International Journal of Home Science 2022; 8(2): 290-296

International Journal of Home Science

ISSN: 2395-7476
IJHS 2022; 8(2): 290-296

www.homesciencejournal.com
Received: 27-05-2022
Accepted: 30-06-2022

Yashi Gupta
Research Scholar, Department of Home Science, V.M.L.G. College, Ghaziabad, Uttar Pradesh, India

Dr. Shabnam Chhabra
Associate Professor & Head, Department of Home Science, V.M.L.G. College, Ghaziabad, Ch. Charan Singh University, Meerut, Uttar Pradesh, India

Corresponding Author:
Yashi Gupta
Research Scholar, Department of Home Science, V.M.L.G. College, Ghaziabad, Uttar Pradesh, India

Knowledge, attitude and practices among college going girls in reference to their breakfast consumption pattern

Yashi Gupta and Dr. Shabnam Chhabra

DOI: https://doi.org/10.22271/23957476.2022.v8.i2e.1326

Abstract
Objective: Breakfast skipping is being considered as a major public health concern among young adults, especially the girls. Nutrition knowledge has been reported to be one of predictors of this dietary behaviour. Therefore, the aim of the present study was to examine the association between of nutrition related knowledge, attitude and practices with breakfast consumption habits of college going girls aged 18-23 years.
Design: Data regarding nutrition knowledge, attitude and practices in relation to breakfast consumption was obtained by using a validated, pre-tested self-administered questionnaire. The subjects were classified into three groups according to total score obtained based on their knowledge, attitude and practices with breakfast consumption as Low, Moderate and High. In addition, correlation among knowledge, attitude and practices were also analysed to get better insight of the barriers that were responsible for the faulty habits of breakfast skipping.
Setting: Ghaziabad, Uttar Pradesh, India.
Participants: College going girls aged 18-23 years (n=850).
Results: Mean age of the participants was 18.95±1.40 years. Out of the total sample (n=850), 63% of the girls (n=536) were breakfast skippers. The findings related to knowledge, attitude and practices revealed that majority of them fall in the category of moderate. Significant correlation was found between knowledge attitude and practices of college going girls.
Conclusions: The present study suggests that nutrition knowledge level is related to breakfast skipping among college going girls.

Keywords: knowledge, attitude, practices, college going girls, breakfast skipping

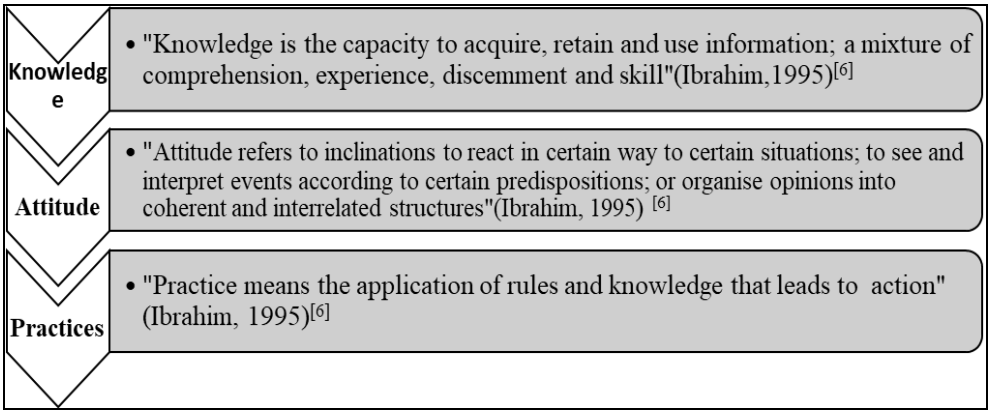
Introduction
The well-being of a nation is directly linked to the health of its citizens. Investing in health of college students is an investment in the health of the entire nation. Focusing on the healthy diet for young adults can have a long-term impact on their mental and physical health. When it comes to health and nutrition education, young adults (18-25 years) are frequently overlooked in preference to children and adults. In future, India will be dealing with number of illnesses that are exacerbated by nutritional inadequacies (Gopalan, 2013) [23]. Diet has a significant impact on human health and in order to maintain a healthy body and mind, one must consume optimum amount of food at proper time. Scientific evidence reveals that nutrients in diet provide the body with energy and also influence one's way of living.
Breakfast, the first meal of the day, is regarded as most critical, since it has the greatest impact on a person's overall health. People who don't have breakfast aren't getting enough of the nutrients they need, such as carbohydrates, protein, and fat. Skipping breakfast has been linked to a variety of negative outcomes, including mood swings, mental anguish and inability to concentrate in studies, difficulty in solving problems, weariness and laziness. Moreover, studies suggest that poor breakfast habits around the age of 16 years predict the metabolic syndrome especially high central obesity and high fasting glucose at an average age of 43 years (Wennberg *et al.*, 2015) [55]. According to Pedersen *et al.*, (2013) [44], teenagers who had poor breakfast intake when they were 15 years old continued to have low breakfast consumption when they were 19 and 27 years old. Pendergast *et al.*, (2016) [45] concluded that among people aged 18 to 30 years, breakfast was the least consumed meal (14-88 percent),

followed by lunch (8-57 percent) and dinner (4-57 percent).Various studies have reported that skipping breakfast is linked with the risk of mortality from cardiovascular disease (Chen *et al.*, 2020) [16], cancer (Yokoyama *et al.*, 2016) [60], diabetes (Ballon *et al.*, 2019) [8], and obesity (Ma *et al.*, 2020) [37]. For college students, breakfast consumption is associated with a range of positive outcomes including better academic performance (Javaid, 2020 [28]; Pengpid & Peltzer, 2020) [46], physical performance (Najwa & Appukutty, 2018) [42] and ideal body weight (Mansouri *et al.*, 2020) [38].

There is a perceptible transition from living under the supervision and care of the parents to living independently among college going girls, particularly the first-year students. They are also looking for self-reliance in order to adapt to an independent existence, which includes selecting a food habit that suits them (Das & Evans, 2014) [18]. As a result, students are more likely to engage in poor eating behaviours (Tok *et al.*, 2018 [52]; Bede *et al.*, 2020 [9]). Breakfast consumption has been linked to good eating habits such as high dietary fibre, thiamine, and folate intake, and reduced fat consumption in previous cross-sectional and intervention studies (Deshmukh - Taskar *et al.*, 2010 [20]; Chen *et al.*, 2014 [15]; Zhang *et al.*, 2017 [62]). Breakfast skipping among university students is influenced by a variety of factors. The key reason has been identified as a lack of time to prepare or consume breakfast (Pendergast *et al.*, 2016 [45]; Damit *et al.*, 2019 [4]; Chawla *et al.*, 2019 [14]; Javaid 2020 [28]). Breakfast skipping can also be due to a lack of appetite, not being hungry, or inclination towards weight control (Pendergast *et al.*, 2016 [45]; Chawla *et al.*, 2019 [14]; Javaid, 2020 [28]).

A variety of things can influence eating habits. Adults' eating habits have been shown to be influenced by nutrition knowledge (Birch LL & Davison KK, 2001 [10]; Wardle *et al.*, 2000 [53]). Several studies have found that those with a greater degree of nutrition knowledge have better dietary habits, such as eating more vegetables, fruits, fibre, and micronutrients, and eating less fat, than those with a lower level of nutrition knowledge (Wardle *et al.*, 2000 [53]; De Vriendt *et al.*, 2009[19]; Ball *et al.*, 2006 [7]; Dallongeville *et al.*, 2001[17]; Dickson-Spillmann *et al.*, 2011 [21]). Furthermore, several studies found that nutrition knowledge is one of the key variables in improving dietary habits (Worsley, 2002) [58]. As a result, nutrition education may lead to healthy eating habits. Moreover, a woman's nutritional status and awareness are powerful indicators of her children's nutritional security and household food security. In a nation like India, where females are largely assigned the duty of food preparation and management within the household, positive attitudes and practices, in addition to information for maintaining good healthy habits (Hu *et al.*, 1997) [26], will improve nutritional status of the whole family (Nazni *et al.*, 2010 [43]; Lin *et al.*, 2003 [35]; Azadbakht *et al.*, 2004 [5]). As a result, one of the most important aspects in ensuring household food and nutritional security is assessment and improvement in food and nutrition-related knowledge, attitudes and practices (KAP) (Weerasekara *et al.*, 2020) [54]

Knowledge, attitude, and practice (KAP) surveys are representative of a specific population to collect information on what is known, believed and done in relation to a particular topic, and are the most frequently used study tool in health-seeking behaviour research (WHO) [57]. Knowledge is usually assessed in order to see how far community knowledge corresponds to the general concepts (Good, 1994) [22]. People reported knowledge which deviates from general concepts is usually termed as 'beliefs' (Tannahill, 2008) [51]. Attitude has been defined as "a learned predisposition to think, feel and act in a particular way towards a given object or class of objects" (Ribeaux, 1978) [47]. As such, attitude is a product of a complex interaction of beliefs, feelings, and values. Practices in KAP surveys usually enquire about the use of knowledge and attitude in day-to-day life (Haq *et al.*, 2012) [25].



Education is necessary to raise public awareness and encourage young adults to change their practices and behaviour. It's critical to examine college students' current knowledge, attitude, and practice in connection to dietary patterns, which can pave the way for educating and enabling them to change detrimental habits like missing breakfast.

Materials and Methods

A descriptive survey was conducted among 850 college going girls aged 18-23 years, in Ghaziabad district, UP. The girls were selected using purposive sampling technique. A valid, pretested, and reliable structured questionnaire was used to assess the knowledge, attitude, and practice of college girls regarding dietary practices with special emphasis on their breakfast consumption pattern. Written consent was obtained from the students. The background information was collected using socio demographic proforma which included variables such as age, religion, caste marital status, type of family, average family income (monthly), and area of residence, etc.

The nutritional knowledge was assessed using a questionnaire which consisted of 15 multiple-choice questions related to basic nutritional knowledge. Each correct answer was given a score of one. The scoring was classified as inadequate knowledge (1 -5); moderately adequate knowledge (6- 10); adequate knowledge (11-15).

Attitude regarding dietary practices was assessed using a five-point Likert scale. It included 15 statements. The options include strongly agree=5, agree=4, uncertain=3, disagree=2, strongly disagree=1. Total score was 75. A score of 1-25 was

considered having unfavourable attitude, 26- 50 was moderately favourable attitude, and 51-75 was considered favourable attitude.

Practices regarding breakfast consumption was assessed using a practice questionnaire which included 15 "Yes" or "No" questions. A score of '1' was given for 'Yes' response and '0' for 'No' response. The scoring was arbitrarily classified as inadequate practice (1 -5); moderately adequate practice (6-10); adequate practice (11- 15).

It was then tabulated and analysed by using statistical measurements. Mean standard deviation and percentage were calculated for the scores from the nutritional knowledge; attitude; and practice score. Pearson correlation(r) was used to determine the relationship between KAP variables. The significance level was considered at $p<0.05$.

Results

Socio-demographic profile of the subjects

In the present study, 850 college going girls aged between 18-23 years participated. The mean age of the subjects was 18.95±1.40 years. Most of the subjects were from under graduate courses (85%). Faculty wise distribution reveals that 54% of them were from arts faculty and 36% and 10% were from commerce and science faculty respectively. A majority of them were Hindus (87%) while Muslim, Sikh and Christian constituted 9.5%, 2.5% and 1%, of the sample respectively. 73% of the subjects belonged to the nuclear family, while 74% of the subjects hailed from urban background. Moreover, according to the study sample, 64% of them were from the household where income was below 25,000 rupees. (Figure 1)

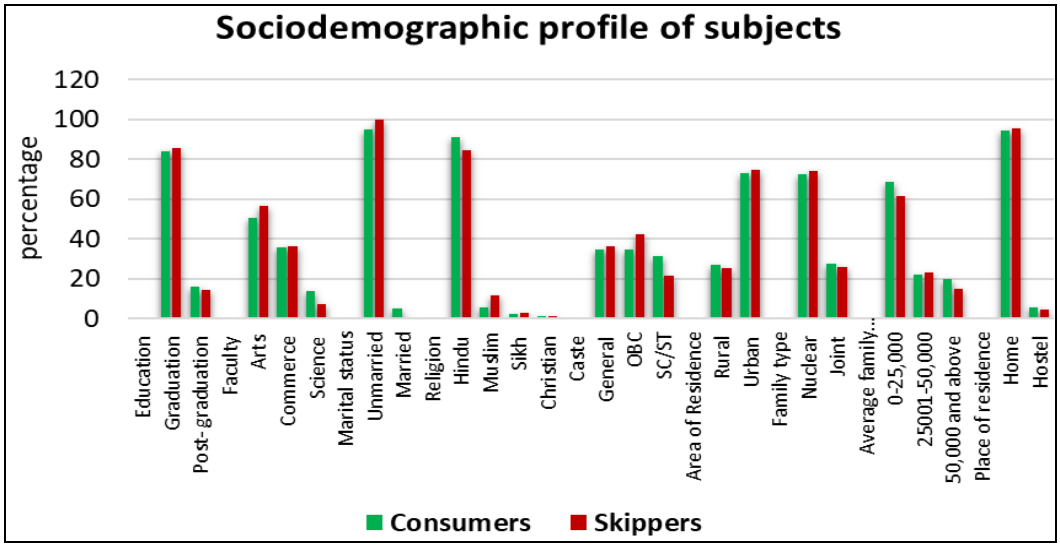


Fig 1: Socio-demographic profile of the subjects

Breakfast consumption pattern of the subjects

Breakfast consumption pattern of the subjects is presented in Table 1. Out of the total sample (n=850), 63% (n=536) of the girls were breakfast skippers and 37% (n=314) were breakfast consumers. 62% of the subjects were vegetarians, 19% were ova-vegetarian and rest 19% followed a non-vegetarian diet. Previous studies reported that the frequencies of breakfast consumption among Indian college going students were 47.8% in Amritha *et al.,* (2019) [1], 63.8% in Jeneta *et al.,* (2016) [30], 80% in Amruth *et al.,* (2019) [2]. Present results indicate similar trend too. Globally, a wide range of breakfast consumption patterns was reported among university students, ranging from 48.1% to 87.6% (Javaid, 2020) [28].

When categorized into the timeframe, 20.47% of the subjects had their breakfast between 8.00 to 10.00 am whilst a very small number (2.12%) had breakfast before 8.00 am. 58.5% of undergraduate students in a study reported by Cebirbay *et al.,*(2011) [13] took breakfast between 6.00 to 8.00 am. This study also found that 77.41% of the subjects took their breakfast after 10.00 am. It might be possible that this group of students consumed breakfast only after having their early morning classes. Further to this delaying breakfast time could result in delaying lunch and dinner times, giving rise to an eating pattern known as "eating jet lag". This eating behaviour has been demonstrated to have an association with weight gain, in which longer the *eating jet lag*, higher the chances a person gains weight (Zeron- Rugerio *et al.*, 2019) [61]. People need to be educated to eat at a similar time daily as irregular mealtime could affect our body clocks, one of the main components that regulate body rhythms (Moreno *et al.*, 2019) [41], further leading to disruption of metabolic process in our body, majorly the body weight regulation (Jayaveloo *et al.*, 2021) [29].

Table 1: Breakfast consumption pattern of the subjects

S. No.	Variables	Consumers (n=314)		Skippers (n= 536)		Total (N=850)	
		N	%	N	%	N	%
1.	**Frequency of breakfast consumption in a week**						
	Daily	181	57.64	246	45.90	427	50.24
	3-4 times a week	133	42.36	290	1.68	18	2.12
2.	**Approximate time of the first meal of the day**						
	7am- 8am	9	2.87	9	16.60	3	16.82
	8am- 9am	15	4.78	16	78.73	658	77.41
	9am- 10am	54	17.20	89	16.60	3	16.82
	Later than 10am	236	75.15	422	78.73	658	77.41

Knowledge, Attitude and Practice scores and Correlations

1. Description of subjects according to the basic Nutritional Knowledge:
The findings related to basic nutritional knowledge level revealed that majority 69.54% (n=591) of the subjects had moderately adequate knowledge, 1.76% (n=15) of the girls had adequate knowledge and remaining 28.70% (n=244) had inadequate knowledge (Figure 2). The mean score of knowledge was 6.59 ±1.90 for total population and there was a significant difference in the scores of breakfast consumers (M= 8.50, SD=0.97) and breakfast skippers (M=5.48, SD=1.35); z =37.76, p<0.05.

2. Description of subjects according to their Attitude towards breakfast consumption:
The findings related to attitude towards breakfast consumption of 850 college going girls revealed that 4.94% (n=42) showed a favourable attitude while 59.30% (n=504) of the subjects had moderately favourable attitude regarding breakfast consumption. The score calculated for 35.76% (n=347) of the girls reported inadequate attitude (Figure 2). The mean and standard deviation of attitude score was 35.45± 13.95 for the total population. Here also a significant difference was reported between the attitude scores of breakfast consumers (M= 49.40, SD=2.36) and breakfast skippers (M=27.28, SD=11.16); z =44.23, p<0.05(Table 2)

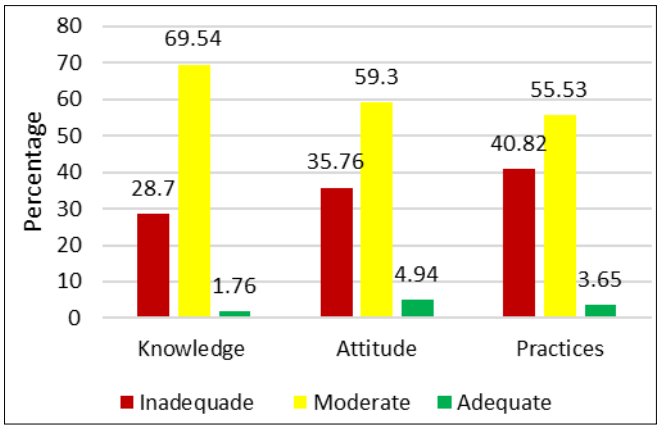


Fig 2: Distribution of the subjects according to Knowledge, Attitude and Practices

3. Description of the subjects in reference to the practices of breakfast consumption: The findings related to breakfast consumption practices of 850 college going girls revealed that merely 3.65% (n=31) of the girls had adequate practices, more than half, almost 55.53% (n=472) of them indicated moderately adequate practices and 40.82% (n=347) of the girls had inadequate practices regarding breakfast consumption (Figure 2). Moreover, a significant difference was reported between the practice score of breakfast consumers (M=8.27, S=1.26) and breakfast skippers (M=5.02, SD=1.07); z =38.32, p<0.05 (Table 2).

Table 2: Knowledge, attitude and practice scores of the breakfast consumption

Variables	Total (N=850)	Consumers (n=314)	Skippers (n=536)
Knowledge	6.59 ± 1.90	8.50 ± 0.97	5.48 ± 1.35
Attitude	35.45 ± 13.95	49.40 ± 2.36	27.28 ± 11.16
Practices	6.22 ± 1.94	8.27 ± 1.26	5.02 ± 1.07

Means ± standard deviation

4. Description of correlations between knowledge, attitude and practices
Correlations between the participants' KAP responses were measured using the Pearson correlation coefficient *(r)*, which calculates the linear relationship between two variables. Statistical significance was set as p<0.05.
The results of Pearson correlation indicated that there is a significant large positive relationship between knowledge and attitude [r (848) =0.95, p<0.05], knowledge and practice [r (848) =0.957, p<0.05], attitude and practice [r (848) = 0.92, p<0.05]. (Table 3)

Table 3: Correlation between KAP variables

Variables	Pearson correlation coefficient (r)	P
Knowledge vs. attitude	+ 0.950	< 0.05
Knowledge vs. practice	+ 0.920	< 0.05
Attitude vs. Practices	+ 0.957	< 0.005

Discussion
The present study aimed to evaluate the association of breakfast consumption of college going girls aged 18-23 years with their nutritional knowledge, attitude and practices. It was found that the frequency of breakfast consumption was higher in participants with high nutrition knowledge than those with lower knowledge score. This finding suggests that nutrition knowledge level affects breakfast consumption practices among young girls.
The participants who had less nutrition knowledge tend to skip breakfast quite frequently. This result is well in consistence with the study suggesting that nutrition knowledge is necessary to improve eating behaviours (Worsley, 2002) [58]. Younger age was reported to have a large influence on breakfast skipping (Yokoyama *et al.*, 2016) [60]; also, it has been reported that the dietary habits formed until adolescence persist throughout adult life and these behaviours can become difficult to modify later in life (St-Onge *et al.*, 2003 [49]; Campbell &Hesketh, 2007 [12]; Mikkila *et al.*, 2005 [40]; Kelder*et al.*, 1994 [32]; Guo *et al.*, 2002 [24]). Since it has been reported that breakfast skipping is related to low intakes of micronutrients (Leech *et al.*, 2016) [34] and other unhealthy eating behaviours (Huang *et al.*, 2017) [27]; therefore, the present results suggest that there is a possibility that nutrition knowledge are one of the key objectives while planning and implementing nutrition promoting programmes particularly with this group as target.
Furthermore, in this study, the correlation between knowledge and practice was found to be the highest (r=0.957; p<0.05) compared to knowledge and attitude (r=0.950; p<0.05) and attitude and practices (r=0.92; p=0.05). This means that knowledge, positive attitude and belief on the benefits of having breakfast on health would increase the regularity of breakfast intake. Contradictorily, those with negative attitude would not necessarily regularise their breakfast consumption, in spite of havinga good nutritional knowledge (Sukkachang, 2017) [50].
Eating pattern of college going girls are often characterized by refusing to eat, skipping meals, and crash diet to lose weight excessively; resulting in less intake of nutrients. According to the basic principle of the KAP model, improving knowledge leads to changes in attitudes and behaviours that not only reduce the human but also economic burden of diseases (Xu *et al.*,2016 [59], Kigaru *et al.*, 2015 [33, 56]). Also, the KAP model emphasizes the beneficial influence of nutrition on health promotion, diseases management and risk reduction (Kamp *et al.*, 2010) [31].

Moreover, according to the WHO [56], women play the main role in achieving a healthy nutrition policy both in the family and society as a whole. Here college going girls can be seen as future mothers and household managers. Thus, the health of these young girls of this age has a large impact on the health of future generations. This survey showed that college girls had a limited grasp of food and nutrition-related knowledge. Therefore, providing educational intervention may be the main factor in initiating changes in dietary behaviour (Bookari *et al.*, 2016) [11]. It may help eliminate nutritional problems of young generation. Unhealthy food practices can directly or indirectly affect the quality of life and health through poor nutritional status (Liu *et al*., 2018 [36]; Anderson, 1990 [3]). This KAP study provided a better understanding of young girl's personal determinants of dietary behaviour and valuable information on planning programmes to prevent the risk of health issues caused due to skipping breakfast. These results may be used to plan culturally, economically and user-friendly diet and lifestyle intervention and counselling programs.

Conclusion

It can be concluded from this study that college students generally had moderate knowledge of breakfast consumption, thus, there may be a possibility that breakfast skipping has occurred because of little information about food and nutrition. Further, it may be concluded that they did not put knowledge into practice due to certain barriers/limitations. The main barriers identified through this study were lack of time, poor time management, poorly timed snack consumption, media, peer pressure, gender bias at home, financial reasons and general stress. Practicing unhealthy eating behaviours and food choices are among factors that influence breakfast consumption. Healthy eating awareness campaigns and educational intervention should be reinforced in order to encourage behavioural change to optimise breakfast consumption and subsequently practicing a healthy lifestyle. Breakfast consumption is one of the factors contributing to better nutritional status. Thus, it is important that students need to be educated about health-related concerns regarding breakfast consumption. Therefore, health promotion programmes or nutrition counselling on breakfast consumption might need to pay greater attention, while making a strategy for improving dietary behaviours among college going girls. Enhancing knowledge and attitude levels can influence practice level and can effectively reduce breakfast skipping. So, to provide nutrition education on healthy food habits and lifestyle will help to bridge the gap between knowledge and practice of dietary pattern and help in increasing overall health and nutritional status. Based on the results of this study, sincere efforts are required to enhance nutritional education among college going girls in India to bring effective change.

References

1. Amritha A, Babu Dharani, Tejasri S, Maheswari S, Mary Vinita. Assessment of Breakfast Skipping and Health-Compromising Behaviours Among College Students in Chennai. JIDAM. 2019;6(3):80-87.
2. Amruth M, Kumar A. A cross-sectional study on BMI and eating habits among students in a medical college in Kerala. International Journal of Community Medicine and Public Health. 2019;6(3):1285-1294.
3. Anderson SA. Core indicators of nutritional state for difficult-to-sample populations. J. Nutr. 1990, 120.
4. Awang Damit NAD, Rahman HA, Ahmad SR. Breakfast intake habits among Universiti Brunei Darussalam Students. Pakistan Journal of Nutrition. 2019;18:817-823.
5. Azadbakht L, Parvin-Miramiran A, Moumenan A, Azizi F. Knowledge, attitude and practice of guidance school and high school students in district-i3 of Tehran about healthy diet. Sci. Inf. Database, 2004, 409-416.
6. Badran Ibrahim G. Knowledge, attitude and practice the three pillars of excellence and wisdom: a place in the medical profession. EMHJ - Eastern Mediterranean Health Journal. 1995;1(1):8-16. https://apps.who.int/iris/handle/10665/116905
7. Ball K, Crawford D, Mishra G. Socio-economic inequalities in women's fruit and vegetable intakes: a multilevel study of individual, social and environmental mediators. Public Health Nutr. 2006;9:623-630.
8. Ballon A, Neunschwander M, Schlesinger S. Breakfast skipping is associated with increased risk of type 2 diabetes among adults: A systematic review and meta-analysis of prospective cohort studies. The Journal of Nutrition. 2019;149(1):106-113.
9. Bede F, Cumber SN, Nkfusai CN, Venyuy MA, Ijang YP, Wepngong EN, *et al*. Dietary habits and nutritional status of medical school students: the case of three state universities in Cameroon. The Pan African Medical Journal. 2020;35:15.
10. Birch LL, Davison KK. Family environmental factors influencing the developing behavioral controls of food intake and childhood overweight. Pediatr Clin North Am. 2001;48:893-907.
11. Bookari K, Yeatman H, Williamson M. Exploring Australian women's level of nutrition knowledge during pregnancy: A cross-sectional study. Int. J. Women's Health. 2016;8:405–419.
12. Campbell KJ, Hesketh KD. Strategies which aim to positively impact on weight, physical activity, diet and sedentary behaviours in children from zero to five years. A systematic review of the literature. Obes Rev. 2007;8:327-338.
13. Cebirbay MA, Aktas N, Calderoni M. Determination of breakfast habits and knowledge of foreign undergraduates studying at Selcuk University in Turkey. Progress in Nutrition. 2011;4:276-285.
14. Chawla R, Emy K, Singh HKJ, Razak AWA. Role of breakfast, BMI and English language proficiency on academic performance of undergraduate dental students: a crosssectional study. British Journal of Medical & Health Sciences. 2019;1(3):56-68.
15. Chen J, Cheng J, Liu Y, *et al*. Associations between breakfast eating habits and health-promoting lifestyle, sub-optimal health status in Southern China: a population based, cross sectional study. J Transl Med. 2014;12:348.
16. Chen H, Zhang B, Ge Y, Shi H, Song S, Zue W, *et al*. Association between skipping breakfast and risk of cardiovascular disease and all-cause mortality: A meta-analysis. Clinical Nutrition. 2020;39:2982-2988.
17. Dallongeville J, Marecaux N, Cottel D, *et al*. Association between nutrition knowledge and nutritional intake in middle-aged men from Northern France. Public Health Nutr. 2001;4:27-33.
18. Das BM, Evans EM. Understanding weight management perceptions in first-year college students using the health belief model. Journal of American College Health. 2014;62(7):488- 97.
19. De Vriendt T, Matthys C, Verbeke W, *et al*.

Determinants of nutrition knowledge in young and middle-aged Belgian women and the association with their dietary behaviour. Appetite. 2009;52:788-792.
20. Deshmukh-Taskar PR, Radcliffe JD, Liu Y, *et al*. Do breakfast skipping and breakfast type affect energy intake, nutrient intake, nutrient adequacy, and diet quality in young adults? NHANES 1999–2002. J Am Coll Nutr. 2010;29:407-418.
21. Dickson-Spillmann M, Siegrist M. Consumers' knowledge of healthy diets and its correlation with dietary behaviour. J Hum Nutr Diet. 2011;24:54-60.
22. Good B. Medicine, rationality, and experience: an anthropological perspective. Cambridge: Cambridge UnivPr, 1994.
23. Gopalan. Changing nutrition scenario. Indian Journal of Medical Research. 2013;138(3):392-397.
24. Guo SS, Wu W, Chumlea WC, *et al*. Predicting overweight and obesity in adulthood from body mass index values in childhood and adolescence. Am J Clin Nutr. 2002;76:653–658.
25. Haq Noman, Hassali Mohamed, Shafie Asrul, Saleem Fahad, Farooqui Maryam, Aljadhey Hisham. A cross sectional assessment of knowledge, attitude and practice towards Hepatitis B among healthy population of Quetta, Pakistan. BMC public health. 2012;12:692. 10.1186/1471-2458-12-692.
26. Hu SP, Wu MY, Liu JF. Nutrition knowledge, attitude, and practice among primary care physicians in Taiwan. J. Am. Coll. Nutr. 1997;16:439-442.
27. Huang C, Momma H, Cui Y, *et al*. Independent and combined relationship of habitual unhealthy eating behaviors with depressive symptoms: A prospective study. J Epidemiol. 2017;27:42-47.
28. Javaid Q. Breakfast and academic performance among college and university students: review of the available literature. International Archives of Biomedical and Clinical Research. 2020;6(2):1-6.
29. Jayaveloo Sivagami, Mat Daud, Norlida, Abdul Rahman, Hafeedza. Breakfast Consumption Patterns, Knowledge, Attitude and Practice and Barriers Among Malaysian University Students. Malaysian Applied Biology. 2021;50:205-216.
30. Jeneta Preetha J. Effect of breakfast in body mass index among college going students. Journal of Pharmaceutical Sciences and Research. 2016;8:545-551.
31. Kamp BJ, Wellman NS, Russell C. Position of the American Dietetic Association, American Society for Nutrition, and Society for Nutrition Education: Food and Nutrition Programs for Community-Residing Older Adults. J. Nutr. Educ. Behav. 2010;42:72-82.
32. Kelder SH, Perry CL, Klepp KI, *et al*. Longitudinal tracking of adolescent smoking, physical activity, and food choice behaviors. Am J Public Health. 1994;84:1121-1126.
33. Kigaru DMD, Loechl C, Moleah T, Macharia-Mutie CW, Ndungu ZW. Nutrition knowledge, attitude, and practices among urban primary school children in Nairobi City, Kenya: A KAP study. BMC Nutr. 2015;1:541.
34. Leech RM, Livingstone KM, Worsley A, *et al*. Meal frequency but not snack frequency is associated with micronutrient intakes and overall diet quality in Australian men and women. J Nutr. 2016;146:2027=2034.
35. Lin XY, Joang XH, Liu Y. Nutrition knowledge, attitude, and practice of university students. Acta Academ. Med. Shandong, 2003, 4.
36. Liu H, Xu X, Liu D, Rao Y, Reis C, Sharma M, *et al*. Nutrition-Related Knowledge, Attitudes, and Practices (KAP) among Kindergarten Teachers in Chongqing, China: A Cross-Sectional Survey. Int. J. Environ. Res. Public Health. 2018;15:615.
37. Ma X, Chen Q, Pu Y, Guo M, Jiang Z, Huang W, *et al*. Skipping breakfast is associated with overweight and obesity: a systematic review and meta-analysis. Obesity Research and Clinical Practice. 2020;14(1):1-8.
38. Mansouri M, Hasani-Ranjbar S, Yaghubi H, Rahmani J, Tabrizi YM, Keshtkar A, *et al*. Breakfast consumption patterns and its association with overweight and obesity among university students: a population-based study. Eating and Weight Disorders – Studies on Anorexia, Bulimia and Obesity. 2020;25:379-387.
39. Matsumoto M, Ishige N, Sakamoto A, Saito A, Ikemoto S. Nutrition knowledge related to breakfast skipping among Japanese adults aged 18–64 years: A cross-sectional study. Public Health Nutrition. 2019;22(6):1029-1036.
40. Mikkila V, Rasanen L, Raitakari OT, *et al*. Consistent dietary patterns identified from childhood to adulthood: the Cardiovascular Risk in Young Finns Study. Br J Nutr. 2005;93:923–931.
41. Moreno JP, Crowley SJ, Alfano CA, Hannay KM, Thompson D, Baranowski T. Potential circadian and circannual, rhythm contributions to the obesity epidemic in elementary school age children. International Journal of Behavioral Nutrition and Physical Activity. 2019;16:25.
42. Najwa N, Appukutty M. Breakfast consumption association with body status and physical activity among female university students. Malaysian Journal of Movement, Health & Exercise. 2018;7(2):93-106.
43. Nazni P, Vimala S. Nutrition Knowledge, Attitude and Practice of College Sportsmen. Asian J. Sports Med. 2010;1:93-100.
44. Pedersen TP, Holstein BE, Flachs EM, Rasmussen M. Meal frequencies in early adolescence predict meal frequencies in late adolescence and early adulthood. BMC Public Health. 2013;13:445.
45. Pendergast, *et al*. International Journal of Behavioral Nutrition and Physical Activity. 2016;13:125. Doi 10.1186/s12966-016-0451-1
46. Pengpid S, Peltzer K. Skipping breakfast and its association with health risk behaviour and mental health among university students in 28 countries. Diabetes, Metabolic Syndrome and Obesity: Targets and Therapy. 2020;13:2889-2897.
47. Ribeaux P, Poppleton SE. Psychology and Work: an introduction. London: Macmillan, 1978.
48. Sangwanna S, Thongprasert C. Breakfast skipping habit effect to energy and nutrients intake among university students. International Journal of Advances in Science Engineering and Technology. 2019;7(2):67-70.
49. St-Onge MP, Keller KL, Heymsfield SB. Changes in childhood food consumption patterns: a cause for concern in light of increasing body weights. Am J Clin Nutr. 2003;78:1068-1073.
50. Sukkrachang K. Knowledge, attitude and breakfast consumption behaviors of upper elementary students in Muang District, Songkla. In: The International Conference on Graduate Students' Research Work, 2017, 1-11.

51. Tannahill A. Beyond evidence-to ethics: a decision-making framework for health promotion, public health and health improvement. Health Promot Int. 2008;23:380-390.
52. Tok CY, Ahmad SR, Koh DSQ. Dietary habits and lifestyle practices among university students in Universiti Brunei Darussalam. The Malaysian Journal of Medical Sciences. 2018;25(3):56-66.
53. Wardle J, Parmenter K, Waller J. Nutrition knowledge and food intake. Appetite. 2000;34:269-275.
54. Weerasekara PC, Withanachchi CR, Ginigaddara G, Ploeger A. Food and Nutrition-Related Knowledge, Attitudes, and Practices among Reproductive-Age Women in Marginalized Areas in Sri Lanka. International journal of environmental research and public health. 2020;17(11):3985. https://doi.org/10.3390/ijerph17113985
55. Wennberg M, Gustafsson PE, Wennberg P, Hammarström A. Poor breakfast habits in adolescence predict the metabolic syndrome in adulthood. Public Health Nutrition. 2015 Jan;18(1):122-129. Doi: 10.1017/s1368980013003509. PMID: 24468205.
56. World Health Organization (WHO). Healthy Nutrition: The Role of Women: Report on a WHO Meeting; Murmansk, Russian Federation, 14–15 June 2000. No. EUR/00/5018043; WHO Regional Office for Europe: Copenhagen, Denmark, 2000.
57. World Health Organization: Advocacy, communication and social mobilization for TB control: a guide to developing knowledge, attitude and practice surveys. http://whqlibdoc.who.int/publications/2008/9789241596176_eng.pdf.
58. Worsley A. Nutrition knowledge and food consumption: can nutrition knowledge change food behaviour? Asia Pac J Clin Nutr. 2002;11(Suppl 3):S579–S585
59. Xu X, Chen C, Abdullah AS, Liu L, Sharma M, Yu H, *et al*. Smoking related attitudes, motives, and behaviors of male secondary school students in an urban setting of China. SpringerPlus. 2016;5:2021.
60. Yokoyama Y, Onishi K, Hosoda T, Amano H, Otani S, Kurozawa Y, *et al*. Skipping breakfast and risk of mortality from cancer, circulatory diseases and all causes: Findings from the Japan Collaborative Cohort Study. Yonago Acta Medica. 2016;59(1):55-60.
61. Zeron-Rugerio MF, Hernaez A, Porras-Loaiza AP, Cambras T, Izquierdo-Pulido M. Eating jet lag: a marker of the variability in meal timing and its association with body mass index. Nutrients. 2019;11(12):2980.
62. Zhang L, Cordeiro LS, Liu J, *et al*. The association between breakfast skipping and body weight, nutrient intake, and metabolic measures among participants with metabolic syndrome. Nutrients. 2017;9:E384.