Social Determinants of Health and Attempt to Change Unhealthy Lifestyle: A Population-based Study

Abstract

Background: A healthy lifestyle is important because of its long-term benefits; however, there is a paucity of information concerning health choices among Iranians. We evaluated personal health behaviors, attempts to change unhealthy behaviors, and factors affecting attempts at change. **Methods:** The design of this cross-sectional study was to assemble a representative cadre of >18-year-old adults in Shiraz, Iran, using a multistage cluster sampling technique. Validated questionnaires collected participant's demographic information, such as weight, height, cigarette smoking history, physical activity, and attempts at lifestyle changes during the previous year. To determine predictors of attempts to change unhealthy lifestyle and to identify confounders, we applied single and multivariable logistic regression methods, respectively. A confidence interval of 95% was calculated for each odds ratio. **Results:** The prevalence of attempts to change unhealthy lifestyle was 42%, 64.8%, and 27.8%, respectively, for losing weight, being more physically active, and smoking cessation. Unemployment, low levels of education, and decreased socioeconomic status have important roles in attempts to change lifestyle conditions. Low socioeconomic status was a risk factor for quitting smoking. Occupation (unemployed/homemaker) and low level of education were two significant factors for being more physically active. **Conclusions:** The prevalence of inadequate physical activity and being overweight or obese was considerable in Shiraz, Iran. Attempts to change unhealthy lifestyle were less than ideal. Social determinants of health factors including unemployment and low levels of education and socioeconomic status play important roles in attempts to change current lifestyles.

Keywords: *Exercise, lifestyle, smoking, Social determinants of health*

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Introduction

Chronic diseases are the main causes of mortality and morbidity worldwide. Cardiovascular disease, cancer, diabetes, and chronic respiratory diseases are among the most common preventable conditions. Tobacco use, unhealthy diets, inadequate physical inactivity, and harmful use of alcohol are major preventable risk factors for noncommunicable diseases.[1,2]

Like people in many developing countries, Iranians are facing epidemiologic transition, especially concerning the increased consumption of saturated fats, decreased intake of dietary fiber, and lower levels of physical activity.[1,3,4] Demographic factors including age, gender, marital status and socioeconomic status, including family income and social support networks, are associated with health-affecting behaviors.[5,6]

Most people are aware of the negative effects of unhealthy behaviors, but often underestimate their personal risk and thus make inadequate attempts to correct their unhealthy behavior.[7,8] Changing unhealthy behaviors requires motivational interventions.[9] It has been suggested that intrinsic motivation and changing individuals' beliefs and attitudes have greater effects on fitness than do extrinsic motivational sources.[10]

Ideally, a healthy lifestyle has long-term effects; however, there is a paucity of information concerning health choices among Iranians. Therefore, we assessed study participant attempts to change their unhealthy lifestyles. Predictors of these activities and their relationship with several sociodemographic factors were also evaluated.

Methods

The design of this cross-sectional study was to assemble a representative cadre of >18-year-old adults living in Shiraz, Iran, using a multistage cluster sampling technique. Shiraz is the sixth most populated

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city (1,460,665 persons in 2011) in Iran. Considering the maximum sample size needed, the prevalence of poor health lifestyles was estimated to be 50% with a 95% confidence interval (CI). The design effect was estimated to be 2 with a 20% withdrawal rate. Therefore, the final sample size was calculated as 1000. The sample included 500 men and 500 women.

Shiraz consists of nine census tracts. We stratified our sample size to cover each tract equally. Each tract was divided into municipal regions. Finally, the municipal regions were further divided into areas containing several blocks (neighborhoods that initiated and terminated at crossroads). Several neighborhood regions were selected randomly. Then, one block was selected randomly from within the selected neighborhood. Finally, the number of dwellings to be surveyed was calculated. Only one person (man or woman) from each dwelling was selected. Data were gathered by expert interviewers during a structured interview scheme, using a validated questionnaire. Initially, 1020 people were solicited to achieve 1000 participants. Thus, the response rate was 98%.

In this study, participants had to be 18 years or older. Persons who could not verbally communicate and those with dementia or some other psychotic disorder were excluded.

The questionnaire used was designed by a panel of health behavioral experts and underwent reliability testing using Cronbach's α test on a pilot sample of 100 people ($r = 0.64$). Questionnaires were completed through face-to-face interviews during a 1-month period.

They contained several inquiries concerning demographic factors including age, gender, marital and occupational status, and educational level (≤12 years or >12 years). Living location was used as a component of socioeconomic status and was classified as being low, moderate, high, and very high.

Four questions were asked about the level of physical activity, cigarette smoking, weight, and height. Physical activity was defined as "activities leading to an elevated heart rate." Responses were divided as to "<5 times/week" or as "≥5 times/week," which was considered a healthy level of activity.[11] Participants were asked about their attempts to change their unhealthy behaviors during the last 12 months. Responses to each factor were categorized as "yes" or "no."

The vice-chancellor for Research at Shiraz University of Medical Sciences funded this project. The interviewers received training concerning specific methods for interviewing and ethical aspects of research, especially concerning the protection of personal information.

Data analyses employed SPSS Version 20 (IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM

Corp). To determine predictors of attempts to change unhealthy lifestyle and to identify confounders, we applied single and multivariable logistic regression methods, respectively. A CI of 95% was calculated for each odds ratio.

Results

The average participant age was 39.11 ± 15.3 years. Approximately 65% of participants were married, 44.6% worked in the home or were jobless, and 35.6% had a university education.

The mean ± standard deviation of body mass index (BMI, kg/m^2) was 24.20 ± 4.01. More than 40% of participants were overweight or obese. Less than 15% of participants had adequate physical activity. Approximately 9.7% of participants smoked daily [Table 1]. Among smokers, only 27.8% (27 smokers) had attempted to quit smoking during the previous 12 months. Among overweight and obese participants, 42% (160 participants) had participated in a program to lose weight during the past year. Approximately 64.8% (307) of participants who had inadequate physical activity attempted to change their level of physical activity during the past 12 months.

Table 2 summarizes the results of simple and multiple logistic regression analysis. Considering different sociodemographic variables, only socioeconomic status had a significant role in attempts to stop smoking cigarettes. Participants with low socioeconomic status were 42 times more likely to quit cigarette smoking than were participants with a very high socioeconomic status. Wide CIs revealed a small sample size because only 9.7% of participants smoked.

Simple regression analysis indicated that there was a significant association between gender, marital status, level of education and occupational status, and having a program for changing physical activity among individuals with low

Table 1: Descriptive characteristics of participants' lifestyle behaviors

Variables	Frequency (%)
BMI	
<18.5	62 (6.7)
18.5-24.9	492 (53)
25-29.9	298 (32)
30-34.9	66 (7.1)
35-39.9	9 (1)
≥40	2 (0.2)
Physical activity	
Inadequate	856 (85.6)
Adequate	144 (14.4)
Cigarette smoking	
Yes	97 (9.7)
No	903 (90.3)

BMI=Body mass index

Table 2: Predictors of attempt to change unhealthy lifestyles

Variables	OR (95% CI)					
	Cigarette cessation		Physical activity		Weight loss	
	Crude	Adjusted	Crude	Adjusted	Crude	Adjusted
Gender						
Male	0.38 (0.04-3.83)	0.43 (0.03-6.44)	1.34 (1.02-1.76)	1.02 (0.72-1.45)	0.62 (0.41-0.94)	0.57 (0.31-1.03)
Female	1	-	1	-	1	-
Marital status						
Single	2.64 (0.59-11.83)	3.68 (0.38-35.43)	2.17 (1.62-2.89)	1.03 (0.71-1.51)	0.99 (0.59-1.66)	0.95 (0.53-1.73)
Married	1	-	1	-	1	-
Education						
≤12 years	0.44 (0.11-1.79)	0.42 (0.08-2.24)	0.36 (0.27-0.48)	0.54 (0.39-0.75)	1.24 (0.78-1.97)	1.14 (0.68-1.92)
>12 years	1	-	1	-	1	-
Occupation						
Homemaker/unemployed	3.16 (0.69-14.38)	2.94 (0.54-16.37)	0.69 (0.53-0.91)	0.66 (0.46-0.95)	1.37 (0.91-2.07)	0.89 (0.49-1.62)
Employed	1	-	1	-	1	-
Living location						
Poor	10.5 (0.46-239.78)	42.44 (1.08-1656.71)	1.51 (0.81-2.86)	1.38 (0.71-2.71)	0.83 (0.32-2.15)	0.71 (0.27-1.58)
Moderate	0.87 (0.15-5.15)	1.31 (0.17-9.98)	1.09 (0.76-1.58)	1.09 (0.75-1.61)	1.01 (0.58-1.75)	1.02 (0.58-1.78)
High	1.17 (0.15-9.14)	1.92 (0.17-21.60)	1.31 (0.88-1.95)	1.32 (0.87-2.01)	1.04 (0.51-1.90)	1.09 (0.59-2.02)
Very high	1	-	1	-	1	-
Age	0.99 (0.94-1.06)	1.03 (0.96-1.11)	0.96 (0.95-0.97)	0.96 (0.95-0.98)	0.99 (0.97-1.01)	0.98 (0.97-1)

OR=Odds ratio, CI=Confidence interval

levels of physical activity. Considering the adjusted odds ratio, only occupational status and the level of education were considered risk factors for failed attempts to be more physically active. Participants with ≤12 years of education and homemaker/unemployed were 0.5 times and 0.6 times less likely to have attempted, respectively.

Gender was associated with attempts to lose weight and being overweight and/or obese; however, if adjusted odds ratio was considered, these associations were not significant.

Discussion

A sedentary lifestyle, smoking, and an unhealthy diet are associated with the onset of a number of chronic diseases. [12] Findings of this study indicate that 32% of participants were overweight with 8.3% being obese. A systematic review of Iranian adults indicated that the prevalence of being overweight and obese was 27.0%–38.5% (95% CI: 26.8–27.1 and 37.2–39.8) and 12.6%–25.9% (95% CI: 12.2–13.0 and 24.9–26.8), respectively.[13] Another study demonstrated that 11.7% and 33.3% of the adult population in Shiraz were obese and overweight, respectively.[14] The prevalence of being overweight in this study was similar to other studies, but the prevalence of obesity was lower compared to other studies. In this study, BMI was calculated according to the self-reported weight and height of participants. It seems that, according to social desirability bias or other reasons, obese participants estimated their weight lower than the actual value.

The prevalence of adequate physical activity was <15% in this study. A national survey in Iran showed that only 18.7% of the population had high physical activity.[15] Another population-based study of adults in Northern Iran indicated that 22.6% of the population had vigorous physical activity levels.[16] In this study, participants self-reported their level of physical activity. Yet, the prevalence of adequate physical activity was still low. Cost-effective population-based interventions could help solve some of these problems.

In this study, the prevalence of daily smoking was reported as 9.7%. A review article about cigarette smoking in Iran reported that the prevalence of daily smoking in different geographical areas varied from 5.9% to 50%.[17]

Forty-two percent of participants in this study attempted to lose weight during the last 12 months. This is similar to a study conducted in Australia which indicated that 46.9% of participants reported attempting weight lose.[18] In this study, <30% of smokers attempted to quit smoking and nearly 65% of inactive participants attempted to change their physical activity behavior during the last year. Two studies among Iranian and American adults indicated that 56.4%[19] and 52.4%[20] of current smokers reported that they had tried to quit smoking in the past. Education-based interventions are very important strategies to raise smoker motivation to quit smoking. The prevalence of attempting to have healthier levels of physical activity was higher than other lifestyle behaviors in this study. Due to the importance of achieving and maintaining physical activity, designing and implementing motivational education programs is necessary.

Findings of this study indicate that peoples living in low socioeconomic conditions had more attempts to

quit smoking than other participants. People of low socioeconomic status in another study reported more attempts to quit due to the price of smoking, but experienced more relapses.[21] Another study reported that low socioeconomic status individuals were less likely to quit smoking and their chances of being unsuccessful were higher.[22]

The results of this study revealed that people with low levels of education and being homemaker/jobless were less likely to try to be more physically active. Results of a prospective population-based study showed that low educated participants had low levels of physical activity during follow-up.[23] Another population-based study showed that unemployment is a risk factor for being physically inactive.[24] One systematic review concluded that employment status is a major etiologic factor for changing physical activity behavior.[25]

In this study, women had more attempts to lose their weight than men. However, considering multiple regression analysis, this association was not significant. Another study showed that age, gender, and ethnicity are associated with weight loss maintenance.[26]

This population-based study with a large sample size possibly revealed a truer overview of adult attempts to change their lifestyles.

Self-reporting of lifestyle behaviors and attempts to change behaviors was a limitation of this study. Furthermore, we evaluated a limited number of demographic variables on individual attempts and it is possible that some important risk factors were missed. Designing qualitative studies to find specific barriers and encouraging factors to have the healthier lifestyle is suggested.

Conclusions

The prevalence of inadequate physical activity, being overweight or obesity, was high in Shiraz, Iran. Attempts to change unhealthy lifestyles were less than ideal. Social determinants of health factors including unemployment, low levels of education, and lower socioeconomic status play important roles in attempts to change the current situations. Policymakers should focus on these targeted groups to better motivate them to change their unhealthy behaviors.

Conflicts of interest

There are no conflicts of interest.

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