

Evaluation of Stress and Perception of Physical Problem with Obesity in Medical Students

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Abstract: Stress is a major problem eventually faced by the students during their studies period. There is an imbalance between environmental conditions and ability of individuals to adapt. When it is concerned with medical students, it has been recognized as the major factor responsible for the negative effect on physical and psychological health. To evaluate stress and perception of physical problem with obesity in medical students. The present descriptive cross-sectional study was conducted in Kathmandu Medical College Teaching Hospital, Duwakot from May 2015 to July 2015. This study encompassed 435 medical students- including both sexes aged 17-27 years. A predesigned and structured questionnaire was used as data collection tool and height and weight were measured and Body Mass Index (BMI) was calculated. In this present study 38.4% (167) were female and 61.6% (268) were male participants. The level of stress was significantly higher in female students when it was compared with male students and various stress associated precipitation factor were also present which was statistically significant as $p < 0.05$. In this study there was no significant association found between level of stress and perception of physical problem with obesity. Incidence of stress was significantly higher in medical students contributing a leading role in physical and psychological problems. Due to stress students are under the negative effect to perform various activities. The effect of stress and its associated precipitating factor influencing medical student needs to be minimized. The students must practice proper eating behaviors and encourage physical activity to prevent obesity. So, an essential step has to be taken as a first line of detection and defense for better health and wellbeing.

Keywords: Body Mass Index, Perception of physical problems, Stress, Obesity.

INTRODUCTION

Education simply means raising knowledge or brings internal potentialities and abilities of the learners. In other words, education means the acquisition of knowledge, understanding, intelligence, conscience, wisdom and so forth [1] So for the betterment of education, some improvement; and extensive change is required in the education system. Such, changes usually bring challenges in the students regarding increase pressure and stress related to studies, examination, peer, teachers or parent's pressure [2]. Stress persists when a person is unable to cope with the situations of the past, present or future. Stress may evoke feelings of fear, anxiety, anger, and aggressiveness and if not solved in time may even lead to associated physical and psychological abnormalities. However, it differs from individual to individual; the same situation that induces stress in one individual may not have the same consequences on another [3, 4]. Stress is difficult to define. Selye originally suggested that stress is the "wear and tear" our bodies experience as we adjust to

our continually changing environment; it has physical and emotional effects and can create positive or negative influence on us [2, 5]. The primary aim of medical training programmers is to produce knowledgeable, skilful, competent and professional graduates who will render comprehensive healthcare services within their communities. This is achieved through a variety of methods, including lectures, tutorials, experiential learning placements, apprenticeships and mentoring. Unfortunately, most medical programmes are overloaded with facts, and the students inevitably spend many hours a day trying to achieve the expected academic outcomes. Therefore, these programmers may have unintended negative consequences with respect to students' personal mental and physical health [6]. Stress compels us into action. It can result in feelings of rejection, anger, and depression, leading to health problems such as headaches, upset stomach rashes, insomnia, ulcers, high blood pressure, heart disease, and stroke [2, 7]. Stress and anxiety among medical students are common due to

difficult and demanding courses over a long duration, affecting their academic performance by decreasing their attention span and affecting their decision making skill [8, 9]. The association between stress and weight gain is less clear. Stress may lead to changes in dietary habit that lead to weight change with various effects related to sex [7, 10] body mass index (BMI) in response to stress [7, 11]. These factors may cause some people to gain more weight under stressful circumstances while others may gain less weight or even lose weight when they are stressed[12]. Stress in medical students is receiving attention because it has been recognized that tired, tense doctors may not provide high-quality care[8].

MATERIALS AND METHODS

The present descriptive cross-sectional study was conducted in Kathmandu medical college from May 2015 to July 2015. This study encompassed 435 medical students- including both sexes aged 17-27 years. Objectives of this study were explained to the students and written consent was obtained from those who agreed to participate.

Data collection took place in two steps. The first step was to fill out the structured questionnaire consisting of age, sex, religion, family history, residence, stress, perception of physical problem, anxiety, headache, back pain, digestive upset, difficulty in sleeping and fatigue were instructed to fill out and the second step involved the use of anthropometric measurements for the determination of Body Mass Index (BMI). The instruments used for data collection were the weighing scale and stadiometer. To calculate the BMI, height was measured without shoes to the

nearest 0.01 meter (m) on a stadiometer, and weight in kilogram was measured in light clothing on a level balance to the nearest 0.01kilogram (kg). The balance was checked for accuracy at frequent intervals following the centers for disease control and prevention (CDC) manual [13]. All the measurements were personally taken by the researchers with the support of assistants.

Determination of BMI was done and it was categorized according to WHO classification as, underweight (<18.5), normal (18.5-25), overweight (25-30), class I obesity (30-35), class II obesity (>35) and class III obesity (40+) [14] and Asia pacific guidelines [15] as underweight <18.5, normal (18.5-22.99), overweight (23-24.99), obesity I (25-29.99) and obesity II >30.

STATISTICAL ANALYSIS

Statistical analysis was done by SPSS (Statistical package for social science) version 15. Chi square test of significance was used, P value of <0.05 was taken as statistically significant. Association of stress with different precipitating factors and associations of BMI with stress and physical problem were assessed.

RESULTS

Sociodemographic profile

435 medical students were enrolled for the study as shown in Table 1. The Male: Female ratio obtained was 1.6:1. It includes different factor like age, sex, religion, family history and residence as shown in Table 1.

Table-1: Characteristics of study subjects

Factor	Number of student (n=435)
Age group	
17-20	287 (66%)
21-24	142 (32.6%)
25-27	6 (1.4%)
Sex	
Male	268 (61.6%)
Female	167 (38.4)
Religion	
Hindu	406 (93.3%)
Buddhist	18 (4.2%)
Muslim	7 (1.6%)
Christian	1 (.2%)
Other	3 (.7%)
Family history	
None	251 (57.7%)
Hypertension (HTN)	121 (27.8%)
Diabetes mellitus (DM) + HTN	47 (10.8)
Obesity + DM+ HTN	13 (3%)
HTN + obesity	3 (.7%)
Residence	
Day scholars	83 (19.1)
Hosteller	291 (66.9%)
Renter	61 (14%)

Level of stress

Stress is a body reaction to any change, as a result of which different precipitating factor gets

activated or stimulated like anxiety, headache, backpain, digestive upset, difficulty in sleeping and fatigue. It occurs in both the sexes and depends on how

individual reacts to it. Association of stress with different other factors were assessed in Table 2.

Table-2: Association of stress with different other factor

Factor	N=435	Level of stress				X ² value	P value
		No	Mild	Moderate	Severe		
Sex							
i) Male	268 (61.6%)	63	142	55	8	33.19	0.000
ii) Female	167 (38.4)	15	81	47	24		
Anxiety						195.60	0.000
i) No	133(30.6%)	54	50	26	3		
ii) Mild	174(40%)	15	135	15	9		
iii) Moderate	109(25%)	5	34	58	12		
iv) Severe	19(4.4%)	4	4	3	8		
Perception of physical problem						27.87	0.000
i) No	273 (62.8%)	65	141	46	21		
ii) Mild to moderate	162 (37.2%)	13	82	56	11		
Headache						127.82	0.000
i) No	133(30.6%)	50	57	20	6		
ii) Mild	194(44.6%)	19	136	29	10		
iii) Moderate	97(22.3%)	7	26	51	13		
iv) Severe	11(2.5%)	2	4	2	3		
Back pain						147.09	0.000
i) No	147(33.8%)	50	67	26	4		
ii) Mild	195(44.8%)	23	136	21	15		
iii) Moderate	81(18.6%)	5	18	49	9		
iv) Sever	12(2.8%)	0	2	6	4		
Digestive upset						17.95	0.007
i) No	126(29%)	34	52	26	14		
ii) Yes	208(47.8%)	31	109	55	13		
iii) Sometimes	101(23.2%)	13	62	21	5		
Difficulty in sleeping						12.96	0.044
i) No	178(40.9%)	39	89	31	19		
ii) Yes	184(42.3%)	28	99	48	9		
iii) Sometimes	73(16.8%)	11	35	23	4		
Fatigue						4.78	0.572
i) No	176(40.5%)	31	92	39	14		
ii) Yes	184(42.3%)	28	98	44	14		
iii) Sometimes	75(17.2%)	19	33	19	4		

Association of level of stress and body mass index

Association of level of stress and body mass index according to WHO guidelines and Asia-pacific

guidelines was evaluated in 435 medical students. There was no significant association obtained as p=0.142 and 0.218 respectively

Table-3: Association of stress with body mass index

Factor		n-435	Level of stress				X ² value	P value
			No	Mild	Moderate	Severe		
WHO Guidelines	Underweight	57 (13.1%)	16	28	10	3	13.49	0.142
	Normal	322 (74%)	56	166	78	22		
	Overweight	42 (9.7%)	4	22	9	7		
	Obesity I	14 (3.2%)	2	7	5	0		
Asia-pacific Guidelines	Underweight	57 (13.1%)	16	28	10	3	15.44	0.218
	Normal	231 (53.1%)	36	123	56	16		
	Overweight	91 (20.9%)	20	43	22	6		
	Obesity I	42 (9.7%)	4	22	9	7		
	Obesity II	14 (3.2%)	2	7	5	0		

Association of perception of physical problem and body mass index

Association of perception of physical problem and body mass index according to WHO guidelines and

Asia-pacific guidelines was evaluated in 435 medical students. There was no significant association obtained as $p=0.435$ and 0.231 respectively

Table-4: Association of physical problem with body mass index

Factor		n=435	Perception of physical problem		X ² value	P value
			No	Mild to Moderate		
WHO Guidelines	Underweight	57 (13.1%)	40	17	2.73	0.435
	Normal	322 (74%)	196	126		
	Overweight	42 (9.7%)	29	13		
	Obesity I	14 (3.2%)	8	6		
Asia-pacific Guidelines	Underweight	57 (13.1%)	40	17	5.59	0.231
	Normal	231 (53.1%)	134	97		
	Overweight	91 (20.9%)	62	29		
	Obesity I	42 (9.7%)	29	13		
	Obesity II	14 (3.2%)	8	6		

DISCUSSIONS

The present cross sectional study was conducted at Kathmandu Medical College in 435 medical students, among them 268 were males and remaining 167 were females. Medical education is related to the practice of medicine; either in the initial training or in additional training. Medical students are often overloaded with a tremendous amount of information that they have limited time to memorize all the information that has been studied. This overload of information creates a feeling of disappointment which makes them incapable to handle all the information at once and get succeed during examination. Many medical students struggle with their own capacity to meet the demands of medical curriculum. As, medical course itself is very vast and volatile that it is often associated with significant stress that needs to be minimized. Some degree of stress is necessary for healthy competition as well as for good academic performance. However, if students cannot cope up with demand and pressure of situation, they may be affected mentally and physically. In our study regarding stress, females were having significant problem in comparison to the males. Similar type of finding were obtained in a study conducted by Kunwar *et al.* [17], Shaikh *et al.* [18], ter Horst *et al.* [19], Sani *et al.* [20]. High levels of stress in females may be due to various factors such as biological, psychological and sociocultural [21]. Females tend to get involved more in personal relationship than males and suffer more when they are disrupted. They became more ruminative that they tend to think about things more—which, though a very good things, may also predispose them to develop depression [21, 22]. A study conducted by Ajdacic-Gross *et al.* [23] found that suicide committed by a young girl between the age 15 and 19 years globally as the number one cause of mortality [23, 24]. Female in our part of world has many responsibilities and freedom of participation in any outdoor activity is very less

when it is compared to male. Majority of male students participate in different outdoor activity, that they are free to perform most of the works, and they do not priorities study much. There is no much responsibility taken by the male students in comparison to the female students. This could be the possible reason that males have less stress; another possible reason could be that they get engaged in some other activities that they ignore it. A study conducted by Ter Horst *et al.* [19] explains that females are subjected to more fluctuating sex hormones such as estrogens and progesterone affecting their emotions and cognition behavior. A study conducted by Abdulghani *et al.* [16] obtained that the prevalence of stress among female was higher and mentioned regarding the negative effects of long and tiring medical education on the psychological status of students. Due to Stress various clinical conditions like anxiety, headache, back pain, digestive upset, difficulty in sleeping and fatigue are seen. Both anxiety and stress if persist for longer period results to distortion, due to inaccurate thoughts which result them to reinforce negative thinking [25]. In most of the cases activation of stress responses causes physiological, psychological and emotional changes in the body that enhances the body ability to deal with a threat resulting digestive upset [26]. A study conducted by Han *et al.* [27] found that sleep and wakefulness are regulated by the aminergic, cholinergic brainstem and hypothalamic systems. Activation of the hypothalamic-pituitary-adrenal (HPA) axis, and/or the sympathetic nervous systems results in wakefulness and the hormone associated with attention and arousal includes corticotropin-releasing hormone (CRH), adrenocorticotrophic hormone (ACTH), cortisol or corticosterone, noradrenaline, and adrenaline. Stress-related insomnia leads to a vicious circle by activating the HPA system, which results to sleep disorder. A study conducted by D'Amico *et al.* found that stressful events affect the brain through inputs from the cortex,

subcortical regions, and sensory organs, and from the endocrine system, provoking reactions mediated, principally, by the corticotropin-releasing hormone (CRH) and by the locus coeruleus (norepinephrine). The effects of these multifarious hormonal and neurotransmitter changes vary with the duration of the stressful stimulus. Prolonged and repeated exposure to stressful stimuli may lead to permanent functional changes and even to anatomical damage, and can thus assume the role of a pathogenetic agent or illness precursor for the development of headache [28]. In this study there was no significant association found between stress and obesity as $p > 0.005$. Similarly a study conducted by Goswami *et al.* [7] also reported similar finding. It has been demonstrated in several studies regarding the eating behaviors in response to stress; some people eat more when stressed while others eat less [7, 11]. It might be the possible reason that how individual responds when they are under stress which results the occurrence of overweight and obesity to be markedly raised in medical students. So, there must be some correlation between these factors.

CONCLUSION

Stress itself is not bad but it compels into action. It depends on how individual reacts and copes with it. The level of stress was alarmingly high in the medical students which may influence various factors like biological, psychological and sociocultural behavior. Due to stress, there is negative effect on physical and psychological health. The effect of stress that is influencing medical student and its associated precipitating factors has to be minimized. Thus, student needs to practice proper eating behaviors, even if they are under stress and need to encourage physical activity on daily routine to prevent obesity related problem. So, an essential step has to be taken as a first line of detection and defense for better health and wellbeing.

LIMITATIONS

There are some limitations in our study since it is an institution based cross-sectional study that is based on questionnaire. So, some potential of reporting bias may have been occurred or some relevant information might be missing.

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