

## Assessment of Dietary Behaviors and Weight Concern in Relation to Socio-Economic and Psychological Factors Among College Students

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### Abstract

Eating behavior has become an important factor in determining nutritional health status of an individual as many individuals particularly youths tend to develop eating disorder behavior.

**Objective:** To assess eating behavior and its association between socio-demographics and psychological factor among the age group of 18-25 years.

**Methodology:** A cross-sectional study was conducted among the students of Sharda university. Total students of 158 participated in the age group ranging from 18-25 years. The study participants were selected using simple random sampling technique. A structured self-administered questionnaire was used which included three sections, the first section comprising questions of socio-demographics, the second part consisted of the eating habits, attitudes, lifestyle and the third part consisted the psychological factors of eating behavior.

**Results:** The mean age and standard deviation of the participants for group 18-20 years was 19.25( $\pm 0.74$ ), for age group 21-22 the mean age was 21.63( $\pm 0.48$ ) and for the age group 23-25 the mean age was 23.73( $\pm 0.77$ ). Majority of the respondent were females (85.9%), most of the participants belong to middle social class (53.16%) and they are mostly involved in moderate level of physical activity (59.49%). Maximum participants do not consume breakfast and meal regularly (60.74% and 63.92% respectively) and they are involved in constant snacking three or more times a day (60.74%). 61.39% participants worried about being fat and 42.4% are not satisfied with their current weight. Eating attitude score was found to be significantly high among the low socio-economic group (56.25%). BMI was significantly correlated with the dietary behaviour and eating attitude at ( $p < 0.05$ ) and ( $p < 0.01$ ).

**Conclusion:** The incidence of disordered eating behaviour was seen highest among the low socio-economic status. The present study showed that BMI and weight concern were associated with the eating behaviour. BMI was also found to be significantly associated with restraint eating among the study participants.

**Introduction**

Eating behavior has become a major health concern as practice or habit that is established with food and can have major impact on human body and health (Manerkar., et al., 2016). Health-related lifestyle of student population has been found to be worrying for the future generation as it suggests the trend in chronic diseases associated with unhealthy lifestyle which might sustained over years and may be unlikely to change in future generations. Prominent part of healthy lifestyle is determined by practicing healthy diet and regular physical activity as they are found to be related to mental and physical well-being of health (Hailu et al., 2021). There is constant increase in overweight and obesity between the age of 18-29 according to the behavioral risk factor. The prevalence of obesity has almost tripled between 1975 and 2016 across the world (Kowalkowska et al., 2021). This increasing trend is mainly attributed to lifestyle and dietary habits among the young people (Shunmuga et al.,2020).An unhealthy diet and low physical activity can lead to many health issues in the future (Pop et al., 2021a). Excess weight and obesity have become a major challenge worldwide. Many studies have shown the co-relation between nutrition and health and have underlined the risk of excessive energy intake and sedentary lifestyles in young adult. Unhealthy dietary practices and sedentary lifestyle has been associated with health-related risk which has been found to be one of the major factors for the prevalence of many diseases later in life (Grygiel-Górniak et al., 2016). According to WHO global health status unhealthy dietary habits and insufficient physical activities has caused 3.2 million deaths and 69.3 million DALYs every year (Pop et al., 2021a). The main cause of excessive body weight is energy imbalance which is a result of an increase energy-dense food consumption and low physical activity (WHO). Adolescence stage is a very critical period as it brings a lot of changes in eating behaviors, most often students are liable to skip meals and develop nutritional habits which lead to risk of incurring deficiencies of certain essential nutrients developing eating disorders, weight gain, obesity and weight loss (Manerkar et al., 2016). Rapid changes in physical growth and psychological development have placed young adults as nutritionally vulnerable groups with poor eating habits which does not meet the nutritional requirements of the body (Ganasegeran et al., 2012). Unhealthy eating pattern, skipping of meals, uncontrolled eating, emotional eating is some of the eating behavior among students. Understanding this issue would provide more deep insight to its caused and provide ways to prevent or treat these habits (Aoun et al., 2019).

Dietary restriction is strategized in order to limit consumption of food to maintain or reduce weight however many studies has shown that it adversely affect the human body in weight gain as it tend to increase hunger, appetite resulting in an intense feeling of deprivation (Kowalkowska et al., 2021). Many researches have proven that youth who skipped breakfast are at high risk of weight gain (Sampasa-Kanyinga et al., 2015). According to WHO rapid changes in diet and lifestyle have occurred with industrialization, urbanization, economic development and market globalization (World Health Organization., 2003). There are many factors which contribute to adoption of unhealthy eating patterns which may include demography, economic status, cultural difference, peer pressure, emotions, family functioning, taste preferences, time and convenience (Manerkar et al., 2016) and (Shi et al., 2005). University students tend to make food choices based on cost and availability, lack of knowledge on healthy food choices which can affect eating habits and nutritional status negatively (Pigeyre et al., 2016). Also, easy access to shopping malls, convenience store, fast-food outlets have created an alarming-situations for youths to adopt unhealthy eating habits. College students have the tendency to change the food habits with academic stress situation also the cost of the food has a great impact on the choice of healthy food (Lizet et al., 2016). Many studies have proven that university students do not meet the nutritional requirement intake by the body. According to many studies psychological factors like depression, anxiety, stress, boredom, loneliness, anger ignite continuous snacking and unhealthy eating patterns (Manerkar et al., 2016). Overweight and obesity carry a high social and economic burden (Löffler et al., 2017). In Europe (2009-2010) the prevalence of obesity on average one in every 15 years was 11-33% and 10-23% (WHO). Therefore the underlying cause and link between eating habits and weight in association to socio-economic status and psychological factors is an important concern in order for prevention and better health strategies. (Ganasegeran et al., 2012) social and psychological are important determinants of eating habits among students. Has conducted a study on associations between eating habits and psychological factors and social demographic factors. This research found that eating habits was found to be significantly associated with age, alcohol intake and is also associated with intake of food when happy. The study suggested that disordered eating behaviour among students could be due to low availability, accessibility and availability of healthy diets. Understanding the cause of adoption of foul practices can create a foundation for interventional programs and awareness on adoption of healthy eating practices.

## **Materials and methods**

### **Study setting**

A cross-sectional study was conducted among the college students of Sharda University to assess the eating behaviour of the students and to analyse if there is any relation between the eating behaviour with respect to socio-economic status and psychological factors. A total of 158 students participated in the studies, the study population was chosen using simple random sampling technique. Self-administered questionnaires were used for the study to collect the data which were filled by the study participants physically as well as through online. The inclusion criteria of age were age group 18-25 years, who according to WHO were considered as young adults. Students were asked to participate in the studies voluntarily, objectives of the study were explained.

### **Sample size:**

The data was collected from 158 people. Inclusion criteria of the study were students of age group 18-25 years.

### **Data collection:**

Data collection tools Questionnaire The questionnaire consisted of three sections 1, 2, and 3. The questionnaire was developed according to the objectives of the study and selective questions were chosen from the tool. The first part consists questions regarding the socio-demographics status of the study participants. The second part consists the dietary habits, eating attitude and lifestyle of the study participants. The third part consists questions regarding the psychological attributes towards eating behaviour like the Restraint eating (RE), Emotional eating (EE) and Uncontrolled eating (UE).

Structured questionnaire was used which consisted of three sections:

**Section 1:** Socio-demographic characteristics

**Section 2:** Eating Habits, eating attitudes (EAT-26) and lifestyle

**Section 3:** Dietary behavior (TFEQ-18)

### **Data analysis**

Socio-demographic characteristics of the collected data from the study participants was analysed by frequency and percentage. The BMI was calculated using the formula ( $\text{kg/m}^2$ ) where the weight is in kg and the height in cm. BMI used was based on the WHO criteria for the Asian population. Eating attitude test (EAT-26) was used to score the eating attitude of

the study participants wherein if the score is  $<20$  then it is considered normal eating and if the score is  $\geq 20$  then it is considered to have disordered eating. The data was sorted in the Microsoft excel sheet and data analysis was done using the Statistical Package for Social Sciences (SPSS) version 22. Spearman Correlation test was used to assess the correlation between the variables.

## Results

The study was conducted exclusively on the age group 18-25 years students in the university campus. The total number of the study participants were (N=158). They were divided into three categories age group 18-20 years, 21-22 years and 23-25 years. The mean age and standard deviation of the participants were calculated, the mean age for group 18-20 years was 19.25 and SD 0.74, for age group 21-22 the mean age was 21.63 and SD 0.48 and for the age group 23-25 the mean age was 23.73 and SD 0.77.

### Sample size:

**Table 1. Mean and Standard Deviation (SD) for Age group of the study participants.**

Age group	N	%	Mean age	SD
18-20	35	22.15	19.25	0.74
21-22	63	39.87	21.63	0.48
23-25	60	37.97	23.73	0.77

## Socio-demographic Characteristics

Socio-demographic characteristics includes parameters like age, weight, height, gender, place of residence, socio-economic status, BMI and physical activity. The result of the socio-demographic data were helpful in analysing and understanding the type of participants which were taken for the study.

According to the result as depicted in the table 2 majority of the respondent were females 85.9% (n=136) and few were males 14.0% (n=22). Female population were easily approachable for the participation in the study as they are more health conscious and are

more concern about the body weight and image. Maximum of the participants belong to age group 21-22 (39.87%) and age group 23-25 (37.97%). In the study population respondent have normal weight (75.94%), while some of them were underweight (14.55%) and few were obsessed (0.63%). The physical activity level of the respondents were found to be good as 59.49% were involved in moderate physical activity and rest of the studied population have low physical activity (29.11%).

**Table 2. Socio-demographic characteristics of the study participants (n=158)**

Characteristics	N	%
<b>Age group</b>		
18-20	35	22.15
21-22	63	39.87
23-25	60	37.97
<b>Gender</b>		
Female	136	85.9
Male	22	14
<b>Place of residence</b>		
Hostel	37	23.41
Home	120	75.94
<b>Socio-economic status</b>		
High	58	36.7
Middle	84	53.16
Low	16	10.12
<b>BMI</b>		
Under weight (<18.5)	23	14.55
Normal weight (18.5-22.9)	120	75.94
Overweight (23-27.4)	14	8.86
Obesity (>27.5)	1	0.63
<b>Physical Activity</b>		
Low	46	29.11
Moderate	94	59.49
High	18	11.39

\*BMI is based on the WHO criteria for Asian population.

**Eating habits:****Table 3. Eating habits among study participants (n=158)**

Characteristics	N	%
Daily breakfast:		
Yes	60	37.97
No	98	60.74
Regular meals:		
Yes	57	36.07
No	101	63.92
Frequency of meals:		
1 times	17	10.7
2 times	90	56.96
3 times/ more than 3 times	51	32.27
Frequency of snacks consumption (in a day):		
1-2 times	62	39.24
3 or more times	96	60.74
Food consumed in the college:		
Fast food	84	53.16
Packaged food	10	6.32
Home-cooked food	64	40.5
Weekly consumption of fast-food:		
Daily	71	44.93
Once or twice	81	51.26
Rarely	6	3.79

From the data collected for eating habits, it was observed that more than half of the respondent i.e., 60.74% do not take breakfast regularly also 63.92% do not take regular meals. Around 56.96% of the respondent consumes meals 2 times a day, 32.27% consume meals 3 or more times and 10.7% of the respondent consume meals 1 time only. Snack consumption was found to be quite high, 60.74% consume snacks 3 or more times while 39.24% of the respondent consume snacks 1-2 times. Half of the respondent consume fast

food in college 53.16%, and consumption of home-cooked (like tiffin and food prepared at home) food was 40.5%.

**Body weight concern**

**Table 4. Weight concern among the study participants (n=158)**

	Yes N(%)	No N(%)
Concerned		
Satisfied with current weight?	91(57.59)	67(42.4)
Worry about being fat?	97(61.3)	61(38.6)
Ever had problems with depression?	110(69.6)	48(30.37)
Currently following a diet?	15(9.49)	143(90.5)

The result of the respondent suggested that 57.59% of the participants are satisfied with their current also 42.4% are not satisfied with their current weight. The study also observed that 61.3% are worried of being overweight and 69.6% of respondent has had problems of depression it may be due to the workload from college also college is a phase where many changes occur physically and psychologically. While it was observed that 90.5% of the respondent are currently not following any kind of diet which is a good sign as many are not involved in dieting.

**Eating Attitudes**

**Table 5. Eating behaviour among respondent of different socio-economic status:**

Eating behaviours	Scale used	High(n=58)		Middle(n=84)		Low(n=16)	
Eating Attitude (EAT-26)		n	%	n	%	n	%



<b>Normal eating</b>	<20	32	55.17	41	48.8	7	43.75
<b>Disordered eating</b>	≥20	26	44.82	43	51.19	9	56.25

EAT-26: Eating Attitude Test – 26

The eating behavior among respondent belonging to different social groups in terms of their eating attitudes is depicted as in the table 4.4. More than half of the respondent from high social group reported normal eating 55.17%, while in middle and low social group half of the respondent exhibits disordered eating 51.19% and 56.25% respectively.

**Correlation between Socio-economic groups and social demographics and weight concern**

**Table6. Correlation between Socio-economic status with dietary behaviour, BMI, weight concern and eating attitude**

			Socio-Economic Status	BMI	Weight Concern	Dietary Behaviour	Eating attitude
Spearman's rho	Socio-Economic Status	Correlation Coefficient	1	0.041	0.054	0.039	0.011
		Sig. (2-tailed)	.	0.607	0.498	0.627	0.894
		N	158	158	158	158	158
	BMI	Correlation Coefficient	0.041	1	-0.042	.179*	.213**
		Sig. (2-tailed)	0.607	.	0.602	0.024	0.007
		N	158	158	158	158	158
	Weight Concern	Correlation Coefficient	0.054	-0.042	1	0.112	-0.063
		Sig. (2-tailed)	0.498	0.602	.	0.16	0.431
		N	158	158	158	158	158
	Dietary Behaviour	Correlation Coefficient	0.039	.179*	0.112	1	.156*
		Sig. (2-tailed)	0.627	0.024	0.16	.	0.05

		N	158	158	158	158	158
	Eating attitude	Correlation Coefficient	0.011	.213**	-0.063	.156*	1
		Sig. (2-tailed)	0.894	0.007	0.431	0.05	.
		N	158	158	158	158	158

\*. Correlation is significant at the 0.05 level (2-tailed)

\*\*. Correlation is significant at the 0.01 level (2-tailed).

There is significant correlation between BMI and dietary behaviour and eating attitude at the 0.05 and 0.02 level respectively. It was also found that there is non-significant negative correlation between socio-economic status and dietary behaviour.

Correlation between socio-economic status with psychological eating behavior (RE, UE, EE)

**Table 7. Correlation between socio-economic status and psychological eating behavior**

			Socio-Economic Status	Restraint Eating	Uncontrolled eating	Emotional eating
Spearman's rho	Socio-Economic Status	Correlation Coefficient	1.000	-.103	.029	.117
		Sig. (2-tailed)	.	.198	.714	.143
		N	158	158	158	158
BMI		Correlation Coefficient	.041	.224**	.087	.098
		Sig. (2-tailed)	.607	.005	.275	.220
		N	158	158	158	158

\*\* Correlation is significant at the 0.01 level (2-tailed)

Here the socio-economic status is inversely correlated with restraint eating and is positively correlated with uncontrolled eating and emotional eating. And there is significant correlation between BMI and cognitive restraint eating (RE) at the 0.01 level and there is non-significant negative correlation between socio-economic status and cognitive restraint.

**Factors associated which led to eating.**

According to the result as shown in the table it is observed that hunger reported the highest score which often triggers to eat among the respondent (63.8%), availability of food (42.9%),

respondent also considered food as comfort to be one of the factor which triggers to eat (36.2%), boredom (32.4%), also PMS eating scored high among the respondent (23.8%) as one of the factor to eat.

Table 8. Habits or Behaviour which triggers the respondent the most to eat (n=158)

Habits or Behaviour which often triggers you to eat	
	%
Availability of food	42.9
Loneliness	11.4
Habit	20
Depression	9.5
Boredom	32.4
Hunger	63.8
Self-reward	29.5
Comfort	36.2
Anxiety	15.2
PMS	23.8
Anger	7.6
Social Situations	7.6
Sadness	6.7
Lack of Appetite Awareness	6.7

## DISCUSSION

There has been an increased in obesity and overweight around the world especially among young people. This is often due to unhealthy diet, most of the young people especially girls has body dissatisfaction influence by media and the idea of attaining the perfect body size. Which eventually lead them to adopt unhealthy eating habits and lifestyle in order to lose weight. This study aims to analyse the eating behaviour (frequency of meals, skipping of meals, consumption of snacks, fast-food) and its relationship with socio-demographics characteristics (Age, weight, height, BMI, social status, physical activity) and psychological factors (uncontrolled eating, emotional eating and restraint eating). In this study more than half of the respondent do not take breakfast regularly (60.74%) and majority of the

respondent do not consume meals regularly (63.92%). The study participants 56.96 % responded for 2 times meal frequency. Which is similar to the study where it was observed that more than half of the of the students had two main meals a day (Pop et al., 2021b) similarly another study showed the majority of the students have only two meals per day (Al-Rethaiaa et al., 2010). And most of the respondent consumed fast food 53.16% with daily consumption percentage 44.93%. A similar study has been conducted among Malaysian medical school where the consumption of daily breakfast is low (Ganasegeran et al., 2012).

The present study found that consumption of snacks in a day is very high among the respondent, 60.74% of the respondent consume snacks 3 or more times in a day. Which is quite high as compared to studies conducted by (Ganasegeran et al., 2012). Study conducted by (Pop et al., 2021b) showed similar result where it was reported that 91.07% of students snacks per day. Another studies showed that individuals tend to consumed highly processed food under stressed also more number of female were reported to suffer from stress (Papier et al., 2014).

Low social groups has more prevalence of unhealthy eating and people with better knowledge about nutrition are less prone to disordered eating. A similar kind of study has been conducted among university students in Spain (Martinez-Lacoba et al., 2018)where study result observed that people belonging to low socio-economic status and not studying health related degree course are factors associated with low diet quality. While in another study conducted in Tinsukia, Assam (Dowarah et al., 2020) has showed that fast food consumption is seen increasing among college students, consumption of fast food does don't depend on age, gender while is highly dependent on the economic status of the people. In another study it is showed that people do not consume fast food frequently (Md Baseer et al., 2015).

The present study 75.94% of the study participants showed normal BMI which is similar to a study conducted among college students (Deliens et al., 2014). Study showed that BMI (underweight)t decreases with age and are more common female than in male (Ali et al., 2006). Which contrast with a study where overweight is found to be more than half of the total participants (Som et al., 2016).

Physical activity among the study participants was good as more than half are found to be moderately active 59.49%. But in a study conducted in Northern Ethiopia it was found that the physical activity and healthy diet were poor and gender, year of college were also found

to be associated with physical activity (Hailu et al., 2021). Another study found that physical activity were higher in males than females (Kowalkowska et al., 2021).

Disordered eating has become a public health concern all around the world, college students tend to adopt unhealthy eating habits due to various factors. The present study also showed that there is high prevalence of disordered eating among the study participants especially among people belonging to low socio-economic status. Which has a similar findings with (Nilsen et al., 2010). From the collected data it exhibits that among different socio-economic groups of participants, the high SES exhibited 44.82% of disordered eating, middle SES 51.19% which is slightly more than half of the total population and low SES 56.25%. In contrast to a study conducted in Saudi Arabia suggested the prevalence abnormal eating attitudes and behaviour to be 25.47%, however the study also suggested that there has been an alarming increase in eating disorder (Fatima et al., 2018). A study observed that the risk of developing eating disorder is twice as high in females as in males also eating attitude among obese individual is higher than among non-obese (Musaiger et al., 2016). There was no correlation found between SES and restraint eating behaviour which is same with another study (Kowalkowska et al., 2021).

Psychological eating behaviour was found to have correlation with the eating behaviour which is similar to findings that uncontrolled eating, restraint eating and emotional eating are found to be related to disturbed eating behaviour and disordered eating (Bryant et al., 2019). In the present finding BMI of the respondent were significantly correlated with restraint eating and there was no correlation showed between uncontrolled eating behaviour and emotional eating behaviour. Which is similar to a study done by (Löffler et al., 2017a) where emotional eating was found to have no associations between SES index score and BMI rather it was directly associated with BMI independent of SES. Cognitive restraint and emotional eating were seen higher in females while uncontrolled eating were high in male, although female are prone to limit food consumption they are more vulnerable when it comes to weight concern in response to negative emotions and stress (Kowalkowska et al., 2021). Uncontrolled eating pattern among college students could be a result of compulsive eating (Ganasegeran et al., 2012) this study also found the associations of various psychosocial factors with eating habits. In another findings it was found that there is a significant associations between two dimensions of eating behaviour emotional eating and uncontrolled eating with BMI (Aoun et al., 2019). There has been many studies which has reported that uncontrolled eating and emotional eating are correlated with the increase in BMI(Aoun et al.,

2019;de Lauzon-Guillain et al., 2009; Brytek-Matera et al., 2018). Psychological eating behaviour has presented to have an effect on the eating behaviour of the study participants. Restraint eating behaviour was significantly associated with the BMI. Correlation between SES and restraint eating was negative but not significant. Weight concern among the respondent has an association with the BMI.

The factors which triggers the study participants to eat the most was due to hunger (63.8%), availability of food (42.9%), comfort (36.2%), boredom (32.4%), self-reward (29.5%).

Some of the limitations to be emphasized in this study. The study may not be generalizable to other populations. The recorded data was obtained through self-reported structured questionnaires, which was formulated in a multiple choice question in for better understanding and easier way to respond in order to make it easier for the participants to respond and save time. The result could reflect the person's preference and perspective about eating behaviour which would not be true for all. There could be bias in answering reasons being unwilling to disclose their information's. Several studies and findings in this studies explains the association between eating behaviour are not always associated with the socio-economic status of the individual's. Therefore, proper studies with large sample size is recommended to represent the result. Education on nutritional importance should also be promoted and encouraged healthy lifestyle and eating habits among students.

### **Conclusion:**

Eating disordered behaviour was found to be prevalent among the students. Their eating habits were influenced by various socio-demographic factors and psychological eating behaviour. The present study showed that BMI was associated with the eating behaviour. BMI was also found to be significantly associated with restraint eating among the study participants which disrupts their eating behaviour. Social and psychological factors was found to be an important tools in determining the eating behaviour of the students which could be reversed or intervene if proper knowledge and education about the importance of healthy diet and lifestyle is encouraged. Scope for future research should be broadened to include a large representative sample size and also students from different university. Nutritional education among the students should be encouraged to promote healthier eating habits and lifestyle.

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