

Original Article

Prevalence and Factors Associated with Obesity among Healthcare Professionals

Muharrem Asudu, RN, MSc

Cumhuriyet University Hospital, Department of Obesity Surgery, Sivas, Turkey

Murat Can Mollaoglu, Dr. MD

Cumhuriyet University, Medical School, Department of Surgery, Sivas, Turkey .

Mukadder Mollaoglu, PhD

Professor, Cumhuriyet University, Health Sciences Faculty, Sivas, Turkey

Correspondence: Mukadder Mollaoglu, Professor PhD, Cumhuriyet University, Health Sciences Faculty, Sivas, Turkey E-mail: mukaddermollaoglu@hotmail.com

Abstract

Background: Although health professionals play an important role in promoting a healthy lifestyle, they are considered to be a high-risk group for obesity.

Aims: The aim of this study is to determine the prevalence of obesity among healthcare professionals and examine the factors affecting obesity.

Methods: A descriptive research was conducted with healthcare professionals working in Family Practice Centers and Inpatient Treatment Facilities in the Central District of in Sivas, Turkey. The research sample consisted of 1421 health workers. The data was obtained from Personal Information Form (PIF) and Obesity Evaluation Form (OEF). Data was analyzed in SPSS (version 22.0) programme.

Results: The results revealed that 52.5% of healthcare professionals were normal weight people), 34.8% were overweight, 8.7% were obese class I, 1.1% were obese class II and 0.3% were morbid obese; whereas 2.7% were underweight. In this study, obesity was found to be higher in the elderly, in the physicians, in the married and in those with higher income. ($p>0.01$)

In addition, obesity was higher in those who watched television for a long time and in smokers and alcohol drinkers.

Conclusion: Obesity is a major problem among healthcare professionals. It is important to identify the factors affecting obesity rates among healthcare professionals and to develop policies to prevent these factors. In health institutions organization of exercise and diet programs for healthcare professionals may be essential.

Key words: Obesity, healthcare professionals, prevalence of obesity among healthcare professionals

Introduction

Daily lifestyle has a direct influence on people's health. Besides, environmental, social and psychological factors also have a direct impact on health. In this respect, obesity might occur depending on the lifestyles and some other factors (Ayilmaz et al., 2016; Farhud, 2015). The underlying cause of obesity is the accumulation of fat in the body, which will damage health. What makes obesity so dangerous is the fact that some fatal diseases such as heart diseases and hypertension are caused by the effects of this disease (Akbulut et al., 2007; Gearhardt et al., 2011).

In today's world, many people have suffered from obesity. Moreover, some professions may have had a higher prevalence of obesity than others. Obesity is more prevalent especially among individuals working for a deskjob (Ozkan and Yilmaz, 2008). Several employees have also suffered from obesity in the healthcare sector. Working in the healthcare sector poses a variety of risks for obesity. The various working conditions that the healthcare sector offers to the employees might cause them to develop obesity (Fie et al., 2013). These conditions are sleep problems, working in shifts, problems with skipping a meal, stress and work spillover (Kyle et al., 2017; Yalcinkaya et al., 2007).

Sleep and nutrition problems caused by working in shifts trigger obesity among healthcare professionals. Working the night shifts or working at irregular hours reduce the quality and duration of sleep (Nicholls et al., 2017; Ozkan and Yılmaz, 2008). Working the night shift means sleeping during the day. This affects sleep both qualitatively and quantitatively. Changeable working hours influence the health in two ways. Firstly, the body's biological needs in terms of sleep and digestion cannot be satisfied. Secondly, it damages family life and social life. When a person's night sleep is reduced by 1.3 to 1.5 hours, this reduces the person's next day alertness by 32% (Yalcinkaya et al., 2007). People working in shifts might get circadian rhythm disorder and metabolic disorders due to the fact that they do not have a sleeping time routine. These irregularities can be considered as factors increasing the susceptibility to obesity significantly (Depner et al., 2014; Karadeniz et al., 2007). Healthcare professionals often have to deal with the problems of working in shifts and changeable working hours. Individuals suffering from sleeplessness and sleep deprivation suffer from many mental disorders and social adaptation problems as well as physical illnesses such as coronary artery disease, hypertension and diabetes (Yalcinkaya et al., 2007). Sleep deprivation and circadian rhythm impairment have an adverse effect on the cardiovascular system and increase the risk of acute myocardial infarction (Orsey et al., 2009). It has been stated that sleep deprivation was an independent risk factor for diabetes. It has also been found out that sleep deprivation increased the risk of hypertension and hypertension led to treatment-resistance. Growth hormone and cortisol levels, which have important roles in glucose metabolism, are affected by acute sleep deprivation adversely. It has also been shown that the risk of obesity and weight gain increased due to working in shifts (Amani and Gill, 2013; Avşar et al., 2013).

Healthcare professionals are the group of people who are responsible for offering health guidance and information to the patient about healthy behaviors and how to improve health (Goon et al., 2013; Karadeniz et al., 2007). Healthcare professionals become a role model with their professional responsibilities and lifestyles in accordance with their social roles and influence people to whom they offer services in terms of health education. Therefore, healthcare

professionals have great responsibilities in activities organized to improve health (Yalcinkaya et al., 2007). Healthcare professionals, who take the lead in the way to protect and improve public health and engage in treatment services, should first take care of their own health and be aware of factors that affect health conditions in both positive and negative ways (Bogossian et al., 2012; Ozkan and Yılmaz, 2008). It is very important to determine obesity status and risks for healthcare professionals.

Many studies have been conducted on the factors affecting obesity. However, there are a limited number of studies investigating the prevalence of obesity among healthcare professionals. The aim of this study is to determine the prevalence of obesity among healthcare professionals working in central district of Sivas and to investigate the factors affecting it.

Methods

Design: The current study, which aims to determine the prevalence of obesity among healthcare professionals working in central district of a city and to examine the factors affecting it, is a descriptive research. In this study, the prevalence of obesity among healthcare professionals within a certain period of time and the effects of factors affecting obesity will also be determined. Therefore, it is also unexploratory research.

Participants: This study covers all healthcare personnel working in all health facilities in a city. The research population consisted of the physicians, medical assistants, nurses and midwives, who work in those institutions. Since all the physicians, medical assistants, nurses and midwives were participated in the research; the sampling method was not applied. The population consisted of 595 participants from Numune Hospital, 573 participants from City State Hospital, and 918 participants from a University Hospital, 263 participants from Family Practice Centers located in the Central District of a city. Since 72 people did not want to participate in the study, 114 people were on leave during the research period (maternity leave, annual leave, unpaid leave etc.), the research was carried out with 1421 participants instead of 2163 people.

Data Collection: The data was obtained by using two forms, which were Personal Information Form (PIF) and Obesity Evaluation Form (OEF).

Personal Information Form: This form consists of 11 questions regarding the socio-demographic characteristics of healthcare professionals. In the form, there are questions related to age, gender, occupation, marital status, educational status, term of employment, the duty in the institution, the nature and duration of department and income level.

Obesity Evaluation Form: This form consists of 10 questions created based on the literature (Comlekci, 2011, Efil, 2005) and expert opinion. In the form, there are questions about body sizes, possible reasons for obesity, disease status, daily amount of meals, treatment for obesity, smoking and drinking alcohol, number of births given by women, daily physical activities and sleeping pattern. As can be seen in Table 2.1, the prevalence of obesity was determined according to WHO's Classification of Obesity in Adults (Comlekci, 2011: 7). The questions were prepared by taking opinions from four experts, who were obesity specialist doctor working in the obesity surgery unit of an University Hospital, two professors working in the field of internal medicine nursing and a faculty member working in the field of biostatistics.

Ethical considerations: The necessary ethical and institutional permissions were obtained for the research. The study was conducted in accordance with the Helsinki Declaration. Written and verbal consent was obtained from patients who met and permitted the criteria included in the study.

Statistical Analysis: After the data was uploaded to the package program SPSS 22.0 (Statistical Package for Social Sciences 22 For Windows), the chi-square test was applied to compare two groups independent in terms of a categorical variable in 2x2 tables, whereas chi-square test was applied to compare more than two groups independent in terms of a categorical variable on many cells. The data were illustrated in numbers and percentages of individuals in the tables at the significance level of 0.05.

Results

In this study, 30.5% of the participants were male while 69.5% of them were female. 71.8% of the participants were married while 28.2% of them were single. 33 % of the participants were physicians, 53.1% were nurses and 13.9% were midwives. A 16.7% of the participants were between the ages of 18-25, 45.2% were between 26-35, 29.5% were between 36-45, and 8.6%

were 46 years old and older (Table 1). A 52.5% of healthcare professionals weighed normal kgs, whereas 34.8% of them were in the pre-obesity level. Moreover, 8.7% of the subjects were in the level of obesity class I, 1.1% were in the level of obesity class II, and 0.3% were in the level of obesity class III (Table 2). The chi-square test value of the differences in obesity status among different age groups was statistically significant ($p < 0.05$). This suggests that the obesity status of participants varied by age. The table shows that 17.2% of those between the ages of 18 and 25, 38.5% of those between the ages of 26 and 35, 57.3% of those between the ages of 36 and 45, and 89.3% of those aged 46 years old and older were obese. These results indicate that the obesity rate increased with age. Another result obtained from the study was that the differences in obesity status were statistically significant among sex groups ($p < 0.05$). This suggests that the obesity status of participants varied by gender. The table shows that 68.1% of men and 34.6% of women were obese. These findings indicate that obesity was more prevalent among men than women. The difference between obesity and health occupational groups was also significant ($p < 0.05$). This suggests that the obesity status of participants varied by profession. The table shows that 61.2% of the physicians, 37.5% of the nurses, 30.5% of the midwives, 66.7% of the medical assistants were obese. These findings indicate that the rate of obesity was higher among physicians and medical assistants than nurses and midwives.

As seen in Table 3, there is also a significant relationship between marital status and obesity ($p < 0.05$). According to this, 51.8 % of married health workers are obese, while 27.2 % of singles are obese. These findings indicate that obesity was more prevalent among married participants than single ones (Table 3). In the following table of regression model, it was attempted to investigate the factors affecting the prevalence of obesity. By looking at the regression model, it can be said that there was a statistically significant relationship between the number of main meals, sitting in front of TV, income level, smoking, drinking alcohol and having a non-desk job and the prevalence of obesity ($p < 0.05$). Obesity increased by income level, duration of TV watching, number of main meals, smoking and drinking alcohol. On the other hand, obesity decreased as the duration of sleep and the duration of staying standing up increased (Table 4).

Table 1. Participants' Demographic Characteristics

		n	%
Gender	Male	433	30.5
	Female	988	69.5
Marital Status	Married	1020	71.8
	Single	401	28.2
Profession	Physician	470	33.0
	Nurse	754	53.1
	Midwife	197	13.9
Age (yr.)	18-25	238	16.7
	26-35	642	45.2
	36-45	419	29.5
	≥46	122	8.6

Table 2. Participants' Obesity Status

	n	%
Under weight	38	2.7
Normal weight	746	52.5
Pre-obese	494	34.8
Obese class I	124	8.7
Obese class I I	15	1.1
Obese class I II	4	0.3
Total	1421	100

Table 3. Demographic Factors Affecting the Prevalence of Obesity among Healthcare Professionals

Age groups	Obesity status				χ^2	p
	Normal		Obese			
	n	%	n	%		
18-25	197	82.8	41	17.2	207.80	.001
26-35	395	61.5	247	38.5		
36-45	179	42.7	240	57.3		
≥46	13	10.7	109	89.3		
Gender	Obesity status				χ^2	p
	Normal		Obese			
	n	%	n	%		
Male	138	31.9	295	68.1	136.72	.001
Female	646	65.4	342	34.6		

Profession Groups	Obesity status				χ^2	p
	Normal		Obese			
	n	%	n	%		
Physician	176	37.4	294	62.6	93.44	.001
Nurse	471	62.5	283	37.5		
Midwife	137	69.5	60	30.5		
Marital status	Obesity status				χ^2	p
	Normal		Obese			
	n	%	n	%		
Married	492	48.2	528	51.8	70.33	.001
Single	292	72.8	109	27.2		

Table 4. Regression analysis on factors affecting the prevalence of obesity

Model	Coefficients		Standardized Coefficients Beta	T	p
	B	Standard Error			
(Constant)	1.747	.246		7.105	.000
Snack Meal	-.002	.016	-.003	-.114	.910
Main Meal	.125	.047	.069	2.630	.009
Sleep Duration	-.028	.015	-.048	-1.860	.063
Exercise	.074	.123	.016	.601	.548
Sitting in front of the TV	.082	.041	.055	2.002	.045
Daily Walking	-.060	.036	-.044	-1.642	.101
Level of Income	.093	.023	.115	4.111	.000
Smoking	.157	.032	.129	4.902	.000
Drinking Alcohol	.077	.017	.123	4.673	.000
Desk Job	-.004	.032	-.004	-.134	.894
Non-desk Job	-.063	.025	-.078	-2.470	.014

Discussion

According to the results, 2.7% of healthcare professionals in the research were underweight, 52.5% were normal weight, 34.8% were pre-obese, 8.7% were obese class I, 1.1% were obese class II and 0.3% were obese class III. In 2008, the prevalence of obesity was found as 11% by WHO, as %22.5 by NHANES III, as 28.6% by TEKHARF, as 25.2% by TOHTA, as 22.3% by TUR-DEP I, as 31.2% by TUR-DEP II and as 36.2% by Turkey Metabolic Syndrome Research (Satman, 2016, Cayir et al. 2011). In the current research, it was assumed that the reason why obesity rate was lower than the general population was the fact that the participants had

higher level of education, lower average of age and were more sensitive to struggle against weight gain.

It was seen that the obesity rate increased with age in this study. Similarly, the literature findings were consistent with this study. Oguz et al. (2008) stated that obesity increased with age. In another study conducted by Erem (2015), obesity was seen as a serious problem especially in women since their basal metabolism slows down due to getting older and menopause process.

In the current study, it was concluded that obesity was more prevalent among men than women. Yalcinkaya et al. (2007) stated that women gave more importance to healthy lifestyle behaviors.

According to the results of TURKSTAT (2016) Health Surveys, the rate of obese individuals in Turkey was 19.6%. 15.2% of them are men and 23.9% are women. According to TURKSTAT statistics, women's obesity rate was higher than men (TUIK,2016). In the current research, obesity rates in healthcare professionals were higher among males than females. An epidemiological assessment was done for 10-20 years in America, Africa, Eastern Mediterranean, South Asia, Western Pacific and Europe within the MONICA study conducted by the World Health Organization. In most of European countries, the prevalence of obesity has increased by 10-40% for 10 years. Moreover, the prevalence of obesity among men has increased by 10-20%, whereas it has increased among women by 10-25%. Besides, on average, 15% of men and 22% of women have been obese in today's world. These rates are similar to TURKSTAT statistics revealed in Turkey (TUIK, 2016). Similarly, the prevalence of obesity is higher in women according to the results of NHANES III (İslamoglu et al., 2008). However, this case turns into exactly an opposite picture for healthcare professionals. The reason for this was thought to be that the socio-cultural values of women in the health sector have been higher than other people, women are generally young, does not give birth or a limited number of birth. Atilla (2017) argued that women whose socio-cultural sights were weak and who live in the village were more likely to be fat. He added that a reverse case could be seen when socio-cultural level and the level of education were improved.

It was found out that obesity status of participants varied in different profession groups. These results show that the rate of obesity was higher for physicians than for nurses and midwives. Karadeniz et al. (2007) reported that physicians experienced obesity less prevalently than other healthcare professionals. It is thought that the reason for this finding could be that physicians and medical assistants were older than nurses and midwives in the present study.

It was found out that obesity status of participants varied by marital status. These results show that obesity was more prevalent among married people than single ones. Cayir et al. (2011) obesity increased with the duration of marriage. It is thought that the reason for this finding could be that the average age of single people was younger, they had not given birth yet, and they were more sensitive about weight

The results also revealed that obesity increased as the level of income in health workers, duration of TV watching, number of main meals, smoking and alcohol use increased, and that obesity rate decreased as sleep duration and duration of staying standing up increased. Healthcare professionals often suffer from musculoskeletal system problems because of their work and being in risk group. Healthcare professionals are under stress due to their working environment (Tam and Cakir, 2012: 3). Due to both physical and psychological factors, the daily lives of healthcare professionals are affected adversely. They have to live under a lot of stress. This may increase the desire of healthcare professionals to eat. Healthcare professionals might try unhealthy nutritional ways in order to get rid of intense stress (Ozkan and Yılmaz, 2008) and might smoke or drink alcohol. Unhealthy diet is seen as the main cause of obesity. When healthcare professionals do not give importance to their own nutrition in an intense work environment and eat especially junk food, the risk of obesity may increase (Oguz et al., 2008). Changes in night and day shifts, difficulty in working conditions and work spillover have an impact on eating habits of nurses (Karadeniz et al., 2007). The fact that healthcare professionals get used to skip a meal because of intense work pressure is a risk factor for obesity. The lack of meal breaks because of intensive work lead to unhealthy eating habits. Meal skipping and too much calorie intake during the next meal triggers obesity (Oguz et al., 2008). Working in shifts leads to circadian rhythm disorder and metabolic disorders. Thus, these disorders increase the susceptibility to obesity in healthcare professionals (Karadeniz et al., 2007). Studies have shown that circadian changes in humans increase the level of postprandial blood sugar. This is probably due to reduced pancreatic β -cell compensation or decreased insulin sensitivity (Scheer et al., 2009). In this context, the factors affecting the prevalence of obesity in the present study were found to be consistent with the literature. In today's world where obesity rates have dramatically risen, healthcare professionals should serve as a model. When healthcare workers become healthy, they can serve as a good model for other people (Zaborskis et al., 2008: 234). It can be seen as a necessity for healthcare professionals to take care of their own health first since they are the ones fighting against obesity. Therefore, determining the prevalence of obesity among healthcare

professionals and the factors affecting obesity can be seen as an important step while eliminating the risk of obesity.

In conclusion, it was found out that approximately half of the healthcare professionals did not have a normal body weight. Obesity prevalence was found out to be high in elderly and male healthcare professionals, medical assistants and physicians, those with lower level of educational degree, married ones, those working in inpatient treatment facilities, those working for longer time, those working in polyclinics, those with a systemic illness and those with a high level of income. Factors such as diet, familial predisposition, working conditions and duration of sleep and duration of staying standing up were found out to be influential on obesity.

Acknowledgements: Thank Dr. Ziyet Cinar, Department of Biostatistics, Cumhuriyet University, Cumhuriyet, Turkey, for her help with data analysis.

References

- Akbulut, G., Ozmen, M., & Besler, T. (2007). Disease of the Age, Obesity. TUBITAK Science and Technical Journal, 2, 5-12.
- Amani, R. & Gill, T. (2013). Shiftworking, Nutrition And Obesity: Implications For Workforce Health- A Systematic Review, *Asia Pacific Journal of Clinical Nutrition*, 22:505–15.
- Atilla, S. (2017), Women's Health and Fatness, Ankara: Hacettepe University Publications.
- Erem, C. (2015). Prevalence of Overweight and Obesity in Turkey. *IJC Metabolic & Endocrine*, 8, 38–41.
- Avsar, P., Kazan, E. E., & Pinar, G. (2013). Investigation of the Nutrition Habits of University Students and Risk Factors Regarding Obesity and Chronic Diseases. *YildirimBeyazit University Nursing E-Journal*, 1, 38-46.
- Ayilmaz, A., Ozaydin, E., Demirel, F., & Kose, G. (2016). Retrospective Evaluation of Factors Determining the Development of Obesity and the Presence of Metabolic Syndrome in Obese Adolescents. *Turkey Pediatrics Journal*, 3, 157-61.
- Bogossian, F.E., Hepworth, J., Leong, G.M, Flaws, D. F., Gibbons, K. S., Benefer, C. A., & Turner, C. T., (2012). A Cross-Sectional Analysis Of Patterns Of Obesity in A Cohort Of Working Nurses And Midwives in Australia, New Zealand, And The United Kingdom. *The International Journal of Nursing Studies*, 49,727–38.
- Cayir, A., Atak, N. & Kose, S. K. (2011). Obesity Status and Determination of Effective Factors in Those Applying to Nutrition and Diet Clinic. *Ankara University Faculty of Medicine Magazine*, 64, 13-19.
- Comlekci, N. (2011) Psychometric Evaluation of the Turkish Version of the Effect of Weight on Quality of Life (IWQOL-LITE), Master Thesis, Istanbul University, Institute of Health Sciences, Istanbul.
- Depner CM, Stothard ER, Wright KP. (2014). Metabolic Consequences of Sleep And Circadian Disorders. *Current Diabetes Reports*, 14, 507.
- Efil, S. (2005). Obesity Incidence in Health Workers and Evaluation of Affecting Factors, Master Thesis, Afyon Kocatepe University, Institute of Health Sciences, Afyon.
- Farhud, D.D. (2015). Impact of Lifestyle on Health. *Iranian Journal of Public Health*, 44 (11):1442-1444.
- Fie, S., Norman, I.J., While, A.E. (2013). The Relationship Between Physicians' And Nurses' Personal Physical Activity Habits And Their Health-Promotion Practice: A Systematic Review. *Health Education Journal*, 72,102–119.
- Gearhardt, A.N., White, M.A., Potenza, M.N. (2011). Binge Eating Disorder And Food Addiction. *Current Drug Abuse Reviews*, 4, 201–207.
- Goon DT , Maputle MS , Olukoga A , Lebeso R , Khoza LB, & Anyanwu FC . (2013). Overweight, Obesity And Underweight In Nurses In Vhembe And Capricorn Districts, Limpopo. *South African Journal of Clinical Nutrition*, 26:147–149.
- Islamoglu, Y., Koplay, M., Sunay, S., & Acikel, M. (2008). Obesity and Metabolic Syndrome. *Journal of Medical Research*, 6, 168-174.
- Karadeniz, G., Yanikkerem, E., Sarican, E., Bulez, A., Arikan, Ç., & Esen, A. (2007). Metabolic Syndrome Risk in Manisa Province Health Workers. *Firat Health Services Magazine*, 2, 13-24.
- Kyle RG, Wills J, Mahoney C, Hoyle, L., Kelly, M., & Atherton, I. M. (2017). Obesity Prevalence Among Healthcare Professionals In England: A Cross-Sectional Study Using The Health Survey For England. *British Medical Journal Open*, 7 (12), e018498.
- Nicholls, R., Perry, L., Duffield, C., Gallagher, R., & Pierce, H. (2017). *Barriers And Facilitators To Healthy Eating For Nurses In The Workplace: An Integrative Review. Journal of Advanced Nursing*, 73,1051–1065.
- Oguz A., Temizhan, A., Abacı, A., Kozan, O., Erol, C., Ongen, Z., & Celik, S. (2008). Alarm for Cardio Metabolic Risk in Turkish Adults; Obesity And Abdominal Obesity. *Anatolian Journal of Cardiology*, 8 (6), 401.
- Orsey, R.R., Eberhardt, M.S., & Ogden, C.L. (2009). Racial/Ethnic Differences In Weight Perception. *Obesity*, 17,790–795.
- Ozkan, S., & Yilmaz, E. (2008). Healthy Life Style Behaviors of Nurses Working in Hospitals. *Firat Health Services Magazine*, 3, 90-105.

- Scheer, F.A., Hilton, M.F., Mantzoros, C.S., & Shea, S.A. (2009). Adverse Metabolic And Cardiovascular Consequences Of Circadian Misalignment. *Proceedings of the National Academy of Sciences of the United States of America National Academy of Sciences*, 106, 4453–4458.
- Tam, A. A., & Cakir, B. (2012). Approach to Obesity in Primary Care. *Ankara Medical Journal*, 12, 1-10.
- TSI, (2016), Survey of Health, Turkey, Ankara .Hab Bulletin.
- Satman I. (2016). Obesity Problem in Turkey. *Turkey Clinical J Gastroenterohepatol-Special Topics*, 9, 1-11.
- Yalcinkaya, M., Ozer, F. G., & Karamanoglu, A. Y. (2007). Evaluation of Healthy Lifestyle Behaviors in Healthcare Workers. *TAF Preventive Medicine Bulletin*, 6, 409-420.
- Zaborskis A, Petronyte G, Sumskas L, Kuzman M, & Ionatti RJ. (2008). Body Image And Weight Control Among Adolescents In Lithuania, Croatia, And The United States In The Context Of Global Obesity. *Croatian Medical Journal*, 49, 233–242.