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RESEARCH ARTICLE

EFFECTIVENESS OF HONEY MIXTURE ON OVERWEIGHT YOUNG ADULTS

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ABSTRACT

Introduction:-According to WHO, Obesity has reached epidemic proportions globally, with more than 1 billion adults overweight- at least 300 million of them clinically obese and a major contributor to the global burden of chronic disease and disability. Obesity is an increase in body weight as the result of excessive accumulation of body fat and obesity results when the caloric value of food intake exceeds energy output. Overweight and obesity are considered the core of many diseases. Although numerous techniques are available for evaluating body fat, the variables for BMI are easy to measure. Along with the pharmacological therapy, many complementary therapies are also available for treating overweight. So, honey mixture was given to overweight young adults. **Aim**: - Aim of the study was to assess the effectiveness of honey mixture on overweight young adults at University College of Nursing, Faridkot, Punjab. **Methods: -** A quantitative approach with one group pretest-posttest research design was selected for the present study. With simple of 37 overweight young adults [1]were selected with BMI 25-29.99 Kg/m^2 and Socio demographic data sheet and tool were selected to assess the effectiveness of honey mixture on overweight young adults. **Results:-**The present study revealed that interventions honey mixture was helpful in reducing BMI among overweight young adults. Comparison of interventions was done ,which showed Pre intervention mean score was 26.25 and post intervention mean score was 25.46 respectively which was significant at p value <0.05.

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INTRODUCTION

One of the most common problems related to lifestyle today is being overweight. Severe overweight or obesity is a key risk factor in the development of many chronic diseases such as heart and respiratory diseases, non-insulin-dependent diabetes mellitus or Type 2 diabetes, hypertension and some cancers, as well as early death. Obesity and overweight are serious problems that pose a huge and growing financial burden on national resources (World Health Organisation, 1995). Obesity is often defined simply as a condition of abnormal or excessive fat accumulation in the adipose tissue of the body leading to health hazards. The underlying cause is a positive energy balance leading to weight gain i.e. when calories consumed exceed calories expended (Flegal, 2012). Data from the National Health and Nutrition examination survey, 2009-2010. More than 2 in 3 adults are considered to be overweight or obese.

- More than 1 in 3adults is considered to be obese.
- More than 1 in 20 adults are considered to be extremely obese.
- About 1/3rd of children and adolescents ages 6 to 19 are considered to be overweight and obese.
- More than 1 in 6 children and adolescents ages 6 to 19 are considered to be obese (Flegal, 2012; Ogden, 2012).

Overweight and obesity are influenced by many factors including hereditary tendencies, environmental and behavioural factors, ageing and pregnancies. Thus, it is clear is that obesity is not always simply a result of overindulgence in highly palatable foods or of a lack of physical activity but Biological factors (hormones, genetics), stress, drugs and ageing also play a role. However, dietary factors and physical activity patterns strongly influence the energy balance equation and they are also the major modifiable factors (Astrup, 2014). Together with information from national surveys, the data show that the prevalence of obesity in most European countries has increased by about 10-40% in the past 10 years, ranging from 10-20% in men and 10-25% in women (World Health Organisation, 2000). The health consequences of obesity and overweight are many ranging from an increased risk of premature death to several non-fatal but debilitating and psychological complaints that can have an adverse effect on

quality of life (Sproston, 2003). Numerous treatments and drugs have been proposed to control the worrisome obesity pandemic, but there have been a lot of adverse effects associated with anti-obesity drugs, prompting researchers to revert to natural products as anti-obesity agents.Honey is also an energizer, helping workers and athletes overcome fatigue and regain energy. Honey is a multivitamin tonic, has antibacterial properties and has antioxidants. Taking one tablespoon honey with one tsp. cinnamon powder three times a day can also recede cancer symptoms in one month. Honey has several antioxidants which are effective against cancer growth. There are various medicinal uses and health benefits of honey. Honey is used as topical antibacterial agent to treat infections in wide range of wounds like leg ulcers, pressure ulcers, diabetes foot, and burns. It also has many health benefits which include fight acne, combat infection, fight colds, treat burns, and reduce cholesterol, clear bladder infection, and helps with weight loss, strengthen immune system (Sampath Kumar, 2010).

Statement of the problem: An Experimental study to assess the effectiveness of honey mixture on overweight young adults at University College of Nursing, Faridkot, Punjab.

Objectives of the study

- To assess the prevalence of overweight young adults.
- To compare the body mass index of overweight young adults before and after the administration of honey mixture.
- To find out association of body mass index of overweight young adults with selected socio-demographic variables.

Research hypothesis

H_0: There is no significant decrease in body mass index after the administration of honey mixture.

MATERIALS AND METHODS

Research Approach: Quantitative research approach was used for the study

Research Design: Pre - Experimental, one group pretest - posttest design was chosen for the study.

Research setting: The study was conducted in University College of Nursing, Faridkot.

Study Population: Young adults of 18-35 years in University College of Nursing, Faridkot.

Sample size and Sampling technique: 37 overweight young adults between BMI 25-29.99 Kg/m^2 were selected by purposive sampling.

Research Tool: This study is using two research tool which consists of following.

Tool I: - Socio- demographic profile of the respondent. This tool is used for recording socio demographic details of the subjects. It has total fourteen items which were age, religion, educational status of father, educational status of mother, father's occupation, mother's occupation, family monthly income, habitat, dietary pattern, family history income, number of meals taken in a day, frequency of taking snacks, type of food consumed daily, doing physical activity daily.

Tool II: - Tool to measure effectiveness of honey mixture on overweight. This includes a Performa for pre intervention and post intervention BMI assessment by using weighing scale and measuring tape.

Procedure of data collection: Data collection was done in University College of Nursing, Faridkot. Weight and height of all the young adults was monitored by using weighing machine and measuring tape and then BMI was computed. There were 385 young adults in the college. Among 385, 1 had polio. Out of 384, 45 had BMI in range of 25-29.99 kg/m^2. In order to maintain the homogeneity eight young adults were eliminated as they were day scholar. Data was collected from those overweight young adults who fulfill the inclusion criteria. So, Purposive sampling was done. The purpose and objectives of the study were presented and discussed with study subjects. The consent was taken from the study subjects. Researcher first introduces herself to the study subjects and explains the purpose of study. They were assured that their responses would be kept confidential and used only for study purpose. The data collection for final study was done in the month of January and February 2016, including thirty seven overweight young adults selected from University College of Nursing, Faridkot. Data was collected from those overweight young adults who were willing to cooperate and participate. Data collection was done between the timing of 6 A.M – 7 A.M and 10 P.M – 11 P.M.

Analysis of data: Analysis of data was done in accordance with the study objectives using descriptive (frequency and percentage) and inferential statistics (paired t-test, chi square). Statistical analysis was performed using SPSS version 20 and SSP 2.80.

RESULTS

Table 1 reveals that slightly more than half 16 (43.25%) of the overweight young adults were in the age group of 18-21 years followed by 14 (37.84%) were in the age group of 22-25 years, 6 (16.21%) in age group of 26-29 years and only 1 (2.70%) in age group of 30-33 years. As per religion, more than half i.e. 21 (56.75%) belongs to Sikh religion and more than one third i.e. 15 (40.55%) belongs to Hindu religion, only 1 (2.70%) was Christian and none of them belong to Muslim religion. Regarding young adults' father's education 12 (32.43%) were graduates & above and similar findings were observed for senior secondary education, 8 (21.62 %) young adults' fathers were having matric education and only 1 (2.70%) young adult's father was illiterate. Regarding young adult's mother's education maximum 15 (40.55%) were having education upto matric 13 (35.13%) were graduates & above followed by 6 (16.22%) were having senior secondary education, only 1 (2.70%) young adult's mother was having education up to middle class and 2 (5.40%) young adults were having illiterate mother. As per the occupation status of father, more than half i.e. 21 (56.75%) were doing service followed by 8 (21.62%) were in business, 2 (5.40%) were laborer, 5 (13.53%) were those with occupation as a farmer and only 1 (2.70%) was retired and none of them was unemployed. As per the occupation status of mother, majority i.e., 29 (78.38%) of the mothers were housewives, 6 (16.22%) were doing service and only 2 (5.40%) were doing business. None of the mother of overweight young adult's was laborer.

Table 1. Frequency and Percentage distribution of Sample Characteristics

N= 37

Variables under study	n	%
Age (in years)		
18-21	16	43.25
22-25	14	37.84
26-29	6	16.21
30-33	1	2.70
Religion		
Sikh	21	56.75
Hindu	15	40.55
Muslim	-	-
Christian	1	2.70
Educational status of father		
Illiterate	1	2.70
Upto middle	4	10.82
Matric	8	21.62
Senior Secondary	12	32.43
Graduate & above	12	32.43
Educational status of mother		
Illiterate	2	5.40
Upto middle	1	2.70
Matric	15	40.55
Senior Secondary	6	16.22
Graduate & above	13	35.13

Variables under study
Occupation status of father
Unemployed
Service
Business
Laborer
Farmer
Retire
Occupation status of mother
Housewife
Service
Business
Laborer
Family Monthly Income (in Rupees)
≤10,000
10,001-20,000
20,001-30,000
30,001-40,000
>40,000
Habitat
Urban
Rural
Dietary Pattern
Vegetarian
Eggetarian
Non-vegetarian

Table 2. Frequency and Percentage distribution of overweight young adults having Family history of overweight

N=37

Family history	n	%
Family history of overweight		
Yes	22	59.45
No	15	40.55
Overweight in your family		
Father	9	37.50**
Mother	11	45.83**
Brother	2	8.33**
Sister	-	-
Grandfather	1	4.17
Grandmother	1	4.17

** *More than one member in the family was overweight*

Table 3. Frequency and Percentage distribution of eating habits among overweight young adults

	N=37	
Eating Habits	n	%
Number of meals taken in a day		
a)1 meal	3	8.12
b)2 meals	2	5.40
c)3 meals	30	81.08
>3 meals	2	5.40
Frequency of taking snacks		
a)Daily	7	18.92
b)Once a week	4	10.82
c)Twice a week	14	37.83
Thrice a week	12	32.43
Which snacks		
a)Noodles	2	5.40
b)Burger	7	18.92
c)Evening mess snacks	25	67.58
d)Manchurian	-	-
e)Tikki	2	5.40
Pasta	1	2.70
Type of food consumed daily with mess meals		
a)Extra ghee	2	5.13
b)Junk food	26	66.67
c)Confectionary items	-	-
Both junk food and confectionary items	11	28.20

Table 4. Frequency and Percentage distribution of doing physical activity among overweight young adults

	N=37	
Physical Activity	n	%
Doing Physical activity		
Yes	14	37.83
No	23	62.17
Type of physical activity		
Jogging	-	-
Running	-	-
Walking	13	92.85
Skipping Rope	1	7.15

Table 5. Frequency and Percentage distribution of Prevalence of overweight among young adults based on BMI

		N= 384	
BMI status	BMI range	f	%
Underweight	≤18.49	84	21.9
Normal	18.50-24.99	252	65.6
Over weight	25.00-29.99	45	11.7
Obese	≥30	3	0.8
Total		384	100.0

Table 7. Frequency and percentage distribution of overweight based on BMI range before intervention

	N= 37	
BMI Range (in $Kg/m^{2)}$	n	%
25-26.6	27	73.0
26.7-28.3	4	10.8
28.4-29.9	6	16.2

Table 8. Frequency and percentage distribution of overweight based on BMI range after intervention

	N= 37	
BMI Range (in $Kg/m^{2)}$	n	%
<25	20	54.05
25-26.6	8	21.63
26.7-28.3	7	18.92
28.4-29.9	2	5.40

Table 9. Frequency and percentage distribution of overweight based on weight status category before intervention

	N= 37	
Weight status category (in Kg)	n	%
55-65	20	54.1
66-75	14	37.8
76-85	3	8.1

Table 10. Frequency and percentage distribution of overweight based on weight status category after intervention

N= 37

Weight status category (in Kg)	n	%
<55	1	2.70
55-65	24	64.86
66-75	9	24.33
76-85	3	8.11

Table 11. Mean and standard deviation of body mass index of overweight young adults

N= 37

BODY MASS INDEX				
		Mean Difference		
Variables	Mean ± SD		t value	p value
Pre intervention	26.25 ± 1.480	0.786	18.648	0.000***
Post intervention	25.46 ± 1.531			

Table 12. Mean and standard deviation of body weight of overweight young adults

N= 37

BODY WEIGHT				
Variables	Mean ± SD	Mean Difference	t value	p-value
Pre intervention	66.33 ± 6.5214			
Post intervenion	64.41 ± 6.7025	1.91±0.4642	25.146	0.000***

Table 13. Association of Body Mass Index with Sample Characteristics

N= 37

Variables under study	BMI category			Chi-square
	25-26.6	26.7-28.3	28.4-29.9	
Age (in years)				
18-21	13	1	2	$\chi^2 = 6.177$
22-25	10	2	2	$p = 0.4035^{NS}$
26-29	4	1	1	df = 6
30-33	0	0	1	
Religion				
Sikh	17	2	2	$\chi^2 = 6.264$
Hindu	10	2	3	$p = 0.1801^{NS}$
Muslim	-	-	-	df = 4
Christian	0	0	1	
Educational status of father				
Illiterate	1	0	0	
Upto middle	10	2	3	$\chi^2 = 7.893$
Matric	6	1	1	$p = 0.4438^{NS}$
Senior Secondary	7	2	3	df = 8
Graduate & above	11	1	0	

Regarding monthly family income of students slightly more than one third 13 (35.13%%) had >Rs.40, 000 monthly income followed by 10 (27.00%%) had Rs. 20,001- Rs. 30,000 monthly income, 6 (16.23%%) had Rs, 10,001-Rs.20, 000 monthly income, 4 (10.82%) had Rs.30, 001–Rs.40, 000 monthly income, and 4 (10.82 %) of overweight young adults belonged to families who were having ≤ Rs. 10,000 monthly income. Less than half i.e. 17 (45.94%) of the sample subjects were residing in urban area and other 20 (54.06%) in rural area. Regarding the dietary pattern 19 (51.35%) overweight young adults were vegetarian, 12 (32.44%) were non vegetarian and only 6 (16.21%) was eggetarian Table 2. More than half 22 (59.45%) overweight young adults have history of overweight in the family and 15 (40.55%) overweight young adults have no history of overweight in the family. Among the overweight young adults having family history of overweight 11 (45.83%) young adult's mothers were overweight, 9 (37.50%) young adult's fathers were overweight, 1 (4.17%) young adult's grandfather was overweight, 1 (4.17%) young adult's grandmother was overweight, 2 (8.33%) young adult's brother was overweight and none of their sister was obese.

Hence, it was concluded that overweight young adults had strong family history of overweight and maximum 45.83% of their mothers were overweight. Table 3 depicts that majority 30 (81.08%) of overweight young adults were taking 3 meals daily. Regarding putting extra Ghee in food, majority 47 (94%) students were not taking extra Ghee in food and only 3 (6%) students were taking only one spoon extra Ghee in food. Regarding taking snacks, all overweight young adults were taking snacks such as noodles, burger, evening mess snacks. Majority 14 (37.83%) take snacks twice a week, 12 (32.43%) take snacks Thrice in a week, 7 (18.92%) were taking daily and only 4 (10.82%) overweight young adults were taking snacks once a week. Regarding consumption of food along with mess meals, 26 (66.67%) take junk food along with mess meals, only 2 (5.13%) consume extra ghee and 11 (28.20%) overweight young adults were taking both junk food and confectionary items along with mess meals. Table 4 depicts the frequency and percentage of physical activity of overweight young adults. Among those doing physical activity, Majority 13 (92.85%) overweight students were doing walking, 1 (7.15%) overweight young adult was doing Skipping rope.

Variables under study	BMI category			Chi-square
	25-26.6	26.7-28.3	28.4-29.9	
Educational status of mother				
Illiterate				$\chi^2 = 11.665$
Upto middle	1	0	1	$p = 0.1667^{NS}$
Matric	1	0	0	df = 8
Senior Secondary	10	3	2	
Graduate & above	3	0	3	
	12	1	0	
Occupation of father				
Unemployed	-	-		
Service	15	2	4	$\chi^2 = 6.197$
Business	5	1	2	$p = 0.6251^{NS}$
Laborer	1	1	0	df = 8
Farmer	5	0	0	
Retire	1	0	0	
Occupation of mother				
Housewife	20	3	6	$\chi^2 = 5.959$
Service	6	0	0	$p = 0.2020^{NS}$
Business	1	1	0	df = 4
Laborer	-	-	-	
Family Monthly Income (in Rupees)				
≤10,000				
10,001-20,000	1	0	3	$\chi^2 = 16.444$
20,001-30,000	6	0	0	$p = 0.0363^{**}$
30,001-40,000	7	1	2	df = 8
>40,000	4	0	0	
	9	3	1	

Variables under study	BMI category			Chi-square
	25-26.6	26.7-28.3	28.4-29.9	
Habitat				$\chi^2 = 0.090$
Urban	12	2	3	$p = 0.9557^{NS}$
Rural	15	2	3	df = 2
Dietary Pattern				
Vegetarian	14	1	4	$\chi^2 = 1.887$
Eggetarian	4	1	1	$p = 0.7564^{NS}$
Non-vegetarian	9	2	1	df = 4
Family History of overweight				
Yes				$\chi^2 = 0.700$
No	15	3	4	$p = 0.7044^{NS}$
	12	1	2	df = 2
No. of meals taken in a day				
1 meal	3	0	0	
2 meals	1	0	1	$\chi^2 = 4.979$
3 meals	22	4	4	$p = 0.5464^{NS}$
>3 meals	1	0	1	df = 6
Frequency of taking snacks				
Daily	4	1	2	
Once a week	3	0	1	$\chi^2 = 3.246$
Twice a week	12	1	1	$p = 0.7773^{NS}$
Thrice a week	8	2	2	df = 6
Doing physical activity daily				
Yes	9	4	1	$\chi^2 = 7.947$
No	18	0	5	$p = 0.0187^{**}$
				df = 2

Table 5 reveals that 84 (21.9%) young adults were underweight, 252 (65.6%) young adults were having normal weight, followed by 45 (11.7%) young adults were overweight and only 3 (0.8%) young adults were obese. Hence, it was concluded that the prevalence of overweight among young adults of University College of Nursing was 11.7%. Table 6 depicts the frequency and percentage of overweight based on BMI range. One third i.e., 33 (73.3%) of the overweight young adults were in the range 25-26.6 Kg/m^2, followed by 5 (11.2%) and 7 (15.5%) overweight young adults were in the 26.7-28.3 Kg/m^2 and 28.4-29.9 Kg/m^2 BMI range respectively. Table 7 depicts that before intervention slightly more than two third i.e. 27 (73%) overweight young adults were in range 25-26.6 Kg/m^2, 4 (10.8%) and 6 (16.2%) were those with BMI between 26.7-28.3 Kg/m^2 and 28.4-29.9 Kg/m^2 respectively. Table 8 depicts that after intervention slightly more than half i.e. 20 (54.05%) overweight young adults had BMI <25 Kg/m^2, 8 (21.6%) and with BMI between 25-26.6 Kg/m^2 and 7 (18.92%) had BMI between the range of 26.7-28.3 Kg/m^2 and only 2 (5.40%) had BMI range of 28-29.9 Kg/m^2 respectively. Table 9 depicts that before intervention, more than half of the overweight young adults i.e., 20 (54.1%) had their body weight between the range 55-65 Kg, slightly more than one third i.e. 14 (37.8%) were those with body weight range 66-75 Kg. Only 3 (8.1%) of them fall between the range 76-85 Kg. Table 10 depicts that after intervention slightly more than two third of the overweight young adults i.e., 24 (64.86%) were in range 55-65 Kg, 9 (24.33%) were in category 66-75 kg, 3 (8.11%) were between 76-85 and only 1 (2.70%) had weight less than 55 kg. Table 11 and fig.1 shows that the pre intervention mean score of BMI was 26.25 ± 1.480 whereas Post intervention mean score of BMI was 25.46 ± 1.531 with Mean Difference of 0.786 and t value 18.648 which was significant at $p < 0.05$ level. Honey Mixture was helpful in reducing the Body mass index of overweight young adults. Table 12 and fig.2 shows that the pre intervention mean score of body weight was 66.33

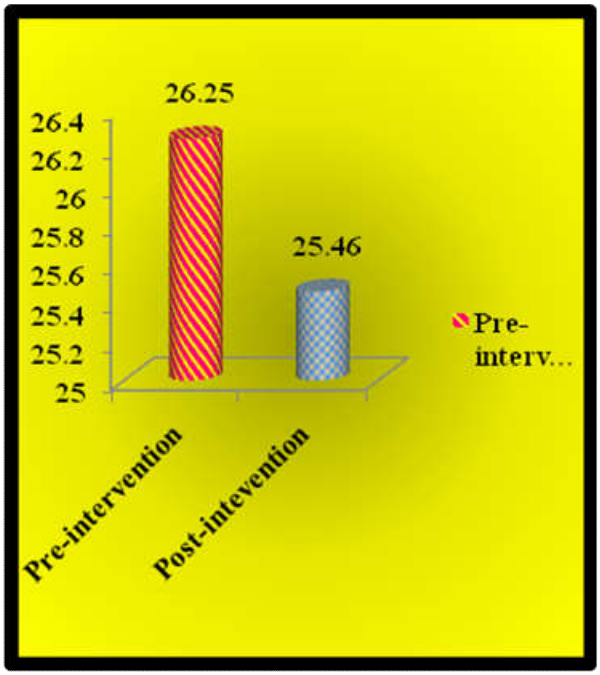

Fig. 1. Pre and Post intervention BMI Mean values of study subjects

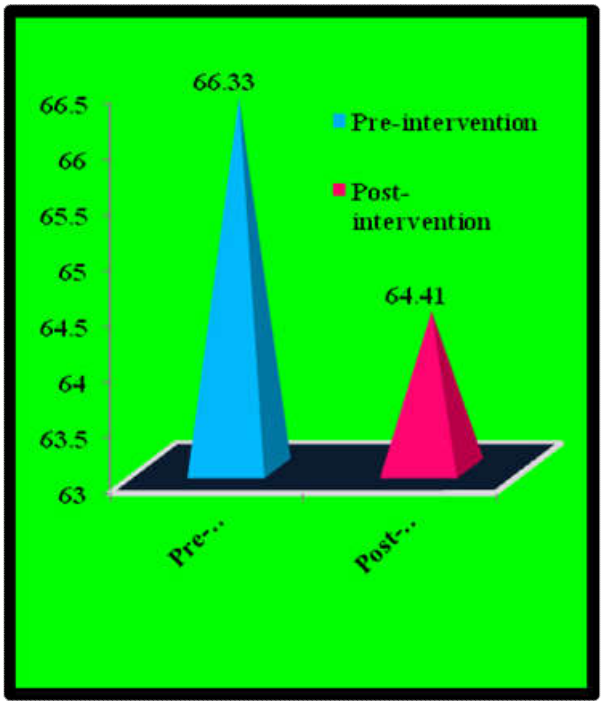

Fig 2. Pre and Post intervention body weight mean values of study subjects

± 6.5214 whereas Post intervention mean score of body weight was 64.41 ± 6.7025 with Mean Difference of 1.91±0.4642 and t value 25.146 which was significant at p <0.05 level. Honey Mixture was helpful in reducing the bodyweight of overweight young adults. Table 13 shows association between BMI and sample characteristics. It was found that a statistically non-significant association was found between age, religion, educational status of father, educational status of mother, occupational status of father occupational status of mother, habitat, dietary pattern, number of meals taken in a day, frequency of taking snacks and BMI of overweight young adults at p value >0.05. Only family monthly income and doing physical activity daily were found statistically significant with p value 0.036 and 0.018.

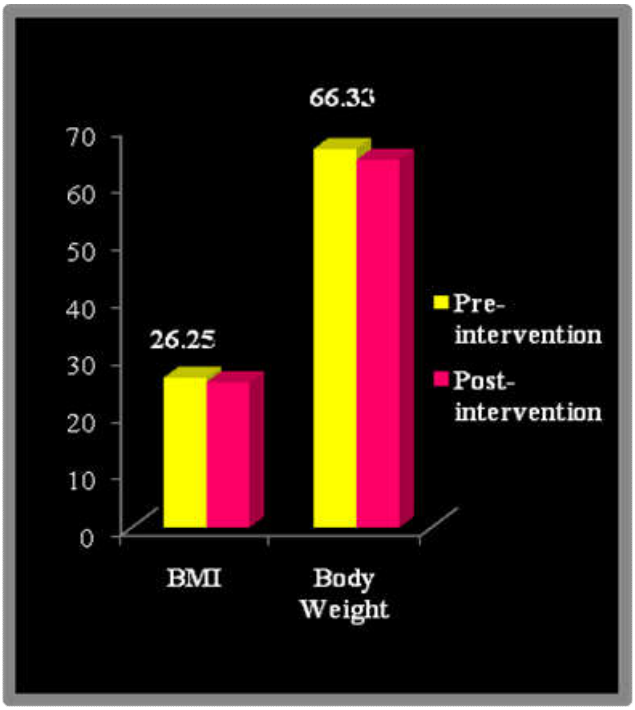

Fig. 3. Comparison of Pre and Post intervention BMI and Body weight Mean values of study subjects

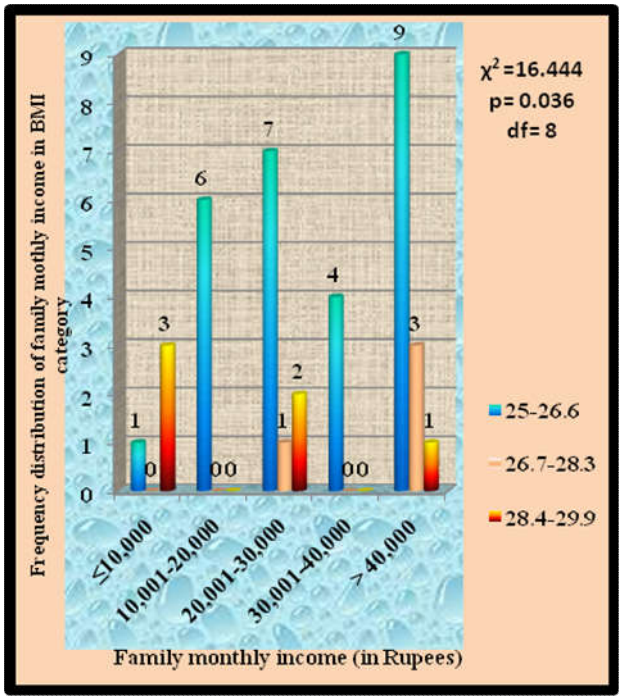

Fig. 4. Frequency distribution of family monthly income (in Rupees) in BMI

Fig 4 shows a statistically significant association was found between BMI of overweight young adults and family monthly income at p value 0.036 and df= 8 with χ^2 =16.444. Fig 5 shows that as per chi-square test, a statistically significant association was found in BMI of overweight young adults and doing physical activity at p value 0.001, df= 2 and χ^2=7.947.

DISCUSSION

The present study depicts that 11.7% young adults were found to be overweight, 0.8% were obese, 21.9% were underweight and 65.6% had normal BMI.

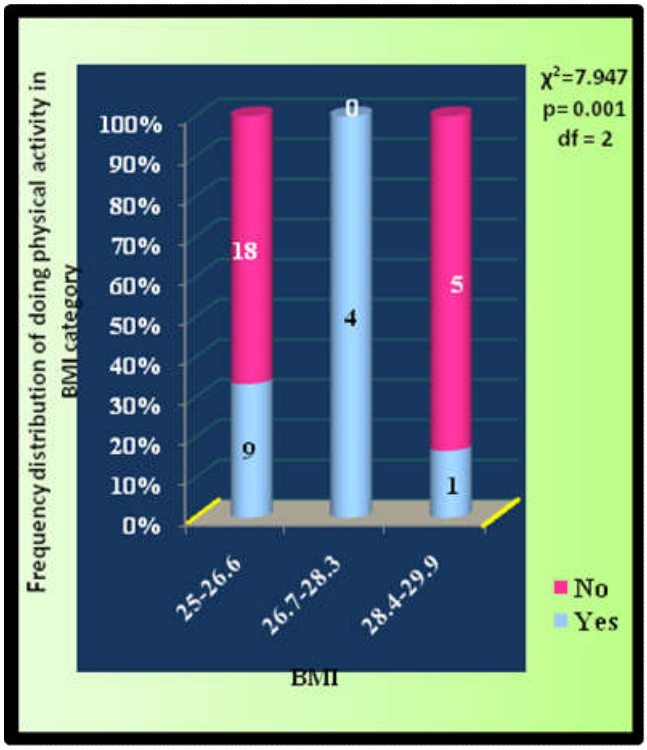

Fig . 5. Frequency distribution of doing physical activity in BMI

This finding is supported by a study conducted by Valentine U Odili et.al (2014)[8]which concluded that prevalence of overweight was found to be 10.5%, 1.2% obese 7.6% underweight and 80% had normal BMI. Kokila Selvaraj, P. Sivaprakasam (2013) conducted a study on prevalence of overweight among young adults and found that 24% of medical students were overweight. 65% of them had family history of overweight/obesity Also, 55% of the students are not doing physical activity and there was significance of low physical activity with BMI. The present study showed that 59.45% had family history of overweight and 62.17% were not doing any physical activity and it has association with BMI (p=0.03). The present study depicts that honey mixture is effective remedy so as to reduce the fat fast in the body as it increases the metabolic rate. It treats overweight by fuelling the liver, speeding up fat-burning metabolism and easing stress hormones and also by satisfying the sweet tooth. This finding is supported by a study conducted by Banumathi K (2014) in which honey mixture was administered. Study concluded that highly significant reduction in weight after administration of honey mixture. The study findings revealed that mean and SD of weight significantly decreased from 70.95±5.79 to 68.91±5.99

Conclusion

The present study revealed that the intervention honey mixture was helpful in reducing BMI among overweight young adults but when comparison of these interventions was done, which showed Post intervention mean BMI of honey mixture was 25.46±1.531 with t value 18.648 which was significant at p<0.00 level, it is evident from the results that honey mixture is more effective in reducing BMI among overweight young adults. Honey mixture reduces the BMI. Most of the young adults with overweight responded that they have very much reduction in their body weight within few days.The findings revealed that honey mixture plays major role in overweight and improving their quality of life. So the nurses should incorporate in providing health educations on reducing the BMI to reduce the mortality and morbidity due to overweight in developing countries.

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