Predictive factors of marital satisfaction in women during postpartum period: The PATH model

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Abstract

**Background:** This study aimed to test a conceptual model considering the interrelated role of anxiety, body satisfaction, breastfeeding, SF, type of personality, income, education, history of infertility on women’s marital satisfaction (MS). Also test the mediating role of SF, anxiety, and breastfeeding.

**Methods:** In a cross-sectional study, 447 women after childbirth meeting the inclusion criteria were enrolled from public health clinics. All mothers were selected in 6 month childbirth period. The female SF index (FSFI), Body Self-Relation Questionnaire (BSRQ), the Enrich Marital Satisfaction and the NEO Personality Inventory (NEO PI-R) were used. Data was analyzed using descriptive test, and Path analysis.

**Results:** We found that SF, anxiety, the level of education, income, and extraversion personality have direct effects on MS. Anxious women have worse SF and MS. In our study, SF, breastfeeding, and anxiety were the three major mediators. Body satisfaction, extraversion personality, and lower level of anxiety through improvement in SF have an indirect effect on MS. A higher level of education has a positive direct effect and indirect effect pathway from breastfeeding on MS. Furthermore, breastfeeding is more observed among educated, and infertile women that cause reduce the women's anxiety level, and this way improves SF and also MS (P<0.05).

**Conclusion:** This study revealed that the women who had higher levels of body dissatisfaction, sexual dysfunction, and anxiety have increased the possibility of MS problems 6-month postpartum. Given these relationships, it is recommended to health professionals to educate women about body changes during postpartum and to find ways to improve mothers' MS.

**Introduction**

The postpartum period is a vulnerable and stressful period for women due to various hormonal, physical, psychosocial changes such as adapting to parental rule, changes in body and self-image, loss of autonomy, breastfeeding, and taking care of the baby (1-3).

Marital satisfaction is defined as a sense of happiness, satisfaction, and joy experienced by the husband or wife when they consider all aspects of their marriage. MS explains how the sexual
partners` expectations are met, a decrease of which has negative effects on the couples mentally and physically (4). Having a baby interferes with MS by various factors such as a decrease in sexual intimacy, the financial burden of children, restriction of freedom, and conflict (8). As a result, the reduction in MS not only makes an unsuitable environment in a family but also drives to family instability and divorce (5). Whereas most women in the postpartum period encounter perineal pain, urinary incontinence, fatigue, and psychological problems, sexual function can be changed (5). The role of sexual relationships in MS in postpartum women is a major issue. There is evidence supporting the presence of an association between MS and having a safe and pleasurable sexual relationship (6). Therefore, awareness of predictors of MS of postpartum women is a necessity in providing the data to inform public policies, planning or intervention related to the health of women.

The objectives of the current study are to test a conceptual model considering the interrelated role of extraversion, history of infertility, wanted pregnancy, income, and education on MS of postpartum women. Also test the mediating role of breastfeeding, SF, anxiety, and body image. According to the above aims, our study proposes the following hypotheses (Hypotheses 1–6):

Hypothesis 1: Better SF, body satisfaction, extraversion personality, high income, and education is associated with a higher level of MS

Hypothesis 2: A lower level of anxiety associated with a higher level of body satisfaction, more MS, and SF.

Hypothesis 3: A higher level of body dissatisfaction is associated with more anxiety levels and poor SF, and MS.

Hypothesis 4: A higher frequency of breastfeeding per day is associated with poor SF.

Hypothesis 5: The history of infertility, type of delivery, anxiety, educational level, body image satisfaction, and unplanned pregnancy predict breastfeeding.

Hypothesis 6: type of delivery associated with women’s SF, body image satisfaction, and level of anxiety.

Method
Design and data collection
A cross-sectional study was conducted, evaluating MS in women after childbirth recruited to the study from public health centers in Zanjan, a city in the northwest of Iran. Surveys, providing the study data, were returned between 5 January and 1 April 2019.

The inclusion criteria included mothers who had a singleton, healthy babies, livening with a partner, pregnancy without complications, no history of surgery in the past 3 months, absence of the history of chronic disease includes diabetes, hypertension, thyroid, and cardiovascular diseases, not using psychiatric medications, willingness to participate in the study.

In this study, a total of 447 women were enrolled who were in a six-month childbirth period. Seventeen questionnaires have not been analyzed due to incomplete data and having exclusion criteria.

Ethics
This study was approved by the Ethical Committee of Zanjan University of Medical Sciences (IR.ZUMS.REC.1398.112). After explaining the study's purposes, written consent and verbal assent was collected from all participants and women were informed that their participation was voluntary, confidential, and anonymous.

Data Collection Instruments
Data collection instruments were a questionnaire including demographic and obstetric characteristics, Beck's anxiety inventory, female SF index (FSFI), Body Self-Relation Questionnaire (BSRQ), the Enrich Marital Satisfaction and the NEO Personality Inventory (NEO PI-R).

Demographic And Obstetric Data
Demographic and obstetric data included age, partner age, married age, educational level, job, type of delivery, family income, the number of times breastfeeding per day, and planned pregnancy.

Beck's Anxiety Inventory
we used the Iranian version of Beck's anxiety inventory for assessing anxiety disorder. This questionnaire contains 21 questions, each item was scored on a 4-point Likert-type scale of 0 (not at all) to 3 (severely). Higher total scores indicate more severe anxiety symptoms. The standardized cutoffs are 0-9 normal to minimal anxiety, 10-18 mild to moderate anxiety, 19-29 moderate to severe anxiety, 30-63 severe anxiety. The validity and reliability of the Iranian version of the
Female Sexual Function Index (fsfi)
This scale was composed of six subscales with 19 items that assess a woman’s sexual function during the previous four-week period. This questionnaire includes six main aspects of sexual functions consisting of sexual desire (two items), arousal (four items), lubrication (four items), orgasm (three items), satisfaction (three items) and pain (three items). The score ranges for all items are 0–5 except for items 1, 2, 15, and 16 (the range is 1–5). The sum score of each domain was multiplied in its certain factor. This factor for desire was 0.6, 0.3 for arousal and lubrication, and 0.4 for orgasm, satisfaction, and pain. The overall scale score ranged from 2 to 36, which higher scores meaning better SF. The overall scale score was obtained by adding the mean scores of all six domains, with ranged from 2 to 36. Higher scores represent the better SF. The psychometric properties of this questionnaire have been verified in the Iranian population (9).

Body Self-relation Questionnaire (bsrq)
For evaluating women’s attitude toward multiple aspects of body image structure, the Body Self-Relation Questionnaire (69 items) was used (10). This includes 10 subscales: appearance evaluation, appearance orientation, fitness evaluation, fitness orientation, health evaluation, health orientation, illness orientation, body areas satisfaction, overweight preoccupation, self-classified weight. The Iranian version of the BSRQ showed good validity and reliability (11).

Enrich Marital Satisfaction
This questionnaire has 35 items on a Likert scale from 4 (very much) to 0 (very little) used for assessing MS. The validity and reliability of the Iranian version of Enrich Marital Satisfaction have previously been confirmed (12). For the aim of the comparability of the scales, the scores of this questionnaire were transformed so that the maximum score was set to be 100. This tool had a 5-point Likert-type scale with the following cut-off point: scores between 10–22 (5–15%) and 23–28 (20–35%) represented the strong low satisfaction and the low satisfaction dissatisfaction of marital partners, respectively. Moreover, scores between 29–35 (40–60%) and 36–40 (65–80%) demonstrated moderate satisfaction and high satisfaction, respectively. Eventually, scores between 41 and 50 (85–100%) indicated a high level of satisfaction.
Neo Questionnaire
We used the NEO questionnaire in our study that is a 240-item self-report instrument to assess five personality domains: neuroticism, extraversion, agreeableness, conscientiousness, and openness to experience. Determining extraversion trait, 48 items are proposed in a 5-option Likert scale (completely disagree, disagree, no idea, agree, and strongly agree) and are scored by 0–4, respectively. The validity and reliability of the Iranian version of the questionnaire are well documented (13).

Statistical analysis
Bivariate correlations were used to analyze the degree of association between postnatal MS with SF, body image, personality, anxiety, income, level of education, and the number of times breastfeeding per day. Baseline data analyzed using descriptive statistics. Analyses were performed with the SPSS, version 21. P-values less than 0.05 were considered statistically significant. A path model was used to evaluate the cause-effect relationship between some variables. Direct, indirect, and total effects of causal relations between variables were found by path analysis. Path model is an extension of different regression, and allowed evaluation of more than one dependent variable at a time whereas allowing for variables to be dependent with respect to some of the variables and independent with respect to the others. LISREL software version 8.5 was used.

RMSEA (Root mean square error of approximation), AGFI (adjusted goodness of fit index), CFI (Confirmatory Factor Analytic), and Chi-square/df were used for evaluation of the model fitness. RMSEA values less than 0.07, Chi-square/df lower than 3, AGFI more than 0.9, and CFI more than 0.95 are indicative of a good fitting model.

Results
The means and standard deviations (SD) of the age and partner age were 28.90(6.09) and 33.92(6.30) years, respectively. Their mean married age was 6.6 (5.01). Only 28.61 percentage of participants were university level educated and their mean monthly family income was $230 (136$). Also, about 53.95% of them were first-time mothers (Table 1).
Table 1
Demographic characteristics of postpartum women

| Maternal Characteristic (n = 430) |        |
|----------------------------------|--------|
| Age*                             | 28.90 ± 6.09 |
| Partner age*                     | 33.92 ± 6.30 |
| Education**                      |        |
| Non university                   | 307(71.39) |
| University                       | 123(28.61) |
| Para                             |        |
| Primiparous                      | 232(53.95) |
| Multiparous                      | 198(46.05) |
| Married age*                     | 6.61 ± 5.01 |
| Income*                          | 230$±136$ |
*value are given as mean ± sd, ** value are given as number (percent)

Correlation bivariate analysis showed that MS was associated negatively with anxiety and was positively associated with body image satisfaction, SF, the higher level of education, income, breastfeeding and extraversion personality (p < 0.05)(Table 2). Type of delivery hasn’t any effect on the level of anxiety, body satisfaction, SF, and MS, therefore deleted from this model.

Table 2
Correlations between sexual function, anxiety, body image, extraversion, breastfeeding, income, education and marital satisfaction.

|                  | 1      | 2      | 3      | 4      | 5      | 6      | 7      |
|------------------|--------|--------|--------|--------|--------|--------|--------|
| 1. sexual function | -      | -0.48**|        |        |        |        |        |
| 2. Anxiety       |        |        | -0.33**|        |        |        |        |
| 3. Marital satisfaction | 0.22**| -0.33**|        |        |        |        |        |
| 4. Body image    | 0.25** | -0.19**| 0.004  |        |        |        |        |
| 5. Extraversion  | 0.30** | 0.02   | 0.16** | 0.17** |        |        |        |
| 6. Breast feeding| -0.20**| 0.24** | -0.13**| -0.03  | -0.11* |        |        |
| 7. Education     | 0.11*  | -0.15**| 0.22** | 0.04   | -0.03  | 0.13*  |        |
| 8. Income        | 0.24** | -0.40**| 0.54** | 0.04   | -0.05  | 0.16** | 0.14*  |
Values are given as Pearson coefficient (P-value) using Pearson correlation test.
*P < 0.05; ** P < 0.001.

Regarding to the conceptual model, the predictors of MS had perfectly good fitness indices (P-value < 0.001; chi2 = 33; DF = 12; chi2/df = 2.75; RMSEA = 0.06; CFI = 0.97; GFI = 0.98) (Table 3).

Table 3
Goodness of fit indices for the models.

|                  | CFI* | GFI** | RMSEA*** | Chi-square | df  | Chi-square/df*p** |
|------------------|------|-------|----------|------------|-----|-------------------|
| Path N = 430     | 0.97 | 0.98  | 0.06     | 33         | 12  | 2.75 < 0.001      |
*CFI: comparative fit index, **GFI: goodness fit index, ***RMSEA: root mean square error of approximation, ****Chi-square/df: chi-square to the degree of freedom index

Findings from the path analysis indicating the direct, indirect and total effects from the predictors on SF are reported in Table 4 and illustrated in Fig. 1.
SF, anxiety, the level of education, income, and extraversion personality have direct effects on MS. Anxious women have worse SF and MS. In our study, SF, breastfeeding, and anxiety were the three major mediators. Body satisfaction, extraversion personality, and lower level of anxiety through improvement in SF have an indirect effect on MS. A higher level of education has a positive direct effect and indirect effect pathway from breastfeeding on MS. Furthermore, breastfeeding is more observed among educated, and infertile women that cause reduce the women's anxiety level, and this way improves SF and also MS (P < 0.05).

**Discussion**

In the current study, it has been attempted to establish a strong relationship between theoretical and applied research topics using the path analysis method. Data collected demonstrated that anxiety, body image, SF, breastfeeding, level of education, and extraversion were significant along the pathway of predictors of MS.

The path analysis showed that SF is one of the main factors influencing women's MS. Level of anxiety, body satisfaction, and extraversion personality have a direct effect on women's SF. SF decreases in the postpartum period due to the decline of libido, desire, and orgasm (24). But having a high level of MS improves SF and as a result, enhances the overall quality of marriage (6). In line with recent research according to previous studies (14–16), lower body image was associated with lower
postpartum SF that confirmed our research about this issue. Our findings contradict the results of Lauren et al’s study, which revealed that postpartum sexual desire was not influenced by breastfeeding status, vaginal trauma, stress, body image, and social support (17). Jawed-Wessel et al study reveal significant relationships between body satisfaction, body-image self-consciousness, and female genital self-image and SF (16).

This study further showed that extraverted women have a higher SF and MS. As extraverts have earlier, more frequently, more varied sexual behavior, pre-coital love play and more different positions in intercourse (18), extraversion associated with SF. In our study, extraversion is the main predictor of SF. In this regard, Crisp et.al showed that introversion personality related to poor SF (19). Although we found a study that showed no association between extraversion and SF (15). Childbirth is a stressful process, and multiple changes, physically and mentally, occur during this period. This study confirms that anxiety influences postpartum MS directly, with results showing that women with more anxiety have lower levels of postpartum SF, and MS, as shown in previous studies (20, 21). Also, women who had a history of infertility, body dissatisfaction, low income, and the lower number of times breastfeeding per day were more anxious. Our results are consistent with the results of a study by Zare et al, which indicated a significant inverse relationship between women's and husband's age, depression, anxiety, and stress with MS (20). The lack of intimacy between the couple and marital conflict is associated with depression within women, and anxiety symptoms are one of the predictors of declined marital adjustment over time (22, 23). The results of Clout et al.‘s study has revealed that marital relationship quality and attachment style are the main predictors of depression, anxiety, and stress among postpartum women (24). Our findings indicated that Mothers with a lower level of anxiety feed breast milk their babies more frequently. in this regard, Fallon’s study reveals that postpartum-specific anxiety was related to lower odds of exclusive breastfeeding and breastfeeding in any quantity during 6 months postpartum (25). In women who had breast-feeding, postpartum anxiety decreases self-efficacy, increases breastfeeding problems, and may negatively influence on breastfeeding behaviors and breast milk composition (26).

Our study sought to understand the predictors of postnatal MS among Iranian women. Whereas some
studies have confirmed that SF, anxiety, and body image, contribute to MS separately (16, 20, 23, 27), the current study was among the first to consider these factors in tandem. The combination of the assessed domains (anxiety, SF, MS, breastfeeding, type of personality) is the main strength of the current study. Other strengths of this study include the developed conceptual model (path diagram in Fig. 1), and the use of validated questionnaires (eg, FSFI, Enrich, NEO, BSRQ, etc.).

This study has some limitations. First, we investigated two aspects of personalities (extroversion and introversion). It would be better that all types of personalities were assessed to detect correlations. Second, Intimacy, partner violence, and intrapersonal relationship are important factors that impact MS; but we did not investigate these areas in our research. It has been suggested that future studies consider these issues. Third, we assessed anxiety as one of the mental disorders. It is recommended that other psychological problems are considered.

Conclusion
This study revealed that the women who had higher levels of body dissatisfaction, sexual dysfunction, and anxiety have increased the possibility of MS problems 6-month postpartum. Given these relationships, it is recommended to health professionals to educate women about body changes during postpartum and to find ways to improve mothers' MS.

List Of Abbreviations
MS: Marital satisfaction
SF: Sexual function

Declarations

Ethics approval and consent to participate
The study was approved by the Zanjan University of Medical Sciences (IR.ZUMS.REC.1398.112). All procedures were in accordance with the ethical standards of the Regional research committee and with the Declaration of Helsinki 1964 and it later amendments. Informed consent was obtained from all participants included in the current study.

Consent for publication
All the women were informed about the aims of the project, and gave a written consent before participating in the study.
Availability of data and materials
The data sets used and analyzed during the current study are available from the corresponding author on reasonable request.

Competing Interests
The authors declare no conflict of interest.

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Authors’ contributions
S.Y and S.N contributed to the conception and design of the study; SY and S.N did the literature search; SY performed the statistical analysis; SY and S.N wrote the first draft of the manuscript. All authors contributed to manuscript revision, read, and approved the submitted version.

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References
1. Giallo R, Rose N, Vittorino R. Fatigue, wellbeing and parenting in mothers of infants and toddlers with sleep problems. Journal of Reproductive and Infant Psychology. 2011;29(3):236-49.

2. Rezaei N, Azadi A, Sayehmiri K, Valizadeh R. Postpartum sexual functioning and its predicting factors among Iranian women. The Malaysian journal of medical sciences: MJMS. 2017;24(1):94.

3. Ducarme G, Hamel JF, Brun S, Madar H, Merlot B, Sentilhes L. Sexual function and postpartum depression 6 months after attempted operative vaginal delivery according to fetal head station: A prospective population-based cohort study. PloS
4. Samadaee-Gelehkolae K, McCarthy BW, Khalilian A, Hamzehgardeshi Z, Peyvandi S, Elyasi F, et al. Factors associated with marital satisfaction in infertile couple: a comprehensive literature review. Global journal of health science. 2016;8(5):96.

5. Anzaku A, Mikah S. Postpartum resumption of sexual activity, sexual morbidity and use of modern contraceptives among Nigerian women in Jos. Annals of medical and health sciences research. 2014;4(2):210-6.

6. Schoenfeld EA, Loving TJ, Pope MT, Huston TL, Štulhofer A. Does sex really matter? Examining the connections between spouses’ nonsexual behaviors, sexual frequency, sexual satisfaction, and marital satisfaction. Archives of sexual behavior. 2017;46(2):489-501.

7. Fata L, Birashk B, Atefvahid M, Dabson K. Meaning assignment structures/schema, emotional states and cognitive processing of emotional information: comparing two conceptual frameworks. Iranian journal of psychiatry and clinical psychology. 2005;11(3):312-26.

8. Kaviani H, Mousavi A. Psychometric properties of the Persian version of Beck Anxiety Inventory (BAI). Tehran University Medical Journal TUMS Publications. 2008;66(2):136-40.

9. Mohammadi K, Rahnama P, Montazeri A, Foley FW. The multiple sclerosis intimacy and sexuality questionnaire-19: reliability, validity, and factor structure of the Persian version. The journal of sexual medicine. 2014;11(9):2225-31.

10. Cash TF. Multidimensional Body–Self Relations Questionnaire (MBSRQ). Encyclopedia of feeding and eating disorders: Springer; 2015. p. 1-4.

11. Khodabandeloo Y, Fat’h-Abadi J, Motamed-Yeganeh N, Yadollahi S. Factor Structure and Psychometric Properties of the Multidimensional Body-Self Relations
Questionnaire (MBSRQ) in Female Iranian University Students. Practice in Clinical Psychology. 2019;7(3):7-.

12. Asrar S. Assessment of reliability and validity of Enrich marital satisfaction in group of couples referred for divorce in Shiraz city: MS. Dissertation. Islamic Azad University, Branch of Arsanjan, 2004.(Persian).

13. Joshanloo M, Daemi F, Bakhshi A, Nazemi S, Ghafari Z. Construct validity of NEO-personality inventory-revised in Iran. Iranian Journal of Psychiatry and Clinical Psychology. 2010;16(3):220-30.

14. Pauls RN, Occhino JA, Dryfhout VL. Effects of pregnancy on female sexual function and body image: a prospective study. The journal of sexual medicine. 2008;5(8):1915-22.

15. Levy S, Handelzalts JE, Yadid L, Geller S. Personality and Postpartum Sexual Functioning in Israeli Women: The Mediating Role of Body Image. Psychological reports. 2018:33294118809935.

16. Jawed-Wessel S, Herbenick D, Schick V. The relationship between body image, female genital self-image, and sexual function among first-time mothers. Journal of sex & marital therapy. 2017;43(7):618-32.

17. Hipp LE, Low LK, van Anders SM. Exploring women's postpartum sexuality: Social, psychological, relational, and birth-related contextual factors. The journal of sexual medicine. 2012;9(9):2330-41.

18. Barnes GE, Malamuth NM, Check JV. Personality and sexuality. Personality and Individual Differences. 1984;5(2):159-72.

19. Crisp C, Vaccaro C, Fellner A, Kleeman S, Pauls R. The influence of personality and coping on female sexual function: a population survey. The journal of sexual medicine. 2015;12(1):109-15.
20. Zare Z, Golmakani N, Shareh H, Khadem N. Factors related to marital satisfaction in primiparous women during postpartum period. Journal of Midwifery and Reproductive Health. 2014;2(2):120-7.

21. Odinka JI, Nwoke M, Chukwuorji JC, Egbuagu K, Mefoh P, Odinka PC, et al. Postpartum depression, anxiety and marital satisfaction: A perspective from Southeastern Nigeria. South African Journal of Psychiatry. 2018;24(1).

22. Austin M-PV, Hadzi-Pavlovic D, Priest SR, Reilly N, Wilhelm K, Saint K, et al. Depressive and anxiety disorders in the postpartum period: how prevalent are they and can we improve their detection? Archives of women's mental health. 2010;13(5):395-401.

23. Dehle C, Weiss RL. Associations between anxiety and marital adjustment. The Journal of psychology. 2002;136(3):328-38.

24. Clout D, Brown R. Marital relationship and attachment predictors of postpartum stress, anxiety, and depression symptoms. Journal of Social and Clinical Psychology. 2016;35(4):322-41.

25. Fallon V, Halford JCG, Bennett KM, Harrold JA. Postpartum-specific anxiety as a predictor of infant-feeding outcomes and perceptions of infant-feeding behaviours: new evidence for childbearing specific measures of mood. Archives of women's mental health. 2018;21(2):181-91.

26. Fallon V, Groves R, Halford JCG, Bennett KM, Harrold JA. Postpartum anxiety and infant-feeding outcomes: a systematic review. Journal of Human Lactation. 2016;32(4):740-58.

27. AHMAD SM, BAGHERI NM. Sexual dysfunction and related factors among breast feeding women. 2011.

28. Roudsari RL, Javadnoori M, Hasanpour M, Hazavehei SMM, Taghipour A. Socio-cultural
challenges to sexual health education for female adolescents in Iran. Iranian journal of reproductive medicine. 2013;11(2):101.

29. Maasoumi R, Lamyian M, Khalaj Abadi Farahani F, Montazeri A. Women’s perception of sexual socialization in Iran: A qualitative study. Journal of Qualitative Research in Health Sciences. 2013;2(3):221-33

Figures

Figure 1

Path diagram for the predictors of marital satisfaction