

## Attitudes and Beliefs of Nurses about Excessive Body Weight and Obesity

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**Abstract:** Obesity is considered as one of the most serious public health challenges of the early 21st century. Recent studies including doctors, nurses and psychologists, demonstrated that health care professionals had common social biases regarding obese individuals. So, the present research aimed Attitudes and beliefs of nurses about excessive body weight and obesity. This study, was a Descriptive-cross-sectional survey conducted from July 2014 to October 2014. Eighty nurses in the service of Kermanshah University of Medical University, responded to the survey. The survey tool was a self-reported questionnaire. Two questionnaire used for data collection were adopted as a research tool by the Yale in 2013 University's Rudd Center for Food Policy. Respondents were allowed 1 hour to complete the questionnaires anonymously without interruption at their hospital workplace data was analyzed using descriptive statistics, chi-square test and t-test analysis by SPSS-11 software. This study, did not identify any significant difference based on age, gender, and work experience of respondents and their attitudes toward and beliefs about obese people. Analysis did not identify any significant differences in attitudes or beliefs about obese people and the age of the nurses. However, there was an identified, significant difference in positive attitude towards and beliefs about obese people by over-weight than underweight or normal weight nurses. Attitudes and beliefs need to be assessed, brought up and discussed in the work groups. Managers and primary care personnel need to jointly discuss measures to initiate and improve prevention and management of obesity, including organizational factors that might facilitate such improvements.

**Key words:** Excessive body, besity, nurses, descriptive-cross-sectional, data collection

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### INTRODUCTION

"Overweight" and "obesity" are terms used to describe and categorize excess weight above what is considered normal for an individual's height. Typically, overweight and obesity are defined and categorized using the Body Mass Index (BMI) scale which takes into account an individual's height and weight. The formula used to calculate BMI is  $\text{weight [kg]} / \text{height [m]}^2$  and the resulting number is related to the amount of body fat. An individual's BMI and amount of body fat can be directly related to other comorbidities. Overweight is defined as a BMI of 25 to 29.9  $\text{kg/m}^2$  and obesity is defined as a BMI of 30  $\text{kg/m}^2$  or higher.

Over the past three decades the prevalence of overweight and obesity has increased substantially. Due to the rapid increases in obesity prevalence and the serious public health consequences, obesity is commonly considered as one of the most serious public health challenges of the early 21st century (Whitney and Rolfes, 2008). Worldwide obesity has nearly doubled, since 1980.

In 2008, >1.4 billion adults, 20 and older, were overweight. Of these over 200 million men and nearly 300 million women were obese.

Similar to most developing countries, obesity prevalence has increased in Iran which is a major element of the epidemiological transition. Among urban Iranian people between the ages of 15-39 and 40-69, the prevalence of overweight was estimated to be 22 and 40%, respectively. Among rural areas, it was 16 and 26%, respectively (Rashidi *et al.*, 2005). One study in Tehran revealed the prevalence of central obesity up to 93 in women and 74.1% in men (Azadbakht *et al.*, 2005). The Iranian population comprises several ethnicities with quite different lifestyles and cultures which might lead to variations in the prevalence of obesity.

Obesity has social, psychological and emotional consequences besides negative physical and economic consequences. There is evidence of stigmatization of obese people in multiple domains (Puhl and Brownell, 2001).

identifying misconceptions and indefensibility of many common beliefs regarding weight is not as simple. Yet many healthcare workers and educators are unaware of their own attitudes and beliefs toward obesity. They do not realize the negative effect of their behavior against those seeking their help.

Recent studies including doctors, nurses and psychologists, demonstrated that Health Care Professionals (HCPs) had common social biases regarding obese individuals (Maiman *et al.*, 1979; Price *et al.*, 1986a, b). Biased attitudes of HCPs towards obesity can produce stigma and discrimination and impact both the medical and psychological health of patients. Evidence suggests that obese patients, although frequently seeking care for illnesses and injuries, are more likely to delay preventive health services such as routine gynecological examinations and mammograms compared to their normal weight counterparts (Fontaine *et al.*, 1998; Ostbye *et al.*, 2005).

Also, multiple studies have substantiated the existence of bias against the obese by health care practitioners. Reto (2003) identified that students who involved in nursing master educational programs, who cared for obese patients, repulsed the patients and preferred not to touch them. Older nurses exhibited less favorable attitudes toward obese patients than younger nurses. A wide range of negative beliefs and attitudes toward obesity and obese patients was documented in a study (Brown *et al.*, 2007). The researchers discovered that obese patients were evaluated more negatively than patients of normal weight and there was strong evidence to suggest discriminatory practices by doctors towards their overweight female patients.

Several other studies support this notion, since they show that doctors and nurses perceive obese patients as having low motivation, lacking willpower, being unwilling to change lifestyle (Brown, 2006; Mercer, and Tessier, 2001) and being non-compliant to advice (Hoppe and Ogden, 1997).

Bias regarding patients' weight in the health care setting is not limited to verbal comments; nonverbal behaviors are common and include facial expressions and inappropriate gestures. Overweight and obese patients can also be indirectly affected by factors such as not having access to adequate medical equipment to accommodate their needs such as patient gowns, scales, and blood pressure cuffs (Phul, 2009; Puhl and Brownell, 2001).

Considering the above mentioned facts and that nurses are on the front line of encounter between health care personnel and patients with obesity or other

lifestyle-related diseases, the aim of the current study was to describe the attitudes and beliefs of nurses about overweight and obesity in both male and female patients. To the best of our knowledge, this study is done for the first time in Iran.

These injustices can be reduced through the elimination of bias and discrimination in the health care arena. Awareness of attitudes and beliefs about obese people is the first step toward changing negative behavior toward obese patients and may also result in changes to participants' personal attitudes and beliefs. By improving self-awareness of personal bias and taking actions to reduce obesity bias, nurses can play a crucial role in providing optimal care to overweight and obese patients.

## **MATERIALS AND METHODS**

**Study setting and sample size:** This study was a cross-sectional survey conducted from July 2014 to October 2014. Descriptive research design was used to assess the nurses' attitudes towards and beliefs about overweight and obesity. Eighty nurses in the service of Kermanshah University of Medical University, Kermanshah, Iran responded to the survey. This population encompassed established nurses within the academic arena.

**Survey tool:** The survey tool was a self-reported questionnaire. Two questionnaire used for data collection were adopted as a research tool by the Yale University's Rudd Center for Food Policy and Obesity and consisted of two parts. To ensure reliability, validity, and the localization of the questionnaires, first, those were translated and modified by the researchers. Then the questionnaires were approved by four of the faculty of Psychology and Educational Sciences. The questionnaires were in simple Persian language. The first part comprised of nine items that explored the demographics of participants answered regarding to demographics such as age, gender, work experience, marital status, participants' self-reported height and weight which was used to calculate BMI and two questions about being or having been obese and knowing someone who is obese. These two questions were answered with "Yes" or "No". The second part consisted of three domains. The first domain assessed the respondent's Attitudes Toward overweight individuals. These attitudes were measured using the ATOP scale. The scale was composed of 20 items, including "Obese people should not expect to lead normal lives" and "Obese people are just as self-confident as other people" (reverse coded). The measurement was based on a scale ranging from 1 (strongly disagree) to 6

(strongly agree). This scale focuses on perceptions and attitudes about obese people. Higher scores reflected more positive attitudes toward obese people. Cronbach's alpha was 0.83. The second domain assessed the Beliefs about Obese People (BAOP). The BAOP scale consists of 8 items (6-point Likert Scale) to measure explicit beliefs regarding obesity. Each question of the BAOP questionnaire asks the respondents to indicate the extent of agreement or disagreement (+3 to -3) to a specific statement, such as "obesity is really caused by a lack of willpower." The higher numbers indicate a stronger belief that obesity is not under the obese person's control (Allison *et al.*, 1991).

And finally an open-ended question was included in the questionnaire: "When you first enter your patient's room and realize that your patient is obese, you think". This question allowed for additional revelation of attitudes and beliefs from the participants. The survey tool was piloted and validated with 20 randomly chosen nurses were made post piloting mainly to facilitate better comprehension before distribution.

**Data collection:** Data collection was done by the research team in the university-affiliated hospitals. The nurses in this university were briefed on the objectives of the survey and participation was voluntary. Informed consent was taken from the respondents before distribution of the survey tool. Respondents were allowed 1 hour to complete the questionnaires anonymously without interruption at their hospital workplace.

**Ethical considerations:** The study protocol was approved by our university Ethics Committee.

**Statistical analysis:** Data was presented in mean or percentage where appropriate. Descriptive statistics were obtained for different quantitative variables. Demographic data were evaluated using the chi-square test. The independent Student's t-test was used to compare the mean scores of nurses. Statistical significance was set at  $p < 0.05$ . All statistical analyses were done using the Statistical Package for Social Sciences (SPSS) for Windows (Ver. 11.0).

## RESULTS AND DISCUSSION

**Demographic characteristics:** The demographic characteristics of the nurses are shown in Table 1. The mean (SD) age of the respondents was 36.24 ( $\pm 7.49$ ) years. All BMI scores were classified as either underweight = 18.5, normal (18.5-24.9), overweight (25.0- 29.9) and obese = 30.0). Of the total sample, 30 of 80 (37.5%) were found to be overweight and 15 subjects (18.8%) were found to be obese; 30% of the respondents was single. The mean (SD) work

Table 1: Characteristics of Study Population

| Characteristic                | n** (%)    | Mean SD           |
|-------------------------------|------------|-------------------|
| Age                           |            | 36.24 $\pm$ 7.499 |
| <b>Body mass index (BMI)</b>  |            |                   |
| Underweight= <18.5            | 1(1.2%)    | 25.64 $\pm$ 3.904 |
| Normal weight = 18.5-24.9 BMI | 34 (42.5%) |                   |
| Overweight = 25-29.9 BMI      | 30 (37.5%) |                   |
| Obese = BMI of 30 or greater  | 15 (18.8%) |                   |
| <b>Work experience</b>        |            | 12.29 $\pm$ 7.16  |
| <b>Gender</b>                 |            |                   |
| Male                          | 18(22.5%)  |                   |
| Female                        | 62(77.5%)  |                   |
| <b>Marital status</b>         |            |                   |
| Single                        | 24(30%)    |                   |
| Married                       | 56(70%)    |                   |

experience duration of the respondents was 12.29 ( $\pm 7.16$ ) years. The female to male ratio was nearly 2:1. The response to the question "In your opinion, are you currently, or have you ever been obese?" 39 participants answered "Yes" and 41 answered "No". The response to the question "In your opinion, do you have a close friend or family member who is obese?" 66 respondents answered "Yes" and 14 answered "No".

**Nurses' attitudes towards and beliefs about overweight and obesity:** Details regarding attitudes towards and beliefs about overweight and obesity received by the nurses are shown separately in Tables 2 and 3. This study did not identify any significant difference based on age, gender and work experience of respondents and their attitudes toward and beliefs about obese people. Analysis did not identify any significant differences in attitudes or beliefs about obese people and the age of the nurses. There was, however, an identified, significant difference in positive attitude towards and beliefs about obese people by over-weight than underweight or normal weight nurses.

**Demography:** The gender distribution of the nurses in our study accurately mirrored the situation in most medical universities in Iran namely, the larger population of female nurses compared to males. There was not a difference in attitudes and beliefs about obese people based on gender of respondents and their attitudes toward and beliefs about obese people. This means that the Iranian society especially in terms of gender, there is no bias towards obese people. Whereas, a former study (Garner and Nicol, 1998) reported that both male and female nurses hold biases against obese patients equally and it has been suggested that negative feelings held by medical professionals develop from values held by the general public and not from their training.

In our study, no scores were impacted by the respondent being younger or older. In this case, different studies have shown different results. For example, result

Table 2: Nurses' Attitudes Toward Obese Persons (ATOP)

| Item                                                                 | Strongly disagree |      | Moderately disagree |      | Slightly disagree |      | Slightly agree |      | Moderately agree |      | Strongly agree |      |
|----------------------------------------------------------------------|-------------------|------|---------------------|------|-------------------|------|----------------|------|------------------|------|----------------|------|
|                                                                      | Fre               | %    | Fre                 | %    | Fre               | %    | Fre            | %    | Fre              | %    | Fre            | %    |
| Obese people are as happy as non-obese people                        | 2                 | 2.5  | 1                   | 1.2  | 10                | 12.5 | 24             | 30   | 22               | 27.5 | 21             | 26.2 |
| Most obese people feel that they are not as good as other people     | 2                 | 2.5  | 4                   | 5    | 30                | 37.5 | 24             | 30   | 13               | 16.2 | 7              | 8.8  |
| Most obese people are more self-conscious than other people          | 3                 | 3.8  | 5                   | 6.2  | 37                | 46.2 | 13             | 16.2 | 15               | 19.8 | 7              | 8.8  |
| Obese workers cannot be as successful as other workers               | 10                | 12.5 | 6                   | 7.5  | 41                | 51.2 | 13             | 16.2 | 9                | 11.2 | 1              | 1.2  |
| Most non obese people would not want to marry anyone who is obese    | 3                 | 3.8  | 3                   | 3.8  | 24                | 30   | 27             | 33.8 | 16               | 20   | 7              | 8.8  |
| Severely obese people are usually untidy                             | 7                 | 8.8  | 3                   | 3.8  | 29                | 36.2 | 18             | 22.5 | 14               | 17.5 | 9              | 11.2 |
| Obese people are usually sociable                                    | 1                 | 1.2  | 1                   | 1.2  | 11                | 13.8 | 23             | 28.8 | 28               | 35   | 16             | 20   |
| Most obese people are not dissatisfied with themselves               | 1                 | 1.2  | 5                   | 6.2  | 17                | 21.2 | 30             | 37.5 | 16               | 20   | 11             | 13.8 |
| Obese people are just as self-confident as other people              | 2                 | 2.5  | 3                   | 3.8  | 23                | 28.8 | 37             | 46.2 | 10               | 12.5 | 5              | 6.2  |
| Most people feel uncomfortable when they associate with obese people | 10                | 12.5 | 9                   | 11.2 | 40                | 50   | 14             | 17.5 | 4                | 5    | 3              | 3.8  |
| Obese people are often less aggressive than nonobese people          | 2                 | 2.5  | 3                   | 3.8  | 19                | 23.8 | 23             | 28.8 | 20               | 25   | 13             | 16.2 |
| Most obese people have different personalities than non-obese people | 5                 | 6.2  | 8                   | 10   | 44                | 45   | 11             | 13.8 | 8                | 10   | 4              | 5    |
| Very few obese people are ashamed of their weight                    | 2                 | 2.5  | 12                  | 15   | 15                | 18.8 | 34             | 42.5 | 12               | 15   | 5              | 6.2  |
| Most obese people resent normal weight people                        | 1                 | 1.2  | 4                   | 5    | 21                | 26.2 | 23             | 28.8 | 16               | 20   | 15             | 18.8 |
| Obese people are more emotional than non-obese people                | 1                 | 1.2  | 1                   | 1.2  | 10                | 12.5 | 29             | 36.2 | 15               | 18.8 | 24             | 30   |
| Obese people should not expect to lead normal lives                  | 9                 | 11.2 | 6                   | 7.5  | 37                | 46.2 | 17             | 21.2 | 8                | 10   | 3              | 3.8  |
| Obese people are just as healthy as non-obese people                 | 7                 | 8.8  | 12                  | 15   | 30                | 37.5 | 23             | 28.8 | 4                | 5    | 4              | 5    |

Table 2: Countinue

| Item                                                                                   | Strongly disagree |     | Moderately disagree |      | Slightly disagree |      | Slightly agree |      | Moderately agree |      | Strongly agree |      |
|----------------------------------------------------------------------------------------|-------------------|-----|---------------------|------|-------------------|------|----------------|------|------------------|------|----------------|------|
|                                                                                        | Fre               | %   | Fre                 | %    | Fre               | %    | Fre            | %    | Fre              | %    | Fre            | %    |
| Obese people are as happy as non-obese people                                          | 2                 | 2.5 | 1                   | 1.2  | 10                | 12.5 | 24             | 30   | 22               | 27.5 | 21             | 26.2 |
| Obese people are just as sexually attractive as nonobese people                        | 3                 | 3.8 | 10                  | 12.5 | 30                | 37.5 | 24             | 30   | 10               | 12.5 | 3              | 30.8 |
| Obese people tend to have family problems                                              | 8                 | 10  | 11                  | 13.8 | 35                | 43.8 | 17             | 21.2 | 7                | 8.8  | 2              | 2.5  |
| One of the worst things that could happen to a person would be for him to become obese | 8                 | 10  | 14                  | 17.5 | 18                | 22.5 | 18             | 22.5 | 14               | 17.5 | 8              | 10   |

Table 3: Nurses' Beliefs About Obese Persons (BAOP)

| Item                                                                                                       | Strongly disagree |      | Moderately disagree |      | Slightly disagree |      | Slightly agree |      | Moderately agree |      | Strongly agree |      |
|------------------------------------------------------------------------------------------------------------|-------------------|------|---------------------|------|-------------------|------|----------------|------|------------------|------|----------------|------|
|                                                                                                            | Fre               | %    | Fre                 | %    | Fre               | %    | Fre            | %    | Fre              | %    | Fre            | %    |
| Obesity often occurs when eating is used as a form of compensation for lack of love or attention           | 2                 | 2.5  | 5                   | 6.2  | 15                | 18.8 | 36             | 45   | 12               | 15   | 10             | 12.5 |
| In many cases, obesity is the result of a biological disorder                                              | 2                 | 2.5  | 3                   | 3.8  | 16                | 20   | 35             | 43   | 19               | 23.8 | 5              | 6.2  |
| Obesity is usually caused by overeating                                                                    | 15                | 18.8 | 28                  | 35   | 27                | 33.8 | 6              | 7.5  | 2                | 2.5  | 2              | 2.5  |
| Most obese people cause their problem by not getting enough exercise                                       | 16                | 20   | 26                  | 32.5 | 28                | 35   | 8              | 10   | 1                | 1.2  | 1              | 1.2  |
| Most obese people eat more than non-obese people                                                           | 26                | 32.5 | 29                  | 36.2 | 21                | 26.2 | 3              | 3.8  | 1                | 1.2  | 0              | 0    |
| The majority of obese people have poor eating habits that lead to their obesity                            | 28                | 35   | 32                  | 40   | 14                | 17.5 | 4              | 5    | 2                | 2.5  | 0              | 0    |
| Obesity is rarely caused by a lack of willpower                                                            | 5                 | 6.2  | 4                   | 5    | 18                | 22.5 | 30             | 37.5 | 21               | 26.2 | 2              | 2.5  |
| People can be addicted to food, just as others are addicted to drugs and these people usually become obese | 17                | 21.2 | 18                  | 22.5 | 33                | 41.2 | 11             | 13.8 | 1                | 1.2  | 0              | 0    |

of the Reto study. Reto (2003) identified those older nurses had less favorable attitudes toward obese patients than younger nurses. Also, in another study, Schwartz, Schwartz *et al.* (2003) showed that older persons had greater bias towards obesity compared to younger persons. In the current study, further questions investigated whether there was a difference in attitudes

and beliefs about obese people based on being obese or prior obesity of the respondents. The analyzed data did not produce any significant difference in those respondents who, in their opinion did not consider themselves to be or ever have been obese. Also, There was no significant difference in attitudes and beliefs based on respondents' relationships with obese friends

or family found and scores from the ATOP questionnaire scores ( $F = .000$ ,  $df = 1$ ,  $p = 0.992$ ); (BAOP,  $F = 2.157$ ,  $df = 1$ ,  $p = 0.145$ ).

In the present study, we did find a significant association between marital status and obesity. This means that, older nurses who lived with their spouses were more likely to be obese than their unmarried counterparts. These finding is partially consistent with other research. Kaplan and coauthors found that marriage was positively associated with obesity among older adult women but not in men. In general, married women or men in Iran are more likely to be overweight than unmarried ones. In Iran, Janghorbani and co authors found that age-adjusted means of BMI for married men ( $25.0 \pm 0.03$  SE) and women ( $27.1 \pm 0.03$  SE) were significantly higher than that for single men ( $23.3 \pm 0.03$  SE) and women ( $24.3 \pm 0.07$  SE). This may be due to a decrease in activity and increase in food intake after marriage. Franz *et al.* (2007) gave two possible explanations for these findings in Syria; married people are more likely to be physically inactive, and it is also possible that marriage increases cues and opportunities for over-eating because they tend to eat together and thus reinforce each other's increased intake. However, multi-parity may be another reason for obesity among women, as a linear association was observed between parity (repeated pregnancy) and prevalence of obesity ( $p < 0.001$ ).

There was a significance relationship between the respondents who were not obese and the scores of BAOP and ATOP questionnaires. Underweight or normal weight nurses had more negative scores about their beliefs and attitudes towards obesity compared to over-weight nurses. Majority of the nurses who were over-weight had more positive beliefs about obese people compared to underweight or normal-weight nurses. This finding is consistent with other research, including in a study, individuals of a healthy weight have been found to be less tolerant of overweight people. Some research has found that those of lower BMI values have more negative attitudes about obesity, whereas other research indicates no effect of BMI on attitudes concerning obesity (Azadbakht *et al.*, 2005; Price *et al.*, 1986a, b). Overall, the practice nurses feel that obesity is more closely related to lifestyle factors rather than biological factors (Hoppe and Ogen, 1997).

Also, it is likely that individuals with obesity have made more attempts to lose weight, and also failed attempts compared to people of normal weight or with over-weight. This may entail those individuals with obesity to a greater extent than individuals without obesity perceive weight to be difficult to control and those controllability beliefs therefore explain their

attitudes towards obesity to a lesser extent than is the case among individuals with normal weight or overweight. Even though we found significant differences in attitude levels between different weight statuses groups, future studies need to connect these results to people's behaviors towards individuals with obesity. For example, educating nursing students about the difficulties for patients to achieve significant, sustainable weight loss over time may promote increased appreciation of the challenges they face. In light of considerable obstacles achieving and sustaining significant weight loss over time (Franz *et al.*, 2007), a greater understanding of the complexity of weight control and the multifaceted biological and behavioral factors that contribute to weight may serve to counter common views that a patient's inability to lose weight merely reflects lack of motivation or compliance in treatment. Such educational messages and efforts may be assisted with evidence from major medical panels like the Institutes of Medicine and National Institutes of Health, whose guidelines suggest that health providers set realistic expectations for patients to lose and maintain only modest weight losses of 10% of body weight.

These results may be roots in cultural factors. Al-Isa reported that there may be a greater social pressure in Europe to be thin, perhaps, than in the Arab Gulf countries. He found that in Kuwait there was a trend to tolerate fatness, and there were no social sanctions against adiposity. The influence of men in determining women's attitudes towards body size is another important issue in some countries in the region. In Qatar, for example, about 43% of Arab women studied believed that men preferred plump women. Also, the women's robe traditional dresses in some rural areas of Iran, including in Kurdistan, Lorestan, Azerbaijan, etc. may indirectly contribute to obesity in some provinces. This traditional long and wide dress either for women may hide the fatness of people, or consequently reduce their motivation to lose weight.

This covering makes it difficult to observe the size and shape of the female body, thereby, reducing the emphasis on these features and possibly acting a protective factor against eating disorders and body image concern. For example, as there is a cultural preference of body fatness with moon face among women of the Kurd, lore, Azeri and some other ethnic groups. The majority of these women describe their body as appropriate and socially acceptable, despite the prevalence of overweight and obesity among them. This may indicate that still have traditionally strong positive cultural views of large body sizes.

The high prevalence of obesity among these ethnic group explained by the combination of urbanization and

cultural preferences of body fatness as they considered fatness is a beauty criterion. It is believed that the preference for plumpness women in some regions in the Iran is due to sexual attraction, rather than any other factors. Also, Iranian women in Tehran and other large cities have no problem doing sports activities. But, in some cities, especially in rural areas of the country are facing more barriers to physical activity than men. This is because, there aren't any recreational facilities and places for women that restricted and inhibited their leisure, including participating in sport activities. These results may be explained by differences in physical activity or caloric intake. Iranian women may have less physical activity than men because of limited outdoor activities due to specific climatic and/or social conditions. However, such conclusions need to be studied.

### CONCLUSION

Since, our country has its own socio-demographic characteristics, further studies on sociocultural factors associated with obesity should be carried out to help in better understanding of the causes of obesity. Ethnic factors should also be considered as an area for studying in this country.

There is a need to prepare a practical manual on how to prevent and control obesity in the community, targeting health workers and other related professionals that are focuses on the measurement of obesity and how to control it using dietary, physical activity, lifestyle modification, drugs, and surgical approaches. Attitudes and beliefs need to be assessed, brought up and discussed in the work groups. Managers and primary care personnel need to jointly discuss measures to initiate and improve prevention and management of obesity, including organizational factors that might facilitate such improvements.

Overweight and obesity were found to be higher among ever married individuals than among never married persons after adjustment for other confounders, which suggests that people, particularly men, after marriage have less physical activity, change their dietary pattern, may be less focused on being attractive, or may be exposed to other environmental factors. Unfortunately, the data used here do not allow for an empirical test of these speculations. Further research would be useful to examine which factors play a role in the weight gain of married individuals in our society.

### LIMITATIONS

The sample size was relatively small and was sampled only from a university hospital. The subjects in the study

were from specific areas in a province of Iran and small sample size may have influenced the lack of significant differences found in the results. The data gathered in this study were self-reported by each participant. Therefore, the accuracy of the answers may be biased.

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