International Journal of Science and Research (IJSR)
ISSN: 2319-7064
SJIF (2022): 7.942

Nutrition Knowledge, Attitude and Practice: A Comparative Study between Female Undergraduate Students of Nutrition and Non - Nutrition Curriculum of Different Colleges of Kolkata, West Bengal

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Abstract: ***Introduction: Nutrition Plays a key role in promoting health. In order to remain healthy and physically active it is necessary to obtain good nutrition knowledge and implement it. Objective: The study was conducted to investigate the impact of nutrition knowledge on nutritional status and compare the same between student of food and nutrition and humanities departments. Method: A cross sectional study was conducted on female undergraduate students of Kolkata. A structured questionnaire was developed to assess nutrition knowledge, attitude and practice (KAP). Subject's height, weight, waist and hip circumference were measured using standard procedures. Data was analysed using SPSS software. Result: Students from nutrition background had significantly higher nutrition KAP scores than their counterparts.59.64% students of non nutrition department did not know about Recommended Dietary Allowances (RDA), 45% did not know about the concept of Body Mass Index (BMI), 73% students thought carbohydrate gave more energy than fat. Knowledge of RDA, knowledge about ill effects of junk food and knowledge of food groups was significantly associated with BMI status (P value 0.02, 0.009.0.019 respectively) Conclusion: This study showed that there is a strong association between student's level of nutrition knowledge and their course curriculum which is consistent with previous studies. It can be concluded from the study that there is a need for nutrition education on the campus to bring awareness among students.***

Keywords: Knowledge Attitude Practice, Recommended Dietary Allowance, Body Mass Index

1. Introduction

Development in nutrition science has continued to show a linkage between health and nutrition. [1] Nutrition knowledge is defined as knowledge of concepts and process related to the science of nutrition. [2] It includes knowledge of food sources of nutrients, the process of their digestion, absorption, metabolism and their functions in body, knowledge regarding preventative role of nutrients in diseases, dietary guidelines and recommendations. It is observed that nutrition knowledge is one of the pivotal factor that influence nutritional status and nutritional habits of individuals, families, societies. Lack of knowledge of the dietary requirements and nutritive values of different foods are the main contributory cause for the widespread occurrence of malnutrition in the developing countries. [3] Nutrition knowledge in general is of two types, one is declarative knowledge, which deals with awareness of things and processes like knowing milk is a good source of calcium and the other one is procedural knowledge which deals with how to do things, for example how to choose the best milk product to get the maximum nutritional benefit. For successful assessment of nutritional status of targeted population, it is important to know their current level of nutrition knowledge in addition to their attitude and practice. [4]

It is commonly found that correct attitude towards healthy dietary practice is directly related to proper nutrition knowledge. Kolodinsky, Harvey - Bernio. et al. (2007) [5] concluded in their study that healthier food choices were made by students who possessed better dietary knowledge.

Previous epidemiological study has shown significant positive association between higher nutrition knowledge and higher consumption of foods from some core food groups such as fish, fibre, calcium enriched foods and lower intake of sweetened drinks. [5] In a earlier study by Gats & Delucin 1998 [6] it was reported that university students with better nutrition knowledge belonged to normal nutritional status and possessed positive attitude towards healthy lifestyle. In a study conducted among university students in Bihar, India by Priya. R & Sinha. M (2020) [2] reported that 50% of students had low level of nutrition knowledge. Result of the aforementioned study also revealed that there was a correlation between nutrition knowledge and nutritional status expressed as haemoglobin level. College students can develop obesity due to their frequent fast food eating habits, lack of physical exercise and increased stress. Given that one of the main goal of university is to broaden the horizon of knowledge of the society, emphasizing on nutrition knowledge, attitude and practice of students may create a more food conscious society and subsequently more healthy people. [7]

Unfortunately there are not many studies regarding the nutrition knowledge, attitude and practice and it's impact on nutritional status among college students in West Bengal.

On the basis of this background the current of the study aims to assess the nutrition knowledge, attitude and practice of female undergraduate students of nutrition and non nutrition departments from different colleges of Kolkata.

Objectives:

a) To assess the nutritional status, nutrition knowledge attitude and practice and dietary pattern of the students
b) To compare the above mentioned variables between the two study groups
c) To find out the correlation of nutrition knowledge and nutritional status.

2. Materials & Methods

Study Design & Area:

The present study was a cross sectional study conducted from August - 2024 to October 2024 among undergraduate students in the age group of 18 - 22 years studying in different colleges of Kolkata.

Study population:

Colleges, under University Of Calcutta having Food & Nutrition as undergraduate curriculum were selected for the purpose of the study. Colleges were approached to conduct the study, three colleges granted permission for the stud. Total sample size constituted of 114 female undergraduate students by using convenient sampling method. Out of 114 students, 57 from Food & Nutrition department and 57 from different disciplines of humanities such as Psychology and Human Development department.

Inclusion criteria – Final year students in the age group 18 to 22 years present on the day of study, students willing to participate in the study.

Exclusion criteria – Those students who were not present on the day of the study, those not willing to participate.

Data collection, tool & procedure:

Students were explained the purpose of the study and type of the questionnaire. A Written consent was obtained from them before collecting data. Complete confidentiality were ensured.

Socio Demographic Information:

A questionnaire was used to collect the general information regarding age of the respondents, monthly family income, numbers of earning members in family, educational qualification of both father and mother and occupation of both the parents.

Information on Nutrition Knowledge, Attitude & Practice:

A structured questionnaire was developed based on previously available research materials [8] to collect data regarding nutritional knowledge, attitude and practice.

Knowledge Questionnaire: This tool consisted of 39 questions related to various aspects of nutrition knowledge such as:

a) Knowledge of balanced diet
b) Knowledge about food sources of macro and micro nutrients
c) Knowledge related to lifestyle disorders and deficiency diseases
d) Knowledge of Recommended Dietary Allowance (RDA), Knowledge of Body Mass Index (BMI).

Every correct response was given 1 score and incorrect response given 0. The total knowledge score was summed up and computed for analysis.

Attitude & Practice Questionnaire: Attitude component of the questionnaire consisted of 11 questions. Subject's attitude towards body image, healthy eating, exercise were measured using this questionnaire. Five point Likert scale was used to score the responses ranging from strongly agree to strongly disagree. A total number of 11 questions were in the practice component of the questionnaire, which had both open ended and close ended questionnaires regarding meal pattern, sleep pattern, activity level. To score the close ended questions five point Likert scale was used.

The total knowledge, attitude and practice scores were summed up and computed for analysis. The score was categorized into three categories. (0 - 40) % as poor knowledge, attitude and practice respectively, (41 - 69) % as fair knowledge, attitude and practice respectively and (70 - 100) % as good knowledge, attitude and practice respectively.

Anthropocentric measurement:

Body weight and body fat percentage of the students were measured by using body fat analyzer. Students were asked to remove their shoes and socks and stand on the weighing machine. Body weight, body fat percentage were displayed on the machine, using the principle of bioelectrical impedance analysis. Height was measured by using a portable stadiometer to the nearest 0.5 cm. Participants were asked to stand with their feet together in "v" shape, head straight and their back of head, back of the leg, buttocks touching the stadiometer rod. A flexible tape was used to measure the waist and hip circumference. Waist circumference was taken at mid point between the lower margin of last palpable rib and the top of iliac crest. Hip circumference was measured at the largest part of the hips and the widest part of the buttocks. [9]

Food frequency questionnaire: A food frequency questionnaire consisting of 49 commonly consumed food items from major five food groups was prepared. Respondents were asked to report their weekly frequency of each food items mentioned in the questionnaire.

Data Analysis: Data were collected and anlayzed using SPSS 16.0 version (IBM's Armonk, New York, USA). Frequency distribution was used to calculate mean and standard deviation of various parameters. Independent sample t test was used to compare mean value of different parameters such as BMI, Body fat %, KAP scores between students of nutrition and non nutrition departments. Pearson correlation test was used to analyse the association between different variables. Statistical results were considered to be significant at 95% confidence interval. The WHO Asian classification was used for defining BMI categories. [9] Body fat percentage data were categorized using ACSM & ACE fitness categories

[10]. Respondents having waist hip ratio >0.8 were considered having central obesity. [11]

Institutional Ethical Clearance was obtained from the Institutional Ethical Committee for Bio Medical and Health Research involving Human Participants before the commencement of the study.

3. Result

Total number of 114 female undergraduate students, consisted the study sample, 57 from Food & Nutrition department and 57 from Psychology and Human development departments. The mean age of the subjects was 20 years. By using the Kuppuswamy's Socio Economic Status Scale [12] it was found that around 55% students belonged to Upper class; 37.5% to Upper - Middle class and 7.5% students were from Lower - Middle class.

Table 1: Association between Nutritional Knowledge Attitude Practice (KAP) Score and Student's Academic Discipline (n=114)

Department	KAP			Chi - square	P value
	Knowledge				
	Poor	Fair	Good	37.75	0.00 significant
Nutrition	0	2	55		
No - nutrition	2	30	25		
	Attitude			8.36	0.004 significant
	Poor	Fair	Good		
Nutrition	0	3 (5.26%)	54 (94.73%)		
Non - nutrition	0	14 (24.56%)	43 (75.43%)		
	Practice			4.06	0.044 significant
	Poor	Fair	Good		
Nutrition	0	13 (11.40%)	44 (38.5%)		
Non - nutrition	0	23 (20.17%)	34 (29.82%)		

Table 1. shows that students from nutrition department had significantly higher level of nutrition knowledge than their counterparts. When it comes to attitude towards healthy eating and lifestyle choices 94.73% students from nutrition department had good attitude and 75.43% students from other departments showed good attitude, the difference of the mean score of nutritional attitude was statistically significant. Students from nutrition department had significantly better food and diet related practices than students from non - nutrition departments.

Now - a days, a lot of young adults undergo a negative body image perception. The result of the present study showed that 14 % of the study participants having normal BMI, thought that they were overweight which depicts their body image dissatisfaction. Students had a tendency of having late dinner, 47% of the study participants had their dinner at 10.30 pm, which could be a predisposing factor for gaining weight.74.6% of students stated that they never followed any crash diet, which reflected their awareness about the disadvantages of such diets.78% of the students agreed that people with normal body weight also should engage in some form of physical exercise everyday. However this positive attitude was not reflected in their practise as only 39% students practised physical activity on a regular basis. Similar findings were found by Chakma K. J et al. (2017) [13], where they observed that only 28.66 % students performed moderate physical activities during a usual week. Most common form of exercise practised by the students in the present study were cardio or aerobics followed by strength training and yoga.

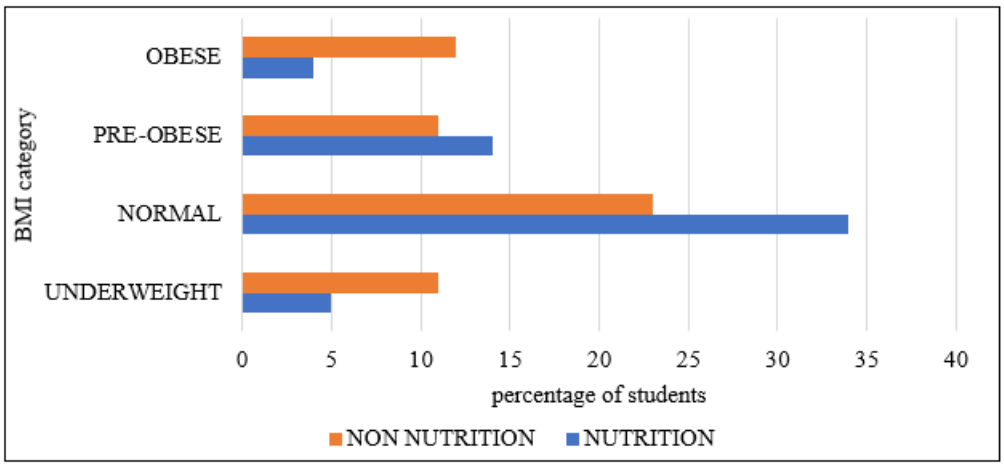

Figure 1: Comparison of BMI category between nutrition & non – nutrition students

Mean weight and height of students from nutrition department (n=57) were 56.86 kg and 154 cm respectively and mean height and weight of students from other departments were (n=57) were 155 cm and 57.78 kg respectively. Difference of mean height and weight between both groups were found to be non significant. Figure 1 depicts that 34 out of 57 students from nutrition department had normal BMI (18.5 to 24.9) [9] where as 23 out of 57 students from other departments had

normal BMI.21.05% students of non nutrition department were obese where as only 7 % students from nutrition department were obese. The result also revealed that 52.6% of the participants (n=114) were obese according to body fat percentage category. The data of the waist to hip ratio indices revealed that 34.2 % of the participants (n=114) had central adiposity, which is highly atherogenic, diabetogenic and hypertensiogenic.16% of the participants (n= 114) having normal BMI had more than 30% of body fat percentage. They can be classified as NWO (Normal Weight Obese), the concept of normal weight obesity can be defined as having a normal BMI (18.5 - 24.9) with increased body fat percent. i. e. >17.65% for male and > 31.6% for females, it can be an indicator of central adiposity. [14]

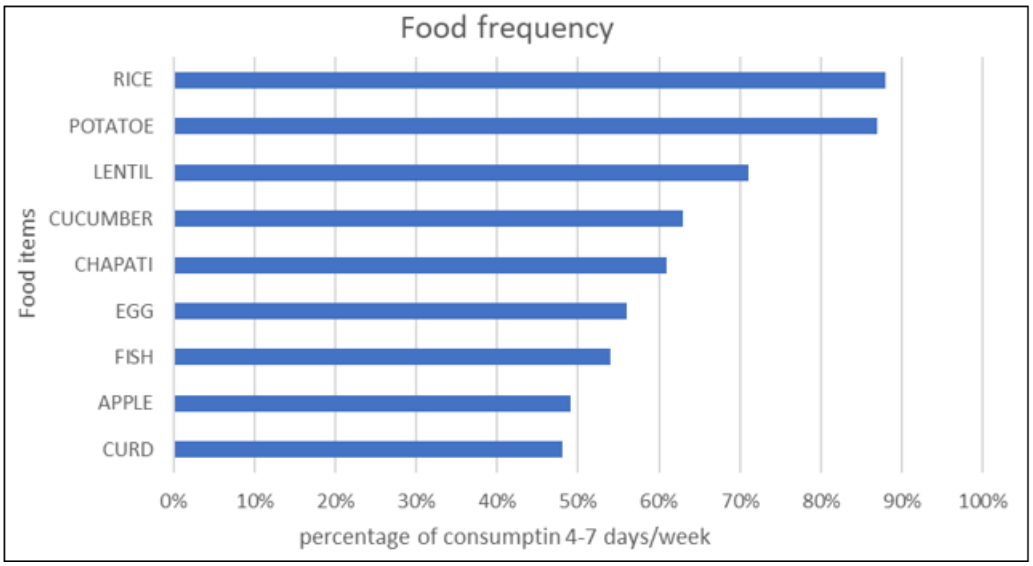

Figure 2: Top food items consumed by study participants (n=114)

The food frequency data revealed that students enjoyed meals from variety of food groups. The main staple food was white rice followed by chapati. Brown rice was the least consumed food item from the cereal group as 84.2% students never had it, followed by cornflakes (60%). The most popular protein source of the study population was lentil as 71.9% students had lentil in their everyday diet, followed by egg (67%). Only 3.07% and 15.78% of total participants took green leafy vegetables and fruits everyday. phucka was the most frequently consumed junk food by the study participants.

Table 2: Association between nutrition knowledge and nutritional status

Independent factors		Dependent factor (BMI status) Frequency (%)						
Nutritional knowledge		Underweight	Normal	Pre obese	Overweight	Total	Chi - square	p value
1) Knowledge of balanced diet	Yes	15 (13.15%)	54 (47.36%)	22 (19.29%)	15 (13.15%)	96	1.24	0.74
	No	1 (1.75%)	3 (2.63%)	3 (2.63%)	1 (1.75%)	8		
2) Knowledge of RDA	Yes	10 (8.77%)	42 (36.84%)	16 (14.03%)	5 (4.38%)	73	9.78	0.02
	No	6 (5.26%)	15 (13.15%)	9 (7.89%)	11 (9.64%)	41		
3) Knowledge of food groups	Poor	3 (2.63%)	5 (4.38%)	1 (1.75%)	6 (5.26%)	15	15.20	0.019
	Fair	5 (4.38%)	11 (9.64%)	7 ((6.14%)	5 (4.38%)	28		
	Good	8 (7.01%)	41 (35.96%)	17 (14.91%)	5 (4.38%)	71		
4) Knowledge of junkfood	Poor	4 (3.50%)	9 ((7.89%)	0	0	13	21.82	0.009
	Fair	6 (5.26%)	11 (9.64%)	10 (8.77%)	3 (2.63%)	30		
	Good	6 (5.26%)	37 (32.45%)	15 (13.15%)	13 (11.40%)	71		
5) Knowledge of BMI	Poor	2 (1.75%)	2 (1.75%)	3 (2.63%)	3 (2.63%)	10	8.66	0.194
	Fair	4 (3.50%)	6 (5.26%)	5 (4.38%)	1 (1.75%)	16		
	Good	10 (8.77%)	49 (42.98%)	17 (14.91%)	12 (10.52%)	88		
6) Knowledge of disease	Poor	1 (1.75%)	0	1 (1.75%)	0	2	10.19	0.335
	Fair	6 (5.26%)	14 (12.28%)	10 (8.77%)	6 (5.26%)	36		
	Good	9 (7.89%)	43 ((37.71%)	14 (12.28%)	10 (8.77%)	76		

Table2 depicts the association of various aspects of nutrition knowledge and nutritional status using BMI category. It can be observed from the table that knowledge of RDA, knowledge of food groups and knowledge about the ill effects of junk food on health had statistically significant association with BMI status of the respondents.

4. Discussion

The present study reports that mean nutrition KAP (knowledge Attitude & Practice) scores of students from nutrition department were significantly higher than their counterparts. It emphasizes a positive correlation of the course curriculum and level of nutrition knowledge which is consistent with previous studies which showed that nutrition knowledge was related to field of study (Barzegari et al.2011) [15]

Nutritional attitude data revealed that 54.4% of the students attempted to eat a healthy diet, where 6% of the students stated that they do not try to eat healthy. This finding shows similarity with results of Elhassan R. M et al. (2013). [16], where they found that 46.3% students attempted to eat heathy.

Food frequency data showed a significant association between eating habits (milk products p= 0.013, junk food p=0.012, pulses p = 0.006) and nutrition background, this is inline with the findings of Bano. R et. al. (2013) [9] The present study shows that 39.5% of the respondents sometimes skipped meal.14 % students skipped breakfast for more than 3 days a week. This finding overlapped with that of Chelliyan G. V et al. [2021] [17], where they found that 14.4% of the students were skipping breakfast more than three times a week. This may be due to the fact that students are usually in a rush to attend their morning classes, as a consequences they neglect having breakfast.

Referring to knowledge about junk food 70.17% of students from non nutrition background were aware of the ill effects of junk food.63% of students from humanities background knew that simple sugars should be completely avoided in type 2 diabetes. After computing the scores of all the knowledge questions it was found that 43.85% students having no nutrition background had good nutrition knowledge and only 3.5% of such students had low nutrition knowledge. This was in contradiction with a study done by Priya. R & Sinha. M (2020) [2], where they found that 50 % of students having no nutrition background had low nutrition knowledge. This may be because the study participants of the present research were more aware of nutrition issues.

In the result of the present study it was found that 50 % of study population had normal BMI (18.5 - 24.) [9] However 21.9% were overweight (BMI 24.9 - 29.9) [9] and 14% were obese (BMI >30.0) [9], which indicates higher propensity of being obese. This is in line with other Indian epidemiological studies conducted among female college students. Sengupta P et al. (2015) [18] studied female undergraduate students of different colleges of Kolkata, reported the prevalence of overweight as 21.95 %.

The anthropometric results revealed that 60% of students of nutrition department had normal BMI, where as 40% of students of other department had normal BMI. This finding is inline to the results of the study by Ijzaj ul Haq. et al. (2018) [19], where they found that, there was an inverse association of BMI with nutrition KAP scores. Earlier studies reported a positive relationship between higher nutrition knowledge and a greater intake of vegetables and fruits and a lower intake of fat. [20] This suggests that having sound nutritional knowledge and a positive attitude towards living a healthy life enable people to make better lifestyle choices which ultimately boost their nutritional status.

5. Conclusion

This present cross sectional study was conducted on female undergraduate students of various colleges under University of Calcutta. Total number of 114 students, 57 each from nutrition background and other academic backgrounds were included in the study. The study aimed to assess nutrition knowledge attitude and practice (KAP) among the study participants and find out that whether there was a significant association between Nutrition KAP and nutritional status. Result of the study showed that students from nutrition background had significantly better nutrition knowledge than their counterparts. When it comes to having a positive attitude towards healthy eating and practice related to diet and physical activity, students studying nutrition curriculum scored significantly higher.

Students of nutrition background had better nutritional status as only 15.7% of students belong to over and undernutrition category of BMI [9], where 40.34% of students from non nutrition background where either undernourished or over nourished.

Findings of the present study strongly showed that nutrition knowledge is related to field of study. These findings suggests that there is a need to enhance nutrition education among the students. Eating premises with in the colleges, student canteens should be guided by the principle of nutrition to ensure availability of nutritious, affordable, varied and convenient meals. Workshop related to food and nutrition at the college campus from time to time may help to generate awareness among the students. These measures may be beneficial for the nutritional status and over all well being of the students.

Limitations

As it was a self- reported questionnaire, subjective bias was one of the drawback of the study**.** A study comprising of a larger sample size may depict a better a picture of the current scenario.

Financial Support and Sponsorship:
University Grants Commission

Conflict of Interest:

There was no conflict of interest.

References

[1] Gabra M. IUNS in Twenty First Century on the Shoulders of the 20th Century Giant of Nutrition. Elmadfa, I., Anklam, E. andKonig, J. (Eds). Modern aspects of nutrition: Present knowledge and future perspectives.2001; 15.

[2] Priya R, Sinha M. Nutritional knowledge and nutritional status amongst university students. IP Journal of Nutrition, Metabolism and Health Science.2020 Jul 15; 3 (1): 22 - 3. Swaminathan M. Hand book of food and nutrition. Hand book of food and nutrition. .1977.

[3] Worsley A. Nutrition knowledge and food consumption: can nutrition knowledge change food behaviour?. Asia Pacific journal of clinical nutrition.2002 Dec; 11: S579 - 85.

[4] Kolodinsky J, Harvey - Berino JR, Berlin L, Johnson RK, Reynolds TW. Knowledge of current dietary guidelines and food choice by college students: better eaters have higher knowledge of dietary guidance. Journal of the american Dietetic Association.2007 Aug 1; 107 (8): 1409 - 13.

[5] Gates GE, DeLucia BA. Influences of lifestyle patterns on diet. Journal of the American Dietetic Association.1998 Sep 1; 98 (9): A82.
[6] Amamoto R, Dozono M, Toyama K. The relationship between dietary life and indefinite complaint in female Nutrition department students. Seinan Jo Gakuin Bulletin.2004; 3: 75 - 85.
[7] Bano R, AlShammari E, Fatima SB, Al - Shammari NA. A comparative study of knowledge, attitude, practice of nutrition and non - nutrition student towards a balanced diet in Hail University. Journal of Nursing and Health Science.2013; 2 (3): 29 - 36.
[8] WHO E. Committee Physical Status: The Use And Interpretation Of Anthopometry: Report of a WHO Expert Committee. WHO Technical Report Series.1995; 854.
[9] American College of Sports Medicine. ACSM's guidelines for exercise testing and prescription. Lippincott williams & wilkins; 2013 Mar 4.
[10] DAS S. Textbook of Community Nutrition. Academic Publishers; 2016.
[11] Singh T, Sharma S, Nagesh S. Socio - economic status scales updated for 2017. Int J Res Med Sci.2017 Jul; 5 (7): 3264 - 7.
[12] Chakma JK, Gupta S. Lifestyle practice and associated risk factors of noncommunicable diseases among the students of Delhi University. Int J Health Allied Sci.2017 Jan 1; 6 (1): 20.
[13] Hadaye RS, Manapurath RM, Gadapani BP. Obesity prevalence and determinants among young adults, with special focus on normal - weight obesity; a cross - sectional study in Mumbai. Indian Journal of Community Medicine: Official Publication of Indian Association of Preventive & Social Medicine.2020 Jul; 45 (3): 358.
[14] Barzegari A, Ebrahimi M, Azizi M, Ranjbar K. A study of nutrition knowledge, attitudes and food habits of college students. World Appl Sci J.2011; 15 (7): 1012 - 7.
[15] Elhassan MR, Gamal HE, Mohammed GS. Nutrition knowledge attitude and practices among students of Ahfad University for women. Indian Journal of Scientific Research.2013; 4 (1): 25 - 34.
[16] Chellaiyan VG, Kamble BD, Raja TK, Liaquathali F, Saha R, Singh SK, Acharya BP. A Study of Determinants of Obesity - Is Skipping Breakfast Meal a Risk Factor?. Journal of Evolution of Medical and Dental Sciences.2021 Jun 21; 10 (25): 1883 - 9.
[17] Sengupta P, Chaudhuri P, Bhattacharya K. Screening obesity by direct and derived anthropometric indices with evaluation of physical efficiency among female college students of Kolkata. Annals of medical and health sciences research.2013; 3 (4): 517 - 22.
[18] Ul Haq I, Mariyam Z, Li M, Huang X, Jiang P, Zeb F, Wu X, Feng Q, Zhou M. A comparative study of nutritional status, knowledge attitude and practices (KAP) and dietary intake between international and Chinese students in Nanjing, China. International journal of environmental research and public health.2018 Sep; 15 (9): 1910.
[19] Spronk I, Kullen C, Burdon C, O'Connor H. Relationship between nutrition knowledge and dietary intake. British journal of nutrition.2014 May; 111 (10): 1713 - 26.