



Relationship of body mass index to job stress and eating behaviour in health care professionals-an observational study



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ABSTRACT

Background: Healthcare professionals are usually exposed to job stress which impacts their health. Adult eating behaviour questionnaire was used to check the eating behaviour and the brief job stress questionnaire was used to check the stress level in obese and non obese healthcare professionals. Physical activity of the participants is noted to correlate with the eating behaviour.

Aims: To determine the correlation between body mass index to job stress and adult eating behaviour in health care professionals.

Methods: The present observational study was conducted among 262 participants which included both males and females healthcare professionals who were 22 years and above with normal, overweight and obese category of body mass index. The participants were given adult eating behaviour questionnaire and brief job stress questionnaire. Scoring of each participant was entered in the excel sheet and physical activity frequency was noted down.

Findings: 262 participants found weak correlation of body mass index to eating behaviour and job stress. The participants with high eating behaviour fall under normal category of body mass index as they perform some amount of physical activity. It was found that stress was more in physiotherapy professionals; it was not related with eating behaviour.

Conclusion: Participants with sedentary life style tend to have high eating behaviour and higher body mass index. Job stress is not related to body mass index.

1. Introduction

World health organization defines obesity as abnormal or excessive fat accumulation that presents a risk to health (WHO, 2018). If body mass index is between 25 and 29.9 kg/m² it is overweight & if it is equal or more than 30 kg/m² it is obese. In India, obesity and overweight emerged as an important public health problem (Ranjani et al., 2016). Prevalence of obesity in Indian population ranges from 8% to 38% in rural and 13%–50% in urban areas (Behl and Misra, 2017). In Karnataka, the community based study demonstrated high prevalence of obesity and overweight among the productive population of urban Shimoga (Nagendra et al., 2016).

Medical management for obesity is life style and diet modification and appropriate use of pharmacotherapy. Sibutramine and orlistat medications as directed by the physician can be used along with low calorie diet for weight loss.

Surgical approaches for obesity are bariatric surgery (gastric bypass, sleeve gastrectomy, adjustable gastric band, biliopancreatic diversion with duodenal switch) which cause weight loss by restricting the

amount of food the stomach can hold, causing malabsorption of nutrients, or by combination of both gastric restriction and malabsorption. Laparoscopic surgery which is minimal invasive technique is used for weight loss. Physical activity, dietary modification and diet modification with exercise has been suggested for weight loss. Plants based food such as grains, fruits and vegetables and Ornish diet which is low fat have been recommended by the American heart Association. Mediterranean type diet includes more of olive oil, nuts and fish which have higher intake of unsaturated fats.

Job stress can have various effects on the individual as well as on the organization. Job strain is caused by combination of high job demands and low amount of control over the situation. Also workers belonging to age group of 31–45years had experienced high job strain (Mohan et al., 2008). In Karnataka, 13.11% of the extension officers experienced high as well as low level job stress while 73.33% of the respondents experienced medium job stress (Mishra, 2005).

Obesity is growing at an exponential rate in the Indian population possibly due to unhealthy eating habits and lack of physical activity, Work overload has also been cited as another major reason. Rapid

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globalization & technological innovation has been on a rise and workplace job stress has been rampant, due to this, health problems are increasing with an affinity for cardiovascular risk factors (Nishitani and Sakakibara, 2006).

Obesity and psychological stress responses due to tension have a direct correlation. Tension is related to job demands positively and the eating behaviour of subject with tension is similar to that of a subject with obesity (Torres and Nowson, 2007). Various studies have been done in different continents on obesity in health care professionals, who tend to prioritize their work & emphasize less on their health (Nishitani and Sakakibara, 2006). Workplace stress tends to encourage food from canteens, snacking between meals and a sedentary lifestyle. This has been found to be a major contributing factor towards obesity. It has also been found that stress increased the intake of higher fat diet (Mahmood et al., 2010).

The objective of the study is to determine the correlation between body mass index, job stress and eating behaviour in health care professionals.

2. Methodology

It is an observational study. Data was collected from tertiary care hospital at Belagavi in duration of 3 months (June 2018–august 2018). 262 males and females healthcare professionals under normal, overweight, and obese category of body mass index were included in the study. BMI was calculated of all the participants by measuring the weight and height of the participant. After finding their suitability as per the inclusion & exclusion criteria, subjects were requested to participate in the study. Participants were briefed about the nature of the study. Only those willing to participate were recruited for the study. A written informed consent was obtained. All participants were assessed using outcome measures as the Brief Job stress questionnaire and Adult eating behaviour questionnaire. The score of the questionnaire was calculated.

2.1. Outcome measures

2.1.1. AEBQ Questionnaire

The AEBQ questionnaire contains 35 items which indicates higher BMI had higher scores for 'food approach' traits and lower scores for 'food avoidance' traits. It is scored between strongly disagree to strongly agree. The reliability of AEBQ-questionnaire was Cronbach's $\alpha > 0.70$ (Hunot et al., 2016).

2.1.2. BJSQ Questionnaire

The BJSQ questionnaire contains 57 items which is graded on 4-point likert-type scale to measure job stress, psychophysical complaints, and support for workers (Kawada and Otsuka, 2011).

2.2. Statistical analysis

Statistical analysis for the present study was done using statistical package of social sciences (SPSS) version 21 so as to verify the results obtained. Mean, standard deviation, and test significance that is Spearman's rank correlation test, were used. Nominal data from 262 subjects included demographic data i.e. age, gender, BMI, height, weight distribution were analysed using Spearman's rank correlation test. p value ≤ 0.05 were considered statistically significant and p value ≤ 0.001 were considered highly significant.

2.3. Results

Mean age was significantly higher in the obese class 1 group (29.0 ± 7) as compared to other group (Table 1). Mean age was significantly higher in the obese group than in the other categories, while of the females were more in the normal category. The percentage of

Table 1
Distribution of age, gender and BMI.

GROUP	GENDER		AGE	BMI
	MALE	FEMALE	MEAN \pm SD	MEAN \pm SD
Normal	31	132	25.5 \pm 3	21.9 \pm 1
Overweight	19	53	26.9 \pm 5	27 \pm 1
Obese class 1	9	17	29.0 \pm 7	31.9 \pm 1
Obese class 2	0	1	26	36
Total	59	203	26.2 \pm 4	24.3 \pm 3

Table 2
Distribution of participants in BMI category according to the profession.

PROFESSION	Normal n(%)	Overweight n(%)	Obese class 1 n (%)	Obese class 2 n(%)	Total n
DENTIST	23(57.5)	13(32.5)	4(10)	0	40
MEDICAL	21(52.5)	11(27.5)	8(20)	0	40
NURSING	38(69)	15(27.2)	2(3.63)	0	55
PHARMACY	34(77.2)	10(22.7)	0	0	44
PHYSIOTHERAPY	47(56.6)	23(27.7)	12(14.4)	1(1.2)	83
TOTAL	163	72	26	1	262

Table 3
Prevalence of job stress among various healthcare profession.

PROFESSION	Normal n(%)	Overweight n(%)	Obese class 1 n (%)	Obese class 2 n (%)	TOTAL n(%)
DENTIST	14(63.6)	6(27.2)	2(9.09)	0	22
MEDICAL	13(52)	9(36)	3(12)	0	25
NURSING	28(75.6)	8(21.6)	1(2.7)	0	37
PHARMACY	31(77.5)	9(22.5)	0	0	40
PHYSIOTHERAPY	36(61)	15(25.4)	7(11.8)	1(1.69)	59
TOTAL	122	47	13	1	183

Table 4
Prevalence of eating behavior in healthcare professionals.

PROFESSION	Normal (n)%	Overweight (n)%	Obese class 1 (n)%	Obese class 2 (n)%	TOTAL
DENTIST	16(53.3)	12(38.7)	3(9.6)	0	31
MEDICAL	21(52.5)	11(27.5)	8(20)	0	40
NURSING	27(67.5)	12(30)	1(2.5)	0	40
PHARMACY	32(78)	9(21.9)	0	0	41
PHYSIOTHERAPY	43(58.9)	20(27.3)	9(12.3)	1(1.3)	73
TOTAL	139	64	21	1	225

obese was highest among the medical professionals (Table 2). The percentage of job stress and eating behavior was highest among the pharmacy professionals in the normal category of BMI (Tables 3 and 4). There was a weak correlation of BMI to job stress eating behavior (Table 5). There was a weak overall correlation of variable 1 to variable 2 (Table 6).

3. Discussion

The present study showed that job stress and eating behavior were affected more amongst pharmacy profession in the normal category supported by a study by Boran A et al which concluded that pharmacy professionals has more stress which was associated with job title, being a women and long working hours (Boran et al., 2011).

Overall the number of participants were comparatively lesser in the obese category as compared to normal and overweight. This is in accordance with a cross sectional study done by Campos-Matos et al

Table 5

Comparing the relationship of body mass index to job stress and eating behaviour in healthcare professionals using Spearman's rank correlation test.

Profession	Variable 1	Variable 2	Normal		Overweight		Obese class 1		Obese class 2	
			R	p-value	r	p-value	r	p-value	r	p-value
DENTIST	BMI	Eating Behavior [AEQB]	0.06	0.246	0.05	0.993	0.05	0.993	NA	NA
		Job Stress [BJSQ]	-0.09	0.756	-0.08	0.884	0.01	0.973	NA	NA
MEDICAL	BMI	Eating Behavior [AEQB]	0.21	0.265	0.28	0.743	-0.05	0.752	NA	NA
		Job Stress [BJSQ]	0.19	0.584	0.29	0.275	0.10	0.413	NA	NA
NURSING	BMI	Eating Behavior [AEQB]	-0.08	0.884	0.08	0.335	0.31	0.213	NA	NA
		Job Stress [BJSQ]	-0.10	0.684	-0.06	0.656	-0.23	0.862	NA	NA
PHARMACY	BMI	Eating Behavior [AEQB]	-0.16	0.613	-0.10	0.413	NA	NA	NA	NA
		Job Stress [BJSQ]	-0.08	0.884	-0.08	0.884	NA	NA	NA	NA
PHYSIOTHERAPY	BMI	Eating Behavior [AEQB]	0.13	0.313	0.20	0.245	0.16	0.632	NA	NA
		Job Stress [BJSQ]	-0.07	0.784	-0.06	0.656	-0.16	0.652	NA	NA

Table 6

Overall Comparing the relationship of body mass index to job stress and eating behaviour in health care professionals using Spearman's rank correlation test.

Variable 1	Variable 2	Normal		Overweight		Obese class 1		Obese class 2	
		r	p-value	r	p-value	r	p-value	r	p-value
BMI	Eating Behavior	0.089	0.256	0.037	0.760	0.310	0.124	NA	NA
	Job Stress	0.006	0.939	-0.022	0.852	0.227	0.265	NA	NA

stated that health care professionals fall under normal to overweight category and not into obese category of BMI as giving lifestyle advice to patients, they themselves practice a healthy lifestyle and talk about the patient body weight when exceeded (Campos-Matos et al., 2014).

Amongst all the healthcare professional groups, those in the normal category had more stress compared to others. Less stress were seen among medical professionals where a study done by Yvonne Birks says that dental students reported more stress than medical students (Birks et al., 2009).

In the present study there was a weak correlation between BMI to job stress and eating behavior. Another note worthy mention is that increased BMI was seen as age advances while the other study supported by Deborah L Reas et al stated that the socioeconomic status exerted minimal influence over time on changes in BMI, young adulthood appeared to be a critical period in which weight gain was accelerated (Reas et al., 2007).

In the present study more number of females are involved as compared to males where another study done by Leo Van Der Reis stated that During the 20th century there was a gradual increase in the variety of feminine physicians, a method that accelerated after the Second war, Nonetheless, the quantity of male candidates dropped more than twice to such an extent, from 26,810 of every 1995 to 18,142 out of 2001 (Reis, 2004).

4. Conclusion

Job stress was found to be high in the normal category of BMI among physiotherapy professionals and least among dentist. This study has paid a fundamental role in applying a direct relationship of eating behaviour and sedentary life style with a higher BMI. A weak correlation was found between BMI, job stress and eating behaviour.

4.1. Limitation

There was no method to confirm the genuineness of the answers given by the respondents and there was unequal distribution of healthcare professionals in the study. The distribution of males and females was also unequal in the study.

Conflicts of interest

There are no conflicts of interest.

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