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Health-promoting Lifestyle and its Demographic Predictors in Infertile Couples Referred to Infertility Clinic of Tabriz Al-Zahra Hospital, 2013

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ABSTRACT

Introduction: Improving the lifestyle of infertile couples led to the preservation of their performance, increase their quality of life, and reduce health cost. So, the aims of this study were to determine the health-promoting lifestyle and its predictors among infertile couples.

Methods: In a cross-sectional, analytical study 322 infertile couples referred to an infertility clinic in Tabriz was participated with convenience sampling method. The demographic and the standard Health Promoting Lifestyle-II (HPLP II) questionnaires were completed by all couples individually. For determining the demographic predictors of health-promoting lifestyle, the multivariate linear regression was used.

Results: The mean (standard deviation) score of health-promoting lifestyle in couples was 2.4 (0.4) of the achievable score ranged from 1 to 4. The highest mean score was for nutrition subscale 2.6 (0.5) in both men and women and the lowest mean score was for physical activity subscale in women 2.1(0.5) and men 2.3(0.5) and health responsibility subscale (2.3(0.5) in both men and women. Educational level, cause of infertility, adequacy of income for living expense, and living situation were predictors of health-promoting lifestyle.

Conclusion: The results showed that participants do not carry out all health-promoting behaviors, especially physical activity and health responsibility, in an acceptable level. These behaviors have an important role in improving the quality of life, health maintenance, and fertility. Thus, the provision of strategies, including those in accordance with predictors of health-promoting behaviors, is important for improving the health status of infertile couples.

Introduction

Health promotion is a process for empowerment of individuals in order to increase their control power and improvement of their health status. Health promotion is not just the duty of health sector, but goes beyond and is related to healthy lifestyle of all community members.[1]

Lifestyle is the pattern of daily living including type of nutrition and dietary habits, spending rest time, smoking, physical activity, stress management, and use of health services.[2] Lifestyle of each person influence their health status and health-promoting behaviors and healthy lifestyle are two major strategies for facilitating and maintaining health.[3]

Walker defined health-promoting lifestyle as a multi-dimensional model consists of the individuals' perceptions and actions that begin with their motives and helps strengthening of health level and self-actualization.[4] Pender classified health-promoting lifestyle in six dimensions including: nutrition, physical activity, stress management, interpersonal relationships, spiritual growth, and health responsibility.[5,6] Maintaining health needs improvement in health-promoting lifestyle.[7]

Infertility is defined as "inability to conceive after 12 months of unprotected

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sexual intercourse".[8] Infertility as a multi-dimensional problem[9] is a significant threat to health worldwide.[10] The prevalence of infertility is about 24.9% in Iran[11] and 8 to 10 percent worldwide.[12] Birth of a child is an important aspect in most marriages and also considered as expected outcome of sexual intercourse between couples.[13] Labels such as failure in reproduction may results in many negative outcomes in infertile couples including: loss of self-esteem, impaired dignity, destroy the sense of masculinity and femininity, decrease in marital satisfaction, increase in psychological stress,[14] and many other health problems.[15] Expensive and tedious infertility treatments as well as uncertainty and disappointment due to treatment failures are other important threats for the life of infertile couples.[16]

Several studies have shown the relationship between infertility and lifestyle.[17,18] According to these studies, diverse lifestyle and environmental factors may be associated with human health and inappropriate reproductive consequences. So, modifying behaviors that may affect fertility could be the first step in helping infertile couples and increase their chance for fertility.[15,19] In fact, lifestyle include behaviors that are modifiable and may be used as an assisted reproductive factors.[20]

Some studies have shown that not only risk factors but also the inappropriate habits and misconceptions may results to infertility or low chance for fertilization.[21] For example, there are many evidence about the negative impact of alcohol and tobacco use on fertility power in women and the quality of sperm in men.[10,22] Moreover, it is well known that people who never drink alcohol or do not smoke and have a regular exercise and normal weight have a better chance for fertility.[21] One study reported that excessive consumption of milk and dairy products may increase the risk of infertility due to ovulatory dysfunction.[20] Both women and men with high body mass index (BMI) are at greater risk for infertility. So, the lack of physical activity in women, BMI over 25, and obesity is linked with infertility.[23]

Some studies confirmed a correlation between reduced intake of vitamins, fat, and iron and lack of ovulation.[24-26] The results of other studies showed that changes in nutrition and lifestyle aiming to weight control and increase in physical activity are effective in improving ovarian function in infertile women.[27,28] Accordingly, changes in lifestyle may reduce infertility.[29] Thus, advices for modifying lifestyle should be given to all people who are seeking infertility treatments in order to increase their chances for pregnancy and childbirth.[17,19,30,31] A study on infertile couples showed that 76.9% of them did not receive any consultation about modifying their lifestyle.[32]

The health-promoting lifestyle of some Iranian population groups, including women in reproductive ages,[33] adolescents,[34] were investigated. In all of these studies, subscale of physical activity received lowest score and interpersonal relationship and spiritual growth received the highest scores. However, despite the mentioned relationship between infertility and lifestyle,[17,18] there is no relevant studies investigated the lifestyle of Iranian infertile women. Considering this facts that health-promoting lifestyle is a key issue in the concept of health promotion and according to the importance of healthy lifestyles especially for infertile couples, the aims of this study were to determine the health-promoting lifestyle and its predictors among infertile couples.

Materials and methods

This study has a cross-sectional and analytical design that conducted on 322 infertile couples (322 men and 322 women) that attending in the infertility clinic of Al-Zahra hospital in Tabriz. These couples were chosen by convenience sampling method.

After scientific approval of the research project, ethical approval for the study was obtained from Regional Ethics Committee at

Tabriz University of Medical Sciences (Code Number: 9242). After assessment of all couples about eligibility criteria, short explanation about the study was given and informed consent was obtained from all couples. Finally, questionnaires were completed by all couples individually. To keep informational privacy, all couples were asked to do not include their defining characteristics on the questionnaires.

Considering the 95% confidence interval, acceptable error of 0.05 around the mean (m= 2.04), and the largest standard deviation of subscales obtained from previous studies (0.64)[33] the sample size of 322 couples were calculated.

Eligibility criteria for inclusion in the study were including: Willingness to participate in the study, Iranian nationality, having a diagnosis of primary infertility, being treated for infertility, having at least the ability to read and write, non-occurrence of stressful events in the past 6 months, not suffering from any mental disorder or its treatment according to self-report of couples.

Instruments used in this study were including: 1) Demographic questionnaire that include questions about gender, age, education, employment status, duration of marriage, duration of infertility, duration of infertility treatments, cause of infertility, type of previous infertility treatments, history of using contraception, reason for previous infertility treatments, history of infertility treatment failure, the adequacy of income for living expenses, family members who live with the couple, BMI (Body Mass Index), and crowding index. Crowding index was obtained by dividing the number of family members per rooms excluding bathrooms and toilets and classified as: low level of population (fewer than two person per room), average population (two to three persons per room), and populous (more than three persons per room).

2- The standard Health Promoting Lifestyle-II (HPLP II) that is designed based on Pender' model (1987) was used for data collection. This questionnaire provides a multi-dimensional assessment of health-promoting behaviors in six dimensions including: nutrition (9 items), physical activity (8 items), spiritual growth (9 items), health responsibility (9 item), stress management (8 item), and interpersonal relationship (9 item).[34] Reliability and validity of the Persian version of this questionnaire was provided by Mohamadian et al. [34]

Also, this questionnaire has been used in other studies.[35,36] In this study, the reliability of the questionnaire was determined using test-retest method after pilot study on 30 infertile couples and both the reproducibility (ICC=Intra Correlation Coefficient) and internal consistency (Cronbach's alpha coefficient) was determined. ICC (confidence interval) was 0.84 (0.69 to 0.91) and Cronbach's alpha coefficient was 0.93.

Data analysis was performed using SPSS Ver. 13.0. To describe the demographic characteristics and health-promoting behaviors of infertile couples, descriptive statistics including frequency, percentage, mean and standard deviation was used. For identifying the predictors of health-promoting behavior firstly the relationships between health-promoting behaviors and demographic characteristics was determined by using bivariate statistical tests such as independent samples t-test and one-way ANOVA. Then, in order to predict the effect of each independent variables (demographic characteristics) on dependent variable (health-promoting behaviors) and explanation of variance, the independent variables that their P-value was less than 0.2 was entered in multivariate linear regression with backward strategy.

Results

Nearly half of couples (47.7%) reported more than 5 years duration of marriage and infertility duration in 40.4% of them was more than 5 years. In more than half of the couples (53%) the duration of infertility

treatment was less than 3 years and the majority of them (68.5%) reported that they have a history of using contraceptive methods. More than half of couples (56.1%) reported that they used contraceptive methods less than 3 months and 43.9% reported this duration as more than 3 month.

The contraceptive method used by couples was natural method 38.1%, pills 36.2%, condom 19%, and the Intra Uterine Device 6.7%. 35.9% of couples have a history of treatment failure, while more than half of the couples 64.1% did not report such a history.

Number of treatment failure in more than half of the couples 61.3% was less than 2 times, in 15.6% was more than 4 times, and in 23.1% of couples were 2 to 4 times. One third of couples 38.5% had received intrauterine insemination (IUI), 34% had received invitro fertilization (IVF), 15.3% had received combination of IVF and IUI, and 10.4% had received other methods (drugs, surgery, microinjection, and donation). More than one third of couples cited the causes of their infertility as following: female infertility 32.9%, male infertility 30.2%, both male and female infertility 18.6%, unexplained 18.3%.

The crowding index in most of couples 92.2% was low level of population.

More than one third of women 34.8% were educated at secondary school level and more than one third of men had a diploma degree 47.2% of women and 60.6% of men were in age group of 30-40 years (Table 1).

The mean (standard deviation) score of health-promoting lifestyle in men and women was 2.4 (0.4) of the achievable score ranged from 1 to 4. According to the results, the lowest score for women were in dimensions of physical activity 2.1 (0.5) and health responsibility 2.3 (0.5). In the same way, the men also had the lowest scores on these dimensions with score of 2.3(0.5) for both of them. The highest score for women were in nutrition, spiritual growth, and interpersonal relationship and for men were in nutrition and spiritual growth with the mean of 2.6(0.5) for all dimensions (Table 2).

The results of bivariate tests showed a statistically significant relationship between the total score of women in health-promoting lifestyle and some demographic variables such as: education, job, history of using contraception, adequacy of income for living expenses, living situation, and cause of infertility ($P<0.05$). Regarding men, the results of these tests showed that job, education, adequacy of income for living expenses, and living situation had a significant relationship with total score of health-promoting lifestyle. Then, multivariate linear regression analysis showed that education, cause of infertility, and living situation were predictors of health-promoting lifestyle for women that predict 18% of variance of health-promoting lifestyle.

Also, according to the results of this analysis, adequacy of income for living expenses, education, and living situation were predictors of health-promoting lifestyle and predict 22% of variance of health-promoting lifestyle in men (Table 3).

Discussion

Based on the results of this study, the average score of health- promoting lifestyle in women and men were equal and at a moderate level.

Highest score of the couples were on the nutrition, spiritual growth, and interpersonal relationship dimensions and the lowest scores were for health responsibility and physical activity dimensions. The score of stress management dimension was the same in men and women.

Educational level, adequacy of income for living expense, and living situation were predictors of health- promoting lifestyle in men and education, cause of infertility, and living situation were predictors for women.

Studies by Al-Kandari et al., in Kuwait[35] and Baheiraei et al., in Iran[36] on medical students showed that the highest and lowest scores of health-promoting lifestyle were for spiritual growth and physical activity

Table 1. Demographic characteristics of couples by sex

Characteristics	Men (n=322) N (%)	Women (n=322) N (%)
Age		
≤ 30	72 (22.3)	150 (46.6)
30- 40	195 (60.6)	152 (47.2)
≥ 40	55 (17.1)	20 (6.2)
Mean (SD)*	34.5 (7.6)	30.5 (6.8)
Education level		
Secondary school	105 (32.8)	112 (34.8)
High school	25 (7.8)	26 (8.1)
Diploma	112 (35)	101 (31.4)
University	78 (24.4)	83 (25.7)
Sufficiency of family income		
Completely	61 (19)	66 (20.5)
To some extent	277 (70.7)	218 (67.7)
Never	33 (10.3)	38 (11.8)
Living situation		
My family	31 (9.6)	8 (2.5)
My spouse family	8 (2.5)	31 (9.6)
With spouse	282 (87.9)	282 (87.9)
Body Mass Index**		
Low weight	3 (0.9)	6 (1.9)
Normal	137 (42.8)	143 (44.7)
Over weight	141 (44.1)	130 (40.6)
Obese	39 (12.2)	41 (12.8)
Job		
Worker	89 (27.6)	-
Shopkeeper	35 (10.9)	-
Governmental job	80 (24.8)	-
Self-employed	118 (36.7)	-
Housekeeper	-	266 (83.6)
Employment outside the home	-	52 (16.4)
Reason for seeking infertility treatments		
Personal desire	276 (86.8)	281 (87.3)
Insists of spouse	18 (5.7)	25 (7.8)
Insists of relatives	24 (7.5)	16 (5)

*SD = standard deviation;** Body Mass Index (BMI) was divided into four categories by World Health Organization as following: Low weight (less than 18.5), Normal (18.5 to 24.99), Overweight (25 to 29.99), Obese (30 and above)

Table 2. Health-promoting lifestyle and it subscales from the viewpoint of infertile couples

Variable	Men (n=322) Mean (SD)	Women (n=322) Mean (SD)
Health-promoting lifestyle	2.4 (0.4)	2.4 (0.4)
Physical activity	2.3 (0.5)	2.1 (0.5)
Spiritual growth	2.6 (0.5)	2.6 (0.5)
Stress management	2.4 (0.5)	2.4 (0.5)
Interpersonal relationship	2.5 (0.5)	2.6 (0.5)
Health responsibility	2.3 (0.5)	2.3 (0.5)
Nutrition	2.6 (0.5)	2.6 (0.5)

Table 3. Demographic predictors of health-promoting lifestyle

Characteristics	Men (n=322)		Women (n=322)	
	β (CI 95%)*	P	β (CI 95%)*	P
Education level				
University (reference)	-	-	-	-
Secondary school	- 0.47 (-0.32, -0.54)	< 0.001	- 0.46 (-0.30, -0.53)	< 0.001
High school	- 0.17 (-0.11, -0.46)	0.001	- 0.06 (-0.07, -0.26)	0.280
Diploma	- 0.20 (-0.08, -0.31)	0.001	- 0.18 (-0.05, -0.28)	0.004
Cause of infertility				
Female related (reference)	-	-	0	0
Male related	-	-	0.02 (-0.08, 0.12)	0.720
Unexplained	-	-	0.13 (0.02, 0.26)	0.023
Both male and female related	-	-	0.03 (-0.09, 0.15)	0.549
Living situation				
With spouse (reference)	-	-	-	-
With my family	- 0.09 (-0.01, -0.28)	0.048	- 0.03 (-0.38, 0.17)	0.452
With my spouse family	- 0.05 (-0.42, 0.12)	0.278	- 0.11 (-0.28, -0.01)	0.035
Sufficiency of family income				
Completely (reference)	-	-	-	-
To some extent	- 0.10 (0.01, -0.21)	0.093	-	-
Never	- 0.18 (-0.09, -0.43)	0.002	-	-
Adjusted R^2	0.22		0.18	

*confidence interval 95%

dimensions, respectively.

These results are consistent with the results of present study. According to the results of one study by Hosseini et al.,[37] that was conducted on the students as well as other investigation by Sehhati et al.,[38] the score of physical activity was the lowest score among all dimensions of health- promoting lifestyle and interpersonal relationship and spiritual growth dimensions were obtained the highest score. Furthermore, these results are consistent with the results of present study.

Consistent with the results of present study, in the study of Mazlomi the score of physical activity in both men and women was lower than other aspects and the score of interpersonal relationship in women was further than men.[39]

Education is one of the health-promoting lifestyle predictors. So, by increasing educational level, the total score of health-promoting lifestyle and the score of all dimensions was improved. Relationship between educational level and health behaviors have been shown in other studies. For example, the results of one study conducted by Shaw et al.,[40] and Lee[41] are consistent with the results of present study.

But, the results of some studies which carried out on the sample of elderly people in Tehran[42] and caregivers of neurologic patients[43] are not consistent with the results of present study. This finding indicates the importance of education and higher educational level on following health-promoting behaviors. Education plays an important role in healthy lifestyle practices.[44]

Another predictor of health-promoting lifestyle was a sufficient income of the family.

In this regard, the total score of health-promoting lifestyle and the score of all dimensions was greater in participants that their income completely enough for their living expenses in comparison to participants who reported that their income "somewhat" or "not at all" enough for their living expenses. The results of some other studies was consistent with the results of present study.[33,45-48] The possible explanation for this could be that sufficient income for living

expenses can improve health status of couples in all dimensions of life.

The cause of infertility was another predictor of health-promoting lifestyle and significant association was found between physical activity and cause of infertility in women. In this regard, the highest score of physical activity was when the cause of infertility was reported as unexplained and the lowest score was obtained when the infertility was related to women. Several other studies also have shown significant association between infertility and physical activity.[17,49-51] For example, the study of Homan et al., that investigated the effects of lifestyle on fertility status in general population showed a significant relationship between exercise and reduced risk of infertility due to ovulatory dysfunction.[17] On the other hand, the study of Esmaeilzadeh et al.,[52] that was carried out on a sample of 1081 women aged between 20 to 45 years showed no significant differences in the levels of physical activity and exercise among fertile and infertile women. This finding is inconsistent with the result of present study and may be related to differences in sample size or sampling method of two studies.

Another predictor of health-promoting lifestyle in this study was family members who are living with couple. By the way, the highest score in the health-promoting lifestyle was obtained by couples who are living with their spouse. The lowest scores were noted when women and men reported that they are living with the men's family.

Consistent with these results, in other studies the relationship between living situation and health-promoting lifestyles has been reported.[33,45] For example, in a study conducted on a sample of women in reproductive age in Tehran, family problems and family responsibilities was reported as major barriers to women's participation in healthy lifestyle.[48]

One limitation of this study is its cross-sectional nature. So, the relationship shown between health-promoting lifestyle and demographic characteristics of couples not necessarily indicate causality. Another limitation of the study is because of convenience sampling method that decreases the generalizability of the results. So, there is a need for further studies in this field with random sampling methods and in other parts of Iran. Also, due to low score of physical activity and health responsibility subscales in couples, there is a need for qualitative and quantitative studies aiming to investigate facilitators and barriers of health-promoting behaviors among infertile couples.

Conclusion

In general, the results indicate that health-promoting lifestyle of infertile couples was not in acceptable level. In addition, the score of couples in spiritual growth, stress management, nutrition, and interpersonal relationship was higher than their scores in health responsibility and physical activity dimensions. Therefore, conducting health education programs, with emphasis on physical activity and health responsibility issues, and establishment of counseling centers for education of health-promoting lifestyle for infertile couples is necessary.

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Ethical issues

None to be declared.

Conflict of interest

The authors declare no conflict of interest in this study.

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