

Nutritional status of the student nurses of a tertiary health-care center – A mixed-method study

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ABSTRACT

Context: Nursing students are the future role model of health; so critical evaluation of their nutritional status is imperative for effective functioning of health sector. **Aims:** The aim is to assess the nutritional status of nursing students using basal metabolic index and exploring the causes of malnutrition along with uncovering the causes behind these causes of malnutrition. **Setting and Design:** Nutritional status of student's nurses was assessed by mixed-method study design in tertiary care center of Mumbai, India. **Materials and Methods:** The method is to use the census method for sampling 280 nursing students of a tertiary care center interviewed using a semistructured interview schedule. Focus group discussions were held with student nurses, which were selected through purposive sampling technique to interpret the instigator causes behind causes of malnutrition. **Statistical Analysis:** Descriptive statistics was applied on qualitative data. Conceptual model framed on themes and subthemes based upon the codes from qualitative data. **Results:** Students having BMI less than 18 and more than 24.9 were 189 and 11, respectively, out of 280 students. About 64.20% had acidity and 11.07% performed regular exercises evolving major themes: challenges, stress, attitude, knowledge, social barriers, and motivators. **Conclusion:** About 67.5% of nursing students had BMI less than 18. Inappropriate dietary pattern, frequent ailments, and improper personal habits ensued their malnourished status. Lack of proper knowledge on balanced diet, work place stress, and challenges such as financial constrain, peer pressure, and health ailments along with improper perception of body image of the student nurses are major triggering factors behind the causes of malnutrition.

Keywords: Diet, malnutrition causes, student nurses

Introduction

Nursing is a lifesaving profession and nurses devour a critical role in the health-care system. Being the largest component of health-care delivery, nursing profession not only deals with individual's life but helps in maintaining good quality of life in a family as well as a community.^[1] Nurses are portrayed as “sheet anchor” in India's health system as they aspire to deliver primary health care to every citizens regardless of the capability to pay.^[2] India has an average of 1 nurse for every 2500 residents, compared with 1 for every 150–200 in developed and richer

countries.^[3] Thus, nursing profession has excessive arduous duties and tasks which need complete dedication,^[4] and high incidence of ailments among the nurses will result in partial and limited dedication to work. Furthermore, sickness absenteeism will result into insufficient nursing staff in hospitals leading to higher mortalities and morbidities of the patients,^[5] which will impede the effective functioning of hospitals and other health organizations.

The nursing students are the future role models of health for the community.^[6] Intriguingly, nursing students, generally between the age group of 17 and 22 years, come in the category of adolescent and young adults.^[7]

Young adults contribute to a major component of professional health services. The health of these young people is closely

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linked to the lifestyle they choose to adopt,^[8] which also affects their nutritional status and so must be evaluated critically as malnutrition is a significant public health problem in low-to-medium income countries like India.^[9]

Malnutrition has a considerable impact on health, education, and productivity of an individual, which projects an overall impact on whole country's development. In India, the issue of malnutrition has received considerable critical attention as studies show that 23% adult females are undernourished and 22% are obese,^[10] and studies determine that more than 50% adolescent girls are underweight in our country.^[11] This observation is also supported by other studies showing that the prevalence of undernutrition in 10–24 years is ranging from 56.4 to 68.5%.^[12] Inadequate nutrition along with adverse life style behaviors has accentuated the problem of chronic diseases in the young adults.^[13] Despite the importance of malnutrition in our country, there remains a paucity of evidence in the research literature of scientific data on the nutritional status of young adults, especially on student nurses, which makes it difficult to define appropriate intervention strategies for them. Therefore, we are conducting this study to assess the knowledge about nutrition, burden of comorbidity, awareness, and utilization of available food services provided to them and explore the causes of malnutrition among nursing students.

Materials and Methods

Study design

A mixed-method study design was used to assess the nutritional status and to explore the causes of malnutrition and the key factors instigating these causes of malnutrition among the nursing students. This cross-sectional observational study used semistructured interview schedule for collection of quantitative data and qualitative data were collected with the help of a pre-designed focus group discussion (FGD) guide for conducting the FGDs amongst the students.

Settings

This study was conducted in a tertiary care hospital of Mumbai city (Maharashtra), which had a nursing institute attached to it from April 2018 to May 2018. This nursing institute had three consecutive years' student. First year had 100 students, second year had 90, and third year had 90 students. The total number of students was 280 and age group was between 17 and 22 years.

Participants

The study consisted of cross-sectional design, where quantitative data were collected by Census method. All 280 nursing students of the hospital were evaluated by using a semistructured interview schedule. The study was conducted in general Out Patient Department (OPD) where 20 nursing students were called from Monday to Thursday and were interviewed and examined. Necessary treatment and referral were done if required. Privacy was maintained by carrying out this study in separate rooms by female resident doctors only. The

qualitative data were collected through FGDs, which abetted in understanding the significant impediments to adequate diet and nutrition among the nursing students. Each FGD group consisted of 6–7 nursing students who were selected out of the total 280 students by using purposive sampling technique.^[14] Saturation of the qualitative data was attained in 3 FGDs which included total 20 students.

Measures

Dietary habits

There are type of diet, consumption of various food items (green vegetables, eggs, milk, etc.), regularity in consumption of full meals, skipping snacks/meals, consumption of junk food items, and daily intake of water.

Personal history

There are average sleep hours, bowel habits, hand-washing habits, and regularity in physical activities (exercise, yoga, etc.).

Health ailments

These are gastrointestinal complaints, upper respiratory infections, and any chronic disease.

Medication history

Folic-acid therapy, vitamin supplementation, albendazole therapy or any other chronic disease medications, if present, among the student nurses will be assessed.

Physical examination

Height, weight and BMI (basal metabolic index) of the students will be examined.

FGD guide's domains were restricted to description of appetite, reasons for skipping regular meals, knowledge about balanced diet, causes of stress in routine daily schedule, influence of peer-groups in daily routine, and diet.

Ethics approval

The study was approved by the ethical review board of Seth G.S. Medical College and K.E.M. Hospital, Mumbai (Maharashtra). All participants gave written consent prior to participating in the baseline interview and FGDs.

Data analysis

Data were entered in Microsoft Excel 2016 spreadsheet in order to organize and tabulate data for statistical analysis. Descriptive statistics was based on the objectives proposed and comprehended by using SPSS 2016.

All the focus group tape-recorded discussions data were transcribed by an independent transcriber and translated into English, as in recorded data, student nurses had used local language in few parts of discussion. The content analysis of the data was done manually by initiating the coding and category allocations. Codes and categories that emerged

from the collected data were suitably sorted and developed into main themes under which appropriate subthemes were merged, as summarized in a conceptual framework in the following section.

Results

Descriptive analysis

Distribution of BMI

Out of 280 students, 67.50% ($n = 189$) were found having BMI <18 and 3.90% ($n = 11$) had BMI >24.9. Only 28.20% ($n = 80$) students had normal BMI range.

The Chi-square statistic value is 2.0409. The P value was found to be 0.36; therefore, there was no significant association between type of meal consumed by the students and their respective BMI.

Qualitative results

We have prepared a conceptual model [Figure 1] based on the results of the three FGDs held with the student nurses. The model represents a summary of the themes and subthemes from the FGDs held. COREQ checklist is used for reporting qualitative findings.^[15]

Financial status

Student receives less pocket money due to financial constrain at family, which deters students to buy expensive but good quality food like dry fruits, etc. and in turn increases preference for cheap street food.

- “I want to eat apples and grapes. I know they are good for health, but they are very expensive, so I can hardly afford these food items”
- “Whenever I go out I have Vada pav from a street vendor as it is cheap but tasty.”

Health ailments

Many of the student nurses had good appetite, but it was significantly reduced during period of sickness affecting their regular schedule of the diet.

- “I have pain in my epigastric region most of days in the morning, so I don’t feel like having my breakfast”
- “Most of the days in the year I have a bloated abdomen.... I feel this is because I am suffering from constipation ... so I consume only one full meal a day....”

Peer pressure

Some students are negatively influenced by their peer groups in eating unhealthy food, keeping “fast” on specific days (based on religious misconception), whereas few students have adjustment issues with their peer groups and maladaptation to new environment, which in turn tremendously has negative impact on daily food consumption.

- “Most of my friends have adopted habit to fast on Thursdays.... I have also adopted the same, as it is considered good for future life and studies”
- “I prefer restaurants over street food, but my class mates like Chinese food of street vendor, so I need to accompany them”
- “I feel the food is not nice here in hostel, my home food was more good”
- “I don’t like eating food alone ... but here I don’t have good friends ... so most of the times I don’t feel like going to mess hall and have food.”

However, conversations about healthy diet and exercise strengthened motivation to embrace healthier habits. This they received mainly from their teachers, warden, and some senior students. These advices are acting as motivators for few of the students.

- “Teacher have told me to go for morning walk or yoga few days a week It helps in building stamina.... I am following it since 3 months.”

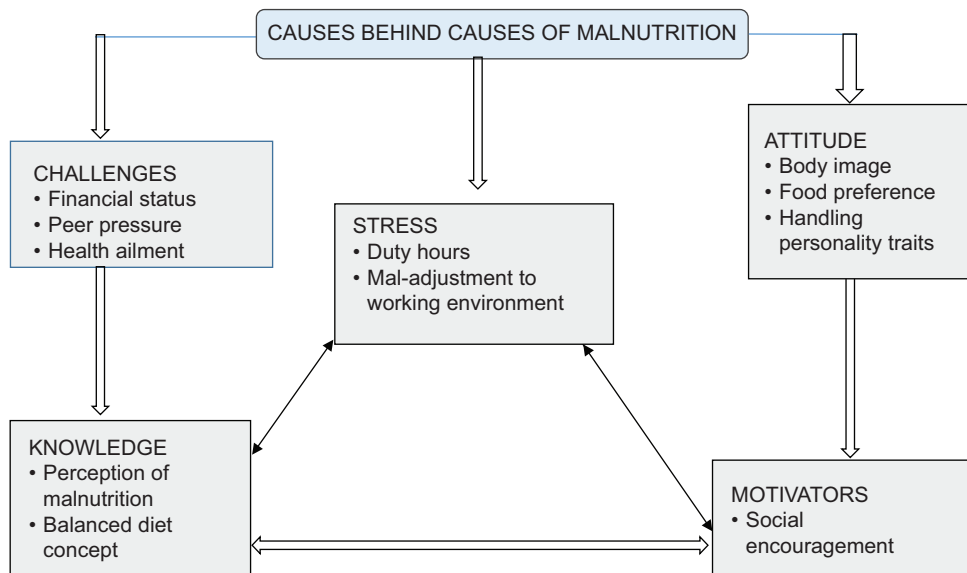


Figure 1: Conceptual model summarizing the themes and associated subthemes determining the significant reasons behind causes of malnutrition

Maladjustment to duty hours and working environment

Student’s habit of skipping breakfasts after night duties and other regular meals, specifically dinner, to complete regular assignments and studies justified the fact of inappropriate management of their time schedule due to maladjustment to duty hours and working environment which ensued not only to unhealthy dietary pattern but also induced stress among them.

- “I get tired after coming back from college so I sleep off and at night I have to study and do my assignments, so most of the days I miss dinner”
- “I don’t like having breakfast in the morning after my night duty”
- “I wake up late, so I cannot manage time to have breakfast as I will get late for my class.”

Body image and self-esteem

Students were evaluated to have a negative body image perception, resulting into deliberate skipping of meal to lose perceived excess weight.

- “I don’t think I am underweight, I am appropriate for my age”
- “I am not eating snacks, full breakfast and dinner to lose excess weight as I have gained 3 kilograms in recent days”
- “Thin people are preferred nowadays.... And if I have full meals all three times a day, I think, I will gain weight....”

Few student nurses omit some specific food from the daily routine, which is arranged for them in the hostel due to their personal dislike for the particular item.

- “I never preferred spinach and milk since my childhood ... so I skip them now also”
- “I skip my meals if my preferred food is not made in mess ... I better have chocolate and glass of water those days....”

Lack of knowledge

Most of the nurses were unaware of the nutritional value of food items. Consumption of milk, purified water, and other healthy food, which was readily available in the hostel-mess, were significantly low.

- “When we talk about malnutrition it means person is underweight for the age and not obese”
- “I don’t like green leafy vegetables so I don’t have but I have more rice in place of it”
- “Albendazole tablet is to be taken every five yearly ... but I don’t remember the exact year when I consumed it last.”

Discussion

This study assessed the nutritional status of nursing students, explored the causes of malnutrition in them, and found the instigator causes behind these causes of malnutrition.

Out of the 280 participating students, 67.50% (n = 189) students were having BMI <18, 3.90% (n = 11) students had BMI >24.9, and only 28.57% (n = 80) students had normal BMI range. Similar findings were comprehended in other community-based

Table 1: Sociodemographic factors of the student nurses

Variables	No. of students (n)	Percentage (%)
Age (in years)		
17-18	121	43.2
19-20	135	48.2
21-22	23	0.08
Permanent residence		
Urban	135	48.2
Rural	145	51.7
Total no. of family members		
2-5	91	33.2
6-10	63	61.7
11-15	14	0.05
Socioeconomic class		
Upper	18	6.4
Upper middle	100	35.7
Lower middle	162	57.8

study involving adolescent and young aged students.^[16-18] Table 1 depicts the sociodemographic factors of the nursing students, where 51.7% had rural residence and 48.2% had urban and most of the students were from lower middle socioeconomic status. This points out to a fact that these nursing students may have inappropriate nutrition and improper dietary habits since their childhood, which may have got amplified in new living and working environment. Table 2 shows the frequency of essential food items’ consumption and it was evaluated that none of the food consumption pattern met the directed guidelines of National Institute of Nutrition, India.^[19] A significant number of other Indian and international study findings acquiesce with our study findings.^[20-23] Table 3 shows the regularity in consumption of meals, breakfast, and type of diet followed by students and its results were in accordance to other diverse studies performed on nursing and undergraduate candidates.^[16,17] Previous study findings highlighted the point of overweight/obesity in association with breakfast-skipping habit.^[24,25] Table 4 indicates relationship between BMI range and type of diet consumed by the students. However, no significant association was established between BMI and food type amongst student nurses. Table 5 indicates that 10.7% students consumed >1 liter of water along with 62.1% of the students drinking 3-4 cups tea daily. These factors may predispose acidity and other gastrointestinal complaints in the students. To sustain this fact, the study found that constipation and acidity were the most common ailment which the students were suffering. Physical activity was done by only 11.07% (n = 31) students in this study. Other studies evaluated similar findings of sedentary life style and lack of exercises in nursing students.^[26-28]

In this study, five main themes were recognized – challenge, stress, knowledge, attitude, social barriers, and motivators – and conceptualized in Figure 1.

Many students were found to have deficient knowledge about malnutrition as obesity being an entity of malnutrition was less known fact among the nursing students. Students agreed

Table 2: Frequency of food items consumption per week among the student nursing students

Number (n)/ Percentage of student (%) consuming food	Food items					
	Chicken	Eggs	Milk	Milk product	Green vegetables	Fruits
Once per week	168 (60%)	65 (23.2%)	112 (40%)	125 (44.6%)	70 (25%)	134 (47.8%)
2-3 times per week	86 (30.70%)	96 (34.2%)	84 (30%)	62 (22.1%)	106 (37.8%)	20 (7.1%)
All days a week	0 (0%)	78 (27.8%)	70 (25%)	34 (12.14%)	98 (35%)	14 (5%)
Nil	26 (9.2%)	41 (14.6%)	14 (5%)	59 (21.09%)	6 (2.1%)	112 (40%)

Table 3: Type and frequency of meal consumed by students (n=280)

Type and frequency of meal	n (=280)	Percentage (%)
Vegetarian diet	67	23.92
Mixed diet	213	76.07
Frequency of missing breakfast	216	77.14
Frequency of missing dinner	171	61.07
Frequency of missing lunch	20	7.14

Table 4: Association of BMI distribution of students (n=280) on basis of type of meal

BMI	Vegetarian diet	Mixed diet
<18	50 (74.6%)	139 (65.2%)
18-24.9	15 (22.3%)	65 (30.5%)
>24.9	2 (2.9%)	9 (4.2%)

The Chi-square statistic value is 2.0409. The P value was found to be 0.36; therefore, there was no significant association between type of meal consumed by the students and their respective BMI

Table 5: Contributory factors affecting the nutritive health status

Variables	n (280)	Percentage (%)
Consumption per day		
Water >3 l	145	51.7
Water 1 l	30	10.7
Tea 3-4 cups	174	62.11
Coffee 2-3 cups	56	20
Cold drinks >3 times a week	105	37.5
Physical activity		
Free hand exercises 3-4 times per week	29	10.35
Yoga and morning walk regularly	2	0.71
Health ailments		
Acidity	180	64.2
Diarrhea	11	3.9
Constipation	135	48.2
Upper respiratory infection	134	47.8
Personal habits		
Preference of street food	196	70
Regularity in albendazole therapy	79	28.21

that food items like milk, banana, eggs, etc., provided in hostel, were healthy food but the trainee nurses, mostly the first-year students, did not have a clear concept about nutritive value of food and proportion of food item required daily for a balanced diet. Some of the trainee nurses had proper knowledge about the health benefits of dry fruits, fruits, milk products in daily diet. But students could not afford these items and include them in regular diet because of difficult financial situation at their

respective houses which in turn allured them to have succulent yet cheap, street food which deteriorated the nutritional quality of the consumed diet. Another reason for preference of street food was peer-group pressure which was also evaluated in past studies.^[29] However, eating behaviors were also positively influenced by nursing student's interactions with their own classmates. So, peer groups can both encourage and act as a hurdle to healthy life style and nutrition.^[30] Another cause behind inappropriate eating habits was improper management of time by nurses. This was the most common reason of skipping breakfast and dinner. Maladjustment to the diverse and new environment of hospital and living away from family in hostel and busy schedule resulted into mood changes and accordingly altered the food habits of the student nurses.^[31,32] Many of the student nurses skipped their regular meals during period of sickness as their appetite is reduced significantly in this period. Another major issue, which came into light via the FGDs, was that a significantly higher proportion of nurse overemphasized their body weight which has resulted in development of negative body perceptions. This noteworthy negative impact on their body image is mainly due to our appearance-oriented culture along with concepts of fat talk and weight-related bullying by peer groups resulting into development of poor body image.^[33-35] Negative body image is unswervingly related to low self-esteem which further contribute to the trailing weight loss strategies and development of eating disorders.^[36] Wrong perception of body image is a significant barrier for any behavioral change amongst the students because unless student nurses identify their weight as a consequence of the improper nutrition and lifestyle, it is less likely to motivate them and take preventive and curative measures. Although latest studies have proved that less caloric intake may not be helpful in losing weight,^[37] nevertheless due to inadequate knowledge, these habits are followed consistently. All these factors instigated the causes of malnutrition in the student nurses.

The limitation of this study is that it is not a multicentric study as it involves nursing students of one tertiary care center only; so, the results may not be extrapolated to nutritional status of all nursing students of the whole country but this study reflects the few core causes of malnutrition. Prevention of these causes in an earlier phase will contribute a critical positive element to the health status of these budding role models of health-care system.

Conclusion

A significant percentage (67.5%) of nursing students had BMI less than 18. Irregular and improper dietary pattern, frequent ailments, and improper personal habits, for example, lack of physical exercise in daily schedule, etc., can be considered as causes for their malnourished status. Lack of proper knowledge on balanced diet, work place stress, and challenges like financial constrain, peer pressure, and health ailments along with improper perception of body image of the student nurses are major triggering factors behind the causes of malnutrition.

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Conflicts of interest

There are no conflicts of interest.

References

- Shortage N, Margo Brooks Carthon J, Nguyen TH, Pancir D, Chittams J, Burnett L, *et al.* Council for nursing released a joint statement on recent registered nurse supply and demand projections. *Nurse Educ Today* 2013;65:1-6.
- Bhaumik S. Workforce planning. Why is India short of nurses and what can we do about it? *BMJ* 2013;346. doi: 10.1136/bmj.f4024.
- Evans C, Razia R, Cook E. Building nurse education capacity in India: Insights from a faculty development programme in Andhra Pradesh. *BMC Nurs* 2013;12:1-8.
- Perry L, Gallagher R, Duffield C. The health and health behaviours of Australian metropolitan nurses: An exploratory study. *BMC Nurs* 2015;14:1-11.
- Needleman J, Buerhaus P, Pankratz VS, Leibson CL, Stevens SR, Harris M. Nurse staffing and inpatient hospital mortality. *N Engl J Med* 2011;364:1037-45.
- Darch JL. Nurses as role models in health promoting behaviour: Concept development and analysis. *Forschungszentrum Jlich R Energietechnik* 2016;21:39.
- World Health Organization. WHO | Adolescent health. Who 2018. doi: 10.1155/2016/9837321.
- Walther J, Aldrian U, Stüger HP, Kiefer I, Ekmekcioglu C. Nutrition, lifestyle factors, and mental health in adolescents and young adults living in Austria. *Int J Adolesc Med Health* 2014;26:377-86.
- Association of Voluntary Agencies for Rural Development (AVARD). *Hunger and Malnutrition in India: Status, Causes and Cures*. Vol. 5. New Delhi; 2013.
- Malnutrition in India: The National Nutrition Strategy explained - Experts & Views - Legally India. 2017.
- Patil S, Joglekar C, Desai M, Yadav A, Sonawane S, Chavan R, *et al.* Nutritional status and psychological impairment in rural adolescent girls: Pilot data from "KOKAN" region of western India. *Front Public Heal* 2018;6:6-11.
- Sunitha S, Gururaj G. Health behaviours & problems among young people in India: Cause for concern & call for action. *Indian J Med Res* 2014;140:185-208.
- Fall CHD. Europe PMC Funders Group Fetal malnutrition and long-term outcomes 2016. doi: 10.1159/000348384. Fetal.
- Neuman WL. *Social research: Qualitative and quantitative approaches*. 2003. doi: 10.1234/12345678.
- Tong A, Sainsbury P, Craig J. Consolidated criterion for reporting qualitative research (COREQ): A 32-item checklist for interviews and focus group. *Int J Qual Heal Care* 2007;19:349-57.
- Ramadass S, Gupta S, Nongkynrih B. Adolescent health in urban India. *J Fam Med Prim Care* 2017;6:468.
- Patton GC, Sawyer SM, Santelli JS, Ross DA, Afifi R, Nicholas B, *et al.* HHS public access. *Lancet* 2018;387:2423-78.
- Shaw C, Prashant K. Nutritional status of adolescent girls from an urban slum area in South India. *Indian J Pediatr* 2009;76:501-4.
- Kamala K, Bhaskaram P, Bhat RV, Raghuram TC. *Dietary Guidelines - A Manual*. Vol. 3. second. Hyderabad; 2011.
- Alam N, Roy SK, Ahmed T, Ahmed AMS. Nutritional status, dietary intake, and relevant knowledge of adolescent girls in rural Bangladesh. *J Heal Popul Nutr* 2010;28:86-94.
- Teji K, Dessie Y, Assebe T, Abdo M. Anaemia and nutritional status of adolescent girls in Babile District, Eastern Ethiopia. *Pan Afr Med J* 2016;24:1-10.
- Jaswant S, Nitish M. Use of upper-arm anthropometry as measure of body-composition and nutritional assessment in children and adolescents (6-20 years) of Assam, northeast India. *Ethiop J Health Sci* 2014;24:243.
- Kotecha PV, Patel SV, Baxi RK, Mazumdar VS, Shobha M, Mehta KG, *et al.* Dietary pattern of schoolgoing adolescents in Urban Baroda, India. *J Heal Popul Nutr* 2013;31:490-6.
- Kim MJ, Son KH, Park HY, Choi DJ, Yoon CH, Lee HY, *et al.* Association between shift work and obesity among female nurses: Korean Nurses' Survey. *BMC Public Health* 2013;13:1204.
- Gibney MJ, Barr SI, Bellisle F, Drewnowski A, Fagt S, Livingstone B, *et al.* Breakfast in human nutrition: The international breakfast research initiative. *Nutrients* 2018;10:1-12.
- Ashton LM, Hutchesson MJ, Rollo ME, Morgan PJ, Collins CE. Motivators and barriers to engaging in healthy eating and physical activity: A cross-sectional survey in young adult men. *Am J Mens Health* 2017;11:330-43.
- Elbially AA, El-shafie IF, Soliman FE. Risk taking behaviors among nursing students. *IOSR J Nursing Health Sci* 2017;6:70-8.
- Sharara E, Akik C, Ghattas H, Makhoulf Obermeyer C. Physical inactivity, gender and culture in Arab countries: A systematic assessment of the literature. *BMC Public Health* 2018;18:1-19.
- Al-sheyab NA, Gharaibeh T, Kheirallah K. Relationship between peer pressure and risk of eating disorders among adolescents in Jordan. *J Obes* 2018;2018. doi: <https://doi.org/10.1155/2018/7309878>.
- Essa HAE, El-shemy MBA. Prevalence of lifestyle associated risk factors for non-communicable diseases and its effect on quality of life among nursing students, faculty of nursing, Tanta University. *Int J Adv Res* 2015;3:429-46.

31. Russi AE, Brown MA. HHS Public Access 2016;165:255-69. doi: 10.1016/j.trsl. 2014.08.005.The.
32. Civelek M, Lusic AJ, Genetics M, Angeles L. HHS Public Access 2014;15:34-48. doi: 10.1038/nrg3575.Systems.
33. Kilpela LS, Becker CB, Wesley N, Stewart T. Body image in adult women: Moving beyond the younger years. *Adv Eat Disord* 2015;3:144-64.
34. Fogelkvist M, Parling T, Kjellin L, Gustafsson SA. A qualitative analysis of participants' reflections on body image during participation in a randomized controlled trial of acceptance and commitment therapy. *J Eat Disord* 2016;4:1-9.
35. Khan AN, Khalid S, Khan HI, Jabeen M. Impact of today's media on university student's body image in Pakistan: A conservative, developing country's perspective. *BMC Public Health* 2011;11:379.
36. Gailledrat L, Rousselet M, Venisse JL, Lambert S, Rocher B, Remaud M, *et al.* Marked body shape Concerns in female patients suffering from eating disorders: Relevance of a clinical sub-group. *PLoS One* 2016;11:1-14.
37. Benton D, Young HA. Reducing calorie intake may not help you lose body weight. *Perspect Psychol Sci* 2017;12:703-14.