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Examining the Relationship between the Health Literacy Level of the Kermanshah Medical University Staff and their BMI in 2015

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ABSTRACT

Obesity is considered as one of the global health challenges, which is increasing at an alarming rate in the 21st century. Identifying factors which affect obesity and determining the exact amount of the impact of each of these factors, including health literacy level, can play a significant role in preventing and reducing obesity. This study, therefore, aimed to identify these factors and to determine their role in preventing and reducing obesity. This cross-sectional descriptive analytical study was conducted in the year 2015 on 204 members of the Kermanshah Medical University staff. The sampling procedure was proportional stratified sampling. To collect the data, Test of Functional Health Literacy in Adults (TOFHLA) questionnaire and demographic information checklist were used. The weight and height of the staff were measured using digital electronic scale and measuring tape. The collected data were analyzed using the SPSS software, version 19. The chances of being obese, recorded as 10.2 (2.9–37.1), increased with age. A significant relationship was also found between the marital status of the staff and their chances of being overweight and obese. The chance of being obese in married staff was 2.5 (1.3–4.8). The average health literacy level in women (83.7 ± 9.6) was more than that of the men (80.6 ± 11.1) (P < 0.01). A significant relationship was also found between health literacy and the chances of being overweight and obese. The chances of being obese were less in people with good health literacy level (more than 74), that is 0.4 (0.1–0.8), compared with those who had low or weak literacy level (less than 74). Increasing the health literacy level of the staff had a significant impact on the reduction of weight and obesity. Hence, it seems necessary to focus on the health literacy, in order to prevent and decrease the weight and obesity.

Introduction

Obesity refers to the increase in the amount of body fat or mass with respect to height, which results in the increase in the incidence of diseases in an individual (1). The most common method for defining obesity is the Body Mass Index (BMI,) which is weight (kg) divided by the height squared (cm). The World Health Organization (WHO) has defined obesity as BMI ≥ 30 (2). The significant increase in obesity has made it one of the most important worldwide health challenges (3). Finkelstein et al reported that compared with people with a normal weight, the obese people incur 46% higher hospitalization costs, of which 27% is due to referring the physicians and outpatient care and 80% are medication costs (4). Changes in the food patterns and reduction in the physical activity results in changes in the body composition, which in turn leads to the concentration of the fat associated with age and consequently, increase in obesity and chronic diseases such as cardio-vascular diseases and cancer (5). This is more prevalent in the office staff that performs their duty while sitting continuously for hours.

Nowadays, it has been proven that better adjustment with the environment requires a balance in the physical fitness and body composition and individuals will not be able to enjoy an appropriate psychological balance if they lack healthy status and body composition. Therefore, having high health, sanitary, and physical ability indices are indicative of the health and empowerment of a society (6).The study by Pasdar et al indicated that having high percentage of body fat and higher BMI may be related to lower physical fitness and quality of life in the staff (7). The international findings and knowledge indicate that factors such as economic development, promoting the education level and literacy, as well as improving the social services will have a positive impact on the health and societal welfare of the individuals in the society (8). Taking into account the above mentioned factors, we can conclude that one of the factors affecting the prevention and control of obesity is adequate awareness of factors leading to obesity and the associative preventing strategies. Meanwhile, one of the most important factors in raising people's awareness and thus more effective control and prevention of obesity, is health literacy. Health literacy includes the capacity to acquire, process, and understand the basic information and the necessary services in order to make appropriate decisions regarding health issues (9). Health literacy encompasses a series of skills such as reading, listening, analysis, decision making, and the ability to apply these skills in the health-related situations, whereas, it does not refer to the schooling and the general reading ability (10). Health literacy has different aspects based on which Nutbeam has introduced a specific and tangible framework for the concept. This framework consists of three levels namely functional, interactive, and critical levels (11). Functional health literacy is, in fact, the most basic level and includes reading and writing skills, allowing the individuals to have an effective function in everyday situations (12). Interactive health literacy refers to advanced skills that help the individual derive information and their associated meanings from a variety of interactive channels and use them practically to change the conditions. Critical health literacy refers to more advanced skills that are used to analyze the

information and apply them in order to exert more control over the events and life conditions (13). At present, health literacy is one of the global challenges of the 21st century (14). According to the WHO, health literacy has a central role in determining the health imbalances in both developed and developing countries (15). Based on the American health promotion strategies, the individuals with low health literacy are less likely to perceive and use the spoken and written information that is presented by the health experts and do not have an optimal health condition. They are hospitalized or referred to the physicians more often, are less effective in self-care skills, have less preventive care abilities, and therefore incur more treatment costs (16-21). Tehrani Banihashemi et al investigated the health literacy in 5 provinces including Kermanshah, Tehran, Booshehr, Mazandaran, and Ghazvin, and showed that 56.6% of the people had inadequate health literacy, 15.3 % had marginal health literacy, and 28.1 % had sufficient health literacy. Overall, the health literacy level in Iran is low (22). Nekoei-Moghadam et al reported that health literacy was low in Kerman (23). The highest level of health literacy was found in the university students, followed by the staff, and the lowest level was in the retired individuals and then the workers. The results of the studies indicated that married people have lower level of health literacy as compared to the unmarried individuals (24). Low health literacy is more prevalent in the elderly, immigrants, illiterate people, people with low incomes, psychologically less healthy individuals, and those with chronic diseases such as Type 2 diabetes and blood pressure (25). Given the above mentioned facts, focusing on the health of the staff, especially, in terms of obesity, is a necessity as little research has been conducted on obesity and its associated factors including health literacy. The current study was, therefore, conducted to investigate the relationship between the health literacy level and the BMI of the Kermanshah Medical University of Sciences staff in 2015.

Materials and Methods

This descriptive-analytical cross- sectional study was carried out in 2015, by recruiting 250 of the Kermanshah Medical University of Sciences

staff. The population included all of the Kermanshah Medical University of Sciences staff that was sampled using the proportional stratified sampling procedure from four sectors of the university. The condition for entry was one year work experience of the staff. The staff was primarily informed about the project, its purpose, and the confidentiality of the information, and finally those that had volunteered to take part in the study were selected. To collect data, The Persian version of Test of Functional Health Literacy in Adult (TOFHLA), which is one of the most valid and most important tests of health literacy all over the world, was used. The reliability of the test was calculated using the test-retest coefficient that was estimated to be 0.99. The health literacy test included sections on reading and numerical ability. In the reading section, the individual's ability to read the authentic texts related to the health care issues was tested. This section included three reading passages on instructions to get prepared for taking pharyngoesophagoscopy, the rights and the responsibilities of the patient in the insurance form section, and a standard hospital consent including 50 multiple-choice questions. In the numerical ability section, there were explanations about drugs, visit time, receiving financial help, and an example of the blood sugar result. This section consisted of 17 questions. The 50 questions of the reading section each had 1 score (50 scores overall) and the scores of the 17 questions of the numerical ability section was transformed to 50 through multiplying the score of each question by 2.941. The overall score of the questionnaire was 100. Considering the cut-off points of 59 and 74, the health literacy of the individuals was at three different levels of inadequate (0-59), marginal (60-74), and adequate (75-100), where the instrument designers offered these cut-off points for categorization of the information. The demographic information of the participants included information on age, weight, height, education level, income, number of children, previous obesity, and genetic diseases in the immediate family members, the amount of time spent on computer, physical exercise, and the leisure activities. Each participant's weight was measured using a digital scale while the participant had minimal clothing and had no shoes on. Measuring tape was used to measure the height of the participants without their shoes on. BMI was calculated by dividing the weight of the person in kilograms by his/her heights squared. To determine being overweight and obese, the WHO's BMI standard was used. In addition to descriptive statistics including mean, standard deviation, frequency, ANOVA, t-Test, and Chi square were also used. The data were analyzed using the SPSS software version 18.

Results

From a total of 204 participants, 83 (40.7%) were male and 121 (59.3%) were female with the average age range of 38.1 ± 8.7. This average age range in men was 40.6 ± 9.1 and 36.1 ± 8.7 in women, meaning that there was a statistically significant difference between the participants' age ($P < 0.001$). The prevalence of obesity was greater in men as compared to women since only 7 women (5.8%) had a BMI ≥ 30 whereas this was found in 13 of the men (15.6%). However, this did not appear to be significant after taking into account the age at which obesity occurred in men and women. The average health literacy level in women (83.7 ± 9.6) was greater than that of the men (80.6 ± 11.1) ($P < 0.01$). Overall, 8 participants, that is 3.92% (6 men and 2 women) had health literacy of less than 59 (weak), while 31 (15 men and 16 women) had average health literacy, and the rest had good health literacy. Age was the most crucial factor in determining overweight in the participants in such a way that the chance of being overweight in the participants above 50 years of age was 10.2 (2.9–37.1), which was more compared with those below 29 years old. A significant relationship was found between the marital status and the chances of being overweight since it was 2.5 (1.3–4.8), and more in the married participants as compared to the unmarried ones. A significant relationship was also found between health literacy level and the chances of being overweight and obese, since in participants with good health literacy (more than

74) it was 0.4 (0.1–0.8), which was less than that in the participants with low or marginal health literacy (less than 74). With increase in education level, the prevalence of obesity decreased; however this relationship was not found to be significant.

Table 1. The statistical relationship between demographic variables and health literacy level with BMI scores

Variables		BMI			P value
		<24	25-29.9	30≤	
Gender	male	23	47	13	0.004
	female	58	56	7	
Age range	<29	35	12	0	0.001
	30-39	22	48	4	
	40-49	20	34	11	
	>50	4	9	5	
Marital status	single	33	25	1	0.002
	married	48	78	19	
Education level	diploma	8	16	3	0.006
	Associate degree	6	17	6	
	bachelor	58	56	5	
	Above bachelor	9	14	6	
Health literacy level	<59	2	4	2	0.1
	60-74	7	21	3	
	>74	72	78	15	

Discussion and conclusions

The results of this study showed that there was no significant difference between the prevalence of obesity in men and women after taking age into account, whereas previous studies had concluded that the chances of being obese were higher in women than in men (26–28). BMI and high fat concentration was directly related to the age of the staff. Additionally, since the staff often sits for long durations, and consequently has less physical activity, the increase in weight becomes more evident as their age increases, which is consistent with the results of the study by Shield et al. A significant relationship was found between obesity and the marital status of the individuals. The results of this study indicated that it was less likely for the unmarried participants to become obese as compared to the married ones. This could be due to changes in the married person's diet and lesser involvement in physical activities after getting married. Furthermore, the unmarried people try to control their weight and keep fit in order to attract their opposite sex, which is less of an inclination after getting married. This finding was in line with the findings of Serahati et al (29). The results of the studies conducted in the developed countries illustrated that the obesity rate decreases with the increase in education level, which is consistent with the results of this study (29–30). The findings also indicated that women had a higher health literacy level, which is similar to those reported by Arozulla and Lee, and contradictory to those reported by Kleindl and Lindstrom, Cho, and Crittenden. The reason for this inconsistency could be the higher education level of the women participants in this study (31–32). As the results indicated, there was a significant relationship between health literacy and the participants' chances of being overweight and obese and vice versa. This finding is in accordance with Janet and Roop's studies (33–34).

Limitations

One of the limitations of the present study was recruiting the Medical University staff that had more health related information as compared to the average population of staff, which makes the findings difficult to generalize to the staff members in various other kinds of workplaces. Therefore, researchers are recommended to use samples that represent the overall population of the staff in the future studies. The second limitation is related to the measurement of health literacy through employing instruments such as the questionnaire used in this study, which was more focused on the reading and numerical abilities of the participants. Whereas, these are only one part of the basic health literacy and other skills such as speaking, listening, sufficient background knowledge, and the ability to seek assistance from the health system are also important. It is also possible that the staff was not cooperative due to having lots of referents; therefore, it is advisable to seek their help in completion of the questionnaire depending upon their availability of time.

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