



EFFECT OF NUTRITION EDUCATION PROGRAM ON THE CONSUMPTION PATTERN OF OUTSIDE FOOD BY THE COLLEGE STUDENTS IN MUMBAI CITY.

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Abstract:-

Aim : To study the effect of Nutrition education program on the consumption pattern of outside food by the college students of Mumbai city.

Study design: Height was taken using height chart while weight and BMI was taken using omron Hbf-701 body composition analysing machine. Total 50 subjects were selected for the study.

Methodology : Total 50 subjects (boys and girls) participated from the classes between the age group of 18-22 years of age were selected for the study from the Mumbai city. Omron Hbf-701 body composition analyser was used to asses weight and BMI. SPSS version 20 was used for the data analysis.

Results: The results were found to be non-significant at ($p \leq 0.05$) 0.87 for weight and ($p \leq 0.05$) 0.78 for BMI. Increased consumption of outside food was associated with high BMI and samples were found to be overweight or obese while lower consumption was associated with comparatively low BMI.

Conclusion: Post the nutrition education program it was observed that the frequency of consumption of outside food was highly reduced and samples were found to choose a healthy option while eating outside. For the study to be more effective an emerging need of nutrition education program was still needed for the population with poor nutrition knowledge.

Keywords :- outside food, BMI, nutrition education program, knowledge.

1. Introduction

Nutrition education is a set of learning experiences designed to assist in healthy eating choices and other nutrition-related behaviour. It includes any combination of educational strategies, accompanied by environmental supports, modulated to facilitate voluntary adoption of food choices and other food and nutrition-related behaviours conducive to health and well-being. Nutrition education is delivered through multiple venues and involves activities at the individual level, community level, and policy levels. Nutrition Education also critically looks at issues such as food security, food literacy, and food sustainability. In these settings, the dietician, nutritionist, or nurse serves to assist or enable individuals to incorporate changes in eating patterns and behaviour into their lives.(<https://www.dshs.wa.gov/altsa/program-services/nutrition-education>).

The problems of over-nutrition, under-nutrition, vitamin, protein and mineral deficiencies, obesity and diet related chronic diseases are progressively more throughout the world. There are more than 900 million people who are undernourished and approximately 170 million children are underweight; these children who do not get enough energy or key nutrients, and cannot maintain healthy and dynamic lives. In India and in other countries of the world, the problem of malnutrition is severe and people are undergoing rigorous health problems (McNulty, 2013).

- ✓ Research has shown that students are able to learn better when they are well nourished, and eating healthy meals has been linked to higher grades, better memory and alertness, and faster information processing. One reason for this is that foods that are rich in fibre, protein, and healthy fats such as eggs, yogurt, apples and oatmeal keep the body feeling full longer, providing enough energy to focus and stay alert throughout the entire day.
- ✓ The biggest problem with eating outside is that it is less hygienic and sometimes people get sick after eating out because the kind of hygiene which one gets at home cannot be replaced. Outside food many a times is unhygienic and also nutritional contents of the food eating outside may not be the best option as only a few restaurants concentrate on nutritional contents of the food. Most fast food meals contain high levels of added sugar. Not only this mean that one will consume extra calories with meal, but it also means eating food which contain less nutrition. There are high levels of trans fat found in fast food as well. There is no amount that is considered to be healthy or good for your body. It increases your bad cholesterol levels, lowers your good ones, and increases

risk of heart disease and diabetes. Pastries, pizza dough, cookies, and fried items all contain this fat. Eating outside food on regular basis increases the risk of obesity and metabolic syndrome. So even while eating outside choosing a healthier option is an important role to play while making choice of any food items. Looking at the nutritional labels or contents is a good habit while buying or purchasing any food product.

2. Materials and methods

The study was undertaken on the college students of the Mumbai city between the age group of 18-22 years of age, including both girls and boys, in order to study the effect of Nutrition Education Program on the consumption pattern of outside food.

- ✓ The sampling method used was Purposive Convenience sampling.
- ✓ The quantitative study was conducted on 50 students (n=50) including both girls and boys, which was the target group for the study.

➤ Selection of samples :-

An official letter was given to the classes to seek the permission and approach the students for the study. The target group was students, between the age group of 18-22 years of age. A Food Frequency Questionnaire was formed as per the objectives of the research. The FFQ was based on the consumption pattern of outside food. After receiving the approval from the respective institute, a total of 50 subjects were selected for the study who had no knowledge about the nutrition. The subjects were asked to solve the food frequency questionnaire.

After that the anthropometric measurements such as height, weight, BMI was taken.

The body composition was done using the Omron HBF-701 machine which gave weight, BMI, body water, Resting Metabolism, Body age. Etc. Followed by this student were provided with a Nutrition Education Program which included Demo, Awareness, and Benefits regarding the healthy lifestyle, basic nutrition knowledge, and awareness on healthy eating. Post 2 months the same group of 50 students each were given to solve the same outside food questionnaire respectively. The questionnaire was same for both pre and post.

3. Results and discussion

When consumption of outside food during college was observed it showed that 42% consumed outside food during college hours, while very few were observed that (12%) did not consume outside food, finally was reduced to 4% post NEP. Very often consumption of outside food was found to be 12% while post NEP only 2% was noted to consume outside food. Almost 42% consumed outside food very rarely. Multiple factors might influence an adolescent's susceptibility to this eating culture, and thus act as a barrier to healthy eating.

When samples were inquired about the frequency of consumption of outside food on weekly basis 8% of subjects consumed outside food for more than 4 times a week which gradually reduced to 4% post NEP, while 14% of samples were noted consuming outside food 3-4 times in a week which was then declined to 4. Only 30% of subjects consumed 2-3 times a week outside food post NEP was reduced to 24%. After the nutrition education program, it was observed that the samples were aware of the consequences of consumption of outside food frequently. In the study done by Larson et al; 2011 Findings showed that Young adults were frequently eating away from home more frequent use of fast-food restaurants that primarily served burgers and French fries was associated with higher risk for overweight/obesity; higher intake of total energy, sugar-sweetened beverages, and fat; and with lower intake of healthful foods and key nutrients.

Table 3 showed that the price of outside food did influence the food choices (38%) of samples confessed that food choices are affected due to inflation rate, whereas 24% did not show any concern with rise in market price, followed by 10% of samples agreed that the price of outside food do affect the food choices rarely, however post NEP it was reduced to 6%. Very often it was noted that 6% of samples were influenced by price for food choices which was declined to 4%. Males were more likely to be influenced by peers than females, whereas females were more likely to be influenced by media-based advertising. Lower body mass indices were correlated with eating breakfast, which a majority of adolescents reported no correlation between body mass and breakfast consumption. Interventions targeted toward improving eating and active behaviours should involve peers as well as parents. Dalky et al; 2017.

It was also observed that nearly (40%) of subjects chose to eat Chinese and very few (14%) preferred to eat sandwiches or dosa. About 20% chose rice preparations whereas very few 26% liked eating Vada Pav and Frankie. Post NEP maximum subjects (36%) preferred eating sandwiches or dosas while minimum percentage of samples (9%) preferred eating Chinese while 30% chose eating vada pav or Frankie and (25%) chose eating rice preparations. Basil; et al; in 2009 observed that Poor eating habits are an important public health issue that has large health and economic implications. Many food preferences were established early, but because people make more and more independent eating decisions as they move through adolescence, the transition to independent living during the university days is an important event. Since the HBM (Health Belief Model) revealed a few important differences by gender, males and females who deserved tailored campaigns. For females, the campaign should highlight the severity of not eating a healthy diet, while the one targeting males should focus on increasing their perceptions of susceptibility. To achieve these objectives, an education campaign would be an important tool to employ.

Table 5 showed that 8% of samples examined the nutrient content label while 32% did not do while pausing food packets. Post NEP the % increase in checking the nutrition label before purchase of food packets were noticed in the study. Only 24% of samples revealed that the samples checked on certain products, post NEP was increased to 34%. Very few subjects (2%) scrutinized the nutrient content labelled on every product whereas 34% of subjects reported that very rarely the nutrition label content were assessed in food packets while post NEP reduced to 30%. Findings showed that Young adults were frequently eating away from home; however, little is known regarding what types of restaurants are patronized or whether associations with dietary intake and weight status differ according to restaurant type. Further more frequent use of fast-food restaurants that primarily served burgers and French fries was associated with higher risk for overweight/obesity; higher intake of total energy, sugar-sweetened beverages, and fat; and with lower intake of healthful foods and key nutrients. There might be a need for interventions to promote healthier food choices among young adults who were noted to buy frequent burger-and-fries restaurant. Larson et al; 2011.

Table 1:- consumption of outside food during college hours.

Options	Pre-test (%)	Post-test (%)
Yes	42.0	42.0
No	12.0	4.0
Sometimes may be	24.0	34.0
Very often	8.0	8.0
Very rarely	14.0	12.0
Total	100	100

Table 2:- frequency of consumption of outside food on weekly basis

Options	Pre-test (%)	Post-test (%)
Less than 1 time	12.0	14
1-2times	36.0	54
2-3times	30.0	24
3-4times	14.0	4
more than 4 times	8.0	4
Total	100	100

Table 3:- influences of food choices due to the price

Options	Pre-test (%)	Post-test (%)
Yes	22	28
No	24	22
Sometimes may be	38	40
Very often	6	4
Very rarely	10	6
Total	100	100

Table 4:- preferences of eating while eating outside food

Options	Pre-test (%)	Post-test (%)
Burger/fries/pizza	0	0
Chinese	40	9
Vada pav/Frankie	26	30
sandwiches/dosa	14	36
rice preparations	20	25
Total	100	100

Table 5:- Table 3.10:- checking of nutrient content label on food products.

Options	Pre-test (%)	Post-test (%)
yes	8.0	10
no	32.0	24
on certain products	24.0	34
on everything	2.0	2
very rarely	34.0	30
Total	100	100

Height ,weight ,BMI

In the pre-test the minimum weight of the subject was found to be 37 kgs which post-test increased to 39.50kgs. The maximum weight was found to be 90kgs in the pre-test which reduced to 88.70kgs in the post-test .12% of the subjects were found to have weight between 35-44.9kgs in the pre-test which reduced to 8% in the post test . while 24% of samples were found to have weight between 45-54.9kgs in the pre-test which increased to 26% in the post test respectively, followed by that 22% of subjects were found to have weight between 55-64.9kgs which increased to 26%.it was also observed that 24% of samples were having weight between 65-74.9kgs in the pre-test which increased to 26% followed and 16% were having weight between 75-84.9kgs in the pre-test which was reduced to 12% in the post test. Least % of samples (2%) were found to be 85kgs and above in both pre and post-test respectively.

The minimum height was found to be 148 cm both pre and post-test and maximum height as 183 cms. It was observed that 40% of subject had height between 148 to 158cm while 26 % of subjects had height between 159-169cm, and 27% had a height between 170-179 cm and very few 4% were above 180cms in both pre and post-test respectively.

Pre NEP the maximum BMI was found to be 32 kg/m² which post NEP reduced to 31.5kg/m² and minimum of 16.00 kg /m², which post NEP increased to 17.00kg/m². 18% of the subjects had BMI less than 18.5 kg/m² that is subjects were underweight and almost half 52% of subjects had normal BMI of 18.5 to 24.9 KG /m², which increased to 58% post NEP. 24% of subjects were found to be overweight in both pre and post-test respectively ,and had BMI between 25 to 29.9 kg/m² followed by 6% of subject found to be obese which was declined to 2% the post test.

Outside food					
		N	$\bar{X} \pm \sigma$	T	Sig(2tailed)
Pair 1	Wt.(kg)	50	61.53±13.03	.156	.877
	Po wt.(kg)	50	61.20±12.04		
Pair2	Ht(cms)	50	164.16±9.65	.010	.992
	Po Ht(cms)	50	164.14±9.62		
Pair3	BMI(kg/m ²)	50	22.73±3.92	.0269	.789
	Po BMI(kg/m ²)	50	22.57±3.46		

The mean value of weight of the samples was observed to be 61.53±13.03, post NEP it was declined to 61.20±12.04 which showed that the Nutrition Education Program was found to be effective. The BMI also showed the positive effect post NEP with the mean value of BMI as 22.73±3.92 in the pretest which was reduced to 22.57±3.46. The P value was found to be 0.877 at (p≤0.05) of weight showed that the results were found to be non-significant. When the Height and BMI was considered p, value was found to be 0.992 and 0.789 respectively which again was ≤0.05, data showed that there was no significant difference between pre and posttest when height and BMI was considered. The study also highlighted the poor knowledge, faulty attitudes and practices of samples. These knowledge gaps must be addressed to formulate effective strategies for the prevention of obesity and related metabolic disorders.

4. Conclusion

In conclusion to outside food frequency questionnaire it was found that the p value for weight and BMI was 0.877 and 0.789 that is greater than (≥0.05) which showed that the results were non-significant. The study highlighted the poor attitudes, knowledge and faulty practices towards eating behaviour. But when the questions asked to the subjects were compared it was noted that frequency of consumption of outside food on weekly basis with p value was seen to be 0.00 which was highly significant and has positive effect on samples. Also, the p value of consumption of carbonated beverages was found to be 0.01 which showed positive results and the risk of obesity was seen to be less in the samples who rarely consumed carbonated beverages when compared with the samples who frequently or daily consumed carbonated beverages.

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6. References

- Bezerra, N., Moreira, M., Cavalcante, B., et al; (2017, March). Food consumed outside the home in Brazil according to places of purchase. *Revista de saude publica*, 51 (0),15,doi: 10.1590/S1518-8787.2017051006750.
- Dalky ,HF., Al Momani, MH., Al-Drabaah, TK., & Jarrah, S.(2017, August) . Eating Habits and Associated Factors Among Adolescent Students in Jordan. *Clinical nursing research*,26 (4),534-552, doi: 10.1177/1054773816646308
- Gyamfi,D.,Obirikorang,C., Acheampong,E.,et al ;(2019, October).Weight management among school-aged children and adolescents: a quantitative assessment in a Ghanaian municipality. *BMC Pediatrics*, 19(1),376,doi: 10.1186/s12887-019-1772-4.
- Larson, N., Neumark-Sztainer, D., Laska, MN., & Story M. (2011, November). Young adults and eating away from home: associations with dietary intake patterns and weight status differ by choice of restaurant. *Journal of American Dietetic Association*,111 (11),1696-1703, doi: 10.1016/j.jada.2011.08.007.
- Payab, M., Kelishadi, R., & Qorbani, M., et al; (2015, March). Association of junk food consumption with high blood pressure and obesity in Iranian children and adolescents: the CASPIAN-IV Study. *Journal de Pediatria*,91(2),196-205, doi:10.1016/j.jpmed.2014.07.006.
- Stevenson ,C., Doherty,G., Barnett,J., Muldoon,O., & Trew,K .(2007, June). Adolescents' views of food and eating: Identifying barriers to healthy eating. *Journal of Adolescence*, 30 (3),417-434 doi: 10.1016/j.adolescence.2006.04.005

