

Body Mass Index among Healthcare Workers

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Background: Overweight is one of the ten leading risk factors for high mortality in developing and developed countries. Studies showed that obesity has serious consequences on health, reduces the quality of life and markedly reduces life expectancy.

Objective: To evaluate body mass index (BMI) among healthcare workers in Bahrain.

Design: Cross sectional study.

Setting: Occupational Health Clinic at Salmaniya Medical Complex, Public Health Directorate, Naim Health Center and the Psychiatric Hospital.

Method: Between 2009 and 2012 a descriptive cross-sectional study was conducted to determine the prevalence of overweight and obesity amongst 644 healthcare workers. Height and weight recorded during periodical medical examination of employees were used to calculate the body mass index using weight in kilogram divided by height in meter squared. Self-administered questionnaire was used for personal characteristics.

Result: Six hundred forty-four healthcare workers were included in the study, 391 males and 253 females. The median age of the males was 43 years and the females was 38 years. Two hundred seventy-eight (43.2%) were between 34-44 years.

One hundred ninety-six (30.4%) healthcare workers were under/normal weight; 266 (41.3%) were overweight, 182 (28.3%) were obese.

The mean BMI of males was 27.5 and females was 28.5. One hundred seventeen (29.9%) males and 79 (31.2%) females were under/normal weight. One hundred seventy-two (44%) males and 94 (37.2%) females were overweight. One hundred two (26.1%) males and 80 (31.6%) females were obese.

Conclusion: This study revealed high prevalence of obesity among healthcare workers.

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Overweight is a leading risk factors for high mortality in developing and developed countries. Obesity has reached epidemic proportions globally; at least 300 million people are clinically obese, nearly 2.8 million people die each year as a result of being overweight or obese and an estimated 35.8 million of global disability-adjusted life year (DALY) are caused by overweight or obesity¹⁻³.

Studies show that obesity has serious consequences on health, including increased risks for non-insulin-dependent diabetes mellitus, hypertension, coronary heart disease, cancer and depression⁴⁻¹⁵. In addition, obesity has been found to reduce the quality of life for both men and women and markedly reduces life expectancy¹⁶⁻¹⁹.

The direct and indirect economic costs of obesity are substantial²⁰⁻²². Although obesity is primarily public health issue, there are clear implications for the workplace. Compared with normal weight, overweight and obesity compile greater rates of absenteeism, occupational injuries, short-term disability and self-reported unhealthy physical and mental days²³⁻²⁹.

Data about the prevalence of obesity among working population in Bahrain are scarce. In their population study, Alsayyad and Omran found that 66.1% of Bahraini men and 71.4% of Bahraini women are overweight or obese³⁰.

Healthcare workers (HCWs) are considered professionals who should have good knowledge of health promotion, and they should act as health role models for their patients. However, a study revealed that female HCWs had 52% prevalence of obesity and 26% overweight, compared to male HCWs, who had a 23% obesity and 63% overweight³¹. Seventy-three percent of HCWs in South Africa were obese or overweight³². Females and older; females HCW were more obese than men and younger counterparts³². In USA, the prevalence of obesity has increased among HCWs³³.

The aim of this study is to evaluate body mass index (BMI) in healthcare workers in Bahrain.

METHOD

Within the occupational health surveillance activities, self-administered questionnaire is routinely provided. Anthropometric measurements including bodyweight and height are routinely been measured and recorded by the occupational nurse for each employee at the periodical examination.

Six hundred forty-four HCWs who attended the occupational health clinic in Salmaniya Medical Complex and Naim Health Center between 2009 and 2012 were included in the study.

The study individuals were from 7 departments. Five in Salmaniya Medical Complex (central sterile supplies section, catering and food services, laundry, mortuary and oncology); one in Public Health Directorate (environmental health section) and nurses at the psychiatric hospital.

The Body Mass Index (BMI) was calculated as follows: weight (kg)/[height (m) × height (m)]. BMI was classified according to WHO guidelines: underweight (≤ 18.5 kg/m²), normal weight

(18.5-24.9 kg/m²), pre-obese (25.0-29.9 kg/m²), obese I (30.0-34.9 kg/m²), obese II (35.0-39.9 kg/m²) and obese III (≥ 40 kg/m²)³⁴.

All data collected from the questionnaires were coded and entered in SPSS version 15.

RESULT

Three hundred ninety-one (60.7%) were males with median age of 43 years; 253 (39.3%) were females with median age of 38 years. Four hundred sixty-six (72.4%) were Bahrainis and 178 (27.6%) were non-Bahrainis. Males were the majority in all departments except for oncology and psychiatry, see table 1. Females' mean BMI was higher than males (28.46 and 27.52 respectively), see table 2.

Table 1: Personal Characteristics of Healthcare Workers in Bahrain

Personal Characteristics		Male	Female	Total
		Number and Percentage		
		391 (60.7)	253 (39.3)	644 (100)
Nationality	Bahraini	350 (75.1)	116 (24.9)	466 (72.4)
	Non-Bahraini	41 (23)	137 (77)	178 (27.6)
Work place	CSSD	27 (69.2)	12 (30.8)	39 (6.1)
	Oncology	7 (9.3)	68 (90.7)	75 (11.6)
	Mortuary	8 (100)	0 (0)	8 (1.2)
	Environmental Health	153 (98.1)	3 (1.9)	156 (24.2)
	Laundry	58 (74.4)	20 (25.6)	78 (12.1)
	Food Hygiene	63 (77.8)	18 (22.2)	81 (12.6)
	Psychiatry	75 (36.2)	132 (63.8)	207 (32.1)
	Age (years)	Mean	42.47	39.71
Median		43.00	38.00	41.00
Age Categories	< 25	9 (75)	3 (25)	12 (1.9)
	25 - 34	52 (40)	78 (60)	130 (20.2)
	35 - 44	173 (62.2)	105 (37.8)	278 (43.2)
	45 - 54	137 (75.3)	45 (24.7)	182 (28.3)
	> 54	20 (47.6)	22 (52.4)	42 (6.5)

Table 2: BMI According to Gender

BMI Statistics	Male	Female
Mean	27.52	28.46
Median	26.83	27.22
Variance	20.88	35.16
SD	4.57	5.93
Minimum	15.97	15.99
Maximum	47.56	50.37
Range	31.59	34.38

Table 3 summarizes the distribution of BMI among HCWs by gender, nationality, age group and place of work. Only 196 (30.4%) of HCWs were under/normal weight, 266 (41.3%) were overweight and 182 (28.3%) were obese.

Table 3: BMI According to Gender, Nationality, Age and Work Place

		BMI Categories			Total	P value
		Under/Normal Weight	Overweight	Obese		
Gender	Male	117 (29.9%)	172 (44%)	102 (26.1%)	391 (60.7%)	0.175
	Female	79 (31.2%)	94 (37.2%)	80 (31.6%)	253 (39.3%)	
Nationality	Bahraini	119 (25.5%)	190 (40.8%)	157 (33.7%)	466 (72.4%)	0.000
	Non-Bahraini	77 (43.3%)	76 (42.7%)	25 (14%)	178 (27.6%)	
Age Categories	< 25 Years	7 (58.3%)	3 (25%)	2 (16.7%)	12 (1.9%)	0.009
	25 - 34 Years	52 (40%)	51 (39.2%)	27 (20.8%)	130 (20.2%)	
	35 - 44 Years	87 (31.3%)	115 (41.4%)	76 (27.3%)	278 (43.2%)	
	45 - 54 Years	41 (22.5%)	76 (41.8%)	65 (35.7%)	182 (28.3%)	
	> 54 Years	9 (21.4%)	21 (50%)	12 (28.6%)	42 (6.5%)	
Work Place	CSSD	16 (41%)	13 (33.3%)	10 (25.6%)	39 (6.1%)	0.011
	Oncology	17 (22.7%)	27 (36%)	31 (41.3%)	75 (11.6%)	
	Mortuary	3 (37.5%)	4 (50%)	1 (12.5%)	8 (1.2%)	
	Environmental Health	43 (27.6%)	70 (44.9%)	43 (27.6%)	156 (24.2%)	
	Laundry	14 (17.9%)	38 (48.7%)	26 (33.3%)	78(12.1%)	
	Food Hygiene	26 (32.1%)	27 (33.3%)	28 (34.6%)	81 (12.6%)	
	Psychiatry	77 (37.2%)	87 (42%)	43 (20.8%)	207 (32.1%)	

The prevalence of under/normal weight in females 117 (29.9%) was slightly higher than males 79 (31.2%). The prevalence of overweight in males 172 (44%) was higher than in females 94 (37.2%). The prevalence of obesity in females 102 (26.1%) was higher than in males 80 (31.6%), see table 3.

The prevalence of under/normal weight in non-Bahrainis was higher than Bahrainis. One hundred ninety (40.8%) Bahrainis and 76 (42.7%) non-Bahrainis were under/normal weight. The prevalence of overweight and obese Bahrainis were higher than non-Bahrainis, 157 (33.7%) Bahrainis and 25 (14%) non-Bahrainis were overweight. The difference is statistically significant.

BMI increases with age. HCWs younger than 25 years had higher prevalence of under/normal weight than overweight and obese. The prevalence of under/normal weight was slightly higher than overweight in 25-34 years. Overweight was higher than under/normal weight in 35-44 years. Overweight and obese were higher than under/normal weight in 45-54 years. Overweight and obese were higher than under/normal weight in more than 54 years. The difference is statistically significant, see table 3.

Sixteen (41%) CSSD HCWs were under/normal weight. This is the highest prevalence compared to other work place. Laundry HCWs had the lowest prevalence under/normal weight, 14 (17.9%). Laundry HCWs had the highest prevalence of overweight 38 (48.7%), followed by Environmental Health 70 (44.9%) and psychiatry 87 (42%). Oncology had the highest prevalence of obesity (41.3%) and mortuary had the lowest prevalence of obesity 14 (12.5%). The difference is statistically significant, see table 3.

DISCUSSION

The study revealed that about 70% of HCWs were overweight or obese. In similar studies, the prevalence of obesity was reported to be as high as 73.5% in South Africa and about 82% in Mexico^{31,32}.

BMI was not associated with gender. In the current study, 70.1% of the investigated males and 68.2% females were overweight or obese. These figures are comparable to the findings in a population study³⁰.

In this study, the BMI was found to be significantly associated with nationality, age and work place. Several studies have shown that aging is directly related to obesity³⁵⁻³⁷.

This study underlines the serious burden of obesity among HCWs. HCWs are expected to be better educated, especially in health-related issues, and to give advice and act as role models to their patients by following a healthy lifestyle, promoting health, preventing diseases and illnesses; yet they still had a very high prevalence of obesity.

The workplace has been identified as an ideal place to target adults at risk for obesity and other chronic conditions related to lifestyle behavior because most people spend more than half of their waking time at work³⁸.

Workplace health promotion programs increase employees' knowledge about healthy eating, increasing physical activity and managing healthy weight^{39,40}. Preventing or treating overweight and obesity may also reduce health risks associated with obesity and improve the quality of life for employees.

Finally, the main limitations when interpreting these findings have to be addressed. First, although large, this sample is not representative of all HCWs. However, the sample remains informative about the BMI distribution and its associations. Second, the reliability and validity of the measurements have to be considered. Although standardization of instruments and procedures is a primary goal in the occupational health service, systematic errors are unavoidable when measurements are made by two observers, which might impair the external validity of the findings.

CONCLUSION

The findings of this study show that there is a high prevalence of obesity among healthcare workers in the Ministry of Health, Bahrain. There is a need for prevention strategy aiming

at a downward shift in the BMI distribution. This implies the issuance of workplace health promotion policies at the Ministry of Health level.

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