

Association of Socioeconomic Status and Life-style Factors with Coping Strategies in Isfahan Healthy Heart Program, Iran

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Aim To investigate the association between life-style and socioeconomic factors and coping strategies in a community sample in Iran.

Method As part of a community-based study called Isfahan Healthy Heart Program, we studied 17 593 individuals older than 19 living in the central part of Iran. Demographic and socioeconomic factors (age, sex, occupation status, marital status, and educational level) and lifestyle variables (smoking status, leisure time physical activity, and psychological distress), and coping strategy were recorded. Data were analyzed by Pearson correlation and multiple linear regression.

Results Not smoking (women $\beta = -11.293$, $P < 0.001$; men $\beta = -3.418$, $P = 0.007$), having leisure time physical activity (women $\beta = 0.017$, $P = 0.046$; men $\beta = 0.005$, $P = 0.043$), and higher educational level (women $\beta = 0.344$, $P = 0.015$; men $\beta = 0.406$, $P = 0.008$) were predictors of adaptive coping strategies, while smoking (women $\beta = 11.849$, $P < 0.001$; men $\beta = 9.336$, $P < 0.001$), high stress level (women $\beta = 1.588$, $P = 0.000$; men $\beta = 1.358$, $P < 0.001$), and lower educational level (women $\beta = -0.443$, $P = 0.013$; men $\beta = -0.427$, $P = 0.013$) were predictors of maladaptive coping strategies in both sexes. Non-manual work was a positive predictor of adaptive ($\beta = 4.983$, $P < 0.001$) and negative predictor of maladaptive ($\beta = -3.355$, $P = 0.023$) coping skills in men.

Conclusion Coping strategies of the population in central Iran were highly influenced by socioeconomic status and life-style factors. Programs aimed at improving healthy life-styles and increasing the socioeconomic status could increase adaptive coping skills and decrease maladaptive ones and consequently lead to a more healthy society.

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Individuals with different demographic characteristics including sex, age, education level, and job have different ways of coping with stress (1). In 1984, Lazarus and Folkman (2) defined coping as a way of mediating the effects of stressors on the psychological and physical level. Some theories define coping as a changing process which happens in response to situation, while others consider it to be a stable trait (3).

Coping strategies can be categorized into adaptive and maladaptive ones. Adaptive coping strategies are classified as emotion-based and problem-focused coping (4). Emotion-based coping includes minimization and distraction and problem-based coping includes situation control, positive self-instructions, and social support. Maladaptive coping strategies include passive avoidance, rumination, and aggression (4). Adaptive coping strategies are associated with better psychological adjustment (5).

There are only few studies showing how environmental factors such as socioeconomic status and life-style factors may influence individuals' response to stress and its management. However, it has been shown that socioeconomic status affects coping strategies by influencing psychological well-being (6,7). Additionally, life-style factors have a direct effect on psychological distress and coping strategies (8,9).

The main purpose of the present study was to investigate the association between life-style and socioeconomic factors on coping strategies in a community sample.

METHODS

The data used in this study were collected from baseline and 4 phases of interventional area of a comprehensive integrated community-based program called Isfahan Healthy Heart Program (IHHP). Details of the methodology used for the IHHP, including sampling strategies, survey instruments, and data entry and analysis are described in detail elsewhere (10), while evaluation of IHHP has been described in detail by Sarrafzadegan et al (11) in 2006.

As part of IHHP, a baseline survey was conducted in 2001 in 2 interventional and 1 referral county. Interventional counties were Isfahan and Najafabad counties, located in the central part of Iran, and from them 1 large and 1 middle-sized town was included. The referral county was Arak county.

Multistage cluster random sampling was conducted to stratify the study population by their living area (urban vs

rural) according to the regional population distribution based on the CINDI protocol (12). The total number of participants for this study was determined according to their sex, age, and area of residence compared with the entire population. Approximately 5%-10% of households within these clusters were randomly selected for inclusion. One individual aged over 19 per household was randomly selected. Four phases of annual evaluation were performed on independent samples from 2002 to 2005.

In this study, 17593 adults aged over 19 who lived for at least 10 years in Isfahan and Najaf-Abad were surveyed. Exclusion criteria were pregnancy, mental retardation, and physical disability.

Individuals underwent a 45-minute home interview by a trained health professional. In the interview, information on demographic and socioeconomic characteristics, and lifestyle factors was recorded. Written informed consent was obtained from individuals every year, prior to participating in the studies. The study was approved by the ethics committee of the Isfahan University of Medical Sciences.

Demographic and socioeconomic factors

We recorded participants' age, sex, marital status (married vs unmarried as single, widow, and divorced), occupation status in men (manual, non-manual worker, unemployed, and retired) and in women (manual workers [due to small number of manual workers in this study, housewives were also considered as manual workers] and non-manual workers), and educational level (years of education) .

Lifestyle factors

Lifestyle factor included smoking status, leisure time physical activity, psychological distress, and coping strategies.

Smoking status. Smokers were defined as participants who reported smoking at least one cigarette per day, while others were defined as non-smokers.

Leisure time physical activity. Leisure time physical activity was assessed according to the frequency of most common leisure time physical activities of Iranian population (number of sessions per day) and average duration (hours and minutes per session). The intensity of leisure time physical activity was expressed in metabolic units (MET). One MET is equal to 3.5 mL/kg/min O₂ consumption.

Psychological distress. Psychological distress was measured by a 12-item General Health Questionnaire (GHQ-12), a well established screening tool in assessing psychological distress (13). There is evidence that the GHQ-12 is a consistent and reliable instrument for using in general population studies (14). Each item is rated on a 4-point scale (less than usual, no more than usual, fairly more than usual, or much more than usual). The system used to score the GHQ-12 questionnaires in this study was the GHQ score method (0-0-1-1 method). Using this method, a participant could score between 0 and 12 points, and a threshold score of 4 or more was used to identify a participant with high stress level.

Coping strategy. Coping strategy was assessed through responses to a multicomponent self-administered stress management questionnaire, which assesses adaptive and maladaptive cognitive and behavioral coping strategy (15). It is a 30-item inventory questionnaire that assesses the frequency of using each strategy, with answers given on a 3-item scale (never, sometimes, and often). The questionnaire assesses 10 maladaptive and 20 adaptive coping skills. Examples of maladaptive items are passive avoidance, drug abuse, sleeping more, smoking more, and examples of adaptive items are positive self-instructions, seeking social

support, situation control, humor, using relaxation methods, and referring to a consultant. Two scores are reported separately for each type of coping skills (adaptive and maladaptive skills). For the final scoring, the number of items marked often is divided by the sum of items marked often and sometimes and is expressed as the percent for adaptive and maladaptive skills separately.

Statistical analysis

Descriptive analysis of the study population was performed (ie, mean and 95% confidence interval [CI] for continuous variables and percentages for categorical variables). Pearson correlation coefficient was used to test the relation between adaptive and maladaptive coping skills and other continuous variables.

To study the effect of socioeconomic and life-style behavior on using coping skills (adaptive and maladaptive coping skills separately), multiple linear regression models were used. Coping skills were entered as dependent variables, and age, educational years, GHQ score, leisure time physical activity, year of evaluation, occupation in men (manual vs non-manual) and in women (manual worker and housewives as manual vs non-manual), marital sta-

TABLE 1. Demographic characteristics and life-style behavior of subjects

Demographic characteristics and life-style behavior	Female (n = 8943)			Male (n = 8650)		
	mean (95% confidence interval)	median (range)	%	mean (95% confidence interval)	median (range)	%
Age (y)	39.2 (39.0-39.6)	39.0 (80.0)		39.4 (39.1-39.7)	39.0 (80.0)	
Educational year (y)	6.1 (6.0-6.2)	5.0 (20.0)		7.2 (7.1-7.3)	8.0 (20.0)	
Occupation:						
manual*			87.4			60.3
non-manual			4.8			16.6
Marital status:						
married			79.1			78.9
unmarried			20.9			21.1
Leisure time physical activity (METs/d [†])	89.35 (89.19-89.57)	89.01(95.00)		109.20 (109.01-109.65)	109.00(110.00)	
Adaptive coping strategies	46.16 (45.54-46.79)	42.85(90.00)		43.84 (43.20-44.47)	40.00 (90.00)	
Maladaptive coping strategies	37.80 (37.05-38.54)	33.33 (95.00)		37.63 (36.89-38.37)	33.33 (99.00)	
GHQ Score [‡]	2.74 (2.67-2.82)	2.00(12.00)		2.29 (2.21-2.36)	1.00 (12.00)	
Stress level:						
low			68.8			72.5
high			31.2			27.5
Smoking status:						
smoker			2.4			25.8
nonsmoker			97.6			74.2

*Household and manual worker among women.

†Metabolic Equivalents/day.

‡General Health Questionnaire.

tus (married vs unmarried), and smoking status (smoker vs non-smoker) were entered as independent variables. The enter approach was selected for regression model, and for each adaptive and maladaptive coping skill a unique model was created. The presumption of linear regression model was obtained for both models.

SPSS, version 11.5 (SPSS Inc, Chicago, IL, USA) was used for analysis. Analysis was stratified by sex. A *P*-value of 0.05 or less was considered statistically significant for all analyses.

RESULTS

Sociodemographic characteristics, including age, years of education, occupation, and marital status, and life-style behaviors, including leisure time physical activity, smoking status, GHQ score, and adaptive and maladaptive coping strategies of participants are shown in Table 1. Employment status in men was as follows: 60.3% of manual workers, 16.6% of non-manual workers, and 23.1% of retired men, students, or unemployed men. Employment status in women was as follows: 2.6% of manual workers, 84.8% of housewives, 4.8% of non-manual workers, and 7.8% retired women or students.

Pearson correlation test showed that there was a negative correlation between adaptive and maladaptive cop-

ing skills in men ($r = -0.302, P < 0.001$) and women ($r = -0.308, P < 0.001$).

GHQ scores showed in both sexes a negative correlation with adaptive coping skills ($r = -0.349, P = 0.006$ in women and $r = -0.284, P = 0.015$ in men) and a positive correlation with maladaptive coping skills ($r = -0.193, P = 0.029$ in women and $r = -0.135, P = 0.015$ in men). In addition, leisure time physical activity in both sexes negatively correlated with maladaptive coping skills ($r = -0.020, P = 0.035$ in women and $r = -0.035, P = 0.045$ in men) and positively correlated with adaptive coping skills ($r = -0.091, P = 0.045$ in women and $r = -0.025, P = 0.049$ in men).

Table 2 shows standardized β weights for each predictor across the adaptive and maladaptive coping skills in both sexes. Overall, smoking status was a significant predictor, so that smokers were more probable to use maladaptive and less probable to use adaptive coping skills, and the relation was stronger in women.

Moreover, high educational level, being a non-smoker, and more leisure time physical activity were predictors of using adaptive coping skills in women, and non-manual job, higher education level, not smoking, and more leisure time physical activity were predictors of using adaptive coping skills in men. On the other hand, lower educational level, smoking, and a higher stress level in women, and manual job, lower

TABLE 2. Predictors of socioeconomic status and life-style behavior for adaptive and maladaptive coping strategies in both sexes (adjusted based on age and phases of evaluation)

Variable*	Adaptive coping strategies			Maladaptive coping strategies		
	B	S.e.	P	B	S.e.	P
Female						
Marital state (married vs unmarried)	1.087	1.324	0.412	0.956	1.522	0.530
Occupation (non manual vs manual) [†]	4.240	2.614	0.105	-0.538	3.005	0.858
Educational year (y)	0.344	0.141	0.015	-0.443	0.162	0.013
Smoking status (smoker vs nonsmoker)	-11.293	2.818	<0.001	11.849	3.240	<0.001
Stress level (high vs low)	-1.162	1.015	0.083	1.588	0.176	<0.001
Leisure time physical activity (METs/d [‡])	0.017	0.009	0.046	0.013	0.010	0.200
Male						
Marital state (married vs unmarried)	-1.907	1.577	0.227	1.640	1.781	0.357
Occupation (non manual vs manual)	4.983	1.310	<0.001	-3.355	1.476	0.023
Educational year (y)	0.406	0.152	0.008	-0.427	1.172	0.013
Smoking status (smoker vs nonsmoker)	-3.418	1.126	0.007	9.336	1.272	<0.001
Stress level (high vs low)	-1.860	1.111	0.094	1.358	0.196	<0.001
Leisure time physical activity (Mets/d) [‡]	0.005	0.003	0.043	-0.006	0.003	0.071

*Binary variable were dummy coded with married, non manual occupation, smoker, high stress level coded as 1. B – B value, S. e. – standard error.

[†]Household and manual worker in women.

[‡]Metabolic Equivalents/day.

educational level, smoking, and a high stress level in men were predictors of using maladaptive coping skills.

Leisure time physical activity was related to increased usage of adaptive coping skills, but did not affect the using of maladaptive coping skills.

Marital status was not significantly related to using either adaptive or maladaptive coping skills.

DISCUSSION

Current study showed that socioeconomic factors such as education had substantial effects on coping strategies in both sexes and that there was a positive relation between high education level and adaptive coping strategies and a negative relation between low education level and maladaptive coping strategies. In addition, manual jobs caused an increase in maladaptive coping strategies in men. Smoking was the result of maladaptive coping behaviors. Also, leisure time physical activity was weakly associated with adaptive coping styles and high stress levels were associated with maladaptive coping styles in both sexes.

In Iran, different cultural, political, economical, and religious factors contribute to types of stress and coping styles. Positive coping strategies which are used more frequently by Iranian people include emotional and spiritual strategies, appropriate to Iranian culture. However, problem-focused strategies are less practiced in this society (16). Therefore, in the IHHP training program, effort was made to practice problem-focused coping styles.

Review of the literature reveals that there are large differences in the coping strategies between individuals depending on their developmental and personal characteristics, and environmental factors (17). Individuals who have higher stress level and subsequent psychological problems have different attitudes toward coping with stress. Thus, individuals with high stress level showed higher levels of maladaptive coping strategies such as self-criticism, rumination, aggression, and avoidance and lower levels adaptive strategies like distraction and seeking for social support (18). In the present study, individuals with high stress levels used maladaptive coping styles more often but the stress level had no association with adaptive coping strategies. This can be explained by the fact that individuals with high stress level seek any way possible to relieve their stress and its consequences, even through a maladaptive strategy.

Smoking is known as one of the greatest modifiable risk factors for non-communicable diseases, and non-smoking is the key element of a healthy life-style (19). Smoking is used as a coping strategy in stressful and uncontrollable conditions; however, due to its harmful long-term effects, it is known as a maladaptive coping strategy (20,21). It has been shown that higher levels of stress were associated with a greater number of cigarettes smoked. In general, individuals who smoke cigarettes are at greater risk of taking part in maladaptive behaviors (22). In the present study, smoking was a negative predictor of adaptive coping behaviors and a positive predictor of maladaptive coping behaviors in both sexes. However, this association was stronger in women. This is probably because in Iran smoking in women is considered socially unacceptable and there is a lower rate of female smokers in the population (23). We can assume that the condition of women who smoke is so stressful that they have resorted to such an uncommon type of behavior. It seems that people who are prone to major psychological problems and maladaptive coping styles are more prevalent among smokers (22).

There are some studies on the association between stress and participation in leisure activity. For instance, the National Population Health Survey performed in Canada showed that physical activity in leisure-time caused higher levels of physical health and well-being and lower levels of mental ill-health (24). Also, it has been found that leisure-time physical activity as an adaptive coping style can buffer or mediate stress (25) and that the largest mental health benefits are obtained from regular and organized physical recreational activities (26). The present study showed that leisure weakly enhanced adaptive coping style in both men and women. We believe that the possible cause of this weak association is the small amount of time spent on leisure time physical activities in our community.

One of the most consistent social epidemiologic findings in the area of the public health is the association between socioeconomic status and mental health. Low socioeconomic status has been indirectly associated with poor mental health outcomes through the inability to adopt a suitable coping style (27). Poetz et al (28) have shown that multiple variables, including low educational level, low income, and emotional distress, are associated with attaining a maladaptive coping style. The results of the present study are consistent with the previous findings in that higher educational levels were positively related to adaptive coping strategies and inversely to maladaptive ones. In highly educated people, relatively high levels of intellectual function

are related to positive health-related behaviors and can result in assuming more adaptive styles, which consequently lead to a healthier life (29).

Occupation has been assumed as one of the socioeconomic factors that can influence health. Research on different occupational groups reported higher mortality levels among unskilled workers (30). However, other factors such as psychological demand, job stress, and lower coping abilities are also more prevalent among unskilled workers (31). The present study revealed that manual workers used maladaptive strategies more frequently. This can be attributed to higher stress levels in this group, as higher stress level is associated with maladaptive strategies. This difference was not obvious in women probably due to the fact that Iranian women do not pursue careers too frequently and there are fewer job varieties for women.

This study has some limitations. The design of the study addressed only associative and not causative relationships between coping strategies on the one hand, and socioeconomic status and life-style factors on the other. Also, the sample was restricted to Iranian population which limits the generalization ability of our results. In addition, personality and family dimensions which might play important roles in individual coping strategies were not considered in this study.

In summary, this study provided evidence for maladaptive coping strategies in smokers with low educational and high-stress level. Also, greater use of maladaptive coping strategies was shown in male manual workers and greater use of adaptive coping strategies was shown in non-smokers with higher leisure time physical activity and lower stress level. The results point to the importance of the implementation of healthy life-style programs in the community. Healthy life-style program is a primary preventive program which includes using strategies for tobacco control, increasing physical activity, and lowering stress through improvement of coping strategies. These programs were evaluated to improve individual coping strategies and their well-being. Further studies are needed on using coping strategies in dealing with specific stressors and on other factors which influence coping strategies, such as personality and family dimensions.

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