concentration (µg/ml)	% inhibition	IC50	SD
1	1	16.63734	8.020391	0.099011
2	2	20.49272		
3	4	30.22716		
4	6	35.92225		
5	8	50.71189		

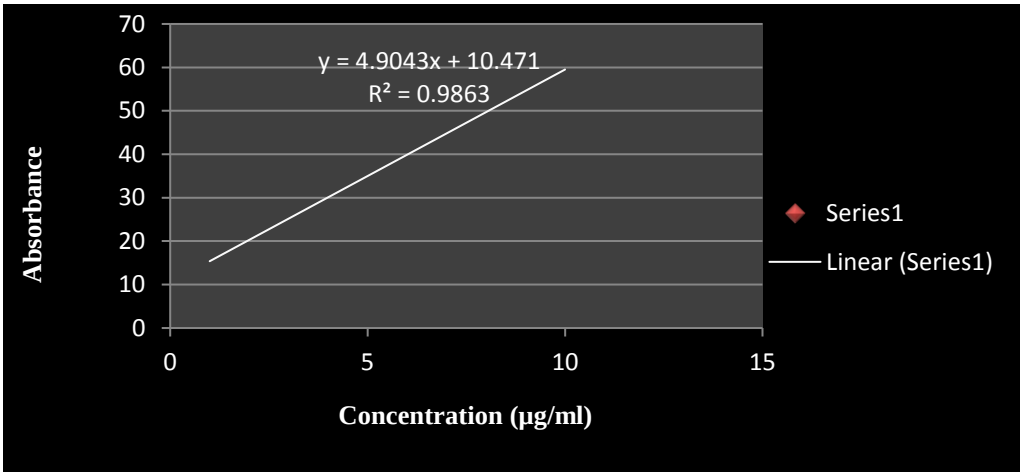


Figure 6: Regression curve of Ascorbic acid by DPPH assay method.

Table 9 shows the phytochemicals present in the selected cookie sample. The tests revealed the presence of alkaloids, saponins, phenols and flavonoids in the cookie sample.

Table 9: Table showing the presence or absence of phytochemicals

Sl. No.	Phytochemical	Presence
1.	Alkaloids	+
2.	Saponins	+
3.	Phenols	+
4.	Tannins	-
5.	Flavonoids	+

Table 10 indicates the total phenolic content in the methanolic extract of the selected cookie sample. The absorbance of each concentration of gallic acid at 765 nm was recorded (due to developed blue colour) using methanol as blank, in order to draw a standard curve. The total phenolic content in the sample was found to be 8.355±0.41 µg/1000 µg gallic acid equivalent.

Table 10: Total Phenolic Content in methanolic extract of the selected product

Sl. No.	Absorbance	Concentration(µg/ml)	Total Phenolic Content in µg/1000 µg GAE
1	0.0903	1000	8.31148
2	0.0882		7.96721
3	0.0932		8.78689
Mean	0.09057		8.35519
S.D.	0.00251		0.41158

Table 11 and **Figure 7** indicate the mean organoleptic scores of the cookie variations stored in plastic containers. **Table 12** and **Figure 8** indicate the mean organoleptic scores of the cookie variations stored in glass containers. It was thus observed that the sample F_1 was the most preferred cookie among all the three formulations. Also, all the cookie variations were minimally affected over the storage for one month. It was also found that the cookie samples in glass containers received better scores than those in plastic containers.

Table 11: Mean organoleptic scores of the cookie variations stored in plastic containers

PLASTIC CONTAINERS						
SAMPLE	**MEAN SCORES**					
	COLOUR	**APPEARANCE**	**TASTE**	**TEXTURE**	**FLAVOUR**	**OVERALL ACCEPTABILITY**
F_1	7.73±1.17	7.9±0.80	7.4±1.07	7.53±1.07	7.53±0.97	7.63±0.81
F_2	7.8±0.92	7.67±0.88	7.7±0.99	7.33±0.96	7.4±0.97	7.57±0.73
F_3	7.73±0.98	7.6±0.81	7.17±1.05	7.2±1.03	7.33±1.06	7.4±0.77

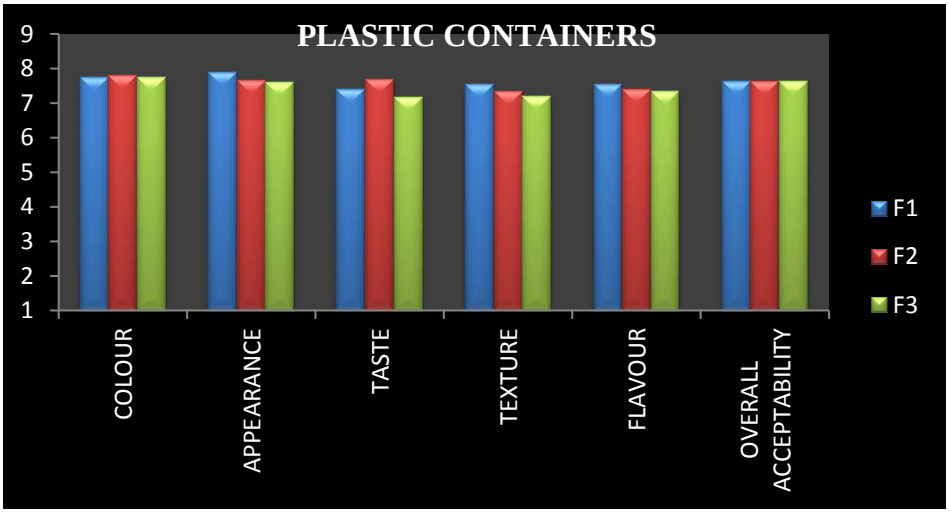


Figure 7: Graph showing panelists scores of acceptance test for the sensory attributes of cookies stored in plastic containers

Table 12: Mean organoleptic scores of the cookie variations stored in glass containers

GLASS CONTAINERS						
SAMPLE	MEAN SCORES					
	COLOUR	APPEARANCE	TASTE	TEXTURE	FLAVOUR	OVERALL ACCEPTABILITY
F_1	8.03±0.89	8.17±0.83	7.52±0.97	7.83±1.08	7.67±0.99	7.87±0.86
F_2	7.9±0.92	7.83±0.79	7.38±0.81	7.27±0.94	7.17±0.91	7.6±0.86
F_3	7.9±0.83	7.4±0.77	7.07±1.20	7.23±0.97	7.43±1.25	7.7±0.99

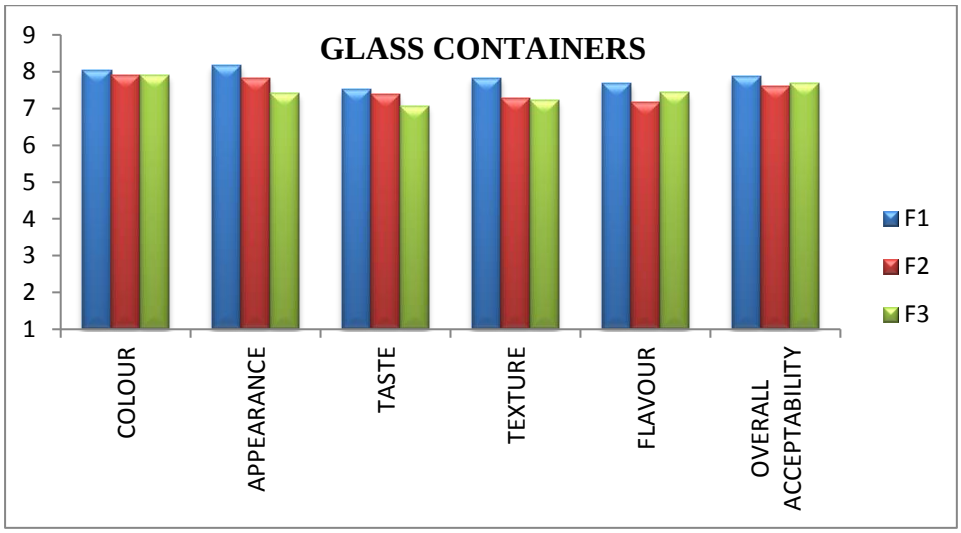


Figure 8: Graph showing panelists scores of acceptance test for the sensory attributes of cookies stored in glass containers

DISCUSSION

The results obtained for the sensory attributes of the samples reveal that the sample with the code F_1 has the most preferred qualities out of all the samples. The desired colour of biscuits is obtained mainly due to the maillard browning during baking. Also, the difference in the attributes of the cookies was due to the composition difference of wheat flour and sattu used in different proportions in the variations. A similar result was obtained in another study [Nath *et al.*, 2017]. The scores for the appearance of the cookies show that panelists preferred the appearance of the sample coded F_2. The appearance of the F_2 sample may be attributed to the high foam capacity and foam stability of the chickpea flour.

The sample has a decent antioxidant capacity, which can be attributed to the presence of phenols and other phytochemicals. Jamun can be used as a potential ingredient to enrich and improve the anti-oxidant status of snacks [Kapoor *et al.*, 2020]. The presence of the phytochemicals in the sample may be attributed to the quality content of the ingredients used.

The intact crispness of the cookies is due to the airtight property of the containers. The scores of cookies stored in glass containers suggest that the cookies in the glass containers were less affected

by the environmental factors such as moisture. This may be due to the thickness and non-porous nature of the glass containers. A similar result was obtained during the evaluation of quality changes in extruded snacks during storage. Another study on the effect of containers during suggests the use of glass containers over plastic containers for storage [Wani & Kumar, 2016] [Gargouri *et al.*, 2015].

CONCLUSION

The study revealed that the partial substitution of wheat flour with chickpea flour and the powders obtained from *Dillenia indica* and seeds of Jamun can improve the nutritional quality of the cookies, without altering their sensory attributes. The cookies possess a decent amount of antioxidants and phytochemicals. Also, the potential of these easily accessible sources of natural antioxidants, i.e., *Dillenia indica* and *Jamun* should be explored by the pharmaceutical, medical and health food industries. The formulated cookies will be a healthy snack alternative for various sections of the society.

IMPLICATIONS

The present study revealed that the formulated cookies have a decent antioxidant capacity. They also received good scores for their sensory evaluation, showing their acceptability. Following are the recommendations for further research that can be conducted pertaining to this study:-

1. Further studies can be conducted to analyse the antioxidant profile of the developed cookies.
2. The cookies can be further evaluated for the phytochemical profile and content.
3. The developed cookies can be evaluated for their effectiveness in keeping certain health issues under control.
4. Commercialization of the cookies can be done.

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STUDY ON THE FORMULATION AND ORGANOLEPTIC EVALUATION OF MICROGREEN SALADS

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ABSTRACT

The Micro greens are younger and tender edible seedlings produced using the seeds of different species of vegetables, herbaceous plants, aromatic herbs and even wild edible plants. Based on the micro green species that has been used, they can be harvested from 7-21 days after germination when the cotyledonary leaves have fully developed and the first true leaves have emerged. They are also rich in phytochemicals like vitamin C, vitamin B9, and vitamin K1 .They help in reducing the risk of heart diseases, Alzheimer's disease, diabetes and certain cancers. Though the microgreens are packed with nutrients, they are not so common in our country mainly towards southern part of India. Introduction of these greens will be remarkable advantage in our diets. Therefore an initiative was taken to incorporate the microgreens into salads that make the nutrients more available to body. The microgreens which were selected were grown and an initiative was done to incorporate the micro greens to diet through incorporating micro greens in salad preparations.

Keywords: Microgreens, Nutrition, Incorporate, Salads, Diet

INTRODUCTION

Depending on the microgreen species that has been used, they can be harvested 7-21 days after germination when the cotyledonary leaves have fully developed and the first true leaves have emerged. Microgreens have a good content of minerals. They represent a good source of potassium and calcium. They are also characterized by a high content of nitrates which are considered anti-nutritional factors **(Xiao et al, 2014)**. Microgreens contain higher amounts of important phytonutrients (ascorbic acid, β-carotene, α-tocopherol, and phylloquinone) and minerals (Ca, Mg, Fe, Mn, Zn, Se, and Mo) and lower nitrates **(Pinto et al, 2015)**. The fully matured Microgreens are collected by cutting the single seedlings above the soil line when their height is 3 to 9 cm without the rootlets. The eatable portion is composed of single stem, the cotyledonary leaves and, often, by the emerging first true leaves. In some cases, when small and tender, also the integuments of the seeds that remain attached to the cotyledons may be considered edible. Even though its size is so small, microgreens, also known as "vegetable confetti" or "microherbs" refers to aromatic herbs, can provide a wide variety of intense flavours, bright colours and a good texture; therefore, they may be proposed as a new ingredient to enhance and garnish drinks, salads, appetizers, main and second courses, soups, sandwiches and dessert **(Treadwell et al, 2010)**.

Though the microgreens are packed with nutrients, they are not so common in our country mainly towards southern part of India. Not much research in this area has fruitful results to modify the behavior of community to accept microgreens as common vegetable greens. Introduction of these greens will be remarkable advantage in our diets. Therefore, the study focuses on the incorporation of the cultivated selected microgreens in salads and aims to formulation of salads with selected microgreens and conduct organoleptic evaluation of the formulated salads.

OBJECTIVES

The proposed objectives are as follows:

- To select varieties of microgreens that are suitable for growth in tropical climate.
- To formulate microgreen incorporated salads using the selected varieties of cultivated microgreens.
- To evaluate the macronutrient and micronutrient analysis of the prepared microgreen salads.
- To analyze the organoleptic criteria of prepared microgreen salads

METHODOLOGY

The study is discussed under the following headings:

a. Selection of samples
b. Cultivation of Microgreens
c. Development of Microgreen Salads
d. Organoleptic Evaluation of the Developed Salads
e. Analysis of the Nutritional Adequacy of the Microgreen Salads

a. Selection of sample

The Microgreens were purchased from online shopping sites. The microgreen seeds selected were from three different families. The microgreens which were selected were based on their adaptability to grow in tropical climate. The final selection of the seeds for the making of the salads was decided based on the easy availability of the seeds and its easy growth. The samples selected were then cultivated and further been used for salads. The Six micro green seeds which were purchased from online shopping site were 1.Red cabbage 2. Radish ,3.Celery, 4.Coriander and 5.Amaranthus . 6. Arugula

b. Cultivation of Microgreens

The selected microgreens which were suitable for the growth in tropical climate were purchased .These Microgreens were cultivated and used for salad preparation.

Cultivation of microgreens can be discussed under different steps:

a. Making of the trays: take trays measuring 29×24×6cm for sowing seeds. Sprinkle some water and spread out the coco peat evenly up to a height of 3cm.
b. Sowing of seeds: transfer the entire seeds in the packet into a glass and spread the seeds over the peat by shaking the glass so that it falls evenly. Tap the seeds with a piece of thick paper so that the seeds come in contact with the peat.
c. Covering the tray: cover the tray with an aluminium foil and place the tray in a darker area for the first 4-5 days.
d. Watering the seeds: sprinkle water on the seeds, twice a day by removing the cover and then place the foil over the tray. Continue this for about 4-5 days and then remove the cover and place the tray in an area where it receives sunlight.

c. Development of Microgreen Salads

The cultivated microgreens (the cultivation procedures were discussed briefly in the above point) were then selected and planned to prepare vegetable salads. Coriander, Red cabbage, Radish, Celery, Arugula and Amaranthus were selected for the preparation of the salads.

d. Organoleptic Evaluation of the Developed Salads

The sensory evaluation were carried out to find the overall acceptability,taste,texture,colour and flavor .The six microgreens which were selected form online shopping sites were selected to adequately plan the preparation for salads.

e. Analysis of the Nutritional Adequacy of the Microgreen Salads

The nutritive value of the developed microgreen salads were computed for energy, protein, carbohydrates, fat, vitamin A, vitamin C, vitamin E, vitamin K, calcium and iron according to United States Department of Agriculture, Assessment Of Nutrient Concentrations, July 2013. Both micronutrient and macronutrient analysis of the salads were done and results were analyzed.

FINDINGS AND DISCUSSION

The findings of the study are discussed below:

a. Microgreens selected for salad preparation

b. Development of Microgreen Salads

c. Organoleptic Evaluation of the Developed Salads

d. Assessment of Nutritive Value of the Developed Microgreen Salads

a. Microgreens selected for salad preparation

The samples used for the study were selected according to the growth of the greens with respect to the climatic conditions suitable.

Table 1

Sl No	Common name
1	Red cabbage
2	Arugula
3	Radish
4	Celery
5	Coriander
6	Amaranth

The above table I depicts the microgreens which were selected for the cultivation and preparation of salads. Six microgreens were selected for the preparation of green salads. The selected microgreens were Red cabbage, Arugula, Radish, Celery, Coriander and Amaranthus.

b. Development of Microgreen Salads

Microgreen salads were developed with the grown varieties of microgreens. For the preparation, Vegetable salads were made with grown varieties of microgreens.

Table 2

Types of Salads	Salads Prepared
Vegetable salads	• Coriander arugula microgreen salads • Coriander celery pulses microgreen salad • Radish amaranth microgreen salad

The above table describes on the developed salads. The details are given below

Under veg-microgreen salads, three salads where made. The three salads differ in the method of preparation and the ingredients used.

1. Coriander microgreen salad

Ingredients:

- Coriander microgreens 60g
- Arugula 60g
- Chopped Onion 10g
- Chopped Cauliflower 10g
- Grated carrot 10g
- Chopped tomato10g
- Garlic dressing 2tsp
- Olive oil 2tsp
- Salt and pepper

Method of preparation

In a bowl, add chopped onion, cauliflower, tomato and grated carrot. To this add 2tsp of olive oil and garlic dressing. Mix with salt and pepper. Finally add coriander and arugula microgreens.

2. Coriander celery pulses microgreen salad

Ingredients

- Coriander microgreens 20g
- Celery microgreens 20g
- Red Cabbage 20g
- Green gram 5g
- Red gram 5g
- Bengal gram 5g
- Rajmah 5g
- Chopped onion and tomato 20g each
- Olive oil 2tsp
- Salt and Pepper
- Garlic dressing 2tsp

Method of preparation

In a bowl, add chopped onion and tomato. To this add boiled green gram, red gram, Bengal gram and rajmah. Mix well with olive oil, salt and pepper. To this add coriander, red cabbage and celery microgreens and finally add some garlic dressing.

3. **Radish amaranth microgreen salad**

Ingredients

- Radish microgreens 30g
- Amaranth microgreens 30g
- Boiled Bengal gram 5g
- Chopped Onion 10g
- Chopped Tomato 10g

- Garlic dressing 2tsp
- Boiled pasta 5g
- Olive oil 2tsp
- Salt and pepper

Method of preparation

In a bowl, add chopped onion and tomato. To this add boiled Bengal gram and pasta. Mix them with garlic dressing and olive oil. To this add a pinch of salt and pepper. Finally add freshly cut radish and amaranth microgreens.

c. Organoleptic Evaluation of the Developed Microgreen Salads.

The organoleptic evaluation of the developed salads were done by a panel of 25 members (N=25). The panel members who have no prior knowledge about the products were invited for the analytical sensory testing as there will be no bias in the results. The evaluation was done using 9 point hedonic scale. The developed salads were evaluated for their taste, texture, colour, flavour and overall appearance. All the 25 score cards were combined and their average was taken for the final assessment of the sensory properties.

TABLE 3: Organoleptic parameters of prepared microgreen salads

N=25

Sl. No.	Salads	Taste	Texture	Colour	Flavour	Overall appearance
1	Coriander microgreen salad	7	7	7.5	8	7
2	Coriander celery pulses microgreen salad	7.5	8	7	8.3	8
3	Radish amaranth microgreen salad	8.3	8	7	8.5	8.5

*Like extremely-9 Like very much-8 Like moderately-7 Like slightly-6
Neither like nor dislike-5 dislike slightly-4 Dislike moderalty-3
Dislike very much-2 Dislike extremely-1

The score cards were given to 25 panel members and the scores were consolidated and tabulated.

It is clear in table -3, that coriander microgreen salad has obtained 7 i.e. like moderately for its taste, texture and 7.5 for its colour. For flavour, it has obtained 8 i.e. like very much and for overall appearance got 7 i.e. like moderately.

Coriander celery pulses microgreen salad has obtained 7.5 i.e. between like moderately and like very much, for its taste, scored 8 i.e. like very much for texture. It has got 7 for its colour i.e. like moderately and for flavour 8.3. For overall appearance it scored 8 i.e. like very much.

Radish Microgreen Salad scored 8.5 for both overall appearance and flavor. The taste of the salad was scored to be 8.5 and the texture was scored as 7.

Coriander microgreen salad

Coriander celery pulses microgreen salad

Radish amaranth microgreen salad

d. **Assessment of Nutritive Value of the Developed Microgreen Salads**

Nutritive content present in 100g of each salads were obtained for both macronutrients and micronutrients using the United States Department of Agriculture (USDA), Assessment of Nutrient Concentrations, July 2013.

Table 4: Macronutrients of the selected microgreen salads in 100g

Salad	Energy (Kcal)	CHO (g)	Protein (g)	Fat (g)
Coriander Microgreen salad	31	4.53	1.19	0.89
Coriander celery pulses salad	94.1	15.81	4.93	6.17
Radish amaranth Salad	45.2	8.64	1.38	1.14

From the above table-4, it is clear that 100g of coriander salad provides 31Kcal and provides 4.53g of CHO. When talking about protein, it provides 1.19g of protein and 0.89g of fat.

Coriander celery pulses salad provides 94.1Kcal and 15.81g of CHO. It also provides 4.93g of protein and 6.17g of fat.

The calorie obtained from radish amaranth salad is 45.2Kcal and that of carbohydrate is 8.64g. It also provides 1.38g of protein and 1.14g of fat.

Table 5 :Micronutrients of the selected microgreen salads in 100g

Salad	Vitamin A (mcg)	Vitamin C (mg)	Vitamin E (mg)	Vitamin K (mg)	Calcium (mg)	Iron (mg)
Coriander Microgreen Salad	311.15	26.25	26.57	4.39	79.6	4.28
Coriander celery pulses salad	247.19	28.27	10.6	1.66	51.94	1.13
Radish amaranth salad	49.42	73.59	31.35	5.13	43.89	0.41

From table-5, it is seen that coriander microgreens salad provides 311.15mg of vitamin A, 26.25mg of vitamin C, 26.57mg of vitamin E, 4.39 µg of vitamin K, and 79.6mg of Calcium and 4.28mg of iron.

As far as the coriander celery pulses salad is concerned, it is clear that, it provides 247.19mg of vitamin A, 28.27mg of vitamin C, 10.6mg of vitamin E, 1.66 µg of vitamin K, 51.94 mg of calcium and 1.13mg of iron.

Radish amaranth salad provides 49.4mg of vitamin A, 73.59mg of vitamin C, 31.35mg of vitamin E, 5.13 µg of vitamin K, 43.89mg of calcium and 0.41mg of iron.

SUMMARY AND CONCLUSION

The clear discussion was done above regarding the formulated salads using developed microgreens. The Microgreens are mostly admired by its texture ,color and flavor compared to sprouts .The microgreens were cultivated with various varieties of edible species .Even though the size of the greens are very small compared to its mature counterparts as micro-herbs, it doubles the flavors, texture and appeal of the recipes prepared . There are various varieties of microgreen seeds which had been used efficiently for the preparation of salads and even other recipes also.

The microgreens are considered as a novel crop, but more investigations are needed in the same field for the better utilization and knowledge regarding microgreens. Considering the required literature the microgreens are the best greens that can be used in several recipes with more micronutrient bioavailability.

Therefore the study entitled "Formulation And Organoleptic Evaluation Of Microgreens Salads" was carried out and the salient findings of the study were listed as follows:

a. Microgreens selected for salad preparation
b. Formulation of Microgreen Salads
c. Sensory Evaluation of the Developed Salads
d. Assessment of Nutritive Value of the Developed Microgreen Salads

a. Microgreens selected for salad preparation

The microgreen seeds which were purchased from online shopping sites were selected for the cultivation purposes .The seeds were selected based on the availability and their adaptation to tropical climate.

b. Formulation of Microgreen Salads

The selected seeds which were purchased form online shopping site were used for the cultivation process. The seeds were sowed in cocopeat and were wet with adequate amount of water .These were done in a rectangular shaped boxes .After the sowing purposes these were covered using aluminum foil which been termed as 'black out period'.

Within a week or two ,the true leaves emerges and were ready for harvest .The selected microgreens were harvested and were freshly used for the preparation of salads . The cultivated microgreens were then selected and planned to prepare vegetable salads. Coriander, Red cabbage, Radish, Celery, Arugula and Amaranthus had been selected for the preparation of the salads.

c. Sensory Evaluation of the Developed Salads

The prepared salads were subjected to sensory evaluation. The developed salads were evaluated for their taste, texture, colour, flavour and overall appearance. All the 25 score cards were combined

and their average was taken for the final assessment of the sensory properties .Nine point hedonic scale was used for the sensory evaluation of the salads.

The coriander microgreen salad has appreciable color, flavor and texture. Coriander celery pulses microgreen salad has good taste and flavor. Radish Microgreen Salad was scored 8.5 for both overall appearance and flavor .The taste of the salad was excellent.

d. **Assessment of Nutritive Value of the Developed Microgreen Salads**

Macronutrient assessment were done and results were analyzed .The coriander salad provides 31Kcal and provides 4.53g of CHO. In case of Coriander celery pulses salad provides 94.1Kcal and 15.81g of CHO. It also provides 4.93g of protein .The calorie obtained from radish amaranth salad is 45.2Kcal and that of carbohydrate is 8.64g. It also provides 1.38g of protein and 1.14g of fat.

Micronutrient assessment was also done and the results were summarized. Coriander microgreens salad provides 311.15mg of vitamin A, 26.25mg of vitamin C, 26.57mg of vitamin E, 4.39 µg of vitamin K, 79.6mg of Calcium and 4.28mg of iron. Coriander celery pulses salad is concerned it is clear that, it provides 247.19mg of vitamin A, 28.27mg of vitamin C, 10.6mg of vitamin E, 1.66 µg of vitamin K, 51.94 mg of calcium and 1.13mg of iron. Radish amaranth salad provides 49.4mg of vitamin A, 73.59mg of vitamin C, 31.35mg of vitamin E, 5.13 µg of vitamin K, 43.89mg of calcium and 0.41mg of iron.

From the nutrient analysis it was clear that the microgreens are rich in both micronutrients and macronutrients .The salads were prepared with more than one microgreens to enhance the micronutrient content.

CONCLUSION

The research work found that exotic salads can be prepared using various species of microgreens. The salads prepared were then both organoleptically and nutritionally analyzed. It was clear that various food products can be prepared using the microgreens. Salad consumption can more effectively utilize the micronutrients from microgreens and in long run can prevent micronutrient malnutrition. As part of the study Microgreen salads were developed with the grown varieties of microgreens and sensory evaluation of the same was conducted with 9 point hedonic scale. As the micronutrient deficiencies are increasing it is needed to impart awareness on microgreens and its consumption .The cultivation process of microgreens are very easy and requires very less space .This can be grown in a very small space even inside kitchen spaces or window seats .The widespread knowledge regarding the nutritional power of these greens are yet to be unfolded and explored .Several researchers are carrying out continuous investigations to find out more information regarding microgreens .

FUTURE RECOMMENDATIONS

- Advanced studies in the field of Micro greens are a must and can become a part of dietician diet prescription.
- More research should be conducted in the field of microgreens to analyze the nutritive content of various greens.

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REVISITING THE SCREENING CRITERION FOR ACUTE MALNUTRITION AMONG CHILDREN (6-24 MONTHS) AND ROLE OF NUTRITION EDUCATION FOR MOTHERS IN ANGANWADI CENTRES OF DELHI

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ABSTRACT

Mid upper arm circumference (MUAC<125mm) is used as a simple and robust alternate method for screening children under 5 with acute malnutrition than Weight for Height Z-score(WHZ<-2SD).Comparison of MUAC and WHZ score as a screening criterion for acute malnutrition among children and role of nutrition education in improving mothers knowledge and attitude regarding infant feeding a community-based study was carried out in 5 zones of Delhi. Children (n=250) aged 6-24 months were screened for acute malnutrition using the above-mentioned criterion. Receiver operating curves were drawn to determine power of MUAC to predict acute malnutrition against WHZ scores. Moreover, study assessed infant feeding practices of mothers of acute malnourished children. Interactive nutrition education session with recipe demonstration was conducted and they were followed up for a period of 2 months. The prevalence of acute malnutrition was reported to be 44.4%. Out of 250 children assessed,111 acute malnourished children were identified and 50 were selected for the intervention. The current cut-off of MUAC for diagnosing acute malnutrition compared poorly to the same category as defined by WHZ score with Kappa 25% (P 0.053). Optimal MUAC cut-off to detect acute malnutrition was 130.3mm (AUC=0.993) with a sensitivity and specificity of 70.9% and 89.1% respectively. Improvement among mother's knowledge and attitude regarding infant feeding was seen in the overall response rate between pre- and post-intervention. Comparable research on a larger population of various ethnic backgrounds and geographic settings is needed to determine age and gender-specific cut-offs for acute malnutrition

Keywords: Acute malnutrition, nutrition education, Anganwadi, children

INTRODUCTION

Acute malnutrition is categorized as a major public health problem in India. Acute malnutrition is defined as Weight for Height Z-score(WHZ) <-2SD of the International reference population (WHO, 2006) or Mid upper Arm Circumference (MUAC)<125 mm (UNHCR, 2011).Findings from various research studies have shown discrepancy between MUAC and WHZ score or both as diagnostic criteria for acute malnutrition (Grellety & Golden, 2016; Fernandez, 2010; Tadesse et al., 2017; Laillou et al., 2014).Children identified as acute malnourished based on one criterion are often missed if diagnosed using the other. Therefore, the question arises of the choice of MUAC and WHZ or both as the criterion for screening malnourished children.

Infants growth is closely related to how they are fed (de Onis, 2011).Evidence suggests that optimal Infant and Young Child Feeding (IYCF) practices play a major role in reducing acute malnutrition (Maalouf- Maneasseh et al., 2016; Jimenez et al., 2014; Schwartz., n.d.).Additionally, they have been identified as important for child's appropriate growth and development (Mahmood et al.,2017).Optimal IYCF as presented by WHO&UNICEF(2003) highlights the importance of exclusively breastfeeding for the period of first six months of infant life. Thereafter, to meet the evolving nutritional needs, infants should receive safe and nutritionally adequate complementary foods after 6 months of age, along with which breastfeeding should continue for up to two years of age or beyond as per global public health recommendation (WHO, 2017).

However, the status of IYCF practices in India is below satisfactory. In addition, poor breastfeeding and complementary feeding practices are widespread in India including India's capital. Data from National Family Health Survey-4 (NFHS-4) Delhi ,shows timely initiation of breastfeeding as 29.1%.The percentage of children (6-8m) receiving complementary feeding and breast milk showed a decline from 58.7% (NFHS-3) to about 45% (NFHS-4).NFHS-4 also provided the data for breastfed children (6-23m) receiving an adequate diet, non-breastfeeding children (6-23m) receiving an adequate diet and total number of children (6-23m) receiving adequate diet which was 4.8%, 9.5%, 5.8% respectively(NFHS-4, 2015-16).

Data above is suggestive of the fact that there is a need to lay stress on the benefits of optimal IYCF practices by the hospitals, rural maternity centres and Anganwadi centres (AWC). Furthermore, focus should be on reinforcement of nutritional messages from time to time in order to ensure proper adherence to optimal IYCF practices by the caregivers/mothers. Poor IYCF directly or indirectly contribute to malnutrition, morbidity and mortality status in infants. Most often, it is not poverty but the lack of awareness which may be the cause of fallacious IYCF practices (Sethi et al., 2003). Hence, the present study was conducted with the following objectives.

OBJECTIVES

1. To compare MUAC, WHZ score and both as screening criteria for acute malnutrition
2. To arrive at mid upper arm circumference cut-offs for screening of acute malnourished children
3. To administer IYCF counselling and low-cost complementary feeding recipes demonstration for mothers of these children in AWCs as an intervention

HYPOTHESIS

There will be no significant difference between MUAC and WHZ score as a screening criterion for acute malnutrition

MATERIALS AND METHODS

Study design and participants:

A community based cross sectional study was carried out in AWCs in 5 zones of Delhi (West- Hastsal, East –Shakarpur, North- Timarpur, South- Badarpur, and Centre- Nabikareem).

A total of 250 children (6-24months) were selected purposively from the locale described above and informed consent was obtained from the mother/ caregiver(s). Mother/ Caregiver who refuse to participate/not providing consent or with medical complications e.g. diarrhoea, pneumonia and physical deformities such as spinal bifida, bow legs, spinal deformities, and knock knees were excluded.
Anganwadi visits were undertaken to locate children aged 6- 24months registered in AWC's of 5 zones of Delhi (1 project each). After seeking consent from their mothers, anthropometric data was collected on 250 children, out of which 111 acute malnourished children were identified inclusive of both Moderately Acute Malnourished (MAM) and Severely Acute Malnourished (SAM).

After identifying these acute malnourished children, general information sheet, and questionnaire regarding infant feeding was filled from only 50 mothers from west and east zone AWC's (based on the accessibility and willingness to participate). Then to these 50 mothers, infant feeding counselling was administered. Further they were followed up for 2 months after which their post intervention knowledge and attitude on infant feeding was re-assessed. The assessments were conducted by a bilingual researcher, in the language of the participant's choice.

The permission to conduct the research study was obtained from Department of Women and Child Development. Child Development Project Officer's (CDPO), supervisors and Anganwadi workers were briefed about the aim and objectives of the study before initiating data collection. .The data was collected between the months of October 2017 - January 2018. Institutional ethical clearance was obtained from Lady Irwin College, University of Delhi on 30th September 2017 before initiating data collection.

Sample size was calculated using IBM SPSS version 25 for Windows. Using prevalence rate of acute malnourished children (under 5 children) in India (54.9%) (Grellety et al., 2016) using WHZ < -2 SD and significance level of 5% with a power of 90%, researcher got a minimum required sample size of 381. But due to the paucity of time and resources, 25% that is at least 100 acute malnourished children were studied. At least 50 mothers (12.5%) of acute malnourished children were purposively selected according to the accessibility and their willingness to participate, on whom IYCF counselling was administered. The study was conducted in phases:

Study Phases:

Phase 1- Collection of Baseline Data:

Child's age was verified by Mother and Child Protection (MCP) card. Anthropometric measurements were taken on children by using standardized equipment and procedures. Instruments were calibrated periodically to maintain the accuracy of measurements and readings were taken in

duplicate to avoid intra observer error. Standard weight of 1 kg was procured and the weighing scale instrument was standardized and calibrated each time before the start of the data collection.

Measurements of MUAC (to the nearest 1 mm) were made using a non-stretch tape measure (UNICEF Supply division, model number: S0145620). Weight was measured in kg using solidly built and durable digital weighing scale (Goldtech, India; model number: GTET 30K) which measured to a precision of 0.1 Kg (100g) with the child wearing no clothes, or minimal clothing. Length/ height was measured lying down (recumbent) to the nearest 0.1 cm using a measuring board like infantometer with a headboard and sliding foot piece (for children less than 2 years). Child's shoes, socks, and hair ornaments were removed before taking the measurement. Readings were taken in triplicates. WHZ Score was computed using Anthro Plus software (2012) to determine the nutritional status of child based on WHO (2006) weight for height/length (WFH) chart (WHO, 2006).

Standardised questionnaire was used to assess the knowledge and attitude of mothers regarding infant feeding (FAO, 2014). It helped to obtain information on local nutrition issues and gaps before formulation of nutrition interventions.

Phase 2- Intervention

Nutrition counselling was delivered using comprehensive flipchart in Hindi (Counselling guide for Mother's Absolute Affection programme) on optimal infant feeding practices which was used as a guide to assist mothers and caregivers (MOHFW, 2016).The major topics covered were; Importance of breastfeeding and early initiation of breastfeeding, discouraging the practice of discarding colostrums, bottle-feeding and prelacteal feeding, exclusive breastfeeding till 6 months, timely introduction and age appropriate complementary foods (solid, semi-solid or soft foods) after the age of 6 months, active feeding of children during and after illness (especially fever and diarrhoea), common misconceptions/myths related to infant feeding practices in India.

After development of recipe book which focussed on low cost complementary feeding recipes including 5 snacks, 5 fresh and 5 premixes, a recipe step demonstration to the mothers of acute malnourished children (6-24months) was performed. Basic food preparation (4^{th} edition) manual was used as a reference for recipe preparations (Raina et al., 2010). Sensory evaluation of each recipe (15 in total) was done by a panel of 5 M.Sc. Final year students. Recipes were finalized after incorporating suggestions received from the panel.

Phase 3- Post Intervention:

Mother's knowledge and attitude related to infant feeding was reassessed during follow up visit (after 2 months) using the same questionnaire to assess the gain in knowledge (FAO, 2014).

All data were coded and entered into Microsoft Excel 2013. The WHO Anthro Software was utilized to calculate Z scores. Prevalence of acute malnourished children 6-24months (WHZ score, MUAC and both) in AWCs was computed. The sensitivity, specificity, False Positive Rate values of the MUAC were determined using WHZ as gold standard. Kappa statistic (K) were calculated as test of association and reproducibility was considered excellent at K>75%, good at 40%> but <75% or marginal at K <40%. Receiver Operator Characteristic (ROC) curves were constructed to present the relationship of MUAC with WHZ for different cut-offs. The change in pre and post knowledge and

attitude of mothers regarding infant feeding was done using McNemar test in IBM SPSS version 25 for Windows. P <0.05 was considered statistically significant.

RESULTS

Prevalence of acute malnutrition among children (6-24months) in Delhi

This study reported the prevalence of acute malnutrition (wasting) in Delhi as 44.4%. The level of acute malnutrition showed greater disparity between genders. Higher prevalence of acute malnutrition was reported among girls (25.6%) as compared to boys (18.8%). Wasting prevalence (44.4%) was more than twice of that reported by NFHS-4 for NCT Delhi District (17.1%). The prevalence of wasting (Delhi) as reported by this study (44.4%) is lower than what was observed by Grellety and Golden (2016) using WHZ < -2among under 5 children in India (54.9%).

Comparison of MUAC with WHZ

Mean MUAC of all 250 children was 133.9 mm and ranged between 110 mm to 159.5 mm. The prevalence of acute malnutrition as indicated by MUAC (<125mm) was 14.8% and 41.2% indicated by WHZ score (<-2SD). Table 1 indicated that only 37 children were diagnosed as acute malnourished using MUAC (<125 mm) and 103 children were diagnosed using WHZ score (< -2SD).This shows a difference of 66 children who would have been left if only used MUAC as a screening criterion. Out of all 37 children diagnosed using MUAC (<125 mm), only 29 were diagnosed using WHZ score also. Out of 103 children identified with WHZ score only 29 were diagnosed using MUAC criteria as well. Hence in comparison the prevalence of acute malnutrition as indicated by WHZ was much higher.

Out of the total 111 acute malnourished children identified, 73 children were identified using WHZ score criteria (WHZ< -2SD) while 8 children using MUAC criteria (MUAC<125 mm) and 30 children using both MUAC and WHZ score (WHZ<-2SD and MUAC<125 mm). Out of total 111 acute malnourished children, 58% (64) were identified as female and 42% (47) as male. The mean weight, mean height and mean MUAC of these children were 7.4 ± 0.9 kg, 73.95 ± 5.47 cm and 127.8 ± 5.6 mm respectively. The current cut-off of MUAC for diagnosing acute malnutrition compared poorly to the same category as defined by WHZ score with Kappa 25% (P 0.053) as shown in Table 1.

Table 1. Agreement between MUAC and WHZ score to diagnose acute malnutrition (n=250)

MUAC* (cm)<12.5**	**WHZ**<-2SD**					**p value**
	YES		**NO**		**Total number of children**	
	N	**%**	**N**	**%**		
YES	29	28.2	8	5.4	37	<0.001*
NO	74	71.8	139	94.6	213	
Total	103	100.0	147	100.0	250	
Measure of Agreement	**Kappa**					
	25%					0.053
Sensitivity	28.16%					

Specificity	94.56%		
PPV	78.38%		
NPV	65.26%		
Accuracy	67.20%		
Note: * significant at 5% level of significance (p<0.05)			
**WHZ: Weight for Height Z score, ***MUAC: Mid Upper Arm Circumference			

Receiver-Operator Characteristic curves (ROC)

ROC curves were used with the objective to improve the power of MUAC to predict acute malnutrition as shown in Figure 1. Receiver-Operator Characteristic (ROC curves) were drawn against WHZ and areas under curve (AUC) were calculated.

Figure 1. ROC curve of the MUAC score in against WHZ<-2SD

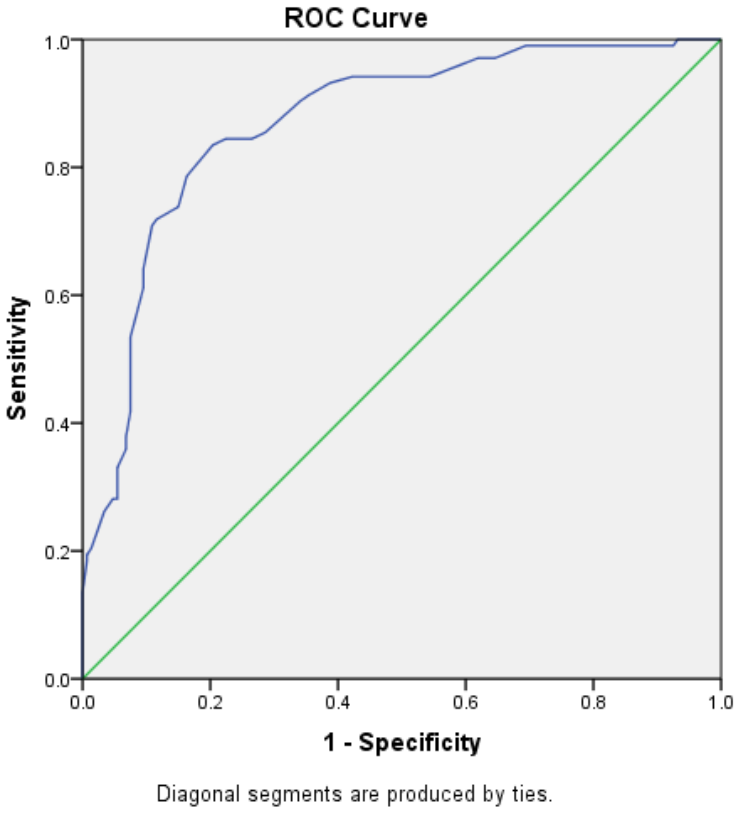

Table 2 showed that optimal MUAC cut-off to detect acute malnutrition was 130.3 mm (AUC= 0.993) with a sensitivity and specificity of 70.9% and 89.1% respectively.

Table 2. Areas under curve (AUC) for wasting and severe acute malnutrition

***WHZ <-2SD**				
****MUAC (cm) cut off (positive if Less Than or Equal To)**	**Sensitivity**	**False positive rate**	**Specificity**	**AUC**
11.63	1.9%	0.0%	100.0%	0.000%
12.53	31.1%	5.4%	94.6%	0.169%
13.03	**70.9%**	**10.9%**	**89.1%**	**0.993%**
13.23	83.5%	20.4%	79.6%	3.424%
14.05	99.0%	69.4%	30.6%	4.752%
14.98	100.0%	93.2%	6.8%	0.700%
15.85	100.0%	99.3%	0.7%	0.700%
16.95	100.0%	100.0%	0.0%	0.700%
*WHZ: Weight for Height Z score, **MUAC: Mid Upper Arm Circumference				

Assessment of differences between pre and post knowledge and attitude of mothers

After assessing pre-intervention knowledge and attitude of mothers of acute malnourished children (n=50) regarding infant feeding practices through the interview schedule, nutrition education was given accordingly and the messages were reinforced again at the end of sessions. After 2 months of delivering nutrition education to mothers, post intervention assessment was done on same mothers to see any improvement in their knowledge and attitude. There were no dropouts in this study. Since improvement was observed in the responses, therefore the pre and post intervention responses were analysed using related sample McNemar test. The results revealed that the gain in knowledge among mothers was statistically significant ($p<0.05$). Results as shown in the Table 3 revealed appreciable improvement in knowledge and attitude of mothers regarding Infant feeding practices. This result could be attributed to nutrition education session that dealt with explaining importance of optimal infant and young child feeding. However, significant results were not obtained for questions like when to start complementary feeding (P 0.063), what is the first thing to be fed to new-born (P 0.063), the reason for this could be the fact that pre-knowledge of mothers on these 2 parameters was satisfactory even before the nutrition education session.

Table 3. Pre and post knowledge and attitude of mothers on Infant feeding practices

	Pre-NE (n/%)**	**Post- NE** (n/%)**	**P value**
Knowledge about Breast feeding			
First thing to be given to child			
• Breast milk	45(90)	50(100)	0.063
• Others (cow milk, ghutti)	2(4)	0	0

• Don't know	3(6)	0	0
Know about exclusive breastfeeding (till 6 months)	26(52)	48(96)	<0.001*
What is exclusive breastfeeding	34(68)	49(98)	<0.001*
Why breastfeeding is sufficient till 6 months	5(10)	46(92)	<0.001*
Frequency of breastfeeding	26(52)	41(82)	0.007*
Importance of breastfeeding	28(56)	50(100)	<0.001*
Found it difficult to breastfeed	8(16)	50(100)	0.008*
Knowledge on appropriate duration of breastfeeding	10(20)	31(62)	<0.001*
When to start complementary food	45(90)	49(98)	0.063
Reason to start complementary food	15(30)	47(94)	<0.001*
Knowledge about correct Dalia selection	21(42)	44(88)	<0.001*
Knowledge about how to improve the dietary diversity of infant food	42(84)	50(100)	<0.001*
Knowledge about how to encourage child to eat food	26(52)	50(100)	<0.001*
Found it difficult to feed food to child	16(32)	0	<0.001*
Think feeding the child frequently is not good	15(30)	0	<0.001*
Found it difficult to feed child regularly	10(20)	0	<0.001*
*Significance level is 0.05, **NE: Nutrition Education			

DISCUSSION

Both anthropometric indicators WHZ score and MUAC used in screening acute malnourished children showed poor agreement between them in the present study. Similar results were observed from various other studies studying these screening criterions in relation to malnutrition ((Grellety& Golden, 2016; Fernandez 2010; Tadesse et al., 2017; Laillou et al., 2014).).Grellety& Golden (2016) found that 16.3% of children were identified as acute malnourished either by WHZ <-2SD or MUAC <125 mm, while 3.5% as severely malnourished by either WHZ<-3SD or MUAC <115mm.

Present study showed that optimal MUAC cut-off to detect acute malnutrition (WHZ<-2SD) was 130.3 mm as opposed to what is recommended globally i.e. less than 125 mm. MUAC has been considered a valid and simple screening tool to identify acute malnutrition in children under 5 years of age. Our dataset, however showed that MUAC <125mm only identified 29 out of 103 children with WHZ<-2SD. On the contrary, WHZ only identified 29 out of 37 children with a MUAC less than 125 mm. This means using only MUAC<125 mm at community level to screen and treat acute malnourished children, a large number of children would have been missed and left without treatment. Findings from another research study showed that community screening by MUAC <138 mm will identify over 75% of the children with a WHZ<-2SD (Laillou et al., 2016).

Hence, above findings compel to revisit the global recommendations on the diagnosis and treatment criteria of acute malnutrition formulated by WHO.As shown in our study, MUAC<125 mm and WHZ< 2SD clearly identify a distinctly different set of children with malnutrition, with hardly any overlap between the 2 indicators. Since, both MUAC and WHZ identify distinctly different category of children they must be considered as an independent criterion for the same rather than substitute for each other.

Moreover, since adequate infant feeding practices plays instrument role in reducing acute malnutrition among children, results from our study shows that repeated reinforcement of nutrition messages and recipe demonstration pertaining to IYCF can lead to improvement in knowledge and attitude of the mothers of acute malnourished children. Similar findings were seen by Sethi et al. (2003) who carried out study on 35 mothers of infants aged 5–19 months and after identifying the lacunae regarding appropriate infant feeding, nutrition education (NE) was imparted for a period of 2 months. The result from this study revealed that post NE, there was a significant improvement in mothers awareness about appropriate feeding practices, thus suggesting that short term nutrition education using different communication channels clubbed with continuous reinforcement of these messages prove out to be instrumental in improving not only awareness but also infant feeding practices(Sethi et al., 2003).

One of the studies from Uttar Pradesh state, on 957 third trimester pregnant women showed that NE improved breastfeeding and complementary feeding practices of mothers. Therefore, emphasis should be laid on nutrition education at various platforms in the community for increasing awareness and practices regarding optimal nutrition habits (Singh et al., 2017).

Though in present study, nutrition counselling for mothers of acute malnourished children had improved their knowledge and attitude related to infant feeding, there are some limitations of this study as it did not include children below 6 months of age which would have led to underestimation/ overestimation of the risk, given the high vulnerability of this group. Due to limited time and resources, it was not possible to follow up all the mothers of acute malnourished children resulting in small sample size.

CONCLUSION

MUAC can be effectively used as a simple and robust screening tool using a broader cut-off for example 130.3 mm to ensure inclusion of as many children with acute malnutrition. Thus, the current cut-off for screening for acute malnutrition at community level should be changed from 125mm.Then, as a second step, all children with a MUAC below the screening cut-off (e.g., 130.3 mm) should be assessed at a secondary facility, e.g. a primary health care centre, for weight, height and MUAC measurements. There is a need to conduct similar studies on a larger population with different ethnic background and geographical settings to derive age and gender specific cut-offs for acute malnutrition. The recommendations that emerged from the study were that MUAC cut-offs for diagnosis of acute malnutrition should be revisited. Additionally, stress should be laid on effective social and behaviour change strategy since it plays an instrumental role in improving IYCF practices.

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EFFECT OF PET BONDING ON EMOTIONAL STATUS AND QUALITY OF LIFE ENJOYMENT AMONG ADULTS

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ABSTRACT

The forefathers and their communities considered animals as a main source of food and made use of it for the transport and agriculture. Present day attitudes of humans towards animals have changed. It is claimed that pet can change one's life into happy and unstressful one. It is also found that pet has an influence on the attitude and behaviour of pet owners. The present study was conducted among 100 adults comprising of 15 post-pet owners, 35 pet owners and 50 non-pet owners. The samples were randomly selected from the Ernakulam District. A questionnaire was developed to collect the information from the respondents. Different scales were used to study the emotional status, quality of life, enjoyment and satisfaction and pet bonding of the respondents. The independent samples t-test showed a highly significant difference in the emotional status scores and also quality of life enjoyment and satisfaction scores between pet owners and non-pet owners. Similarly, significant differences in the emotional status scores and also quality of life enjoyment and satisfaction scores were observed between post-pet owners and non-pet owners. There was no significant difference in the emotional status scores between pet owners and post-pet owners but a highly significant difference in the quality of life enjoyment and satisfaction scores were observed. It can be inferred that owning a pet contributes to the better emotional status and also life enjoyment and satisfaction of an individual.

Keywords: pet, life enjoyment, satisfaction, emotional status, pet bonding, pet owners, non-pet owners, post-pet owners

INTRODUCTION

Animals were found to be a co-existent of human life for the past thousands of years though the keeping of animals purely as companions may appear to be a modern phenomenon (Robinson, 2013). Animals that are domesticated and kept for pleasure rather than for utility are called as pets (Hart, 2003). Dogs were found to be the most common pet all over the world. It may be due to the availability of the more varieties of dogs to choose from (McKay Sindy, 2002). Pets can be classified into house pets, aquarium animals, avian animals, small Pets: mammals and rodents, herptiles and outdoor pets (Brough CAS Clarice, n.d.). Pet contributes to the health of the owner by increasing the longevity and thereby provides psychological well-being (Herzog, 2011).

Pet contributes to the health of the owner by reducing the stress, maintaining the heart health. They also contribute to the social and emotional skills among children (Hicklin Tianna & Piazza Geri, 2018). The plasma triglyceride levels and systolic blood pressure was found to be lower among pet owners than that of non- pet owners (Anderson et al., 1992). There are different ways of integrating companion animals practically into health care and health promotion (Smith, 2012). In a study between pet acquiring and non-pet acquiring groups of adults it was found that the former group of adults scored better on 30-item General Health Questionnaire while the latter

group did not exhibit any statistically significant changes in their health or behavior which shows that acquiring a pet may have a positive impact on human health (Serpell, 1991).

In a study on allergic sensitization during childhood it was found that exposure to dogs and cats in the first-year life has significantly reduced the risk of allergy (Ownby et al., 2002). The benefits of owning a pet may be due to the lifestyle adjustments adopted resulting from the ownership of it (Cohut Maria, 2018). A higher level of pet attachment was found to be negatively correlated with the social isolation based on a study conducted among adults of age above 55 (Wuellner, 2017). It was also found that the emotional well-being of an individual is affected by the death or loss of a pet as the pet owners form a strong bond with their pets (Sharkin & Knox, 2003).

Modern life is found to be little bit stressful with numerous health problems. As per several studies the pet can reduce the mental stress and also improves the responsibility of a person. The pet presents animal love and it stimulates the emotions of the owners. It is also seen that pet can symbolize a child, sibling, best friend or a companion. They become a part of family and life. The morning routines and fitness also influences the life of owner. The pet owners who lost their pet in later stage may hold a small amount of sadness in their hearts for their lost beloved pets. This might also have an impact on their emotional or social behavior. Since pet animals are said to influence the attitudes and behaviors of pet owners, the researcher decided to carry out the present study.

OBJECTIVES

- The proposed objective of the study is to analyse the difference in 'emotional status' and 'quality of life enjoyment and satisfaction' among pet owners, post pet owners and non-pet owners.

HYPOTHESES

- There is no difference in the emotional status and quality of life enjoyment and satisfaction of pet owners, post pet owners and non-pet owners.

METHODOLOGY

Sample

The sample included 100 adults comprising both male and female hailed from Angamaly, Paravoor and Cherayi areas at Ernakulum District. The sample comprised of adults belonging to early adulthood period with age between18 to 40 (Sugarman, L., 2004). Sample constituted 15 post-pet owners, 35 pet owners and 50 non-pet owners.

Instrument

The questionnaires and scales were the tools used for the study. The questionnaire was developed by the researcher to collect information from the post-pet owners, pet owners and non-pet owners. These were developed to understand the attitude towards the pets and emotional aspects of the respondents. Different types of scales were also used. They were tool to assess the

emotional status, tool to assess the quality of life, enjoyment and satisfaction and tool to assess the Pet bonding.

Emotional status of the sample was measured using 'emotional status scale' comprising of 15 questions. Each question had 3 options from which one option was to be selected based on their emotional state.

Quality of Life Enjoyment and Satisfaction Questionnaire (Q-LES-Q-SF) developed by Jean Endicott was used to assess the score of quality of life enjoyment. This tool comprised of 16 questions which was intended to measure the satisfaction level of the respondents. The respondents were required to rate their satisfaction level in different aspects as very poor, poor, fair, good or very good taking into consideration their activities during past week. The components in the questionnaire were physical health, mood, work, household activities, social relationships, family relationships, leisure time activities, ability to function in daily life, sexual drive, interest and/or performance, economic status, living/housing situation, ability to get around physically, without feeling dizzy or unsteady or falling, vision in terms of ability to do work or hobbies, overall sense of well-being, medication, overall life satisfaction and contentment during the past week.

Pet Bonding Scale (PBS) developed by Angle, Rebecca L was used to study the bondage towards pets among the pet owners. Pet bonding scale comprised of 24 statements regarding the relationship between the pet and pet owner. The respondents were required to mark never, usually or always based on their bondage with the pet.

Design

The survey was conducted by distributing the structured questionnaire, Quality of Life Enjoyment and Satisfaction Questionnaire and emotional status scale to all the respondents coming under post pet owners, pet owners and non-pet owners in their place of residence. The questionnaires and the scale were filled by the respondents and were collected back. Pet Bonding Scale (PBS) was distributed only to post pet owners and pet owners and collected back after marking the responses.

Statistical analysis

The data were subjected to statistical analysis. The preliminary analyses included calculating the descriptive statistics. Pearson's correlations (r) were used to investigate the correlation between attachment to pet, emotional status and quality of life enjoyment and satisfaction of pet owners. Independent samples t-tests were used to investigate the difference in emotional status scores and quality of life enjoyment and satisfaction of pet owners scores between pet owners, post pet owners and non-pet owners.

FINDINGS

Demographic data of the respondents

Demographic data of the sample studies is presented in Table -1. The number (N) of post-pet owners, pet owners and non-pet owners were 15, 35 and 50 respectively. Most of the respondents in the post-pet owner's category were female while that in the other two categories were male. More than half of the respondents resided in the rural area in nuclear families. Statistical analysis was done using chi-square test between the demographic details and owning a pet. A chi-square test of independence showed that there was no significant association between gender and owning a pet, $\chi 2$ (2, N = 100) = 2.54, p < .05. A chi-square test of independence showed that there was no significant association between area of living and owning a pet, $\chi 2$ (2, N = 100) = .729, p < .05. There is a significant relationship between the variables type of family and owning a pet. Respondents from nuclear family are more likely than those from joint family to own a pet, $\chi 2$ (2, N = 100) = 7.18, p < .05.

Table- 1: Demographic details

Category	Gender (%)		Area (%)		Type of family (%)	
	Male	Female	Rural	Urban	Joint	Nuclear
Post-pet owners	46	54	60	40	13.3	86.7
Pet owners	57.1	42.9	71.4	28.6	5.7	94.3
Non-pet owners	68	32	68	32	28	72
$\chi 2$	2.54		.729		7.18	
p-value	.280832 ^{NS}		.694544^{NS}		.027598*	

*Significant at p <.05, **Significant at p < .01, ^{NS} Not significant

Social status of the sample studied is given in Table 2. Majority of the subjects belonged to the middle-income category and were unmarried. A chi-square test of independence showed that there was no significant association between income level and owning a pet, $\chi 2$ (4, N = 100) = 2.54, p < .05. The relationship between owning a pet and marital status were also studied. A chi-square test of independence showed that there was no significant association between marital status and owning a pet, $\chi 2$ (2, N = 100) = 1.365, p < .05.

Table - 2: Social status of the sample

Category	Income level (%)			Marital status (%)	
	Low income	Middle income	High income	Married	Unmarried
Post-pet owners	20	80	0	20	80
Pet owners	22.9	62.9	14.2	31.4	68.6
Non-pet owners	6	90	4	36	64
$\chi 2$ statistic	2.54			1.365	
p-value	.637488 ^{NS}			.505352^{NS}	

*Significant at p <.05, **Significant at p < .01, ^{NS} Not significant

Emotional status and quality of life enjoyment and satisfaction of pet owners and non-pet owners:

Independent samples t-test was carried to study the difference in the emotional status scores and quality of life enjoyment and satisfaction scores between (i) pet owners and non-pet owners, (ii) pet owners and post pet owners and (iii) non pet owners and post pet owners. The details of the difference in the scores are given and Table - 3.

According to the results of the independent samples t-test, there was a highly significant difference in the emotional status scores between pet owners (M = 22.229, SD = 5.12253, n = 35) and non-pet owners (M = 17.82, SD = 4.10, n = 50, t (83) = 4.39, p = .000032). According to the results of the independent samples t-test, there was a highly significant difference in the quality of life enjoyment and satisfaction scores between pet owners (M = 70.086, SD = 3.81, n = 35) and non-pet owners (M = 53.14, SD = 11.05, n = 50, t (83) = 8.70, p < .00001).

According to the results of the independent samples t-test, there was no significant difference in the emotional status scores between pet owners (M = 22.229, SD = 5.12253, n = 35) and post-pet owners (M = 20.93, SD = 5.04, n = 15, t (48) = 0.823, p < .4143). According to the results of the independent samples t-test, there was a highly significant difference in the quality of life enjoyment and satisfaction scores between pet owners (M = 70.086, SD = 3.81, n = 35) and post-pet owners (M = 22.3, SD = 10.95, n = 15, t (48) = 22.71, p < .00001).

According to the results of the independent samples t-test, there was a significant difference in the emotional status scores between post-pet owners (M = 20.93, SD = 5.04, n = 15) and non-pet owners (M = 17.82, SD = 4.10, n = 50, t (63) = 2.44, p = .0173). According to the results of the independent samples t-test, there was a highly significant difference in the quality of life enjoyment and satisfaction scores between post-pet owners (M = 22.3, SD = 10.95, n = 15) and non-pet owners (M = 53.14, SD = 11.05, n = 50, t (63) = 9.30, p < .00001).

Table – 3: Scores of emotional status and quality of life enjoyment and satisfaction

Category	Pet ownership	Mean	SD	df	t-value	p
Emotional status scores	Pet owners	22.229	5.12253	83	4.39	.000032**
	Non-pet owners	17.82	4.10			
Q-LES-Q-SF Scores	Pet owners	70.086	3.81	83	8.70	.00001**
	Non-pet owners	53.14	11.05			
Emotional status scores	Pet owners	22.229	5.12253	48	0.823	$.4143^{NS}$
	Post-pet owners	20.93	5.04			
Q-LES-Q-SF Scores	Pet owners	70.086	3.81	48	22.71	.00001**
	Post-pet owners	22.3	10.95			
Emotional status scores	Post-pet owners	20.93	5.04	63	2.44	.0173*
	Non-pet owners	17.82	4.10			
Q-LES-Q-SF Scores	Post-pet owners	22.3	10.95	63	9.30	.00001**
	Non-pet owners	53.14	11.05			

*Significant at p <.05, **Significant at p < .01, NS Not significant

DISCUSSION

Owning a pet is not only a pride for the owner but also influences several factors that contribute to the wellbeing of the individual. From the study it is perceived that the gender or area of residence do not affect the owning of a pet. But a study reported at California showed a highest proportion of pet ownership in rural stratum (Franti et al., 1974). The family type was found to have a profound influence on owning a pet in the present study. A study conducted in Midwestern state in the United States also showed that pet ownership was associated with marital status, income of the family, size of the family and place of residence. Most of the pet owners belonged to larger families and the families residing in rural status (Poresky & Daniels, 1998). In the present study no, significant difference was observed between the owning of pets and marital status and income level of the family.

Mean scores of emotional status was found to be higher for pet owners (22.229) followed by post pet owners (20.93) and non-pet owners (17.82). This difference was found to be statistically significant which shows that owning a pet at present or in the past contribute to a higher emotional status score.

The mean scores of quality of life enjoyment and satisfaction was found to be higher for pet owners (70.086) followed by non-pet owners (53.14) and post pet owners (22.3) and the results were found to be statistically significant which shows that pet owners and non-pet owners had secured higher scores than post pet owners. From this observation it can be perceived that losing or parting with a pet after once owning it may contribute to the quality of life enjoyment and satisfaction score.

CONCLUSION

From the study it can be concluded that pets play a significant role in the life of any individual. No significant relationship was found between the pet bonding scores, emotional status scores and quality of life enjoyment and satisfaction scores of pet owners. But it was seen that the emotional status scores of pet owners and post pet were found to be more when compared to that of non-pet owners. The quality of life enjoyment and satisfaction scores of the pet owners were found to be the highest followed by the post-pet owners and non-pet owners. So, it can be inferred that owning a pet contributes to the better emotional status and also life enjoyment and satisfaction. The null hypothesis that there is no difference in emotional status and quality of life enjoyment and satisfaction of pet owners, post pet owners and non-pet owners was rejected.

There is a scope of research pertaining to the effect of specific category of pets on emotional and social status of the individual. Studies also can be made based on demographic differences.

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FAMILY BASED EARLY PREDICTORS OF DEVELOPMENTAL READINESS AMONG CHILDREN

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ABSTRACT

Physical, cognitive, socio-emotional and self-help readiness are major domains of developmental readiness that prepare young children for smooth transition from home to formal school environment. Thus, developmental readiness has its important role in the early childhood period of life. For school readiness, ready family component along with ready child is required for successful school entry. The present study was conducted to analyze the relationship of family variables of children with the domains of developmental readiness. The sample comprised of 200 children of class-I including 100 girls and 100 boys randomly selected through multi-stage sampling technique. Self-structured developmental readiness checklist was used to assess the different component of developmental readiness of young children. General Information Sheet was used to obtain information related to personal and family background variables. The findings of the study revealed that parental education level and their occupation has significant influence on various domains of developmental readiness of boys and girls. Birth order has no significant relationship with overall developmental readiness and its domains. Some recommendations are suggested based on the results of the study.

Keywords: Developmental readiness, Domains, Predictors, Family variables

INTRODUCTION

The early years are recognized as critical period for the lifelong learning of experiences. These years lay the basis for children's cognitive, physical and socio-emotional development. Neurobiological researches indicated that the brain development occurs rapidly during the initial years of life. The environmental interactions during this period substantially affect the development of individual's neural pathways (Mustard, 2006). The first six years are critical period for development of various domains that have direct influence on school learning. The Annual Status of Education report of 2013 envisaged that the early years of individual life may be the best place to invest in order to improve and sustain learning outcomes in the long run. It can be done by providing quality Early Childhood Care and Education (ECCE) to all children. Thus, the important goal of early education is to promote a child's school readiness (High, 2008).

Readiness is understood as the degree of physical and psychological preparedness of individual to respond to a particular stimulus (Nugent & Pam, 2013). The concept of 'school

readiness' has various interpretations in respect to early childhood education. Docket and Perry (2002) defined readiness as a set of ideas or meanings constructed by families, and schools in relation to children participation in the kindergarten experience. School readiness refers to readiness condition of the individual child to engage in formal learning experience at school. It is different from readiness for learning. Zuckerman and Halfon (2003) state that school readiness is a child's ability to demonstrate the foundational knowledge, skills, and behaviors in key areas and domains of learning that prepare him/her for formal educational curriculum. It undoubtedly involves the complex and inter-depending relations of child, school and family (Britto, 2010). School readiness is not a simple concept. It is more multifaceted notion comprised of various competencies related to academics and developmental readiness.

Developmental readiness

The term developmental readiness means that child reaches a developmental level to achieve school education. This concept includes an understanding of the developmental domains which are relevant to a child's readiness to manage complex demands of a formal schooling. The elements of developmental readiness stated by the National Education Goals Panel (1997) include physical well-being, motor development, socio-emotional development, language and cognitive development. These elements are important indicators of academic success of young children.

Developmental readiness is necessary for young children to enter ready to learn, laying foundation for academic success, physical and mental health, and general well-being. Young children entering kindergarten with poor academic and social– emotional school readiness skills as compared to their peer are at a risk for long-term negative school outcomes (Magnuson et al., 2007). Ready children experience less behavioral or emotional problems and are likely to succeed academically (Duncan et al., 2007). Less prepared children for school in later life are more likely to become teen parents, engage in criminal activity, and have a job that did not survive (Schweinhart, 2003). Globally, school readiness is gaining acknowledgement as a practical strategy to close the learning gap and improve equity in achieving lifelong learning and full developmental potential among young children.

Predictors of developmental readiness:

The pupil-centered transition model in school readiness focuses on ready child and ready family as key dimensions. Ready family includes factors like family level (parental style, socio-demographic characteristics) and the educational level of family members (Magdalena, 2014). An ecological view of child development framework considers important factors impacting readiness includes child's age, gender, family, early childhood education, schools, neighborhoods and the larger society (Emig et al., 2001). The relative age of children has been found as a key factor for developmental readiness of children in terms of social, emotional, cognitive and behavioural skills (Williams et al., 2016). Researches indicated gender differences can influence developmental readiness of children and explain that girls perform better than boys in various domains of developmental readiness (Janus & Duku, 2007). Along with this, the family background also acts as a major factor effecting developmental readiness of children for school learning and achievement. Parental education level and occupation acts as contributory factor in developmental readiness of

young children. Yadav (2011) found that children with educated and regular income parents were found to have better school readiness as compared to their counterparts. The pre-school exposure also plays important role in achievement of children in academic activities. Studies reported that children having pre-school education showed better developmental readiness than children without pre-school education at the time of entering to formal schooling.

Thus, developmental readiness is very essential component for successful transition of young children to formal schooling environment. For successful transition, along with ready child and ready school another important dimension is ready family. The ready families dimension focuses on parental involvement, education, home environment, family type and size etc. that acts as contributory factor influencing child development and readiness for success in school environment. However, the number of the studies that examine the influence of family background variables on the developmental readiness of young children mainly in Indian context is limited. Hence, keeping this consideration, this study was planned to assess the relationship of family variables and developmental readiness of the children.

OBJECTIVE

- To analyze the relation of certain family variables and developmental readiness of private school children

METHODOLOGY

Participants

The study was carried out in private schools affiliated with Punjab School Education Board (PSEB) of Ludhiana district of Punjab. Block-1 for rural sample and Zone-D for urban sample was purposively selected for this study. The total sample for the present study included 200 children of Class-I equally distributed across two genders [boys (n_b=100) and girls (n_g=100)] and care was taken to drawn sample equally from rural and urban private schools i.e. rural (n_1= 100) and urban (n_2= 100).

Instruments

The research tools that were employed on selected sample for various assessment and information collection are mentioned below:

a) **General Information Sheet**: To elicit the socio-personal and family background information of the respondents of the study, a self-designed general information sheet was prepared. It included the name of the school, name of the child, gender, pre-school experience, parental education and occupation, birth order, family size and type.

b) **Self-Structured Developmental Readiness Checklist:** The self-structured developmental readiness checklist was used to collect information concerning various domains of developmental readiness viz. cognitive, physical, socio-emotional readiness and self-help skills of class–I students from rural and urban private schools of Ludhiana district. The checklist included worksheets, activities and observations to be recorded related to each

component of developmental readiness. It was used to assess the basic skills likely to be achieved by Class-I students before entering for formal education in school. The checklist was divided into five sub-checklists:

a. Cognitive Readiness Checklist
b. Gross motor Readiness Checklist
c. Fine Motor Readiness Checklist
d. Socio-emotional Readiness Checklist
e. Self-help Readiness Checklist

Statistical Analysis

The collected data were classified and tabulated as per objective in order to arrive at meaningful and logical inferences by Karl Pearson's Coefficient of Correlation.

FINDINGS AND DISCUSSION

The present study made an effort to analyse the influence of various family variables of children on their developmental readiness. The results were analysed and presented in tables.

Table 1: Correlation between various domains of developmental readiness and family variables of the children (n=200)

Domains of Developmental Readiness	Family Variables					
	Father's Education	***Mother's Education***	***Father's Occupation***	***Mother's Occupation***	***Family Size***	***Birth Order***
Cognitive Skills	.240**	.283**	.177*	.170*	.134	-.005
Physical Skills (Gross Motor Skills)	.196**	.192**	.116	.119	.078	-.062
Physical Skill (Fine Motor Skills)	.227**	.303**	.073	.178*	.127	.112
Socio-Emotional Skills	.194**	.210**	.149*	.100	.113	.031
Self Help Skills	.133	.148*	.074	.025	.148*	-.011
Overall Developmental Readiness	.261**	.294**	.151*	.157*	.155*	.016

*** 0.01 level of significance*
** 0.05 level of significance*

The data in table 1 portrays the correlation between different domains of developmental readiness and family variables of the children. As per the data observed in the table, the overall developmental readiness of children was found to be significantly correlated with various family variables such as father's and mother's education (at 0.01 LOS), father's and mother's occupation (at 0.05 LOS) as well as the family size (at 0.05 LOS). The domains of developmental readiness also had significant correlation with various family background variables like father's and mother's education was found to have significantly positive relationship with all domains of developmental readiness. Similarly, father's occupation was significantly correlated with cognitive skills and socio-emotional skill at (0.05 LOS) whereas mother's occupation represented positive correlation with cognitive skill and fine motor skills of children. The family size of children was found to have significant correlation with self-help skills of children (at 0.05 LOS). In contrast to this, Magdalena (2014) demonstrated that parental style and involvement with children acts as a powerful predictor for preparing children for successful transition to formal schooling as compared to the parental educational level and family size.

Table 2: Correlation between various domains of developmental readiness and family variables of the boys (n=100)

Domains of Developmental Readiness	**Family Variables**					
	Father's Education	***Mother's Education***	***Father's Occupation***	***Mother's Occupation***	***Family Size***	***Birth Order***
Cognitive Skills	.181	.229*	.097	.218*	.214*	.117
Physical Skills (Gross Motor Skills)	.053	.048	.123	.009	.172	-.019
Physical Skills (Fine Motor Skills)	.164	.236*	-.036	.168	.172	.196
Socio-Emotional Skills	.046	.122	.064	.147	.286**	.110
Self Help Skills	.026	.050	.008	-.039	.285**	.077
Overall Developmental Readiness	.142	.187	.058	.147	.284**	.134

*** 0.01 level of significance*
** 0.05 level of significance*

Table 2 represents the relationship of family variables of boy respondents to the domains of the developmental readiness. The results indicated that the cognitive skills of boys were found significantly (0.05 LOS) related to mother's education and occupation as well as the family size. Similarly, the fine motor skills of boys were also significantly (0.05 LOS) related to mother's education. Data revealed that the family size of boys had significantly (0.01 LOS) positive relationship with socio-emotional skills, self-help skills as well as overall developmental readiness. Other than this, non-significant relationship exists between remaining domains of development and various family variables of boy respondents.

Table 3: Correlation between various domains of developmental readiness and family variables of the girls (n=100)

Domains of Developmental Readiness	**Family Variables**					
	Father's Education	*Mother's Education*	*Father's Occupation*	*Mother's Occupation*	*Family Size*	*Birth Order*
Cognitive Skills	.321**	.342**	.266**	.129	.054	-.149
Physical Skills (Gross Motor Skills)	.346**	.336**	.111	.216*	.004	-.105
Physical Skills (Fine Motor Skills)	.304**	.377**	.191	.191	.085	.015
Socio-Emotional Skills	.362**	.304**	.238*	.055	-.037	-.056
Self Help Skills	.273**	.256*	.144	.099	.013	-.115
Overall Developmental Readiness	.404**	.409**	.247*	.173	.037	-.116

*** 0.01 level of significance*
** 0.05 level of significance*

Correlation between various domains of developmental readiness and family variables of the girl respondents is presented in table 3. The data indicated that significantly positive association exists among father's and mother's education with all domains of developmental readiness of girls. The fathers' occupation was found significantly correlated with cognitive skills (0.01 LOS), socio-emotional skills (0.01 LOS) and overall developmental readiness (0.01 LOS) of girls whereas mother's occupation was found to have significant correlated with gross motor skills (0.01 LOS) of girls. Non-significant correlation exists between family size and birth order with domains of developmental readiness. These results are in line with other studies (Onzima 2010 and Nannyonjo

2007) indicating that parents with higher education level and better occupational status have more success in providing better opportunity for preparing their young children to be school ready as they have access to variety of resources contributing to their optimum development and well being. Guryan et al. (2008) also reported that educated parents like to spend more quality time with their young children that contribute in enhancing child development essential to be school ready for formal education.

Table 4: Correlation between various domains of developmental readiness and family variables of the rural children (n=100)

Domains of Developmental Readiness	**Family Variables**					
	Father's Education	*Mother's Education*	*Father's Occupation*	*Mother's Occupation*	*Family Size*	*Birth Order*
Cognitive Skills	.271**	.283**	.086	.102	.117	.065
Physical Skills (Gross Motor Skills)	.194	.012	.159	-.004	.080	-.114
Physical Skills (Fine Motor Skills)	.213*	.275**	.051	.190	.105	.130
Socio-Emotional Skills	.216*	.204*	.173	.023	.081	.031
Self Help Skills	.080	.031	.051	-.084	-.006	-.023
Overall Developmental Readiness	.273**	.226*	.115	.070	.109	.039

*** 0.01 level of significance*
** 0.05 level of significance*

The domains of developmental readiness were correlated with the family variables of rural children (Table 4) using Pearson's Correlation. Results depicted that there was a significantly positive correlation of father's education and mother's education with cognitive skills, fine motor skills, socio-emotional skills and overall developmental readiness of children. Statistically non- significant relationship was found among other variables with domains of developmental readiness of rural children. Shi et al. (2008) in their study revealed that environment of rural community encourages bond/ attachment between parents and children leading to better opportunity for independent free play and more physical activity that promote the development readiness of young children.

Table 5: Correlation between various domains of developmental readiness and family variables of the urban children (n=100)

Domains of Developmental Readiness	Family Variables					
	Father's Education	*Mother's Education*	*Father's Occupation*	*Mother's Occupation*	*Family Size*	*Birth Order*
Cognitive Skills	.192	.242*	.240*	.160	.115	-.049
Physical Skills (Gross Motor Skills)	.163	.270**	.043	.146	.027	-.013
Physical Skills (Fine Motor Skills)	.213*	.292**	.076	.126	.118	.103
Socio-Emotional Skills	.154	.178	.107	.107	.115	.036
Self Help Skills	.121	.148	.068	.000	.261**	.005
Overall Developmental Readiness	.218*	.284**	.164	.143	.154	.004

*** 0.01 level of significance*

** 0.05 level of significance*

Table 5 indicates the correlation of family variables of the urban children to various domains of developmental readiness. The results depicted that there was a highly significant correlation of cognitive skills with father's education, mother education and father's occupation (0.05 LOS). The gross motor skills of children were to be significantly related to mother's education (0.01 LOS) while fine motor skills reported significant correlation with father's education (0.05 LOS) and mother's education (0.01 LOS). Self-help skills domain of developmental readiness were found to have significant relationship with family size (0.01 LOS). Overall developmental readiness also had significant correlation with father's education (0.05 LOS) and mother's education (0.01 LOS). In line of this study, Bhaise and Sonawat (2016) identified socio-economic status, maternal education and pre-school experiences as potential factors to affect school readiness of child.

CONCLUSION

The concept of school readiness in the broadest sense involves ready child, family, school and communities. For successful school entry, children are expected to have certain prerequisite skills related to certain domains of development to comply with school routine. Thus, assessment of school readiness of pre-school children before entering to primary section is becoming an increasing concern.

Thus educators, practitioners, and policymakers should closely examine the variables that may affect adjustment and achievement of children in school environment. Developmental readiness acts as contributory factor for successful entry into formal school that helps in managing academic pressure of formal learning environment. This study was an attempt to find out the influence of family related variables on developmental readiness of young children. The finding indicated that parent's education (especially mother's education) & occupation and family size has significant influence on various domains of developmental readiness of children. Family environment plays vital role in getting child ready for formal schooling. Thus, the research paper is concluded with some suggestion which can be helpful for policymaker to increase awareness among parents and teachers regarding importance of developmental readiness resulting in better school readiness among children:

- Play based model with ample opportunities of exposure at home and pre-school is useful for achieving school readiness
- Program for parents and teachers on strategies to improve the developmental readiness of young children
- Assessment should be made an integral part of the ECCE curriculum with the prime objective of assessing the school readiness level of young children for further improvement.
- Training of teachers to play role of counselor should be organized which will be resulting in encouraging the children to participate in activities which will help in promoting their readiness for formal schooling
- Preparation of educational plans of ECE for the socio-economic disadvantaged population of children to prepare them in various domains of developmental readiness for smooth transition to formal schooling.
- Extensive research should be undertaken to investigate the impact of family interaction in terms of preparing young child for formal school and its effect of academic success.
- The family-based interventions should be conducted during the pre-school period help children meet the new challenges of entering school successfully.

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A QUALITATIVE STUDY ON PARENTS PERCEPTION REGARDING CARTOON VIEWING OF CHILDREN AND ITS INFLUENCE ON THEIR BEHAVIOUR

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ABSTRACT

This manuscript reviews the literature concerning the influence of watching cartoons on children's behaviour and does qualitative study of parent's perception on influence of watching cartoons on children's behavior. It begins with an overview of the research on children and parents' perception of watching cartoons. The modern-day technology is changing at exponential speed. In the digital era of television screen, mobile phones and internet, child's behaviour and personality are definitely affected as it has over ruled the field of recreational activities. Due to deep penetration of cartoon watching it has been seen that it has affected the behaviour of children. Whatever they see on cartoon channels they try to mimic and copy and behave in that manner. Parents of early childhood years were contacted and interviewed in depth for their views on cartoon viewing and its impact that they observe in their children. It has not only affected the language of child affirmatively but has also affected their habits. Parents in the study reported using cartoon viewing for making children eat their meals often. Food which was a part of family culture and also society due to modern fast life had become a work or duty which parents find comfortable in completing with the help of cartoon viewing. In this process children do not focus on food or eating manners instead fill their stomach mechanically and their mind remains focussed on cartoons. Thus, this habit appears to be unhealthy and alarming for child development. Parents use cartoon viewing often for engaging children in their busy life style thus the content being watched is of concern and requires immediate attention and awareness.

Keywords: Early Childhood, Cartoon Viewing, Eating habits, Parents perception

INTRODUCTION

Present generation is attracted towards digital media as they are born and being raised in the environment where phones, T.V, Internet smart, I-pod are accessible 24/7 to children of every age. Children begin watching cartoons at an early age and by the time they start going to school they become enthusiastic viewers. Over many years, watching cartoons has replaced their field activity and has become a primary part of their life.

Almost all have grown up watching cartoons and it can be said that they keep children engaged with information and entertainment. But on the negative side it is seen that violence shown in cartoons make children violent and aggressive. The screen time of children had increased and physical activities reduced. .One cannot avoid the negative sides of digital media. Adopting positive strategies and engaging children hobby courses can reduce the negative side of digital media. Steve Hostler alludes that those children who watch too much cartoons become too much violent and addictive. He also stated that the content they see on television in cartoon is not appropriate as per their age group. Excessive watching of cartoons has affected children's innate health like mental and emotional. On the other side, some of the studies advocated that some of the

content shown in cartoon not only make children independent but also increases their vocabulary and improve communication skills.

In the entertainment sector cartoon characters and channels has brought a big revolution. Zimmerman and Christakis et al. (2007) stated that the 3 different types of content shown in cartoon series; they are educational, non-violent entertainment, and violent entertainment. Signature characters such as Chhota Bheem, Motu- Patlu, Barbie and Rapunzel gained stardom through cartoon (Furniss, 2007). Zahid Yousaf stated that Ben Ten character in cartoon series influences not only the children behaviour but also their language. A drastic change was seen among the children that they were more interested in watching cartoons rather than playing physical games.

In early 1960s, cartoons were an established television feature. At that time they were facing big disputes among their fraternities on commercialization and violence. These issues rose because cartoon characters were showing some unacceptable and irrelevant characters which were not appropriate to the age of child. This issue is yet to be resolved, as, content shown in the cartoons are still violent (Butler, N.D).

Habib & Soliman (2015) stated that childhood is the stage where moral values are if inculcated will develop in to strong ethics. If children are exposed to too much violence on the television, especially through cartoon characters, it could ruin an individual's personality and it could not contribute to raise a healthy child by teaching them good habits.

Schmidt and Vandewater (2008) conclude in their study that content shown on television programmes matters and if quality educational program is shown it will definitely have positive influence on children's learning .A study done by Adak (2004) explains that Children cannot fully distinguish between real world and virtual world so they tend to imitate what they see in cartoons. Impersonate positive behaviour is seen among those children who mostly spend time viewing educational programs (Rideout & Hamel, 2006). Review of literature motivated to undertake present study with the following objectives.

OBJECTIVES

1. To know the influence of watching cartoons on children's behaviour through analysing secondary data
2. To study parents' perception on cartoon viewing of children and its influence on their behaviour

METHODOLOGY

1. Tools used: Secondary data have been gathered from various research journals, books and websites.
2. An interview Schedule was mailed through goggle form and was filled by children's parents and their views were taken in detail telephonically. Twenty parents were interviewed in depth about their perception of cartoons impact on children's behaviour.

Parents of different play schools of Lucknow city were contacted for interviewing on their perception of cartoon viewing of children and its influence on their behaviour. Finally out of thirty five parents twenty gave their time and data for the study.

a. Inclusion criteria for second objective: -Parents of those children who watch cartoons daily for at least two hours daily.

b. Exclusion criteria: - Parents of children who did not watch cartoons daily minimum for 2 hours.

REVIEW OF LITERATURE

Parental Supervision: This part is an important part to be discussed in the study because this clearly shows how much parents are aware with respect to their child's exposure of cartoon they were watching. Abelard (1999) says that in an era where both parents are generally working and children spent most of the time unsupervised. It is essential for them to take out time for children and regularly keep on checking what they are doing in their absence. Josephson (1995) says that there are many things through which parents can control their child from watching violence and irrelevant stuff on television. Abanto (2014) notes that 'child developed self-confidence, grew responsible when cohesion in family is strong. It can be developed through communication, sitting together, watching cartoons and laughing together.

Cognitive behaviour: Some studies have shown that watching cartoons on television has greatly affected the cognitive functioning of child. Wartella & Robb (2007) in their findings state that children learn quickly from watching cartoon or movie when compared to human teaching... On the other side Diehl and Toelle, (2011) said that children who watch educational programmes, reading books, engaging themselves in their hobby courses are more likely to have better cognition.

Child development: According to Baran &Davis (2009) the child's development starts since the time they started mimicry and they recall the sounds, Buonanno (2008) says that television pretend to convoy children to do those activities which are not appropriate to their age. Meyrowitz (1985) observes that television forces children to ask the meanings of actions and words. Positively, television cartoon provides a medium of family cohesion because it is something that families can together get entertainment. An observational study done by the American Paediatrics Association has concluded that the television has become a widely used tool for teaching the children (Muss, 1999). On the negative side, it is a complained that excessive exposure to cartoons by children has hindered the growth of children by not getting enough time for their participation in recreational activities.

Impulse food purchasing behaviour: A research was conducted by Tanvir & Arif (2012) on parent's perception towards children behaviour- how their children behave when they encounter the cartoon endorsed product. The results suggested that children buy cartoon endorsed items more as compared to other food products but there is no difference between the impulse buying behaviour among boys and girls. Although class difference in the impulse buying behaviours of the children is seen as children of higher income group tend to buy things more impulsively as compared to parents with low income.

Social behaviour: A study done in Nigeria by Oyero & Oyesomi (2014) reported that cartoons had influenced the children and said that cartoons have both positive and negative influence on shaping the behaviour of children.

Violence: A study done by Hassan &Daniyal (2013) stated that there is a relation between the violence shown in the cartoon programs with the behaviour of the children in the class.

Aggressive behaviour: According to Kirsh (2005) comedic elements in cartoons camouflage animated violence, thereby reducing the negative effects of violent imagery on aggressive behaviour. This study suggested that intervening the negative effects of cartoon violence may be as simple as making an active mediation statement during viewing.

Education: According to a report by Gill and Robert Children have a tendency to simulate character of cartoons more easily than adults. In educational content if emphasis is put on cartoon characters for teaching the children then the speed of learning increases.

Role Models: Cartoon characters can set a good example to children as a role model that encourages good moral behaviour. For example, Superman character is honest and brave; it plays a role of constantly standing up for the rights of others.

Health Problems: Study done by Bowling Green State University stated that watching too much cartoons has reported the harmful effect on the brains of children who watch too much cartoons specifically the attention deficit disorder. Too much watching cartoons force children to sit in front of TV for longer times, this on other hand limit their time for physical activity. Lesser physical activity leads to the problems like obesity, etc.

Eating disorders: Researchers from the University of Colorado Boulder collected data from approximately 300 children and found that cartoon characters are completely imaginary, kids still attributed human body norms to character's body shapes. After watching a cartoon with a plump character, it was found that children were almost twice as likely to consume high-calorie, indulgent foods when compared to children who viewed healthier looking characters or no characters at all.

Observational learning: According to Bandura (1986) learning has four stages that is attention, retain, reproduce and repetition. Humans are much socialised and that is why he can quickly adapt new behaviour patterns. Children pay a lot of attention to cartoons because the characters they watch, they retain the things then they reproduce and finally they repeat from the things they saw.

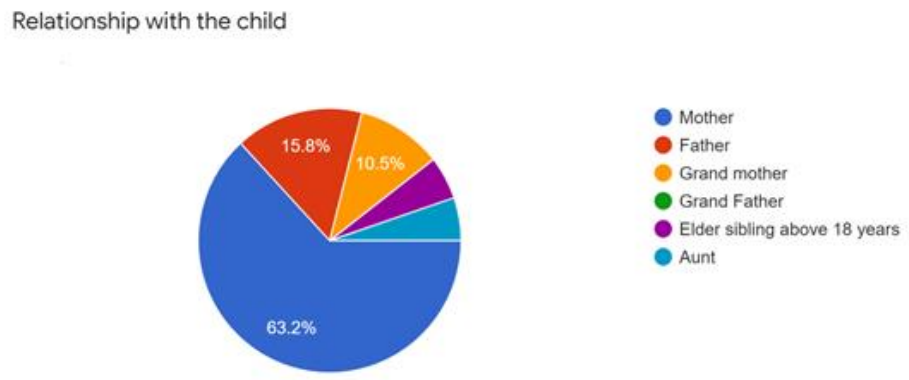
Linguistic development: Clark (2002) studied watching cartoon from pedagogical point of view. He said Cartoons give the child that atmosphere in which he engages himself and create the scene to enhance his abilities and his listening and speaking abilities unconsciously. Doring (2002) said that watching cartoons make child’s brain more productive. Learner creates his oral capabilities so that he can answer the question.

Social learning theory: Social learning theory explains imitation occurs in four stages that is close contact, imitation of influencers, understanding of concepts, and role played by the characters. According to Baran and Davis (2003), the components of observational learning are attention, retention, motor reproduction and motivation.

Hence, from these two theories it can be concluded that television cartoons help in shaping the social behaviour of children because the characters they watch on television they put attention to the characters they see, they retain the things then they reproduce and finally they repeat from the things they saw.

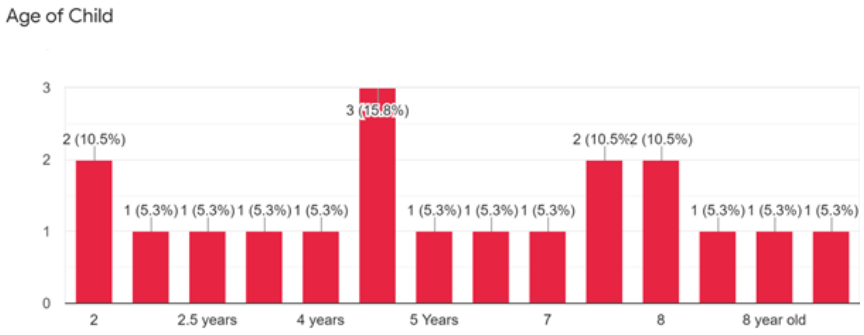
FINDINGS AND DISCUSSION

Graph 1: Relationship of respondents with the child:



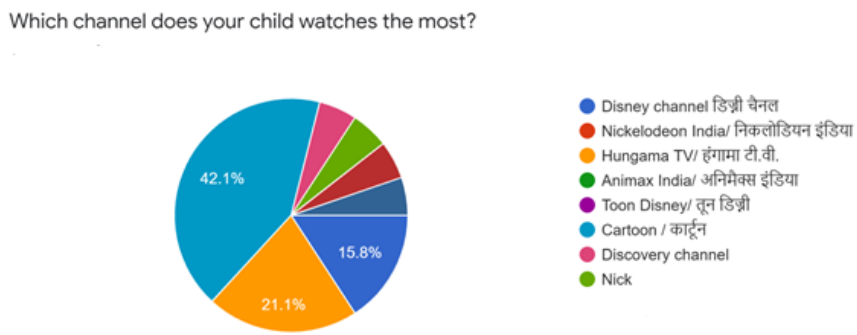
A pilot study was done on 20 respondents among which 52.6% were female child and 47.4% were males. Among them, 63.2% were living in joint family and 36.8% in the nuclear family. It was seen that 63.2% guardian of the child was mother, 15.8% had father and 10.5% had grandmother as their guardian. None had grandfather as the guardian. Hence, it is clear from the study that mothers are generally the caretaker of a child. She played a major role in molding the personality if a child.

Graph 2.: Age of child



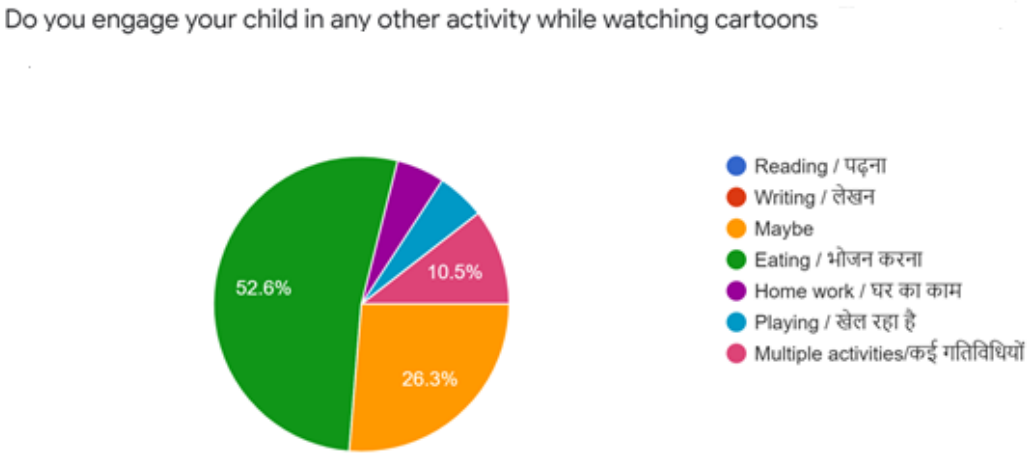
The data shows that 15.8% among the respondent's child were in the age between four to five years and 10.5 % have the child of age group eight years. An article written by Nocola KS Davis in ''The Guardian'' stated that until a child reaches to its puberty child speaks according to the adults he is surrounded by.

Graph 3. T**ype of channel the child watches**



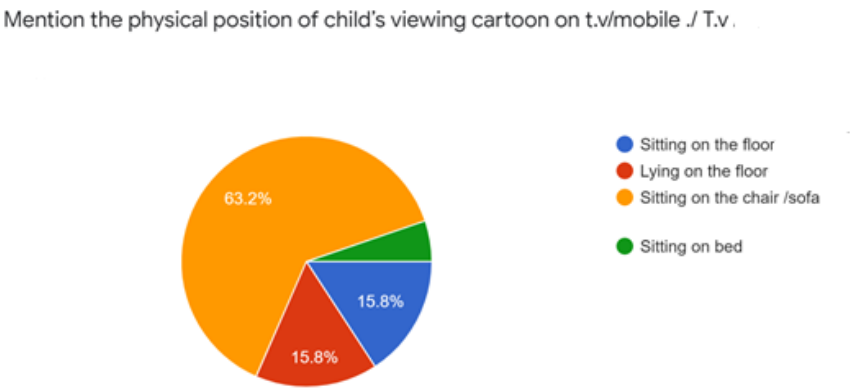
The study revealed that 42.1% children watched cartoon channel, 21.1% watched Hungama channel, 15.8% watched the Disney channel and 5.25% watched Nickelodeon, Toon Disney and Nick and Discovery channel respectively. Majority of the children were watching cartoon channel. The reason can be as the channel has a name cartoon in it and the content shown on this channel may entertain the child very much.

Graph 4: Engagement of the child while watching T.V.



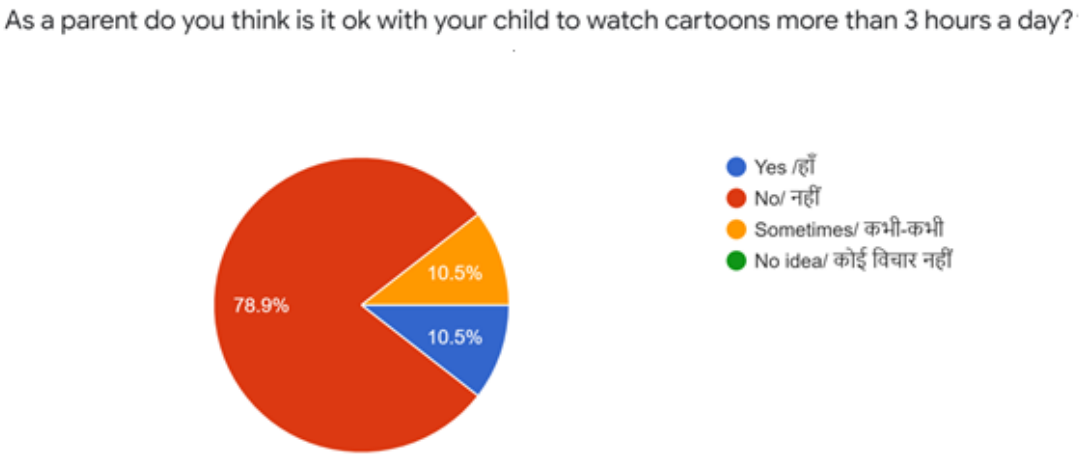
About 52.6% gave their child a food to eat ,26.3 % parents were not sure whether they engaged their child in other activities while their child was watching cartoons ,10.5% parents engaged their child in multiple activities when their child is watching the cartoons while 5.3 % parents may give a child something to read or write respectively. A big reason for parents to engage their child to eat food or doing multiple activities or other work is that they may get rest or take out some time for themselves.

Graph 5: Physical position of a child while watching cartoon



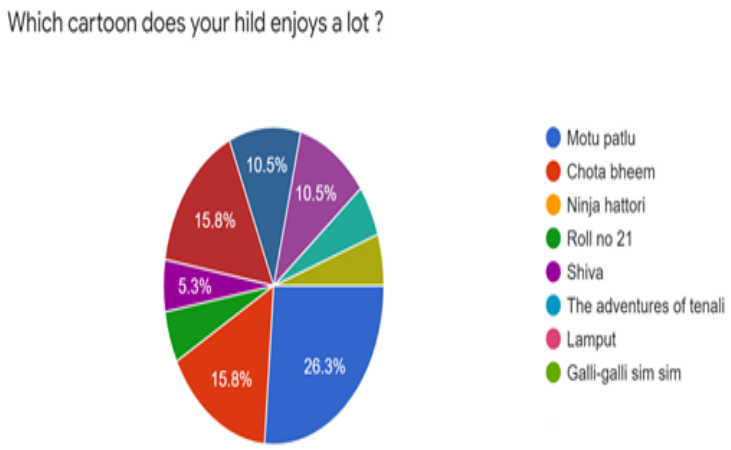
Majority of parents said that their child watch cartoon while sitting on the chair/sofa, 15.8% child watch cartoon while sitting on the floor or while lying on the floor respectively and 31.6 % watch cartoon while sitting on a bed. The reason for this could be that the parents are not paying attention towards the posture of a child. It can also be said that as the duration of a child for cartoon watching is too long because of tiredness or laziness the posture keeps changing.

Graph-6: Timing of watching cartoons by a child



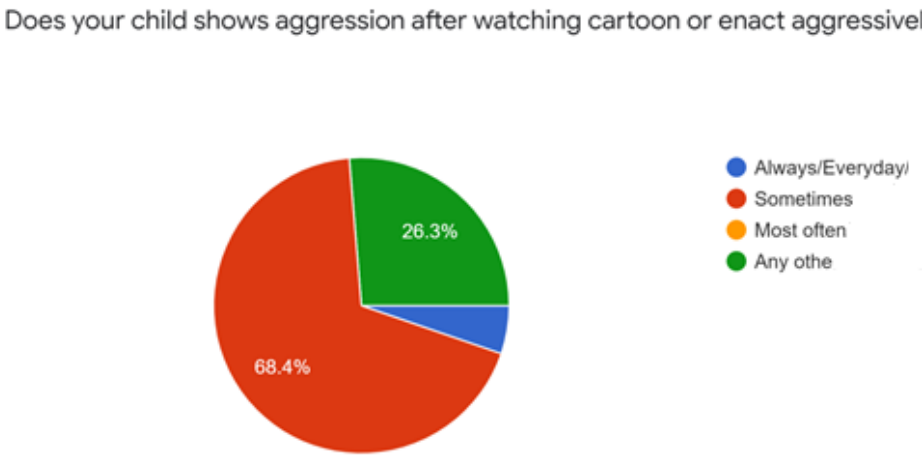
Majority of the parents said that they were not 'ok' with the fact that their child is watching cartoon for too long time. 10.5% either said 'yes' or 'sometimes' they are 'OK'if their child is watching cartoons for more than 3 hours. The reason could be if parents are too much busy or they are not getting a time for children then they may have no problem. On the other hand, all those parents who were not ok may have noticed some behavioral changes in their child.

Graph7: Type of cartoon a child enjoys



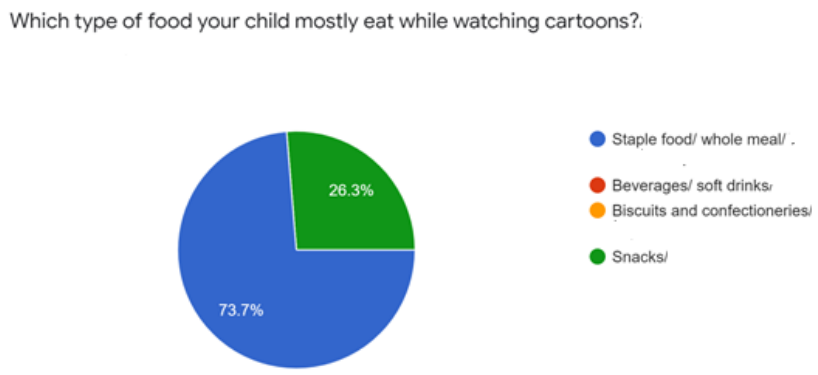
From the study it is clear that 26.3% children enjoy the adventures of Tenali, 15.8 % children enjoy cartoon chotabheem and Lamput respectively, 10.5% children enjoyed cartoon Shiva and Motu Patlu. About 5.2% children enjoyed watching cartoon Galli-Galli sim-sim, roll no 21 respectively. From the study it was also clear that about 21.1 %children watch cartoon on mobile at the time of interview taken by the researcher. About 78.9% children watch cartoon on television. From the study it was also found that about 15.8% children imitate cartoon character Mr. Bean, Chota Bheem, Doremon respectively. 10.5% children imitate cartoon character of Motu Patlu, 5.3% children imitate character of Tom and Jerry. About 18.4 % children imitate cartoon characters of Pakadam Pakdai, Ben ten respectively.

Graph 8: Behavior of a child -Aggression



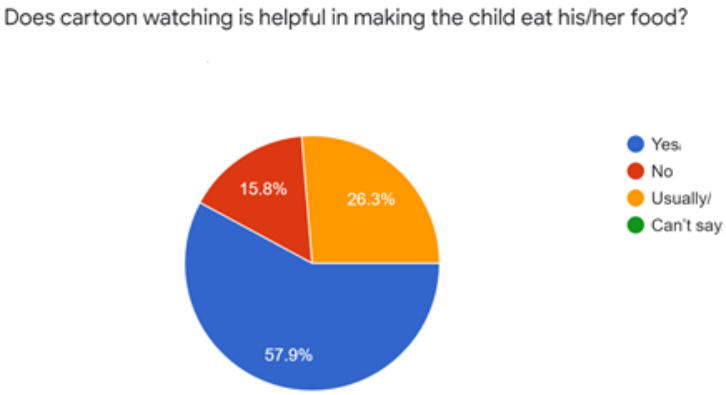
About 68.4% children sometimes show aggression after watching cartoon or enact aggressively. About 26.3% any other behavior while watching cartoon and about 5.3% children always/everyday show aggressive behavior or enact aggressively.

Graph 9: Type of food eaten by a child while watching cartoon



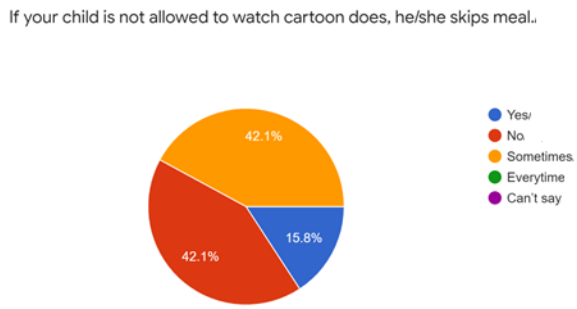
About 73.7 % children were eating staple food or whole meal while watching cartoon and about 26.3% were eating snacks.

Graph 10: Cartoon watching helping in making child eat food



From the study it was clear that about 57.9% children were comfortable before the screen while eating food. Their parents/guardian said it was helpful for them. About 26.3% usually eat food while watching cartoons and about 15.8% said no that it is not helpful in making their child eat food while watching cartoon.

Graph 11: Child skips meal if not allowed to watch cartoons



About 42.1% children do not skip meal and about 42.1% children sometimes and 15.8% skip meal if not allowed to watch cartoon. It was clear from the study that 47.4% children finished all their food given to them while watching cartoons and 31.6% children usually did not finish all their food during they watch cartoons. About 57.9% parents said that watching cartoon is helpful to the child to eat his/her food and about 26.3% said usually cartoon is helpful for their child to eat his/her food and about 15.8% said no to cartoon watching for helping their child to eat his/her food. The reason can be when the child is watching cartoons no one is observing them or interfering them.

CONCLUSION

The aim of this research was to study the influence of watching cartoon on behaviour of children. Various studies have shown that watching cartoons had significant influence on behaviour of children. Changes are both positive as well as negative. Parents should keep bird eye view on the content showing in the cartoons. They need to spend time with children. From the study it can be concluded that the production of more informative and educational programs will help to create the awareness among the children.

Majority parents reported to utilize cartoon viewing of child for making them eat food. They gave different reasons as ‘children don’t eat but watching cartoon is a distraction or engagement that involves them thus easy to make them eat’. This throws light on the fact that food and eating manners were an important part of our culture. Families sat together food preparation food serving and eating together is an important part of way of living in a culture and was an important aspect of a family environment. Now a day’s families don’t eat together thus even parents in their fast life are not able to provide an environment to child where food and eating together is happiness and satisfaction not just for hunger but psychological thus often food presented to them is disapproved with various reasons as taste, appearance or boredom. Researches have proved that for children observation and imitation are powerful tools of learning at that early years of life but eating together not only introduced children to various foods being consumed by different family members but also gave opportunity to eat by observing and copying. Instead of that we are moving

towards television and mobiles cartoon viewing to displace their attention and feed mechanically. That's a concern that needs attention and improvement if we want children to not just eat as a type of work but enjoy food as part of our culture.

Majority children sit on sofa and chair to watch cartoons others lie or sit on floor or bed. But the point is their posture while watching cartoons for long hours, of which, parents felt they are not at all conscious. Parents reported often once the child is comfortable and engaged in watching they hardly pay attention to their postures.

Majority of the parents feel their children should not watch cartoons for more than three hours but there was difference in their thought and practice. Parents need cognitive and behaviour therapy for this concern as per this qualitative study. Parents told about various cartoons watched by their children which depend on age group, region, language etc. In this study majority liked "Motu Patlu". As parents it is important to analyse the cartoon character that your child is observing. Example in the cartoon "motu patlu" the main character eats "Samosa"- a junk food - often and gains energy and power from that. So such fairy and wrong perceptions for eating or other important things needs to be analysed and counselled.

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ISLAMIC RELIGIOSITY AND PERSONAL IDENTITY: MUSLIM YOUTH VOICES FROM BENGALURU AND VADODARA

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ABSTRACT

Muslims are the second largest religious group in India. Growing up in the new millennium against a secular backdrop, Indian Muslim youth have witnessed rising Islamic fundamentalism, global terrorism and religious polarity. The study attempted to understand developing identities of urban, educated Muslim youth from Vadodara and Bengaluru. Thirty-two participants, both men and women, aged 22-32 years wrote detailed Biographical Sketches narrating important influences on their personal identity from childhood to adulthood. They ranked three significant factors from their life which shaped their identity and responded to open ended questions about meaning of life and personal growth goals. The Psychological Measure of Islamic Religiosity (PMIR) (Raiya, 2008) was also administered. Results revealed that participants of Vadodara and Bengaluru performed similarly on Islamic religiosity at a moderate level. Qualitative analysis of Biographical Sketches revealed that urban, educated Muslim youth considered factors like family/friends, personal attributes, learning from past experiences, and educational achievements to be more important than religion in shaping their identity. In finding their meaning and purpose of life, they actively engaged in interpreting religion vis-à-vis their life circumstances.

Key words: youth, Muslim, India, personal identity, religiosity, Islam

INTRODUCTION

Engendering multiple identities is a norm in India and religious identity is but one among many identities a person may have. Muslim identity in India is highly debated and often scrutinized from a historical, political and social perspective. Through this study, the researcher explored the interface of Islamic religiosity and personal identity of Muslim youth from Vadodara and Bengaluru.

Personal Identity and Religiosity

Identity is the way one sees or defines one self, or the network of values and convictions that structures one's life. In order to understand themselves, youth take a psychological journey identifying and associating with familial, vocational and societal roles (Damon, 1983). Self and identity are reflections of the distinction between inner and the outer, best understood as representing a collectivity, closer to the social and observable (Mishra, Akoijam &Misra, 2009). Youth are in the process of exploring their identity and examining identity cohesion vis-à-vis the collective.

Religiosity is found to be relevant in explaining commitment and purposefulness in terms of identity formation (Tzuriel, 1984, cited in Oppong, 2013). Tarakeshwar, Stanton and Pragament (2003) identified ritualistic, experiential, ideological, intellectual and social dimensions for understanding the structure and content of religious identity. Religiosity thus influences collective identity, comprising membership in a religious group, acceptance of its belief systems, endorsement of important religious values, commitment to the religious group, and practices associated with religion (Templeton & Eccles, 2006). Religious beliefs, values and morals empower youth to better understand the world and their unique place in it. In an unstable social and political context, religious affiliation may anchor identity formation strongly.

Post 9/11 and with beginning of the 'war against terrorism,' increased interest in Islamic religiosity and identity has inadvertently created a falsely homogenous and distorted picture about the everyday life of Muslims. However, few researches look into the lived realities of Muslims in other spheres such as professional life, class affiliation and their socio-economic needs (Khan, 2009). This gap needs to be bridged.

Muslims and Muslim Youth in India

India remains the world's largest religiously plural, secular, multi ethnic country, where Muslims form the largest group among religious minorities. Apart from Shias and Sunnis, other sects like Bohras (within Shias) Ahmadis and Qadiyanis are also found in India (Santhosh, 2016). According to the 2011 census, Muslim population in India is estimated around 17.22 crores, which is 14.23% of the total population. The Pew Research Center (Hackett, 2015) estimates that by 2050 India will be home to 311 million Muslims, the largest number of Muslims found anywhere on the globe. Although eight in ten Indians report that religion is a very important part of their lives (Majumdar, 2018), Muslims are considered to be excessively religious in comparison to other Indians (Khan, 2009). One is also led to believe that the major preoccupation of a Muslim is his or her religious practice and strong adherence to Islamic religious beliefs and institutions. However, a nation-wide study by CSDS-Lokniti in 2015 (Ahmed, 2018) found a majority of Muslims in India to be only 'somewhat religious' (like Hindus) with reportedly less religiosity levels than Christians or Sikhs. Contrary to another stereotype, among various religious groups in India Muslim families were the fastest to shrink in size from 2001 to 2011 due to rising education and literacy levels (Hindustan Times, 2016).

With a population of 350 million youth (Census 2011), India is the 'youngest country of the world.' The Muslim community has the highest number of young persons below the age of 20, amounting to 52% share in India's total youth population, more than any other religious group (India Today, 2016). According to the Sachar Committee Report cited in Santhosh (2016) the Muslim community lags behind in areas of education, employment in the organized sector and representation in government service as well as policy making bodies. 25% Muslim children between the ages of 6-14 years have either never been to school or have dropped out. With 31% living below the poverty line, most Muslim families are self-employed in the unorganized sector, indicating limited contribution to the formal sector. Muslims in India have the highest economic dependency rates on their adult population, even though the number of elderly in the community is less than the national average. The 2001 Census showed that the literacy rate of Muslims in India was 59.1%, lowest among all religious groups. The literacy rate for men was 67.6% and that for women was 50.1%, again lowest among all religions (Kaur & Kaur, 2012). Given these trends, challenges linked to inadequate opportunities and skewed social mobility put Muslim youth at a risk of marginalisation. In a situation of global and national polarisation of Muslims, movement

towards radical religious ideologies that get easily integrated into developing identities is highly plausible. Thus, understanding the lived realities of Muslim youth is significant at this time.

The present study was conducted to understand two aspects, Islamic religiosity and personal identity among Muslim youth. The research objectives were:

i. To understand levels of Islamic religiosity among Muslim youth from Vadodara and Bengaluru.
ii. To understand subjective experiences of important life events and their effects on personal identity.

METHODOLOGY

The study was descriptive and qualitative in nature. The sample consisted of 32 Muslim youth participants from two cities of Vadodara and Bengaluru, including eight men and eight women from each city. To be included in the study, participants were required to be unmarried Muslim individuals between the ages of 21 and 35 who had completed at least a Bachelors' degree. Religious affiliation was determined through self-identification.

Two tools were used to gather data.

1. *Biographical Sketch and Open-ended Questions*: Participants wrote their Biographical Sketchesin response to a list of questions about personal identity. They ranked three important factors affecting their personal identity, where a first rank meant the most important influence. Some open-ended questions on religious practices, purpose of life and growth goals were also asked. The tool was validated by an expert from the field of Human Development and Family Studies.
2. *Psychological Measure of Islamic Religiousness (PMIR):* Abu Raiya's (2008) scale examines Islamic Religiousness using eight subscales, each independent of the other. For the present study, five subscales most relevant to the Indian context were used namely, (a) Islamic Belief (b) Islamic Duty, Obligation and Exclusivism (c) Islamic Ethical Principles and Universality (d) Islamic Positive Religious Coping and Identification and (e) Islamic Religious Struggle.

Both tools were administered one by one, in a particular order on email and followed upon the telephone. The Biographical Sketch was administered first. Three days after receiving a response the Islamic Religiousness scale was sent. Participation was voluntary and participants were free to leave the study at any time. After explaining the purpose of the study, written informed consent was taken via email. Confidentiality of responses was maintained and participants could clarify their doubts on phone.

FINDINGS AND DISCUSSION

Profile of the Participants

Twenty-two participants, eleven men and eleven women had a Bachelors' degree in Engineering, Education, Business and Management and worked in the corporate sector. Four participants had advanced degrees and worked as managers and nutritionists. Two men and three women were Lawyers, Architects and Chartered Accountants. One participant was a college teacher. Most of the participants were born in the early 1990s, representing a generation with first-hand experience of economic liberalization and the beginnings of globalization in India. During

early adolescence, participants had witnessed significant global events like 9/11, the war on terror in Afghanistan, the Iraq debacle and intermittent communal riots in different parts of India. Their life experiences thus happened against the backdrop of a changing, radical understanding of Islam.

Islamic Religiosity

Using the inter-quartile method, ranges of high, moderate and low scores were obtained for Islamic religiosity scale and participants were distributed in these ranges as per their scores. For Islamic religiosity, 15 out of 32 participants, across cities and genders, were moderately religious. Most of the Bengaluru participants scored in the moderate and low ranges but most Vadodara participants scored in the moderate and high ranges. Contrary to expectations, across cities very few participants were highly religious, with men scoring slightly more than women. Across cities, participants showed similarity in their understanding of Islamic religiosity. More participants scoring moderately and below on Islamic religiosity scores indicated that interpreting religion was a complex process and contextual factors like place of residence, education, work and personal life experiences may influence their thinking.

Influences on Personal Identity and Meaning of Life: Qualitative Analysis

Qualitative analysis highlighted the role of many factors including religious values for participants' personal identity. Participants were asked to rank three significant factors that influenced their identities in their life so far. A total of 98 responses were obtained. Meaningful, mutually exclusive categories were formed to summarize influences on personal identity.

Table 1: Factors Affecting Personal Identity of Muslim Youth *(N=32)*

Factors	Definition	Examples	Proportion (%)
Family and Friends	Parents, grandparents, immediate family members, taking care of family as a goal in life, supportive friends from school, college or workplace	*Parents encouraged me, always supportive* *I want to earn and keep my family happy* *My friends have taught me so many things, they keep me happy and grounded*	33.67
Self-Attributes	Personality characteristics possessed or valued by self	*Dedication, Discipline, Friendly, Outspoken, Will power, Respectful*	20.40
Education and Work	Educational qualifications, success in career	*I am proud of my academic achievements* *I have worked hard for a good career; it is very important for me*	13.26
Past Experience	Personal growth and learning due to past experiences,	*Financial hardships have taught me patience,*	12.24

	overcoming adversity	*Overcoming health issues reinstated my faith in myself, Moving away from home made me stronger*	
Religion	Belief in Islam, Religious practices like prayer, fasting, pilgrimage	*I offer namaz daily, prayer makes me stronger, I believe God has sent me for a purpose, I believe in Islamic principles*	10.20
Others / No response	Influences from various sources	*Success, social belonging, movies, fictional characters*	6.12

(table-1 represents multiple responses)

Majority of the participants considered their family and friends to be the most important factor shaping their identity followed by self attributes, education, work and past experiences. Only 9 out of 32 participants mentioned religion as an important factor. Thus, although religion was important for Muslim youth, their identities were defined more by factors that supported them to navigate life and meet challenges with confidence like support of family and friends, personality characteristics like hard work, decision making and will power, education and work-related achievements.

The influence of religion was seen most when participants responded to open ended questions about meaning and purpose of life.

Table 2: Understanding of Meaning and Purpose of Life (N=32)

Meaning of Life	Definition	Examples	Proportion (%)
Religious Purpose			
Life is a test	Human life as a test to overcome existential challenges, know one's true nature	*Life is merely a test, of choosing the right path*	12.12
Belief in eternal afterlife, Judgement day	Quality of eternal afterlife depends on one's deeds	*The main purpose of life is to prepare for eternal afterlife*	10.60
Obeying Allah, follow Quran, Serve God	Praying, following all religious rituals that reinforce belief in Islam	*The Almighty has created us to serve and obey his orders in the Quran, We are God's trustees on earth*	7.57
Discover and fulfil divine purpose	Focus on finding life's purpose	*I must discover and achieve the reason for which I was born*	6.06
Universal Love			
Live and let live, be good-do good	Concerns with peace, love, and happiness	*Simple and peaceful living, Make the world a better place*	15.15

No discrimination or hate, helping others	Need for justice and inclusion in society	*Your life is meaningless if you don't help others*	10.60
			10.60
Fulfilling dreams of parents, good behaviour	Achieving a good life for self and family	*To keep my parents happy and not let them down*	
Constant self-improvement, service to society	Improving self and betterment of society	*To know myself, my true nature…I must constantly improve*	13.63
Don't know			
Still searching, No idea	No engagement with questions, no response	*I am still searching for my life's meaning*	13.63

(Table-2 represents multiple responses)

Total of 66 responses could be categorized into Islamic concepts like beliefs in Judgement day and eternal afterlife, life as a test to reveal one's true or divine nature and beliefs about universal understanding of a peaceful and happy life. Participants mentioned spreading happiness in different ways such as keeping family happy, contributing to society, spreading love, eradicating hate and helping the needy. Concerns for justice, rising inequality and need for more inclusion in society were also mentioned. Four participants mentioned that religion was not a prerequisite to have a good purpose in life, but being a good-hearted person was. Interestingly, participants with moderate scores on Islamic religiosity mentioned religious and universal love the most whereas four out of five participants who mentioned not knowing the meaning or purpose of their life were low scorers on Islamic Religiousness.

Biographical Sketches

A variety of Biographical Sketches presented in the next section exemplified the interface of Islamic religiosity and personal identity and gave insights into lived realities of growing up and being Muslim in urban India. The blue boxes on the top of the flow charts indicated the mention of religion and the importance they attributed to it through different life stages. The lower side of the diagram depicted life events. Broken lines indicated a negative event while a solid line indicated a positive event.

Figure 1 represents the Biographical Sketch of a woman participant from Bengaluru with moderate Islamic religiosity.

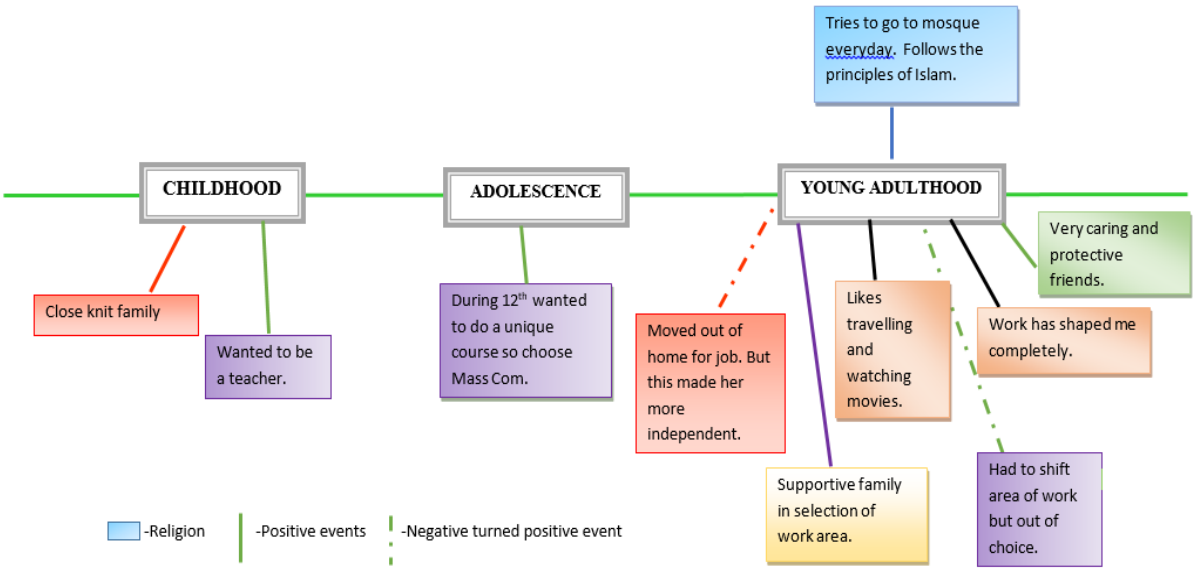

Figure 1. Representation of moderate Islamic religiosity and personal identity

A lady, 'Y' was a mass communications professional in Bengaluru working with a multinational media house. For her, religion was not the most significant factor in life, yet she practiced and believed in it. Her work demanded long hours of stay on the sets, frequent travel and outdoor shooting often leaving no time to offer *namaaz* on a daily basis. Being a woman, she faced restrictions from her relatives but her parents were very supportive and never stopped her from achieving her goals. Eventually she moved out of the city and transformed into a strong and independent person who had many close friends. She believed that each person came to life for a reason. Her purpose in life was thus to find and fulfil that reason for herself and needy others.

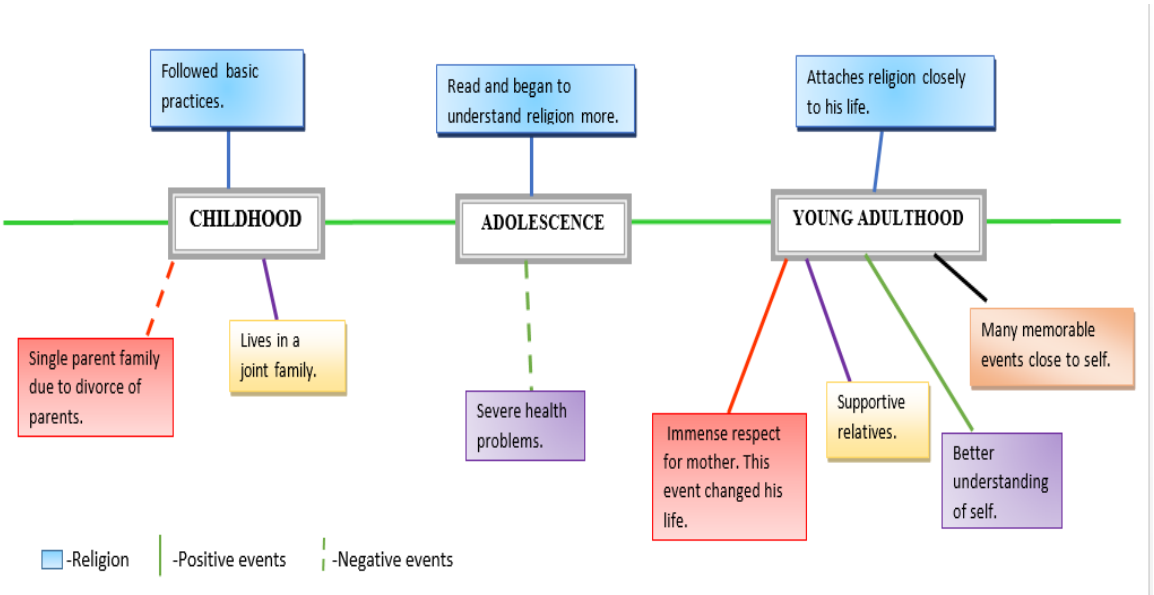

Figure 2. Representation of high Islamic religiosity and personal identity

Figure 2 represents the Biographical Sketch of a highly religious Bengaluru man. An engineer by profession, he grew up in a joint family. He follows all Islamic religious practices since childhood and over time he began to understand the teachings of Islam more consciously. In his words, learning this *"changed me from an uncivilized and aimless person to a civilized and a focused person"*. He attributes overcoming life challenges like parents' divorce in his childhood and recovery from bad health in adolescence to religious faith.

The next Biographical Sketch represents personal identity of a Vadodara woman 'P', low on Islamic religiosity.

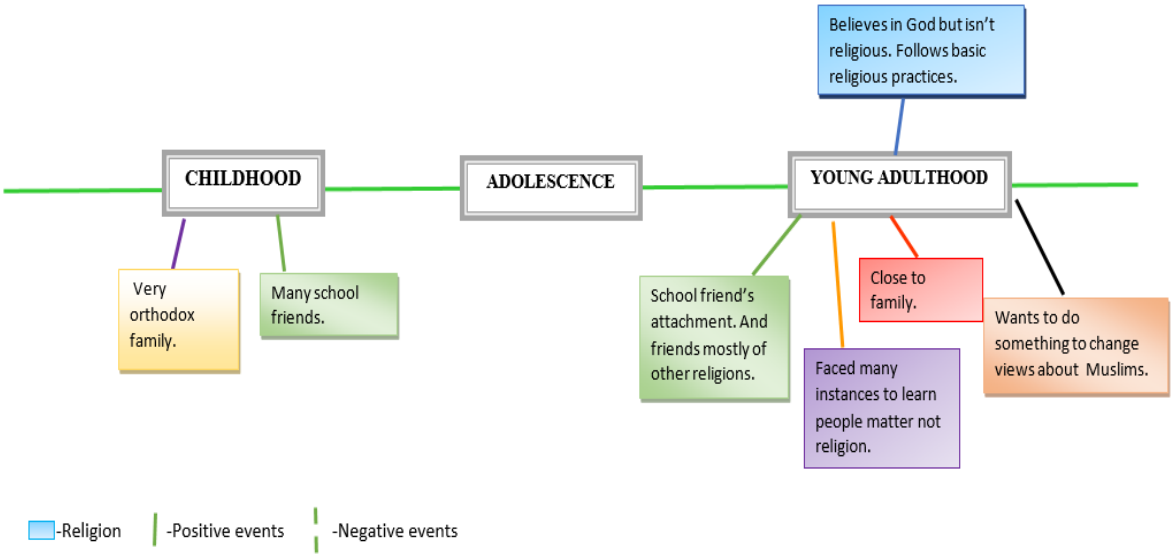

Figure 3. Representation of low Islamic religiosity

A lady 'P' was 24 years old, hailing from an orthodox Bohra family. She liked to listen to music and hangout with her friends, most of whom belonged to other religions. Although she read the Quran and prayed regularly, she did not consider herself religious. In her words, "*Yes I practice out of will. I do it (pray, follow religious practice) when I feel like following it. Not when somebody asks me to. I am quite spiritual that way…I believe in God but not in religion*." She mentioned that religion was an inseparable part of her identity, but she wanted to do something about stereotypes associated with Muslims*("I do not want to be known as a Muslim girl from an orthodox family…that is something that we are tagged with….you cannot date a Muslim girl, something like that")*.Her experiences taught her that relationships were more important than a community or religion.

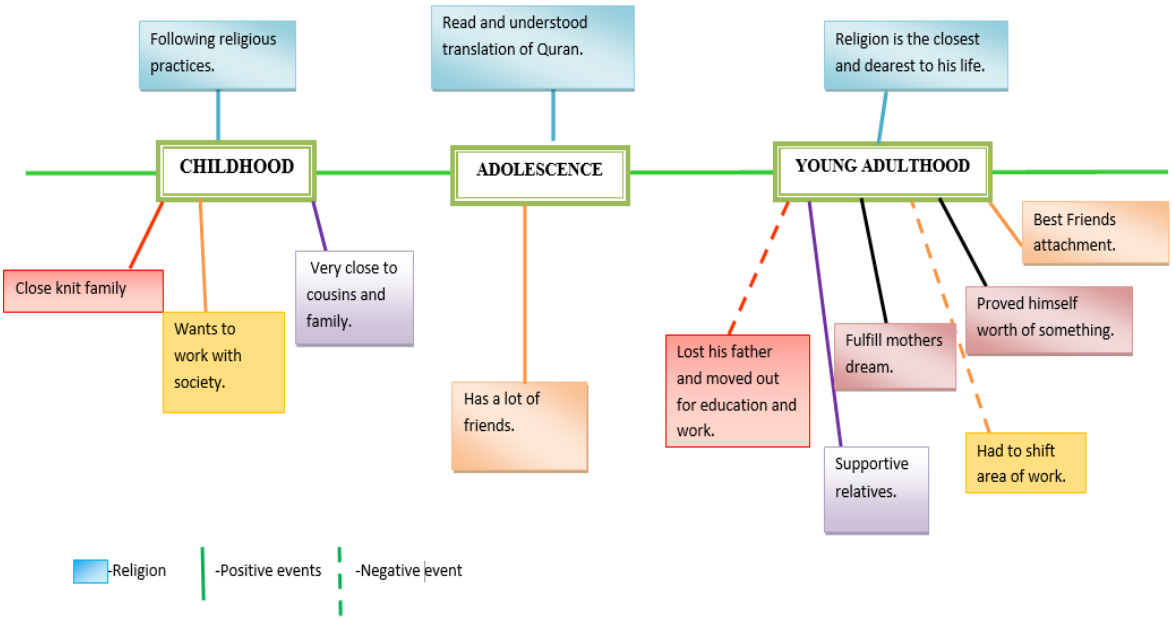

Figure 4. Representation of high Islamic religiosity

'Z' was a 26-year-old Sunni Muslim man from Vadodara. A very religious man, he learned to read the Quran in childhood and over the years, has read translations in English and understood it very well. For him *"Religion is the closet and dearest concept of my life."*He read the Quran daily, offered *namaz* regularly and also fasted in the month of Ramzaan, without fail. He was very close to his family and worked hard to earn a gold medal for a Masters' in Social Work. His father's untimely death changed his family circumstances. He had to leave a good offer for a Government job and shift his area of work to support his mother. He felt his life was a test and his deeds in life would bear fruits in the form of heaven or hell in afterlife. So, his purpose in life was to do good deeds and live with peace and simplicity.

SUMMARY, CONCLUSION AND IMPLICATIONS

Moderate Muslim Voices

Contrary to popular media images, Muslim society as well as Islam is not homogenous and each Islamic group has its own unique social, historical and political background. Majority of the participants across cities scored moderately on Islamic religiosity. Suroor (2019) argued that moderate Muslim voices hold more promise than any other group to bring about positive changes within the community. Unfortunately, a polarizing political atmosphere has made even moderate Muslims deeply conscious and defensive about their religious identity. Similarly, Bilgrami (1995) stated that even moderate Muslims find it difficult to make a sustained criticism of the Islamic doctrine. In a changing socio-political context, they fear that any criticism of Islam will only lead to their surrender to the motives of the western world. Unless this defensiveness is given up and replaced by a third-person perspective on the community, internal reform in Islam is difficult to achieve. In the long run, this would only strengthen fundamentalist ideologies about an existential threat, making Muslim youth especially vulnerable.

Religiosity and influences on Personal Identity

"Yes, I do believe in my religion and follow it, but I don't blindly follow it, I question it and understand it. This is not only for religion; it is true for every aspect of life." (Bengaluru man).

Adherence to religious practice is an observable facet of Islamic religiosity. But many participants reported not being able to follow all religious practices because they gave preference to practical considerations like lack of time, work schedules as well as personal choices. Thus, participants' belief in religion was complex and needed active interpretation for one's life circumstances. The study brought forth other facets like work and family life, health and decision making where religion and personal identity were interspersed. More than religion, the presence of supportive family or friends and self-related attributes like hard work, dedication, honesty, punctuality were critical factors shaping their personal identity. This indicates that identity concerns of Muslim youth were not very different from other youth.

LIMITATIONS AND RECOMMENDATIONS

The study was conducted with a small sample of thirty-two individuals and thus has limited generalizability. The data for the study was gathered though email or telephone. This led to limited face to face interactions. Similar studies can be done with a larger diverse religious sample, in the lower socio-economic classes to explore the interface of religiosity and personal identity.

CONCLUSION

In conclusion, although not the most important factor, religion remains an integral part of the life of Muslim youth. Identity exploration in youth includes understanding what religion means for oneself and choices about what aspects of religion should be upheld across a variety of life situations. Majority of the participants were moderately religious and actively engaged in making sense of religious beliefs for personal identity, through their life circumstances. Religion plays a major and positive role, in defining the meaning of life, ethical principles and growth goals of Muslim youth. It can be concluded from the results that religion and its integration in life is an active and dynamic process. Religion derives its dynamism and flexibility from deeply personal interpretations by individuals who navigate life challenges with religion as a guiding factor.

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WORKING WIVES AND THEIR IMPACT ON MARITAL SATISFACTION

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ABSTRACT

The study investigates women employment and their marital satisfaction. College teachers had the highest marital satisfaction. Majority of doctors had medium marital satisfaction, due to less availability of time for family. Job satisfaction, value, sexual adjustment, performance in dual role and attitude towards marriage had direct positive effect whereas marital conflict, sexual unfaithfulness of husband and temperament had direct negative effect on marital satisfaction. Majority of the working women had medium level of satisfaction with their family income, sex related matters, role in family decision making and relations with in-laws. A high number of working women was highly satisfied with regard to personal character of husband, affection from husband, sexual interaction; children looked after by husband in a better way, social behavior and support of husband in household chores and role in family decision making. Dual-earner families, work hours and schedules had a large impact on spousal time. Time spent with spouse was also directly associated with marital quality, emphasizing the importance of spending time together for building strong and healthy marital relationship. The variable adaptation affected negatively and indirectly via job satisfaction and sexual adjustment means that women have to adjust with their job and spouse. Income had positive but indirect effect on marital satisfaction and it influenced through value and job satisfaction. Adaptability had negative indirect effect through job satisfaction and sexual adjustment.
Key words: job satisfaction, marital conflict, marital satisfaction, organized sectors, working women.

INTRODUCTION

Marital satisfaction is the amount of satisfaction expressed by husband and wives in their marriage relationship. It refers to that state of accommodation between husband and wife characterized by tendency to resolve conflict and solve problems, to come to a mutual agreement on important issues of married life and also by an overall feeling of happiness and satisfaction with marriage and marriage-partner (Kapur 1974). Family in transition is faced with the dilemma of two roles of women. It wants earning from the woman member but at the same time does not want to compromise with the traditional role of women. Men's household work participation has not increased along with the women's rise in the labour force, leaving many employed women faced with household responsibilities when they get home. When demands and expectation are not met, frustration and role-conflicts crop up, which has implications for the women's mental health as well as well-being of their children (Lerner and Galambos, 1988).

By the 1980s the differences became significant which was reflected in higher marital quality among wives, especially highly educated wives, who were employed than among housewives (Houseknecht and Macke, 1981; Simpson and England, 1982). Researchers suggest that husbands who hold conventional attitude about the division of labour (Perry- Jenkins and Crouter, 1990) or whose wives hold highly paid jobs (Voydanoff, 1988) may report lower levels of satisfaction when wives are employed. Changing gender norms regarding married women's

employment contributed to these changes (Mason and Lu, 1988; Thornton, Alwin, and Camburn, 1983).

Significance of the study

The results of the present study will reveal the perceptible changes in the mindset of working women, their attitude towards marriage and help the married couple in mending their behaviour and also helpful to the employer to change its policy for enhanced job satisfaction. It will be of great academic value to the students, scientists and researchers for studies on this issue.

OBJECTIVES

1. To study the level of marital satisfaction among working women.
2. To study the association between marital satisfaction and job satisfaction.

HYPOTHESIS

H 1**:** There is a difference in level of marital satisfaction among working women

H 2: There is an association between job satisfaction and marital satisfaction

Assumption

- Marital satisfaction is the result of both intrinsic and extrinsic factors.
- Attitude towards marriage has bearing on marital satisfaction.
- Job satisfaction has spillover effect on marital satisfaction.

Limitation

The study is based on the ability of the respondents to recall, their willingness and sincerity to furnish required information. The study will be applicable to areas with similar socio-economic and cultural situation.

METHODOLOGY

The survey design of research was used in the present investigation. The total 300 working women from different professions like education (school and college teacher), health (doctor and nurse) and other services (officer and clerk) from organized sectors in Ranchi, Hazaribagh, Ramgarh and Bokaro district of Jharkhand were selected purposively for field investigation (fig. 1).

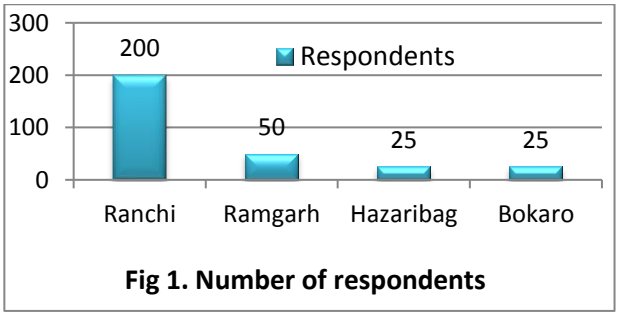

Fig 1. Number of respondents

PROCEDURE

A total of seventeen independent variables (mainly socio-personal, economic and situational characteristics), namely: age of wife, age of husband, differences in age, length of marriage, year of employment, income, interference of elders, temperament, interest, values of life, sexual unfaithfulness of husband, sexual adjustment, adaptability, performance in two role, attitude towards marriage, job satisfaction and marital conflict were selected on the basis of review of literature, discussion with experts and pilot study for studying their association with the dependent variable i.e. marital satisfaction.

Item analysis

The suggestions of the experts were analyzed and 30 items were selected and pre-tested among 30 working women other than sample. Level of marital satisfaction was judged on a four-point continuum rating scale with their scores given as: high satisfaction (3), medium satisfaction (2), low satisfaction (1) and no satisfaction (0).

The correlation coefficients of items were worked out and valid 26 items for measuring marital satisfaction were selected which included life after marriage, family income, amount of affection from husband, personal character of husband, social behavior of husband, support of husband in household chores, role in family decision making, relations with in-laws, sexual satisfaction, time spent by husband, respect of emotion, regards for views, conflict resolution, husband doing the things liked by wife, looking after of children by husband, the husband himself, husband ignoring weakness, joint outings, freedom in taking important decisions, freedom to interact with outsiders particularly male, faith on husband, importance received for being working women, husband adjusting with wife's prioritized work, freedom to participate in socio-religious activities, sharing confidential information by husband, husband ignoring unintentional mistakes.

Reliability of the test

To judge the reliability of the test 30 respondents were interviewed twice at an interval of 15 days and correlation coefficient (r=+0.88) was found to be significant at 0.01 level of probability indicating high reliability.

Pre-testing of interview schedule

The draft interview schedule was pre-tested with 25 respondents other than sample. On the basis of experience gained in pre-testing necessary modifications were made and the final questionnaire was prepared and used to collect the data.

Measures

The data were analyzed using statistical methods such as frequency distribution, mean score, standard deviation, paired 't'-test, correlation and path coefficient analysis.

FINDINGS

Martial satisfaction is a function of several factors and considered worth examining their combined effect in order to draw reasonable and acceptable conclusions. Martial satisfaction of working women was measured on four-point continuum viz., high, medium, low and no satisfaction (Table 1)**.** Majority of the working women were in medium satisfaction in respect of their family income (61.7%), sex related matters (54.7%), role in family decision making (53.3%)

and relations with in-laws (53%). More number of working women were highly satisfied with regard to personal character of husband (41%), affection from husband (30.3%), sexual satisfaction (27%), children looked after by husband in a better way (28.3%), social behavior and support of husband in household chores (26%) and role in family decision making (22.3%). Majority of the women had low satisfaction with regard to respect for their emotion (54%), followed by husband ignoring the weaknesses (53.3%), conflict resolution (52.3%), regard for their views (51%) and joint outings (40. 7%). It is heartening to report that 49. 7 percent working women had very much faith on their husband and 37.3 percent respondents got importance. About 29.7 percent respondents got freedom to participate in socio-religious activities and husbands of 25.3 percent working women adjust with their prioritized work. As far as sharing of important information is concerned, only 11 percent respondents reported that they had high satisfaction with respect to sharing of confidential information by husband and 40 percent women had no satisfaction with husband himself.

Table 1. Distribution of respondents with respect to selected statements on marital satisfaction

	High satisfaction		Medium satisfaction		Low satisfaction		No satisfaction	
ITEM	N	%	N	%	N	%	N	%
Life after marriage	42	14.0	94	31.3	98	32.7	66	22.0
Family income	37	12.3	185	61.7	66	22.0	12	4.0
Affection from husband	91	30.3	150	50.0	47	15.7	12	4.0
Personal character of husband	123	41.0	132	44.0	39	13.0	6	2.0
Social behavior of husband	78	26.0	142	47.3	60	20.0	20	6.7
Support of husband in household chores	78	26.0	123	41.0	84	28.0	15	5.0
Role in family decision making	67	22.3	160	53.3	59	19.7	14	4.7
Relations with in-laws	46	15.3	159	53.0	59	19.7	36	12.0
Sexual satisfaction	81	27.0	164	54.7	46	15.3	9	3.0
Time spent by husband	51	17.0	143	47.7	69	23.0	37	12.3
Respect of emotion	33	11.0	54	18.0	162	54.0	51	17.0
Regards for views	29	9.7	51	17.0	153	51.0	67	22.3
Conflict resolution	17	5. 7	36	12.0	157	52.3	90	30.0
Husband's work liked by wife	55	18.3	119	39.7	96	32.0	30	10.0
Looking after children by husband	85	28.3	68	22.7	81	27.0	66	22.0
The husband himself	5	1.7	46	15.3	129	43.0	120	40.0
Husband ignoring weaknesses	14	4.7	39	13.0	160	53.3	87	29.0
Joint outings	48	16.0	92	30.7	122	40.7	38	12.7
Freedom in taking decisions	106	34.3	96	32.0	66	21.7	33	11.0
Freedom to interact with male	15	5.0	44	14.7	92	30.7	149	49.7
Faith on husband	149	49.7	99	33.0	29	9.7	23	7.7
Importance received from husband	112	37.3	119	39.7	57	19.0	12	4.0
Adjustment of husband with prioritized work	76	25.3	111	37.0	51	17.0	62	20.7
Freedom in socio-religious activities	89	29.6	105	35.0	83	27. 7	23	7.7
Sharing confidential by husband	33	11.0	51	17.0	115	38.3	101	33.7
Husband ignoring unintentional mistakes	96	32.0	97	32.3	84	28.0	23	7.7

Level and range of marital satisfaction

Majority of the respondents (66%) had medium satisfaction whereas, 18.7 percent of the respondents were found to have low marital satisfaction (Table 2). As far as high marital satisfaction is concerned, 40 percent of college teachers had high marital satisfaction followed by officer (20%), clerk (14%) and school teacher (10%). About 34 percent of school teacher had low marital satisfaction followed by doctor, nurse, college teacher and officer.

Table 2. Level of marital satisfaction of working women

Categories	High satisfaction (> 51)		Medium satisfaction (36-50)		Low satisfaction (20-35)	
	frequency	%	frequency	%	frequency	%
College teacher	20	40.00	25	50.00	05	10.00
Officer	10	20.00	37	74.00	03	06.00
Doctor	-	00.00	38	76.00	12	24.00
School teacher	05	10.00	28	56.00	17	34.00
Clerk	07	14.00	35	70.00	08	16.00
Nurse	04	08.00	35	70.00	11	22.00
Total	46	15.33	198	66.00	56	18.67

Marital satisfaction ranged belonging to higher and lower service varies from 27 to 59 and from 20 to 67 respectively (Table 3). The range was found maximum in clerk whereas; minimum limit is in the category of nurse. The minimum variability of marital satisfaction in doctor ranged from 27 to 47 whereas maximum variability was observed in clerk ranged from 21 to 67.

Table 3. Mean and range of marital satisfaction

Respondents	Mean	Range	Maximum	Minimum
College teacher	46.96	26	56	30
Officer	45.14	32	59	27
Doctor	38.56	20	47	27
School teacher	40.16	35	56	21
Clerk	43.32	46	67	21
Nurse	39.90	33	53	20
Total	42.34	47	67	20

Comparison of marital satisfaction between selected categories

There was highly significant difference between doctor and officer, doctor and college teacher, doctor and clerk, officer and school teacher, officer and nurse, college teacher and school teacher and college teacher and nurse depicted by their t-value of -5.279, -6.604, -3.235, 3.101, 3.174, 5.641 and 4.388 (Table 4). There was significant difference between respondent belonging to higher and lower services.

Table 4. Comparison of marital satisfaction between selected categories

Pair of respondents	Paired Difference		t value
	Mean	S.E. Mean	
Doctor- Officer	-6.58	1.25	-5.279 **
Doctor-College teacher	-8.40	1.28	-6.604 **
Doctor-School teacher	-1.60	1.42	-1.130
Doctor-Clerk	-4.76	1.47	-3.235 **
Doctor-Nurse	-1.34	1.15	-1.161
Officer-College teacher	-1.82	1.30	-1.402
Officer-School teacher	4.98	1.61	3.101 **
Officer-Clerk	1.82	1.68	1.085
Officer-Nurse	5.24	1.65	3.174 **
College teacher-School teacher	6.80	1.21	5.641 **
College teacher -Clerk	3.64	1.68	2.166
College teacher -Nurse	7.06	1.61	4.388 **
School teacher-Clerk	-3.16	1.76	-1.800
School teacher-Nurse	0.26	1.63	0.159
Clerk-Nurse	3.42	1.86	1.839
Higher service-Lower service	2.43	0.95	2.562 *

* significant at 0.05 percent probability level, ** significant at 0.01 percent of probability level.

Multivariate Analysis:

In case of factors affecting marital satisfaction out of 17 variables, 11 variables exhibited significant correlation. The variables income, temperament, value, sexual adjustment, performance in dual role, attitude towards marriage and job satisfaction correlated significantly and positively with marital satisfaction, whereas the variable interference of elders, sexual unfaithfulness of husband, adaptation and marital conflict had shown significant negative correlation as depicted in fig. 2. Path coefficients were worked out with the factors which had shown significant association with marital satisfaction. The analysis of path coefficients reveals that value, job satisfaction, attitude towards marriage, performance in dual role and sexual adjustment had high to medium direct positive effect on marital satisfaction whereas the factors like interference of elder, temperament, marital conflict and sexual unfaithfulness of husband had medium to high but negative direct effect on marital satisfaction. Similarity of temperament had two extreme situations- both partners being hot tempered or cool temperament. Being hot tempered, the situation often is chaotic and resulted in poor marital quality. Marital conflict creates pressure on spouses and cause low level of marital satisfaction. In modernization era, the individuals want to enjoy freedom and autonomy. They attain financial security; naturally, the working women like to have their own decision in personal and family life. They do not like interference of elders. The variable adaptation affected negatively and indirectly via job satisfaction and sexual adjustment means that women have to adjust with their job and spouse.

DISCUSSION

Marriage is a fundamental social institution which helps to the nurture and rising of children and is the "social glue' that reliably attaches fathers to children. It contributes to the physical, emotional and economic health of men, women and children and thus to the nation and world as a whole. It provides a global assessment of the current state of a relationship and indicators of happy, stable relationships (Sabatelli, 1988). It is often viewed as an individual's attitude toward the partner and the relationship (Dainton, Stafford and Canary, 1994).

Majority of the working women had medium level of satisfaction with their family income, sex related matters, role in family decision making and relations with in-laws. A high number of working women was highly satisfied with regard to personal character of husband, affection from husband, sexual interaction; children looked after by husband in a better way, social behavior and support of husband in household chores and role in family decision making. England and Farkas (1986) cited American attitudinal survey evidence from the late fifties and the seventies showing that marital satisfaction had risen over a period when women's employment rates also rose. They speculated that non-economic reasons for martial dissatisfaction may be more important than economic reasons. Majority of the women had low satisfaction with regard to respect for their emotion, which was followed by husband ignoring the weaknesses, conflict resolution, regard for their views, and joint outings. Wilkie, *et. al*., (1998) in case of marital satisfaction of two- earner couples, found that controlling for perceived empathy, each spouse's own perceptions of fairness in domestic and paid work directly and significantly increased marital satisfaction for both husbands and wives.

In level of marital satisfaction of working women, only 15.33 percent of the respondents belonged to high satisfaction category. Matthews *et. al*., (1996) found that for both husbands and wives, work-family conflict was associated with greater psychological distress, which in turn affected marital interaction and marital quality. Similarly, in examining work characteristics of both husbands and wives, Kingston and Nock, (1987) found that the longer the work hours of either spouse, the less time couples spent together engaged in a number of different activities-including leisure. Dual-earner families, work hours and schedules had a large impact on spousal time. Time spent with spouse was also directly associated with marital quality, emphasizing the importance of spending time together for building strong and healthy marital relationship.

There was highly significant difference between doctor and officer, doctor and college teacher, doctor and clerk, officer and school teacher, officer and nurse, college teacher and school teacher and, college teacher and nurse. Officer and college teacher had more marital satisfaction than doctor. This difference in marital satisfaction emanates from the fact that officer and college teacher had routine type work style with lots of leisure whereas doctors work under pressure and often called by the employer in case of emergencies. The comparison between officer and college teacher reveals that there was no statistically significant difference between them with respect to marital satisfaction. In case of lower service respondents i.e. school teacher, clerk and nurse there had no statistically significant difference. Marital satisfaction in higher service respondents was found to be statistically higher than that of lower service respondents. Differences in marital satisfaction between higher and lower service respondents may be due to differences in income and social status.

Marital satisfaction not only relates to spousal support satisfaction, but also plays a pivotal role in determining spouses' behaviors and judgments and spousal support satisfaction often

demonstrates influence on spouses' outcome through its contribution to marital satisfaction (Pasch *et. al.*, 1997). As far as correlation is concerned, the variables value, temperament, attitude towards marriage, job satisfaction, performance in dual role and sexual adjustment showed significant and positive association with marital satisfaction. This is an acknowledged fact that marriage is a socio-religious institution witnessed by society and solemnized according to ritual of a particular religion. The similar value possessed by the spouses ensures strong bonding, a favourable attitude towards marriage keeps the couples intact in situation and performance in dual role naturally keeps every member happy. As the working women move on home-office continuum, the disturbance at one place brings commensurate disturbances at another place. Satisfying and pleasing situation in office carries happiness for the family at home. Higher marital satisfaction was associated with higher levels of positive and lower levels of negative family emotional expressiveness (Froyen *et al* 2013).

SUMMARY AND CONCLUSION

The results indicate that value, job satisfaction, attitude towards marriage, performance in dual role and sexual adjustment have positive and direct effect on marital satisfaction. Similarly, the factors like interference of elder, temperament, marital conflict and sexual unfaithfulness of husband had direct negative effect. Most of the factors are intrinsic and require action on the part of spouses and other factors. Suitable environment helps children to learn humanity and shape the future of community, country and world at large.

These issues were not considered important until the middle- and upper-class women started to enter into job in organized sector. Initially, they were mostly restricted to health and education sector as nurse and teacher respectively. Advancement of education, bestowal of constitutional rights in the form of right to employment, economic necessity arising out of raised standard living and most important the will of the women to assert themselves have resulted into rising number of women in job market. Liberalization, privatization and globalization have added new dimension to the women's employment. Now it is easy to discern the presence of women in every sector.

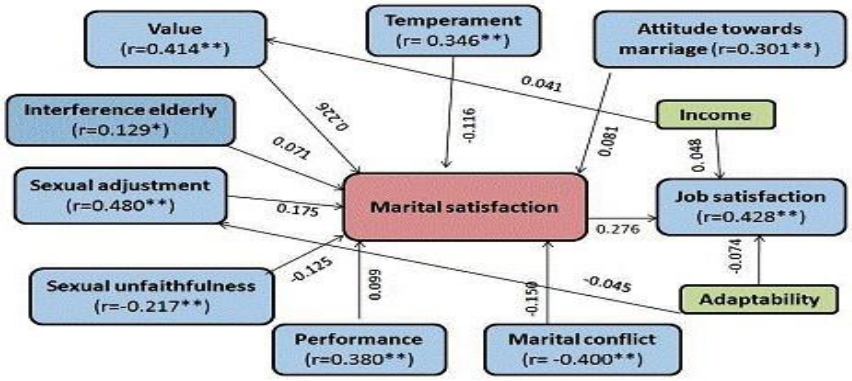

Figure 2. Path analytic model of marital satisfaction

IMPLICATIONS

The study indicates the factors responsible for modifying marital satisfaction and bringing peace and happiness in the family and ultimately in the society. The implications of the study are relevant for couples, employers, socio-cultural organizations and government.

SUGGESTIONS FOR FUTURE RESEARCH

- Precise indicators could be developed for measuring overall marital satisfaction of working women due to changes in technology.
- Some more in-depth and broad-based studies in respect of marital satisfaction could be conducted with different sectors and larger number of samples.

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