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Short Report

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Preconception Lifestyle Status and Its Predictors in Women Contemplating Pregnancy

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Abstract

Preparation for pregnancy and management of modifiable risk factors result in favorable pregnancy and childbirth outcomes. Regarding this, the present study aimed to determine preconception lifestyle status and its predictors among women contemplating pregnancy. This cross-sectional study was conducted on 201 women aged 18-35 years contemplating pregnancy for the coming year. The data were collected using sociodemographic characteristic form, preconception lifestyle questionnaire, preconception lifestyle awareness questionnaire, and perceived stress scale. Data analysis was performed using Pearson correlation, independent t-test, one-way ANOVA, and multivariate linear regression. The mean preconception lifestyle score was 2.7±0.3 (range: 1-4). According to the results, knowledge about preconception lifestyle, maternal age, receipt of routine preconception care, and marital satisfaction were the predictors of preconception lifestyle. Based on the findings, it is necessary that the health care providers take some measures to improve the preconception lifestyle in women contemplating pregnancy by considering its predictors.

Keywords: Knowledge, Lifestyle, Preconception care, Pregnancy

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Introduction

Lifestyle means knowledge, attitudes, and behaviors related to health issues in an individual or a group of people (1). The basic components of lifestyle include physical activity and sports, nutrition, tobacco-free life, and avoidance of other harmful drugs (2). Women with more desirable lifestyle have better fertility outcomes. According to a Cochrane review, preconception lifestyle risk factors are associated with undesirable pregnancy outcomes; accordingly, preconception lifestyle counselling is effective in the induction of behavioral changes (3, 4).

Risk factors related to lifestyle, such as smoking, alcohol consumption, and periodontal diseases, increase the risk of preterm birth (5). Stress, excessive physical labor, and long standing are also involved in the occurrence of spontaneous preterm birth (6). In addition, factors associated with mother's lifestyle, such as preconception body mass index, are correlated to the gestational hypertension and diabetic problems (7), which can lead to premature birth and small for gestational age. The identification of the women's lifestyle status and the associated risk factors in each region contribute to the improvement of the preconception care policies.

Few studies have investigated the preconception lifestyle status in Iran. In this regard, in a research conducted in Hamedan, Iran, Riazi et al. (2010) studied the rate of folic acid consumption during preconception period among the women referring for childbirth or termination of pregnancy (8). In addition, Bayrami et al. explored the preconception lifestyle status and its relationship with socio-demographic characteristics in Kalat County, Iran. They reported alcohol and illegal drug consumption as the most desirable lifestyle area of smoking, physical activity as the most undesirable ones. In the mentioned study, health care status, such as dental care, regular consumption of folic acid, and receipt of routine preconception care were also classified as lower than desirable. Furthermore, they observed an association between preconception lifestyle status and couples' education level and occupation (9).

The main challenge for the preconception health providers is to provide a preconception care package based on preconception risk factors and high-priority preconception indicators for each region that can alter the pregnancy outcomes through screening tests and evidence-based interventions delivered at the preconception stage (10). The World Health Organization supports countries to coordinate their own package of preconception care interventions with the regional and national priorities (11).

The Cochrane review of preconception lifestyle status also suggests that the couples contemplating pregnancy should be provided with more information regarding the risks and effects of risk behaviors and that more research shall be carried out to provide specific information on the content and context of preconception interventions (4). It seems that this end can be fulfilled only through the recognition of preconception lifestyle status and its components among women contemplating pregnancy. With this background in mind, the present study aimed to clarify the preconception lifestyle status and its predictors in the women referring to urban health centers of Bonab city, East Azerbaijan Province, Iran.

Methods

This cross-sectional study was conducted on 201 women contemplating pregnancy and referring to health centers of Bonab city from March 2016 to August 2016. The participants were selected from all health care centers of Bonab city (i.e., seven health care centers) using the convenience sampling technique.

The sample size was determined considering lifestyle as the main variable using a pilot study with a power of 90% (SD=9.35, d=0.02, mean=92.15, α=0.05). The inclusion criteria were: 1) healthy status, 2) age range of 18-35 years, 3) contemplating pregnancy for the coming year, 4) possession of records in the healthcare centers of Bonab city, 5) fertility (i.e., no history of hysterectomy, tubal ligation or other causes of infertility, including both male and female factors), 6) a minimum of junior high school education, 7) availability of a contact number for follow-up, and 8) consent to participate in the study. On the other hand, the exclusion criterion was the infliction with any underlying diseases (e.g., cardiovascular disease, hypertension, diabetes, and mental illness).

The data collection was accomplished using the sociodemographic characteristic form, preconception lifestyle questionnaire, preconception lifestyle awareness questionnaire, and perceived stress scale-14 (PSS-14), completed through interviewing. Socio-demographic form recorded data regarding the maternal age, spousal age, marriage age, gravidity, abortion, and number of current alive children,

previous history of pregnancy complications or abortion, education level and occupation of the mother and her spouse, monthly income of the family, housing status, consanguineous marriage, smoking and alcohol consumption status of the spouse, history of spousal violence in the past six months and type of violence, spousal support rate, and marital satisfaction.

The preconception lifestyle questionnaire was a researchers-made instrument designed based on the Central Pennsylvania Women's Health Study (12), Becoming A Parent: Preconception Checklist (13), and a study performed by Bayrami et al. in Kalat County (9). This questionnaire assessed the preconception lifestyle in terms of nutrition, folic acid consumption, physical activity and sport, checkups and screening tests, stress management, smoking or exposure to second-hand smoke, environmental exposures, medications, vaccinations, and dental health. This instrument entailed 31 items scored on a four-point Likert scale (never=1, sometimes=2, often=3, and always=4).

This questionnaire had the score range of 1-4 obtained by summing up the scores of all items divided by the number of the items. It had the content validity index (CVI) and content validity ratio (CVR) of 0.95 and 0.94, respectively. In order to evaluate this tool's test-retest reliability, it was administered to 20 women with an interval of two weeks rendering an intra-class correlation (ICC) of 0.906.

The preconception lifestyle awareness questionnaire was also designed by the researchers. This instrument consisted of 30 items covering nutrition, physical activity, medications, smoking, alcohol consumption, and health care. The scoring of this tool was performed by assigning a score of 1 to the correct answers and a score of 0 to the wrong or "I don't know" answers. This questionnaire had the minimum and maximum scores of 0 and 30, respectively. The CVI and CVR were calculated as 0.95 and 0.94, respectively. Furthermore, it showed the ICC of 0.925.

Another tool employed in this study was the PSS-14 developed by Cohen et al. (1983). This scale measures the degree to which situations in one's life over the past month were appraised as stressful. In the PSS-14, 7 out of the 14 items are worded negatively (i.e., items 1, 2, 3, 8, 11, 12, and 14), and the remaining items are positive (i.e., items 4, 5, 6, 7, 9, 10, and 13). In this instrument, each item is rated on a five-point Likert scale (ranging from never=0 to very often=4). Total score is obtained by reversing the positive items' scores, and then summing up all scores. The PSS-14 have the score range of 0-56. A higher score in this instrument indicates greater stress (14). This questionnaire has been used in many studies conducted in Iran. In this regard, Momeni et al. and Mansouri et al. reported the Cronbach's alpha coefficients of 0.95 and 0.85, for this scale, respectively (15, 16). In this study, the ICC was estimated as 0.934.

In the health care centers of Bonab city, preconception care services are offered under a national program for clients contemplating pregnancy. After referring to the health centers, the researcher prepared a list of the women aged 18-35 years contemplating pregnancy, and then specified those intending to get pregnant within 1 year by a phone call. Subsequently, the women who met the inclusion criteria were selected and invited to cooperate in the study. In a meeting, the purpose and procedures of the study were clearly explained to the participants, and the questionnaires were completed by the researcher through interviewing the participants.

This study was approved by the Ethics Committee of Tabriz University of Medical Sciences, Tabriz, Iran (Code: TBZMED.REC.1394.1057). Informed written consent was obtained from all participants.

The data were analyzed using SPSS, version 21 (SPSS Inc., Chicago, IL, USA). The data were presented as frequency, percentage, mean, and standard deviation. The skewedness and kurtosis were applied to check the normality of the quantitative data. Furthermore, the association of preconception lifestyle with preconception lifestyle awareness and perceived stress was determined using the Pearson correlation test. In addition, the independent t-test and one-way ANOVA test were used to determine the relationship of preconception lifestyle with socio-demographic characteristics.

The independent variables with a p-value of less than 0.1 in bivariate tests were entered into multivariate linear regression in order to control the confounding variables and assess the effect of each independent variables (i.e., knowledge, perceived stress, and socio-demographic characteristics) on the dependent variable (i.e., preconception lifestyle). Assumptions for multivariate linear regression (e.g., homoscedasticity, normality of the residuals, independence of observations, no multicollinearity, linearity of association, and no outliers) were assessed by examining histograms and normal probability plots of the studentized residuals, scatter plots of standardized predicted values

versus standardized residual values, and scatter plots of the dependent variable versus the standardized residuals.

Multicollinearity was assessed by examining the variance inflation factor (VIF) and tolerance index. The model fit was evaluated according to the values of the multiple correlation coefficient (R), the coefficient of determination (R^2), adjusted $R^{2,}$ and standard error of the estimate. The ANOVA (F test) was used to test the hypothesis. The standard error of the estimate was 6.4. P-value for the F statistic was < 0.001. All assumptions of multivariate linear regression were confirmed. The Durbin-Watson statistic value was 2.0. No evidence of multicollinearity was apparent in our data based on the tolerance value of 0.6-1 and the VIF of 1-2. P-value less than 0.05 was considered statistically significant.

Results

The mean age of the women was 28.2±4.7 years; furthermore, nearly half of the women 91 (45.3%) aged 30-35 years. The majority of the women 153 (76.1%) were housewives. Regarding the education level, 106 (52.2%) of the participants had high school education and diploma. Most of the participants (83.6%) reported to have sufficient family income. Furthermore, 151 (75.1%) of the women were satisfied with their marital life, and most of them 130 (64.7%) had no spousal violence experience in the past 6 months. According to the results, 107 (53.3%) of the women were under routine pre-conception care in health-medical centers. In terms of gravidity, 130 (64.7%) of the participants had at least one pregnancy. The majority of the participants' spouses 147 (73.1%) had high school education or above, and only 2 (1%) of them were unemployed.

The mean preconception lifestyle score was 2.7±0.3 (range: 1-4). Among the preconception lifestyle subscales, dental care and absence of smoking or alcohol consumption habits had the lowest (1.5±0.7) and highest (3.7±0.4) mean scores, respectively. Furthermore, sport and physical activity had the mean score of 1.7±0.5, which is less than desired; however, nutrition had a moderate mean score (2.7±0.3). Additionally, folic acid consumption, prevention of exposure, and performing screening tests or other considerations had the mean scores of 3.3±1.0, 3.2±0.4, and 3.1±0.7, which were higher than the average score.

The mean preconception lifestyle awareness was about 15.7±3.5 (range: 0-30). Furthermore, the mean score of perceived stress was 25.3±6.4 (range: 0-56). The results of the Pearson's correlation test revealed that the preconception lifestyle status was positively correlated with awareness about preconception lifestyle (r=0.48, P<0.001). However, it showed no significant correlation with the perceived stress (r=-0.12, P=0.08) (Table 1).

Table 1. Preconception lifestyle status and its dimensions, knowledge about preconception lifestyle and perceived stress of participants (n = 201)

Variable	Mean±SD[a]	Achieved score range	Achievable score range
Preconception lifestyle awareness	15.7±3.5	7-31	0-30
Perceived stress	25.3±6.4	11-62	0-56
Preconception lifestyle	2.7±0.3	2.1-3.3	1-4
Nutrition	2.7±0.3	1.8-3.6	1-4
Folic acid consumption	3.3±1.0	1-4	1-4
Physical activity	1.7±0.5	1-3.4	1-4
Dental care	1.5±0.7	1-4	1-4
Avoidance of harmful exposures [b]	3.4±0.3	2.1-4	1-4
Checkups, screening tests, and other consideration	3.1±0.7	1-4	1-4

[a] Mean±Standard deviation

[b] Consuming herbal extracts and herbal medicines, medication without a prescription, excessive caffeine consumption, avoidance of exposure to chemicals (e.g., paints, cleaners, and pesticides), avoidance of exposure to excessive heat and radiation, and informing the doctor on the plan to get pregnant before medication prescription or paraclinical practices.

Table 2. Predictors of preconception lifestyle and socio-demographic characteristics in participants according to multivariate linear regression (n=201)

	Bivariate tests results		Multivariate linear regression results	
Variable	Mean (SD)	P-value	B (CI 95%) [a]	P-value
Preconception lifestyle awareness	0.48[b]	<0.001[b]	0.03 (0.18 to 0.04)	<0.001
Perceived stress	- 0.12[b]	0.09[b]	-0.00 (-0.01 to 0.00)	0.12
Age	0.22[b]	0.00[b]	0.01 (-0.00 to 0.02)	0.04
Spousal age	0.16[b]	0.02[b]	-0.00 (-0.01 to 0.01)	0.72
Education (Reference: University)	2.8 (0.2)	<0.001[c]		
Secondary school	2.6 (0.3)		-0.02 (-0.13 to 0.10)	0.79
High school and Diploma	2.7 (0.2)		-0.02 (-0.9 to 0.05)	0.60
Marital satisfaction (Reference: Very and extremely very)	2.6 (0.3)	0.02[c]		
Low and very low	2.8 (0.2)		-0.07 (-0.22 to 0.08)	0.35
Moderate	2.7 (0.3)		-0.08 (-0.16 to -0.00)	0.04
Intimate violence history (Reference: No)	2.7 (0.2)	0.01[d]		
Yes	2.8 (0.2)		-0.01 (-0.07 to 0.06)	0.08
Spousal support (Reference: Very and extremely very	2.8 (0.2)	0.049[c]		
Low and very low	2.6 (0.3)		-0.10 (-0.24 to 0.43)	0.16
Moderate	2.7 (0.3)		-0.05 (-0.13 to 0.02)	0.17
Spousal educational level (Reference: University)	2.8 (0.2)	0.03[c]		
Illiterate and primary school	2.6 (0.3)		-0.08 (-0.20 to 0.03)	0.16
Secondary school	2.7 (0.2)		-0.07 (-0.16 to 0.1)	0.10
High school and diploma	2.7 (0.2)		-0.01 (-0.08 to 0.06)	0.72
Receipt of routine preconception care (Reference: No)	2.7 (0.2)	0.01[d]		
Yes	2.8 (0.2)		0.08 (0.02 to 0.13)	0.01

Adjusted R^2=25.3% [a] 95% Confidence Interval
[b] Pearson's correlation test
[c] One-way ANOVA
[d] Independent t-test

The independent t-test and one-way ANOVA test showed that preconception lifestyle score was significantly correlated with preconception routine care (P=0.01), education level of the women (P<0.001) and their spouse (P=0.03), maternal age (P=0.00), spousal age (P=0.02), spousal support (P=0.04), marital satisfaction (P=0.01), and history of spousal violence in the past 6 months (P=0.01). The variables of preconception lifestyle awareness and perceived stress were entered into multivariate linear regression in order to determine the predictive factors for preconception lifestyle. Preconception lifestyle awareness, age, receipt of routine preconception care, and marital satisfaction were associated with preconception lifestyle. The values of R, R^2, and adjusted R^2 were estimated as 0.593, 0.352, and 0.299, respectively and explained 29.9% variance of the preconception lifestyle score (Table 2).

Implications for Practice

The providers of preconception care policies should constantly attend to the enhancement of the awareness of women and men of reproductive age, especially the women contemplating pregnancy. In addition, they should take some measures to improve the knowledge regarding the risk factors affecting fertility and childbearing in this group. The women with low education level are considered as high-risk groups concerning lifestyle; therefore, they require specific interventions. Planning to improve the quality of marital life, marital life skills, and couple relationship will help to enhance the women's health and lifestyle.

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Conflicts of Interest

All the authors have no conflicts of interest.

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