

Differential Impact of Sociodemographic Variables on the Quality of Life of Menopausal Iranian Women

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Abstract

Background: Menopause is a natural physiological event in women's lives that can potentially have negative effects on their quality of life (QoL).

Objectives: The aim of the present study was to explore the extent to which sociodemographic characteristics are related to QoL and to compare the QoL of Iranian women with that of women in other countries.

Methods: This cross-sectional study was conducted using cluster sampling of 250 postmenopausal women in Hamadan in the west part of Iran in 2014. The participants were interviewed and completed questionnaires. These methods provided data on sociodemographic characteristics and menopause-specific QoL factors (vasomotor symptoms, psychosocial symptoms, physical symptoms, and sexual satisfaction). The QoL evidence was also compared with normative data from other countries. Inferential and descriptive statistics via SPSS 20.0 software were used for data analysis.

Results: The mean age of the respondents was 52.27 years (SD = 3.84). The average scores of their vasomotor, psychosocial, physical, and sexual dimensions were 3.86, 2.30, 2.44, and 1.35, respectively. Sociodemographic dimensions, such as smaller age, being married, having a lower education level, and having a higher number of children, were related to sexual symptoms. Vasomotor symptoms were related to lower education and lower income. Psychosocial symptoms and physical symptoms were related to hormone replacement therapy. The QoL results did not differ from the normative data from other countries.

Conclusions: Sociodemographic dimensions were related to QoL, particularly to sexual satisfaction. The QoL results for postmenopausal Iranian women do not differ from results from other countries, suggesting that cultural factors do not influence QoL among postmenopausal Iranian women.

Keywords: Postmenopause, Sociodemographic Status, Quality of Life

1. Background

In a woman's life, menopause is the ending of menstruation. During menopause, fertility ceases because production of estradiol and progesterone by the ovaries comes to an end (1). Based on this cessation of the endocrine function of the ovaries, a woman is no longer able to conceive or give birth to children (climacteric). The transition from being potentially or actually fertile to being definitively infertile occurs gradually over a period of years, usually starting around 45–55 years of age, and is a natural stage in female development (2). The physiological signs of menopause usually include the beginning of irregular menses and va-

somotor instability (hot flashes, night sweats). Psychologically, the change can be marked by sudden mood swings, increased stress, forgetfulness, and sleep disturbances (1, 2). Due to a variety of physiological, psychological, and social causes, menopausal changes may often coincide with critical life events, such as dealing with and caring for elderly parents, the death of parents, children leaving home, or the birth of grandchildren. Moreover, from a psychological point of view, menopause indicates a definite and irreversible psychophysiological period of human female development a clear sign of "getting older" that may be difficult for an individual to accept and with which an individual may have problems coping (3).

During the menopausal period, women often identify lack of energy and vitality as the most frequent and distressing effects together with psychological effects, such as depression, anxiety, irritability, mood swings, memory problems, and lack of concentration (1). Weber et al. (2) suggested that declines in estrogen during menopause may be associated with declines in cognitive functioning, bringing an increased risk of depressive symptoms and depressive disorders. However, most women do not develop depression during their menopausal transition, and assumptions about the occurrence of major depressive disorder in menopausal women might be based largely on “beliefs” and hearsay. Findings are either lacking or mixed (3, 4).

The psychological changes most frequently reported are depression and/or anxiety (3, 5), fatigue, irritability, memory loss, problems with concentration, mood disturbances, sleep disturbances (poor or light sleep), insomnia (6, 7), sleepiness (8), and a decline in quality of life (QoL) (9). Specifically, good QoL among postmenopausal women is defined as a favorable state of vasomotor, psychosocial, and physical wellbeing and sexual satisfaction. However, QoL evidence for non-Western populations is limited, and the associations between QoL and sociodemographic factors have not been well explored. Therefore, the first aim of the present study was to investigate the association between QoL and sociodemographic factors.

QoL following menopause is influenced by many parameters, including vasomotor and urogenital symptoms and psychosocial and physical status (10, 11). Women may experience significant QoL changes during menopause (12), and several studies have indicated that QoL is impaired in menopausal women (13-15).

The available evidence concerning possible cultural influences on the QoL of postmenopausal women is primarily derived from Asian and industrialized Western populations; there is currently very little evidence derived from non-Western countries, such as the Islamic Republic of Iran (henceforth: Iran). Therefore, another aim of the present study was to compare the QoL of postmenopausal Iranian women with evidence from other countries. In this regard, studies have indicated that the prevalence of menopausal symptoms is markedly higher in Asian populations than in non-Asian populations, and the effects of these symptoms may have been underestimated (13, 14). Although women throughout the world experience similar hormonal changes as a result of menopause, their menopausal experiences might be affected by sociodemographic characteristics, individual and cultural factors, and environmental conditions (16). Some studies have shown that particular demographic characteristics, such as age, marital status, education level, economic circum-

stances, and number of children, are factors that affect postmenopausal life (17, 18). To our knowledge, comparable data concerning postmenopausal women in Iran is lacking so far.

2. Objectives

The purpose of the present study was twofold: to investigate the association between sociodemographic variables and the QoL of postmenopausal Iranian women and to compare these QoL results with those from other countries. Instead of using hypotheses, an exploratory approach was chosen.

3. Methods

3.1. Sample

This cross-sectional analytical study was conducted in Hamadan in the west part of Iran between November 2013 and October 2014. A total of 250 postmenopausal women took part in the study. Sampling was based on the cluster method, in which each cluster included 20 households in different sections of the city. The choice of 20 households for the cluster size was based on the seven-day performance capacity of the data collection group, which consisted of two interviewers. The statistical framework used was based on the household lists held by the health department in Hamadan Province. Women aged between 50 and 60 years with one year or longer of amenorrhea and with an intact uterus were asked to participate in the study.

3.2. Procedure

Participants were informed of the voluntary nature of their participation in the study and of the study's aims. After obtaining written informed consent, a brief face-to-face interview was conducted to collect sociodemographic information (age, civil status, employment, marital status, education level, income, health insurance coverage, number of children, age at menopause, and history of hormone replacement therapy [HRT]) and to assess physical and mental health concerns. The thorough structured interview to assess QoL was based on the questionnaire described in greater detail below. This study was conducted with approval from Hamadan University of Medical Sciences's institutional review board and ethical committee and was conducted in accordance with the ethical standards laid down in the Declaration of Helsinki.

3.3. Tools

Sociodemographic variables. Information about the participants' age (which was dichotomized into 50 - 55-year and 55 - 60-year ranges), age at the beginning of menopause (40 - 50 years or 50 years and older), civil status (married or single), education (highest level: illiterate, primary school, middle school, or high school), income (below \$400, \$400 - 800, or more than \$800 per month), HRT status (yes or no), and number of children (fewer than 4, 5 - 7, or more than 7).

Menopause-Specific QoL Questionnaire. QoL was assessed via a structured interview based on the Menopause-Specific Quality of Life Questionnaire (MENQOL) (10, 17, 18). The MENQOL consists of 29 items that assess menopausal symptoms in four dimensions: vasomotor symptoms, psychosocial symptoms, physical symptoms, and sexual satisfaction. For every symptom experienced, the participants were asked to indicate how bothered they had been by the symptoms on a seven-point scale ranging from 0 (not at all bothered) to 6 (extremely bothered). Next, a mean score for each of the four subscales and the total MENQOL score were calculated. Higher scores reflected more severe symptoms or discomfort (Cronbach's alpha for the present sample: 0.85).

Normative QoL data from other countries. Normative evidence of the QoL of menopausal women in other countries was taken from published studies that used the MENQOL. Specifically, normative data was compared from the following countries: Iran: Fallahzadeh (17), Ecuador: Chedraui et al. (19), Chile: Blumel et al. (20), Canada: Whelan et al. (21), Pakistan: Nisar et al. (22).

3.4. Statistical Analysis

To calculate the associations between the four dimensions of QoL, a series of Pearson's correlations was performed. Next, a series of ANOVAs was performed with the sociodemographic dimensions as independent variables and the QoL dimensions as dependent variables. Where appropriate, post hoc analyses were performed with Bonferroni-Holm corrections for p values. To compare the QoL data from this study with the normative evidence from other countries, a series of ANOVAs was performed. The level of significance was set at $P < 0.05$. All statistical analyses were calculated with SPSS® 20.0 (IBM Corporation, Armonk, NY, USA) for Apple Macintosh®.

4. Results

The mean age of the 250 women included in this study was 52.27 ± 3.84 years. More than half were between 50 and 55 years old. The mean length of time since menopause

was 6.93 ± 4.8 years. The proportion of women with no formal education was 50% ($n = 125$); only 11.6% ($n = 29$) of the sample was highly educated. The majority (70.8%) of these women were still married and living with their husbands. Most women (94%) were housewives, and only 15 (6%) were employed. At the time of survey, 66 (26.4%) participants reported household incomes of less than \$400 per month. Only 40 (16%) participants had undergone HRT within the preceding six months.

The mean total and subscale MENQOL scores and the prevalence of low to severe total scores in relation to menopause symptoms are depicted in Table 1. Overall, the most prevalent symptom was body aches, which was reported by 83.2% of the sample. The least common symptom was an increase in facial hair; this was reported by only 32.8% of the sample. In total, 82% reported "feeling tired or worn out," while 76.8% and 76.4% reported a decrease in "physical strength" and a "lack of energy," respectively (the full sample characteristics are reported in Table 1).

Table 2 reports the correlations between the four dimensions of menopause-related QoL factors (vasomotor symptoms, psychosocial symptoms, physical symptoms, and sexual satisfaction).

Higher vasomotor symptoms were associated with higher psychosocial, physical, and overall symptoms but not with lower sexual satisfaction. Higher psychosocial symptoms were associated with higher physical, sexual, and overall symptoms; higher physical symptoms were associated with lower sexual satisfaction and overall score. Lower sexual satisfaction was associated with higher overall symptoms.

Table 3 summarizes the descriptive and inferential results from the ANOVAs with sociodemographic dimensions as independent variables and QoL dimensions as dependent variables. Smaller age, being married, having a lower education level, and having a higher number of children were related to sexual symptoms (significant ANOVAs and post hoc analyses with Bonferroni-Holm corrections for P values). No other statistically significant mean differences were observed for this QoL dimension. Vasomotor symptoms decreased with greater education and higher income (significant ANOVAs and post hoc analyses with Bonferroni Holm corrections for P values). There were fewer psychosocial and physical symptoms in participants who had undergone HRT. No other statistically significant mean differences were observed for these dimensions.

The QoL of postmenopausal Iranian women were compared with that of postmenopausal women from Ecuador, Chile, Canada, and Pakistan. Table 4 gives a descriptive and statistical comparison of the QoL dimensions between five different countries. No significant mean differences were observed between these groups of women.

Table 1. Frequency Distribution and Scores of MENQOL Items

| Symptom | No. (%) | Mean \pm SD |
|---|------------|-----------------|
| Vasomotor dimension | | |
| Hot flushes or flashes | 189 (75.6) | 3.94 \pm 2.74 |
| Night sweats | 182 (72.8) | 3.71 \pm 2.84 |
| Sweating | 190 (76) | 3.92 \pm 2.75 |
| Total vasomotor dimension | | 3.86 \pm 2.47 |
| Psychosocial dimension | | |
| Being dissatisfied with personal life | 149 (59.6) | 2.34 \pm 2.37 |
| Feeling anxious or nervous | 189 (75.6) | 3.50 \pm 2.56 |
| Experiencing poor memory | 152 (60.8) | 2.37 \pm 2.35 |
| Accomplishing poor memory | 159 (63.6) | 2.35 \pm 2.26 |
| Feeling depressed, down, or blue | 160 (64) | 2.42 \pm 2.40 |
| Being impatient with other people | 120 (48) | 1.65 \pm 2.21 |
| Feeling of wanting to be alone | 104 (41.6) | 1.50 \pm 2.23 |
| Total psychosocial dimension | | 2.30 \pm 1.38 |
| Physical dimension | | |
| Flatulence (wind) or gas pains | 162 (64.8) | 2.74 \pm 2.55 |
| Aching in muscles and joints | 208 (83.2) | 4.09 \pm 2.45 |
| Feeling tired or worn out | 205 (82) | 3.78 \pm 2.40 |
| Difficulty sleeping | 147 (58.8) | 2.62 \pm 2.64 |
| Aches in back of neck or head | 170 (60.8) | 2.88 \pm 2.50 |
| Decrease in physical strength | 192 (76.8) | 3.14 \pm 2.28 |
| Decrease in stamina | 181 (72.4) | 2.91 \pm 2.38 |
| Feeling a lack of energy | 191 (76.4) | 2.89 \pm 2.21 |
| Drying skin | 113 (45.2) | 1.78 \pm 2.39 |
| Weight gain | 118 (47.2) | 1.81 \pm 2.34 |
| Increased facial hair | 82 (32.8) | 1.22 \pm 2.06 |
| Changes in appearance, texture, or tone of skin | 106 (42.4) | 1.63 \pm 2.29 |
| Feeling bloated | 93 (37.2) | 1.30 \pm 2.17 |
| Low backache | 157 (62.8) | 2.76 \pm 2.64 |
| Frequent urination | 127 (50.8) | 2.09 \pm 2.49 |
| Involuntary urination when laughing or coughing | 99 (39.6) | 1.46 \pm 2.16 |
| Total physical dimension | | 2.44 \pm 1.26 |
| Sexual dimension | | |
| Change in sexual desire | 126 (50.4) | 1.66 \pm 2.04 |
| Vaginal dryness during intercourse | 107 (42.8) | 1.28 \pm 1.87 |
| Avoidance of intimacy | 98 (32.2) | 1.10 \pm 1.74 |
| Total sexual dimension | | 1.35 \pm 1.57 |
| Postmenopausal quality of life | | 2.53 \pm 1.11 |

Table 2. Descriptive Statistics and Intercorrelations Between the Study Variables (n = 250)

| Variables | 2 | 3 | 4 | 5 | Mean | SD |
|-----------------|--------------------|--------------------|--------------------|--------------------|------|------|
| 1. Vasomotor | 0.168 ^a | 0.231 ^a | 0.045 | 0.447 ^a | 3.86 | 2.47 |
| 2. Psychosocial | - | 0.561 ^a | 0.259 ^a | 0.754 ^a | 2.30 | 1.38 |
| 3. Physical | | - | 0.278 ^a | 0.919 ^a | 2.44 | 1.26 |
| 4. Sexual | | | - | 0.423 ^a | 1.35 | 1.57 |
| 5. Total | | | | - | 2.53 | 1.11 |

^aP < 0.001.

5. Discussion

Among postmenopausal Iranian women, menopause-related QoL was related to specific sociodemographic and menopause-related dimensions. Furthermore, the menopause-related QoL scores of this Iranian sample did not differ from the QoL scores obtained from comparable populations within other countries.

The results of this study showed that most women had a moderate and relatively positive status in terms of the physical dimension of QoL. These results are consistent with the findings reported by Taebi et al. (18) and Fallahzadeh (17). Other studies have produced similar results (23, 24). Among the symptoms associated with the physical dimension of QoL, joint and muscle pain, fatigue, and back pain had the greatest impact. Fallahzadeh (17) and Shouhani et al. (25) both found that back pain, joint and muscle pain, and fatigue were among the most common complaints and physical ailments reported by postmenopausal women. These results are consistent with the findings of other studies (26-28). Since a considerable proportion of postmenopausal women suffer from moderate to severe physical problems, particular attention should be paid to this issue when providing healthcare services to this population.

In the present study, women had a largely positive status in terms of the sexual dimension of their QoL. These results are consistent with the findings of the study by Taebi et al. (18); however, the levels we found are higher than those reported in studies from other countries (17, 24, 29). Though it cannot be verified on basis of the present data, our assumption is that these differences are due to cultural factors. In some societies, for example, it is difficult to speak about sexual issues, and for some people, sexual change with aging is regarded as natural. Among the symptoms associated with the sexual dimension, changes in sexual desire had the greatest impact on QoL. These results are consistent with the findings of similar studies (17, 25, 30).

There was a significant relationship between the sex-

ual dimension of women's QoL and their age, level of education, and marital status. Women's QoL decreased with age as the incidence and severity of symptoms and problems with the sexual dimension increased. Because married women may have more sexual intercourse and consequently may think about sexual issues more often, they may be more likely to report symptoms associated with the sexual dimension than single women. In this regard, Fallahzadeh (17), Sheikhan et al. (29), and Ehsanpour et al. (31) all reported a significant relationship between the sexual dimension of postmenopausal women's QoL and age and education. Research shows that educated women who are in better economic circumstances enjoy a higher QoL during menopause (14, 15, 32). Overall, the results of this study are consistent with the findings of the majority of similar studies.

A majority of our participants had poor QoL with respect to the vasomotor dimension. This is consistent with the majority of studies, which have reported the vasomotor dimension of postmenopausal women's QoL to be poor or moderate (Taebi et al. (18); Fallahzadeh, (17); Li et al. (24); Blumel et al. (33)). The minor differences are probably due to differences in the measures used in these other studies. Among the symptoms associated with the vasomotor dimension, hot flush had the greatest impact on women's QoL. Shouhani et al. (25) and Fallahzadeh (17) both reported hot flush as the most common complaint associated with the vasomotor dimension. These results are also consistent with the findings of some other studies (34, 35). In the present study, there was a significant negative relationship between level of education and the vasomotor dimension of QoL, which is an association that has been reported in other studies (17). One reason for this association may be that with greater knowledge and familiarity with social opportunities, more educated women are able to achieve greater control over vasomotor symptoms. This study also showed that there was a significant relationship between the vasomotor dimension of QoL and women's economic status, which is consistent with the findings of

Table 3. Relationship Between Dimension of Quality of Life Scores and Various Demographic Characteristics

| Variables | N (%) | Dimension of postmenopausal quality of life | | | |
|------------------------------|------------|---|-------------------------|---------------------|-------------------|
| | | Vasomotor, Mean (SD) | Psychosocial, Mean (SD) | Physical, Mean (SD) | Sexual, Mean (SD) |
| Age | | | | | |
| 50 -55 | 130 (52) | 3.66 (2.49) | 2.29 (1.38) | 2.39 (1.28) | 1.61 (1.58) |
| 55 - 60 | 120 (48) | 4.07 (2.43) | 2.32 (1.39) | 2.50 (1.23) | 1.06 (1.52) |
| P value | | 0.184 | 0.903 | 0.496 | 0.006 |
| Civil status | | | | | |
| Married | 177 (70.8) | 3.86 (2.43) | 2.24 (1.45) | 2.42 (1.32) | 1.84 (1.58) |
| Single | 73 (29.2) | 3.86 (2.58) | 2.46 (1.18) | 2.51 (1.09) | 0.15 (0.61) |
| P value | | 0.995 | 0.257 | 0.648 | 0.001 |
| Education | | | | | |
| Illiterate | 125 (50) | 4.41 (2.42) | 2.25 (1.33) | 2.41 (1.17) | 0.91 (1.23) |
| Primary school | 64 (25) | 3.41 (2.31) | 2.28 (1.48) | 2.37 (1.27) | 1.44 (1.54) |
| Middle school | 32 (12) | 3.14 (2.57) | 2.49 (1.35) | 2.64 (1.51) | 2.16 (1.91) |
| High school | 29 (11) | 3.29 (2.51) | 2.36 (1.43) | 2.54 (1.33) | 2.17 (1.89) |
| P value | | 0.005 | 0.855 | 0.732 | 0.001 |
| Income | | | | | |
| < \$400 | 66 (26.4) | 4.75 (2.31) | 2.41 (1.51) | 2.42 (1.21) | 1.24 (1.50) |
| \$400 - \$800 | 148 (59.2) | 3.43 (2.48) | 2.21 (1.34) | 2.48 (1.29) | 1.35 (1.59) |
| ≥ \$800 | 36 (14.4) | 3.98 (2.29) | 2.51 (1.27) | 2.30 (1.21) | 1.51 (1.65) |
| P value | | 0.001 | 0.405 | 0.718 | 0.709 |
| Age at menopause (yr) | | | | | |
| < 40 | 17 (6.8) | 3.41 (2.54) | 2.37 (1.54) | 2.51 (1.39) | 1.01 (1.34) |
| 40 - 50 | 179 (71.6) | 3.82 (2.49) | 2.41 (1.35) | 2.45 (1.27) | 1.53 (1.68) |
| ≥ 50 | 54 (21.6) | 4.11 (2.40) | 1.93 (1.37) | 2.41 (1.18) | 0.85 (1.08) |
| P value | | 0.566 | 0.081 | 0.958 | 0.015 |
| Hormone therapy | | | | | |
| Yes | 40 (16) | 4.13 (2.61) | 2.62 (1.45) | 2.83 (1.49) | 1.54 (1.56) |
| No | 210 (84) | 3.80 (2.44) | 2.32 (1.35) | 2.57 (1.21) | 1.31 (1.58) |
| P value | | 0.449 | 0.059 | 0.063 | 0.404 |
| Number of children | | | | | |
| < 4 | 134 (53.6) | 3.53 (2.48) | 2.29 (1.44) | 2.36 (1.29) | 1.67 (1.81) |
| 5 - 7 | 98 (39.2) | 4.26 (2.35) | 2.39 (1.32) | 2.54 (1.25) | 1.21 (1.15) |
| ≥ 7 | 18 (7.2) | 4.07 (2.77) | 1.94 (1.26) | 2.51 (0.99) | 1.01 (1.12) |
| P value | | 0.077 | 0.451 | 0.549 | 0.061 |

Table 4. Comparison Quality of life Domains Among Various Menopausal Ethnic Populations Using MENQOL Questionnaire

| Country | Population Hormonal Status | Score for Each MENQOL Domain | | | |
|-------------------------------------|----------------------------|------------------------------|-----------------------------|-------------------------|-----------------------|
| | | Vasomotor, Mean \pm SD | Psychosocial, Mean \pm SD | Physical, Mean \pm SD | Sexual Mean, \pm SD |
| Iran ^a | Postmenopausal | 3.86 \pm 2.47 | 2.30 \pm 1.38 | 2.44 \pm 1.26 | 1.35 \pm 1.57 |
| Iran, Fallahzadeh, 2010 (17) | Postmenopausal | 3.66 \pm 1.71 | 2.90 \pm 1.48 | 2.48 \pm 1.04 | 2.88 \pm 2.31 |
| Ecuador, Chedraui et al., 2007 (19) | Postmenopausal | 3.50 \pm 2.40 | 3.71 \pm 1.51 | 3.81 \pm 1.22 | 4.92 \pm 2.32 |
| Chile, Blumel et al., 2000 (20) | Postmenopausal | 3.25 \pm 1.85 | 3.51 \pm 1.51 | 3.63 \pm 1.18 | 3.65 \pm 2.37 |
| Canada, Whelan et al., 2005 (21) | Postmenopausal | 2.93 \pm 1.91 | 2.15 \pm 1.14 | 2.59 \pm 1.15 | 2.19 \pm 1.71 |
| Pakistan, Nisar et al., 2009 (22) | Postmenopausal | 3.14 \pm 0.89 | 2.75 \pm 1.12 | 2.57 \pm 1.08 | 3.13 \pm 1.22 |
| P value ^b | - | 0.993 | 0.779 | 0.678 | 0.403 |

^aData obtained from the present study.

^bP values are compared with various studies.

similar studies (11, 36). This is likely because economic status can improve access to healthcare services and thus enhance QoL (15).

With regard to the psychosocial dimension of QoL after menopause, our participants had moderate and relatively positive profiles. The results of this study are consistent with the findings of the majority of similar studies (17, 18, 24). The most negative scores on the psychological dimension were for feelings of anxiety, nervousness, and depression. Our findings in this area are also consistent with the results of similar studies (17, 25, 37-39).

Finally, the comparison of the present findings with evidence reported from other countries revealed that scores of Iranian women closely matched those of women from other countries, suggesting that despite different sociocultural backgrounds, changes in QoL are experienced in virtually the same way by postmenopausal women.

Several of this study's limitations prevent the overgeneralization of its findings. First, the data was derived from self-reports, which can be biased. Second, the study design was cross-sectional, so no conclusive answer can be given concerning directions of influence. Finally, the pattern of results might have been emerged due to further latent variables that might have influenced two or more variables in the same direction. Future studies should be based on longitudinal designs and should include objective assessments of psychophysiological parameters; such studies could provide further insight into the complex interplay between physiological and psychological mechanisms among postmenopausal women.

Menopause-related QoL among postmenopausal Ira-

nian women varies as a function of sociodemographic factors, but no differences were found between this Iranian sample and comparable samples from other countries.

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Footnotes

Authors' Contribution: Study design: Majid Barati, Mohammad Ahmadpanah, Samaneh Shirahmadi, Saeed Bashirian, Parisa Parsa, Edith Holsboer-Trachsler and Serge Brand; data gathering: Majid Barati, Mohammad Ahmadpanah, Samaneh Shirahmadi, Saeed Bashirian and Parisa Parsa; data entering: Majid Barati, Mohammad Ahmadpanah, Samaneh Shirahmadi, Saeed Bashirian and Parisa Parsa; statistical analysis: Mohammad Ahmadpanah, Edith Holsboer-Trachsler and Serge Brand; manuscript drafts: Majid Barati, Mohammad Ahmadpanah, Samaneh Shirahmadi, Saeed Bashirian, Parisa Parsa, Edith Holsboer-Trachsler, Serge Brand and Mohammad Haghghi; modification drafts and final version: Mohammad Ahmadpanah, Edith Holsboer-Trachsler and Serge Brand.

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