Original Research Article

Assessment of epidemiological determinants of obesity among nursing staff in a tertiary healthcare center in northern Maharashtra: a cross sectional study

Anant N. Borde, Amol D. Kinge*, Mukesh Bawa, Vikrant Pagar, Parth Vyas

Department of Community Medicine, Shri Bhausaheb Hire Government Medical College, Dhule, Maharashtra, India

Received: 08 May 2017

Accepted: 30 May 2017

*Correspondence:

Dr. Amol D. Kinge,

E-mail: dramolkinge@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Obesity is now-a-days is considered as diseases. India is currently experiencing rapid epidemiological transition. Doctors and nurses play a vital role in the health and welfare of the people of a nation. Health of the doctors and nurses is of paramount importance and they are also known to have a sedentary lifestyle with high levels of stress and their own health behaviours are known to influence the public's confidence in advice offered. The purpose of this study is to find out prevalence of obesity among nurses and to assess its epidemiological determinants.

Methods: It was a cross sectional study done among 200 nursing staff working in a tertiary healthcare center in Northern Maharashtra between September 2016 to March 2017. Data regarding socio-demographic profile, complete lifestyle history and general and systemic examinations were gathered and analysed using appropriate methods.

Results: Out of total 200 nurses enrolled for the study 24% were males and 76% were females. All the participants were between the age group of 20-60 years. About 13% had altered sleep pattern while 15.5% women had menstrual irregularities. Overall prevalence's of underweight, overweight, obesity and morbidly obese were found to be 8%, 27%, 13% and 3.5% respectively.

Conclusions: Based on findings of the present study, we conclude that total prevalence of malnutrition (under nutrition plus over nutrition) found in this study was 51.5% and it was found to be associated with various modifiable risk factors.

Keywords: Obesity, Nurses, Health care providers, Body mass index, Weight, Non communicable diseases

INTRODUCTION

Overweight and obesity are defined as abnormal or excessive fat accumulation that may impair health.¹ For adults, WHO defines overweight as BMI greater than or equal to 25 and obesity as BMI greater than or equal to 30.¹ Overall, about 13% of the world's adult population (11% of men and 15% of women) was obese in 2014. The worldwide prevalence of obesity more than doubled between 1980 and 2014.¹ Obesity is now being recognized as a disease in its own right as it is associated

with increased morbidities like metabolic disorders including diabetes, hypertension, dyslipidaemia, cardiovascular disease and even some cancers and mortality.² India is the second most populous country in the world and it is currently experiencing rapid epidemiological transition. Undernutrition due to poverty is being rapidly replaced by Industrialization and urbanization which contributed to increased prevalence of obesity.² Doctors and nurses play a vital role in the health and welfare of the people of a nation. Health of the doctors and nurses is of paramount importance and they

are also known to have a sedentary lifestyle with high levels of stress, lack of proper rest and irregular eating habits making them highly vulnerable to cardiovascular diseases.³ However, nurses own health behaviours are known to influence the extent to which they engage in health promotion and the public's confidence in advice offered. Estimating the prevalence of overweight and obesity among nurses is therefore important.⁴

The purpose of this study is to find out prevalence of overweight and obesity among nurses in a tertiary healthcare center, and hence to find out risk factors influencing obesity among them.

METHODS

It was a cross sectional study done among nursing staff in a tertiary health care center in Northern Maharashtra between September 2016 to March 2017. All the nurses who consented for the study after ethical committee clearance were enrolled for the study. Total 200 Nurses were enrolled for the study. Data was collected using a prevalidated prestructured questionnaire. It included questions regarding socio-demographic profile, complete lifestyle history and general and systemic examinations. Data was entered and analysed for frequencies and appropriate test of significance was applied with the help of MS Excel Software 20.0.

RESULTS

The present study was carried out among 200 nursing staff working in a tertiary health care center. Out of all participants 48 (24%) were males and 152 (76%) were females (Figure 1). Participants were between 20 - 60 years of age group, Maximum number participants were between the age group of 25-40 years (Figure 2). 83% participants were married and 17% were unmarried. 141 (74%) participants consume mixed diet while 52 (26%) participants were strict vegetarians (Table 1). After statistical analysis between type of diet and BMI, it is found that mixed type of diet was associated with overweight and obesity, however statistical significance not found (Table 2). 132 (46%) participants said that they consume different types of junk foods occasionally in a week, whereas 34 (17%) participants said that they consume it often (Table 1). After statistical analysis consumption of junk food was found to be statistically related with overweight and obesity ($p=0.011$) (Table 2). 4 (2%) participants were smokers, 4 (2%) were other tobacco products users whereas 6 (3%) had a habit of alcohol consumption. All of the participants having addiction were males. All of them were found overweight (Table 2). Sleep pattern of 174 (87%) participants was regular while 26 (13%) complained of snoring. History of snoring was found statistically significant with overweight status ($p=0.016$) (Table 2). Out of all participants only 18 (9%) participants responded that they do physical exercises regularly, while about 106 (53%) participants said that they do not exercise at all (Table 1). Among female participants 114 (75%) were having regular menstrual cycle while 24 (15.5%) were having

irregular menstrual cycle and 14 (9.5%) had achieved menopause (Table 1). The irregularity of menstrual cycle was found to be associated with overweight status of female participants. ($p=0.021$) (Table 2). Upon doing Anthropometric measurement of participants, we obtained their heights and respective weights, and BMI was calculated, 16 (8%) participants found underweight, while 97 (48.5%) participants were having normal BMI, 54 (27%) participants found overweight, and 26 (13%) participants found obese whereas 7 (3.5%) found morbidly obese (Table 3). Gender-wise distribution of nutritional status of participants is given in Table 3, Figure 3 and 4. About 4.16% males and 9.2% females were found underweight, 25% of males and 29.6% of female participants were found overweight, whereas 12.5% males and 11.26% of females found obese (Figures 3 and 4).

Figure 1: Distribution of participants according to gender.

Figure 2: Distribution of participants according to age.

Figure 3: Nutritional status of male nurses (according to BMI).

Table 1: Distribution of study participants according to various modifiable risk factors.

Sr. no	History	Variables	Number of students	Percentage (%)
1	Diet type	Vegeterian	52	26
		Mixed	148	74
2	History of junk food	None	34	17
		Occasional	132	46
		Often	34	17
3	Physical exercise	No	106	53
		Occasional	76	38
		Regular	18	9
4	Addiction history	None	188	94
		Smoking	4	2
		Other tobacco products	4	2
		Alcohol	6	3
5	Sleep pattern	Normal	174	87
		Snoring	26	13
		Sleep apnea	0	0
6	Menstrual history (in case of females)	Regular	114	75
		Irregular	24	15.5
		Menopausal	14	9.5

Table 2: Distribution of participants according to modifiable risk factors.

Sr. No	Variables	Under-weight nurses (BMI <18.5)	No. of nurses with normal BMI (18.51-25)	No. of overweight nurses (BMI: 25-30)	No. of obese nurses (BMI: 30-40)	No. of morbidly obese nurses (BMI >40)	P value*
1	Consume junk food	7	56	58	21	6	0.011
	Do not consume junk food	9	26	14	2	0	
2	mixed diet	14	68	60	20	2	0.76
	vegetarian diet	2	14	12	3	4	
3	Do not exercise	12	42	38	12	4	0.1
	exercise	4	40	34	11	2	
4	History of addiction						--
	None	16	80	60	23	6	
	Smoking and other tobacco products	0	2	6	0	0	
5	Alcohol	0	0	6	0	0	0.016
	Normal sleep pattern	16	76	58	17	6	
	History of snoring	0	6	14	6	0	
6	Regular menstrual flow	14	60	60	19	6	0.021
	Irregular menstrual flow	0	16	6	2	0	

*P value was measured after applying chi-square test to normal BMI and overweight and obese BMI ($p < 0.05$ =statistically significant)

Table 3: Distribution of nutritional status of participants according to class of obesity.

	Male (% calculated as compared to total males)	Female (% calculated as compared to total females)	Total (% calculated as compared to total participants)
Underweight	2 (4.16%)	14 (9.2%)	16 (8%)
Normal weight	27 (56.25%)	70 (46%)	97 (48.5%)
Overweight	12 (25%)	42 (29.6%)	54 (27%)
Obese	6 (12.5%)	20 (11.26)	26 (13%)
Morbidly obese	1 (2%)	6 (3.94%)	7 (3.5%)

Figure 4: Nutritional status of female nurses (according to BMI).

DISCUSSION

The present study was conducted among 200 nursing staff working in a tertiary health care center in northern Maharashtra. All the participants were between age group of 20-60 years. Female nurses were more (76%) as compared to male nurses. In a study by Hegde et al, similar findings were observed, their participants were between age group of 18-65 years, 68.4% were female nurses and 49.6% were males.³ However Leong L took 81.4% females and 18.6% male nursing staff in the study.⁵ When we statistically analysed types of diet participants consume, history of junk food was found to be significantly associated with obesity. Due to their hectic duties they don't have fixed diet schedule and this might add to their junk food consumption and hence to obesity. Lack of physical exercise, habit of addiction (smoking, tobacco products, alcohol etc.) were also found to be associated with obesity. It is seen that nursing job is associated with sedentary working pattern and due to their rotating working pattern, they hardly get time for physical exercise, this might be the reason behind lesser prevalence of physical exercise among nurses. Also strict vegetarian diet, lack of physical exercise was found significantly associated with underweight. As obesity may reflect various non-communicable diseases like diabetes mellitus, cardiovascular diseases in future, above risk factors related with obesity like junk food consumption, dietary patterns, lack of physical exercise should be controlled. It is also well known that obesity is associated with sleep disturbances, sleep apnoea etc. We tried to get sleeping pattern history of study participants; we found that 13% participants complained about snoring, which was statistically found to be associated with obesity (Table 2). Overweight and obesity are also associated with polycystic ovarian disorders among females, of which menstrual irregularities are most common symptoms.⁷ This present study also tried to find associations of obesity with menstrual irregularities, we found that 15.5% women had complained about their irregular menstrual cycles. When we compared it statistically with overweight and obesity, both were found significantly associated with each other (Table 2). When we compared nutritional status of participants, overall

prevalences of underweight, overweight, obesity and morbidly obese were found to be 8%, 27%, 13% and 3.5% respectively. Similar study was done by Hegde et al, they found 12.9% overweight and 3.2% obese participants.³ Miller found 26% underweight nursing staff.⁶ While in a study done by Kyle in Singapore, they found 69.1% overweight or obese nursing staff.⁴ Prevalence of overweight was found higher than that of underweight in our study. Total prevalence of malnutrition (undernutrition plus overnutrition) found in this study was 51.5% (43.75% in male nurses and 54% in female nurses).

CONCLUSION

Based on findings of the present study, it can be concluded that prevalence of malnutrition among nursing staff was found to be 51.5% (Underweight 8%, overweight 27% and obese 13%). No significant difference was found between nutritional statuses of males and females. Overnutrition was found to be associated with certain modifiable risk factors such as junk food consumption, lack of physical exercise, Addictions, faulty diet patterns etc. which demands prompt actions to correct these modifiable risk factors in order to achieve healthy lifestyle pattern. Also Obesity was found to be associated with altered sleep pattern and menstrual irregularities, which is reversible after reduction of weight according to available researches.

Recommendations

As we believe that nurse's own health behaviours are known to influence the extent to which they engage in health promotion and the public's confidence in advice offered, various advocacy and communication strategies should be developed in order to percolate knowledge about importance of determining and preventing the risk factors among them. Nurses can be taught about importance of following proper diet plan, physical exercises customized to their body structure, making suitable changes in sedentary working pattern, avoiding smoking and alcohol.

ACKNOWLEDGEMENTS

The authors acknowledge the participants regarding the truthfulness in their anthropometric measurements and in filling the questionnaire regarding the dietary habits and physical activity.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Not required

REFERENCES

1. WHO. Available at: <http://www.who.int/mediacentre/factsheets/fs311/en/> Accessed on 3 March 2017.

2. Pradeepa R, Anjana RM, Joshi SR, Bhansali A, Deepa M, Joshi PP, et al. Prevalence of generalized and abdominal obesity in urban and rural india- the icmr-indiab study (phase-i) [icmr-indiab-3]. *Indian J Med Res.* 2015; 139-150.
3. Hegde SK, Sathiyarayanan S, Venkateshwaran S, Sasankh A, Ganeshkumar P, Balaji R. Prevalence of Diabetes, Hypertension and Obesity among Doctors and Nurses in a Medical College Hospital in Tamil Nadu, India. *National J Res Community Med.* 2015;4(3):235-9.
5. Kyle RG, Neall RA, Atherton IM. Prevalence of overweight and obesity among nurses in Scotland: A Crosssectional study using the Scottish Health Survey. *Int J Nurs Stud.* 2016;53:12633.
6. Leong L, Chia SE. Prevalence of cardiovascular risk factors among healthcare staff in a large healthcare institution in Singapore. *Singapore Med J.* 2012;53(8):517-21.
7. Miller SK, Alpert PT, Cross CL. Overweight and obesity in nurses, advanced practice nurses, and nurse educators. *J Am Acad Nurse Pract.* 2008;20(5):25965.
8. Sam S. Obesity and Polycystic Ovary Syndrome. *Obesity management.* 2007;3(2):69-73.

Cite this article as: Borde AN, Kinge AD, Bawa M, Pagar V, Vyas P. Assessment of epidemiological determinants of obesity among nursing staff in a tertiary healthcare center in northern Maharashtra : a cross sectional study. *Int J Community Med Public Health* 2017;4:2506-10.