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Comparison the Life Style between Secondary Infertile and Fertile Women: Considering Potential Socio-Demographic and Reproductive Confounding Factors in a Case-Control Study

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Abstract

Introduction: Secondary infertility can cause some problems for the couples involved, particularly the women. It is supposed that the life style could influence the fertility status of the couples. This study was aimed to comparison the life style between secondary infertile and fertile women.

Materials and Methods: In this case-control study, 125 secondary infertile women as case group and 140 fertile women as control group were investigated in 2015. The subjects were selected from the fertility clinics and private office of the gynecologists in Zahedan, southeast of Iran. The data were collected using a structured questionnaire including reproductive history, socio-demographic variables, physical activity and Pittsburgh sleep quality. To analyze the data were used Chi-square and multiple logistic regression with Hosmer&Lemeshow method.

Results: By adjusting for potential confounders the secondary infertile women were more likely to have had higher BMI and be overweight (OR=2.89, 95%CI: 1.15-10.1) than fertile women. The sedentary and low sleep quality were significantly more common in infertile women than fertile women (OR=2.37, 95%CI: 1.005-9.7 and OR=2.92, 95% CI: 1.6-9.3, respectively). Also the chance of nutritional related disease among cases was more that controls ($P<0.05$).

Conclusion: As life style related factors were associated with some reproductive variables in this study, thus it could be concluded that the life style and nutritional status not only influence the obstetric events, but directly effect on fertility via another paths. However, decreasing weight and increasing physical activity, improvement of sleep quality are all likely to decrease secondary infertility in women.

Keywords: women, secondary infertility, infertility

1. Introduction

Infertility is one of the important health associated issues that divided into two groups included the primary and secondary infertility. The secondary infertility (SI) is the inability to give births in spite of exposure to pregnancy for one year, after having conceived at least once before (Lunenfeld & Van Steirteghem, 2004). This problem can have some consequences for the couples involved, particularly for the women (Sami & Ali, 2006).

The SI is not life-threatening, but a woman cannot produce a live child in a formal merger with a man, she will often is stigmatized in the society (Dyer, 2007; Orji, Kuti, & Fasubaa, 2002; van Balen & Bos, 2009; Dyer et al., 2004). In the main, the infertility influences the life psychologically. Otherwise, some of the consequences for primary and secondary infertility are including: societal repercussions, personal distress, psychological disorders, sexual dysfunctions and marital dissension (Volgsten et al., 2010; Volgsten et al., 2010; Drosdzol & Skrzypulec,

2009; Drosdzol & Skrzypulec, 2009). It must be mentioned that these disorders could influence directly the life style of the involved families, especially in developing countries (Shea, Rutstein, & Iqbal, 2004; Direkvand Moghadam, Delpisheh, & Khosravi, 2013).

Although nowadays the primary or secondary infertility occurs in almost 15% of all women around the world (Mascarenhas et al., 2012), but the incidence of female infertility is rising yearly (Kumar, 2007). Some studies have reported that the infertility in women consists one third of infertility among all infertile pairs (Unuane et al., 2011). The Center for Disease Control (CDC) has reported that 11% of couples in USA have SI (Chandra et al., 2005). The studies conducted in Iran estimated the prevalence of current and lifetime primary infertility to be 3.4% and 24.9%, respectively (Mohammad & Ardalan, 2009). Another study indicated the prevalence of primary infertility to be 20.2% in Iran (Akhondi et al., 2013), but on the other hand, a new study in Iran estimated the primary and secondary infertility among women to be 26.1% and 1.7%, respectively (Hosseini et al., 2012).

Particular epidemiologic study regarding the SI is limited. A study conducted in Rwanda showed that the lack of prenatal care in the last pregnancy, the first pregnancy before the age of 21 years, a history of unwanted pregnancy, an adverse pregnancy outcome and stillbirth can be as risk factors for SI among women (Dhont et al., 2011). However, some other studies in this field, have discussed that in addition to ovarian and uterine factors, the smoking, obesity and occupation as well as life style (Delpisheh, Brabin, & Brabin., 2006; Gudmundsdottir, Flanders & Augestad, 2009; Kazemijaliseh et al., 2015) are other main determinants of female infertility in the societies. Though, there is little information on life style factors associated with SI from Iran and around the world.

Sistan and Baluchistan province in the southeast of Iran have different cultural, social and economical environment compared to the other provinces in Iran. Otherwise, the child bring is important in this area and life style of the families is disagreeable. In addition to higher cost and time consuming of infertility dealing, a few infertile women have access to efficient infertility treatment methods and centers. On the other hand, there were no advanced infertility treatment centers in southeast of Iran and many infertile couples have to go to other infertility treatment centers outside of the province that can cause to many psychological and economical problems for couples in this area. Since most of SI is preventable, a better knowledge of modifiable risk factors may help to develop interventions targeted at those mainly at risk. In order to finding of some epidemiological risk factors for SI in southeast of Iran, we conducted a case control study in sistan-Baluchistan province, comparing some aspects of life style among secondary infertile and fertile women.

2. Materials and Methods

In this case-control study ,125 secondary infertile women as case group and 140 fertile women as control group were studied in Zahedan, Southeast of Iran in 2015. SI regarded as having had regular unprotected intercourse for one year or more with at least one regular partner without conception in women who conceived at least once before. To be eligible for being case, women needed to be secondary infertile with up to 6 months of diagnosis between 21 and 45 years of age, residing in Zahedan, willing to contribute in the study, without history of infertility treatment, having had sexual intercourse at least once in the last 2 weeks, lack of infection after first childbirth, without ovary and endometrial disease, without history of radiotherapy and chemotherapy, without history of selective abortion and do not being vegetarian. Fertile controls were defined as currently pregnant or non-pregnant women who had at least one live birth. The eligibility criteria for controls were the same as for cases, except for fertility status and in case of pregnancy the gestational age should have been up to 3 months.

In this study the subjects were selected from the women referring to fertility clinics located in hospitals of Zahedan University of Medical Sciences and private office of the gynecologists in Zahedan city. The sampling method was quota sampling according to inclusion criteria. The share of the sample from clinics and offices was based on approximate number of daily referred patients. The controls selected from the same place as the cases. As soon as a case found in clinics or private offices, an eligible women referred to same place was considered as control of this case. If there were many eligible controls in the place, one or two (for 15 cases) control was selected randomly by simple random sampling using blindly hand-picking numbers from a bowl with regard to consent to participate in the study.

The study was approved by the Ethics Committee of Zahedan University of Medical Sciences. However, all participants justified regarding purposes of the study and participated in the study with informed consent.

The data were collected by two female trained and reliable staffs by interview using a structured questionnaire. The first section of the questionnaire was contained reproductive history and socio-demographic variables including age, age of marriage, Job status, educational level, smoking (cigarette or hookah), smoking of husband, alcohol consumption, age at first pregnancy, first age at menarche, history of abortion, history of irregular

menstruation, history of infertility in the family, contraceptive pills consumption before first pregnancy, weight, height and Body Mass Index (BMI). The BMI was calculated as weight in kilograms divided by the square of height in meters. The measurement of weight and height were done by a trained staff and the instruments were calibrated regularly during the work. The second section was the pattern of physical activity questionnaire. The physical activities measured based on Metabolic Equivalent of Task (MET) (Bui et al., 2015). In this questionnaire based on the type or condition of daily activity and MET (low: ≤2.9), moderate: 3-5.9, high: ≥ 6), the severity of physical activity is classified in 3 levels including light, moderate and high. The validity and reliability of this questionnaire has approved in previous study in Iran (Kelishadi et al., 2001). It is worth mentioning that the noted questionnaire was considered under supervision of a nutritionist consultant. The third section was the Pittsburgh sleep quality questionnaire. The validity and reliability of this questionnaire has approved in previous study in Iran (FarrahiMoghaddam et al., 2011). The subjects divided in three groups regarding quality of sleep as bellow: high (score≤4.9), moderate (score: 6-10) and low (score≥11). However, the validity of the physical activity pattern, Pittsburgh sleep quality and food frequency questionnaires were approved with at least 0.82 Content Validity Index (CVI) for all questions by 10 expert persons regarding each questionnaire. The Cronbach's alpha coefficient for pattern of physical activity and Pittsburgh sleep quality questionnaires were 0.90 and 0.78, respectively.

Finally, in addition to BMI, the subjects were evaluated regarding "anemia (Hemoglobin<12)" and "diabetes type 2" according to their records and/or confirmation of their physicians. Also in this study to determine the status of essential nutrients intake, the women were asked that if they have had during last year a complaint or disease that the doctor had diagnosed its reason due to insufficient nutrients. Although might be mistaken and erroneous, but it is supposed that the answer to this question could be an indicator for adequacy or inadequacy of nutrients intake. This variable was named as "Having nutritional related problem".

2.1 Statistical Analysis

The bivariate Odds Ratio (OR) and Chi-square test were used to examine unadjusted association between lifestyle related variables and SI. The mean difference of quantitative variables between case and controls was evaluated by Independent sample T test. Moreover, a multiple logistic regression was used to investigate the effect of predicting life style factors on SI by controlling potential confounders. The Hosmer&Lemeshow method was used to model estimation and to evaluate the goodness-of-fit of the logistic regression model (Hosmer & Lemeshow, 2001). In this method the variable selection (including or excluding variables from the model) and modeling is based on Likelihood Ratio Test (LrTest). The statistic of LrTest is -2lnLR-(-2lnLF), in which the LR is the likelihood of the reduce model (the model with lower parameters) and LF is the likelihood of the full model (the model with higher parameters). The LrTest has Chi-square distribution with degrees of freedom of equal to different of two models parameters. Population Attributable Fractions (PAF%) were calculated for selected risk factors using the following formula: P(E/D) (1-1/adjusted OR) with P(E/D) the proportion of cases that is exposed to risk factor. The data were analyzed in Stata.12 software and the significance level was defined as $P<0.05$.

3. Results

Due to good explanation of the women (125 cases and 140 controls) in the local language, all data collected from the subjects and there was no missing data. About 68(28.3%) of the cases with their controls selected from private offices of gynecologists and the others selected from hospitals' gynecology clinics. The cases and controls have the same age mean (p=0.12). In this study the women with secondary infertile relationships were more likely to have had higher age of menarche (adjusted OR = 1.21, CI =1.07-6.1). The multiple logistic regression model showed that the cases were more likely to have had the first conception in older age (adjusted OR = 1.71, CI=1.12-5.3) and on the other hand the women with irregular menstruation have more chance to have got SI (adjusted OR=3.91, CI= 1.5-6.7). As the results of multiple logistic regression present in this study the contraceptive pills consumption before first pregnancy for at least 6 months analysis was not considered as independent related factor for SI. The other studies menstrual-reproductive factors were not related to SI at present study. Also the educational level and job status distribution was similar in both cases and controls groups (Table 1).

Table 1. Frequency distribution and mean of some demographic variables and reproductive history factors in secondary infertile (cases) and fertile (controls) women. (Variables with P<0.2 in the bivariate analysis entered in multiple regression models using Hosmer-Lemsho Method for model building)

Independent variables		**Cases N=125, n(%)**	**Controls N=140, n(%)**	**P[3]**
Total number of pregnancies[1]		138	317	
Age, Mean(Sd)		26.3(5.1)	25.2(6.4)	0.12
Husband's age Mean(Sd)		26.9(7.4)	24.4(6.6)	0.18
Age at marriage, Mean(Sd)		21.2(7.5)	19.8(6.8)	0.11
Age at first conception, Mean(Sd)		22.9(7.7)	21.2(6.5)	0.052
Age at first menarche, Mean(Sd)		13.4(4.9)	11.1(3.7)	0.0001
Education	Up to primary	87(69.6)	90(64.3)	0.31
	More than primary	38(30.4)	50(35.7)	
Job	Housewife	94(75.2)	99(70.7)	0.09
	Practitioner	31(24.8)	41(29.3)	
Number of Pregnancies	1	99(79.2)	58(41.5)	0.03
	≥2	26(20.8)	82(58.5)	
Contraceptive pills consumption before first pregnancy[2]	Yes	46(36.8)	23(16.4)	0.05
	No	79(63.2)	117(83.6)	
History of infertility in the 1st degree family	Yes	9 (7.2)	8 (5.7)	0.22
	No	116(92.8)	132 (94.3)	
Menstrual cycle	Irregular	61(48.8)	20(14.3)	0.02
	Regular	64(51.2)	120(85.7)	

[1]excluding last pregnancy for fertile women, [2]consumption of contraceptive pills for at least 6 months before first pregnancy, [3] each variable adjusted for the other variables based on Hosmer-Lemeshow method to model building.

In this study also some lifestyle related factors including, smoking, physical activities, sleep quality and nutritional status were studied. According to the results of this study (data not shown) the physical activity and sleep quality were significantly related to menstrual cycle (P=0.042), age at menarche (P=0.037) and number of pregnancy (P=0.048) and on the other hand, the BMI was significantly related to menstrual cycle, age at menarche and age at first conception (P=0.05). Therefore, it is supposed that in addition to socio-demographic variables, the obstetric events also can be confounded the relation between life style and SI. Therefore, the relationship between life style related factors and SI considered by adjusting for potential confounding factors presented in table 1. Table 2 shows the distribution of studied lifestyle related factors in cases and controls along with relevant adjusted OR and estimated Population Attributable Risk Percent (PAR%).

The secondary infertile women were more likely to have had higher BMI and be overweight (adjusted OR=2.89, 95%CI: 1.15-10.1) than fertile women. On the other hand, the sedentary or low level physical activity and low quality sleep was significantly more common in infertile women than fertile women (adjusted OR=2.37, 95%CI: 1.005-9.7; adjusted OR=2.92, 95% CI: 1.6-9.3, respectively). The history of smoking or tobacco use among cases (24/125, 19.2%) was more than the controls (21/140, 15%) as well as smoking or tobacco use of cases' (71/125, 56.8%) and controls' husband (75/140, 53.6%) but did not reach statistical significance (P>0.05). It should be noted that very few women reported to alcohol use (0.016% of cases and 0.021% of controls) and this variable was not considered in analysis (Table 2).

Regarding nutritional related problems the presence of anemia and diabetes type 2 among cases was 20% and 8% respectively. Otherwise, the women in secondary infertile relationships were more likely to have a diagnosis of iron deficiency anemia (adjusted OR =1.23, 95%CI=0.52-8.8) and diabetes type 2 (adjusted OR =1.26, 95%CI=0.41-9.6) than women in fertile relationships but did not reach statistical significance (p =0.16 and p=0.13, respectively). In this study to evaluate the relation of nutrition on infertility, having nutritional related

problems were considered among the subjects. Present study showed that having nutritional related problem increases the chance of SI (adjusted OR=1.99, 95%CI: 1.01-11.1) in southeast of Iran. The PAF% for BMI more than 25, low level of physical activity, low level of sleep quality and having nutritional problems were 28.7%, 16.64%, 25.2% and 14.7%, respectively (Table 2). There was no interaction between the independent variables in increasing the odds of SI and the Hosmer & Lemeshow test showed a goodness-of-fit for the model adjustment (p = 0.44).

Table 2. Association of life style related factors and SI, adjusting for potential confounders

Life style related variable		Cases N=125, n(%)	Controls N=140, n(%)	Adjusted[1] OR (95% CI)	Pe[7] (%)	Estimated PAR% (95%CI)
BMI[1,5]	≥25	55(44)	37(26.4)	2.89(1.15-10.1)[6]	44	28.7(23.1-35.3)
	≤18.4	28(22.4)	29(20.7)	1.55(0.83-12.02)	22.4	7.9(3.4-12.8)
	18.5-24.9[5]	42(33.6)	74(52.9)	1	-	
Physical activity[1]	Low	36(28.8)	29(20.7)	2.37(1.005-9.7)[6]	28.8	16.64(11.1-22.1)
	Moderate	65(52)	71(50.7)	1.41(0.81-11.8)	52	15.1(10.4-23.2)
	High[5]	24(19.2)	40(28.6)	1	-	
Sleep Quality[1]	Low	48(38.4)	37(26.4)	2.92(1.6-9.3)[6]	38.4	25.2(21.2-31.1)
	Moderate	55(44)	62(44.3)	1.72(0.76-11.4)	44	18.4(12.4-25.7)
	High[5]	22(17.6)	41(29.3)	1	-	
Smoking and tobacco use[2]	Yes	24(19.2)	21 (15)	1.49(0.73-6.1)	19.2	6.3(3.3-10.8)
	No[5]	101(80.8)	119 (85)			
Husband's smoking or tobacco use[3]	Yes	71(56.8)	75 (53.6)	1.31(0.67-9.3)	56.8	13.4(10.1-17.5)
	No[5]	54(43.2)	65 (46.4)			
Anemia[4]	Yes	25(20)	26(18.6)	1.23(0.52-8.8)	20	3.7(1.8-7.9)
	No[5]	100(80)	114(81.4)			
Diabetes type II[4]	Yes	10(8)	11(7.8)	1.26(0.41-9.6)	8	1.65(0.06-3.2)
	No[5]	115(92)	129(92.2)			
Having nutritional related problem[4]	Yes	39(31.2)	29(20.7)	1.99(1.01-11.1)[6]	29.6	14.7(10.3-21.2)
	No[5]	86(68.8)	111(79.3)			

[1]adjusted for age, education, Job and reproductive history factors .[2]taking a cigarette or one time water pipe a month was considered as smoker, [3]taking at least a cigarette or one time water pipe a day, [4]indicator for nutritional status, [5]reference group, [6]significant at level P<0.05, [7]the proportion of cases exposed.

4. Discussion

This study discovered that in the main the women with SI were more likely to have low life style and different life style related factors probably contribute unequally in increasing the chance of SI in southeast of Iran. Furthermore, the study indentified inappropriate sleep pattern and low physical activity as risk factors for SI in Iranian women. However, some menstrual-reproductive factors were investigated at present study to assessing and/or approving those confounding role. The results were in line with the previous studies (Dhont et al., 2011) that have approved the relation of obstetric history factors with SI.

This study indicated that delay in first conception after marriage may be increase the chance of SI in women that is not parallel with the previous study in Iran (Ahmadi AsrBadr et al., 2006). In Iran usually the couples who marry late, delay the conception and this situation could explain the effect of first productivity in higher age on SI. Regarding age at menarche it should be noted that our study is in line with the previous studies that have approved the effect of age at menarche and infertility (Chen et al., 2015; Guldbrandsen et al., 2014). This result

may account for the higher fecundity among women with an earlier age at menarche. However, some studies (Axmon et al., 2006; Wise et al., 2011) have concluded that age at menarche was not associated with fecundity. These discrepancies might be due to the variety on study population and study design, so that conducted the study in a specific subgroup and excluded women with irregular menstrual cycles and might have selection bias. The menstrual cycle was another factor that was related to likelihood of infertility and the women with irregular menstruation have more chance to have got SI. This result is concordance with previous studies around the word (Small et al., 2006; Henrik et al., 1997).

As stated in the results section, the main goal of this study was estimation of the association's strength of some life style related factors and SI in a group of Iranian women. Considering potential socio-demographic and reproductive confounding factors in a case-control study using statistical models, higher BMI, lower physical activity, lower sleep quality and having nutritional related problem (regardless anemia and diabetes type 2), were significantly increased the likelihood of SI among women. We discussed here regarding these predictors.

In this study the BMI was recognized as a related factor of the SI in women. This result is in line with the previous studies around the world that discussed about obesity and reproduction (Practice Committee of the American Society for Reproductive Medicine, 2015; Best & Bhattacharya, 2015). Although the lower BMI was also related to SI, but excessive weight contributes to ovulatory disorders probably via insulin resistance. Though, it could be concluded that having and retaining normal weight and BMI probably decrease the chance of SI. It is recommended that the pictorial brochures with instructions and recommendation about importance of weight and BMI after first fecundity should be prepared and given to the women in the hospitals after delivery. However, the awareness sessions targeting the women could sensitize them and their relatives to keep their weigh normally.

Although the previous studies have noted that tobacco smoking significantly increase the risk of SI (Tzonou et al., 1993), but neither tobacco use of women not smoking or tobacco use of her husband were not related to SI in this study. However, the determination of history, duration and quality status of cigarette smoking is not simple and inappropriate measurement of this exposure could explain this result.

As the result of this study the sedentary or low level physical activity may increase the odds of SI in women. The previous study in Iran showed that physical activity affects the reproductive system (Esmaeilzadeh et al., 2013) and also there is a relation between physical activity, ovulatory disorder infertility and time to pregnancy (Janet et al., 2002; Lauren et al., 2012).However it is not clear that how the mobility influence the ovum-producing reproductive organ, but it seems that the ovaries' activity of women with higher physical activity is stable and sustain during the time, so that they have more chance to next pregnancies. It should be noted that as the result of one previous study there is no overall association between regular physical activity and semen quality of men (Lauren et al., 2011).

Another interesting finding in our study, and not yet reported, is the strong association of sleep quality with infertility adjusting for reproductive history and some demographic variables. The women with psychological disorders have no appropriate sleep pattern and the sleep quality among women with high stress is low.

Sleep and sleep disturbances are recognized as determinants of women's health and wellbeing, especially in the context of the menstrual cycle, pregnancy, and menopause (Jacqueline et al., 2015). However, lit is unknown whether fertility is affected by sleep quantity and quality. This study showed that lower sleep quality may possibly increase the odds of SI of the women. It seems that the stress, sleep dysregulation, and circadian misalignment are delineated for their potential relevance to infertility and SI (J. L. Lin, Y. H. Lin, & Chueh, 2013). In conclusion, there is growing evidence that circadian rhythmicity and reproduction are correlated, so that the circadian timing system influences a wide range of physiological systems via hormonal and neural routes (Boden & Kennaway, 2006). There are two assumptions in this regard, 1) due to familial problems the secondary infertile women have high stress that disrupts their sleep, 2) the women with high level of stress that cause to circadian rhythm disorders that influence their ovaries and consequently cause to SI. However, the studies have shown that the psychological factors influence the infertility, on the other hand, the experience of the diagnosis and treatment of infertility causes subsequent psychological distress (Cwikela, Gidronb, & Sheiner, 2004; Lapane et al., 1995; Boivin, 2003) and eventually there is a reciprocal relationship exists between psychological factors and infertility. It should be noted that the psychological factors such as depression, anxiety and stress-induced changes in heart rate and cortisol are predictive of a decreased probability of achieving a viable pregnancy (Westphal et al., 2004; Czeizel, Metneki, & Dudas, 1996), therefore relation between sleep quality and SI is anticipated.

In this study a proxy variable was used to measuring the micronutrients intake and to evaluate the relation of nutrition on infertility, having nutritional related problems were considered among the subjects. Our data suggest

that having nutritional related problem probably increases the chance of SI and nutritional status and intake of micronutrients are determinants of the SI of the women. It seems that a decreasing in the frequency of ovulatory problems may account for the beneficial effects of multivitamins and other micronutrients. The previous studies have shown that intake of some micronutrients may enhance female fertility and users of micronutrient supplements have higher pregnancy rates (Jorge et al., 2008; The ESHRE Capri Workshop Group, 2006). Also the studies indicates that regular use of multivitamin supplements may decrease the risk of ovulatory infertility (Chavarro et al., 2007). As the results of the studies the reproductive condition is closely linked to nutritional status, especially undernutrition in the female, and inhibitory pathways involving detectors in the hind brain suppress ovulation in subjects with weight loss (Clara et al., 2011). According the results of the previous study, high intake of low-fat dairy foods may increase the risk of anovulatory infertility whereas intake of high-fat dairy foods may decrease this risk (Chavarro et al., 2007). It seems that the nutrient intake in subjects with any having nutritional related problems (as the gynecologists' and other physicians' opinion) is not enough, therefore, the relation between nutritional related problems and SI is justifiable.

The history of anemia and diabetes type 2 was weakly associated with SI in this study. This result is in line with the previous study in this context (Clara et al., 2011). It should be noted that the anemia and diabetes are chronic and the exact onset of these disease is unknown. Therefore, assessment of the effect of these diseases on SI is not possible in short time.

As most of the independent variables were objective and the data were collected by female trained staffs, so possibility of recall and interview bias is low in this study. Also the controls were the women who had attended in private offices or clinics for other obstetrics' complain; therefore, the controls are from the population base of the cases. On the other hand we firstly identified the potential confounding factors and then controlled those methodologically using valuable statistical models. Hence, it seems that the results of this study could be valid and reliable. However, conducting of this study encountered some limitations; since women experiencing SI reported many pregnancies than fertile women in, the contributions of pregnancy-related and obstetric events to cases were probably underestimated. It should be noted that due to the case-control design of this study, temporal relationships between life style and reproductive history related factors and infertility cannot be ascertained. Finally lack of infertility treatment center was an administrative limit in this study regarding data collection. Although the advice and cooperation of midwives and gynecologists rectified the problem, but the managing and conducting similar study in places that have infertility treatment center could help to better detection of the related factors. Therefore, to clearly discovering of relation between life style and infertility, conducting a cohort study in this regard is recommended.

5. Conclusion

We found that life style in different aspects is associated with odds of SI of the women and women planning to become pregnant should consider this issue and promoting life style in any aspect may help them to become pregnant. However, management of the infertility problem should include the suitable way of preventing SI considering underlying causes such as revealed factors in this study. In this study the most PAR% was belonged to higher BMI and lower sleep quality, therefore, decreasing stress among women via holding stress management classes and preparing facilities in the communities to physical activity and weight decline is too important and effective manner for decreasing the likelihood of infertility and SI of the women in the societies. It must be mentioned that financial supports should be regarded to effective manage of this problem. Since both obesity and infertility are increasing public health issues in Iranian women, more attention should be paid to lifestyle behaviors, especially gaining weight in women who have experienced infertility.

Competing Interests Statement

The authors declare that there is no conflict of interests regarding the publication of this paper.

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