

Psychometric Evaluation of the Farsi Version of the Body Image Concerns during Pregnancy Scale

Fatemeh Mohamadi ¹, Hana Sohrabi ¹, Marzieh Aslani ^{2*}, Abbas Ebadi ³, Shamsi Zare ⁴, Reza Ghanei Gheshlagh ^{5*}

¹ School of Nursing and Midwifery, Kurdistan University of Medical Sciences, Sanandaj, Iran

² Department of Nursing, Asadabad School of Medical Sciences, Asadabad, Iran

³ Behavioral Sciences Research Center, Life Style Institute, Baqiyatallah University of Medical Sciences, Tehran, Iran

⁴ Department of Obstetrics and Gynecology, School of Medicine, Kurdistan University of Medical Sciences, Sanandaj, Iran

⁵ Social Determinants of Health Research Center, Research Institute for Health Development, Kurdistan University of Medical Sciences, Sanandaj, Iran

* Corresponding author: Marzieh Aslani and Reza Ghanei Gheshlagh, Social Determinants of Health Research Center, Research Institute for Health Development, Kurdistan University of Medical Sciences, Sanandaj, Iran.

Email: aslamm63@yahoo.com, rezaghanei30@gmail.com

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Abstract

Background: Body image is a multifaceted construct comprised of cognitive, affective, perceptual, and behavioral components that may change during pregnancy.

Objectives: The present study aimed to translate the Body image concerns during pregnancy scale (BICPS) into Farsi and examine its psychometric properties.

Methods: The study sample included 500 pregnant women referred to obstetrics and gynecology clinics in Sanandaj, Asadabad, and Hamadan in Iran. Face and content validity were examined. Exploratory factor analysis (EFA) was conducted on half of the participants, and Confirmatory factor analyses (CFA) on the other half. Internal consistency was examined using Cronbach's alpha coefficient and McDonald's omega, and relative and absolute stability was assessed using interclass correlation coefficient (ICC) and standard error examination.

Results: In the EFA, five factors, including dissatisfaction with body parts and social concerns, concerns about weight and appearance, concerns about skin changes, concerns about abdominal obesity, and concerns about the future were extracted that together explained 53.86% of the total variance of body image concerns during pregnancy. Floor and ceiling effects were zero percent. Internal consistency using Cronbach's alpha coefficient and McDonald's omega was above 0.7. The goodness of fit indices of the CFA was within the acceptable range.

Conclusion: The Farsi version of the Body image concerns during pregnancy scale (F-BICPS) is a valid and reliable instrument to measure pregnant women's concerns about their body image.

Keywords: Body image, Pregnancy, Psychometric evaluation, Validity, Reliability.

Introduction

Body image comprises cognitive, affective, perceptual, and behavioral components that show one's beliefs and conscious and unconscious feelings about one's body.¹ In other words, body image refers to how one sees themselves and their impression of how others perceive them. This dynamic concept changes women during puberty, pregnancy, afterbirth, and menopause.² During pregnancy, body size and shape rapidly change, and physical signs of pregnancy become more evident.³ Gaining weight and

slight changes in appearance are part of normal pregnancy. Women usually gain 11 kg to 16 kg.⁴ After giving birth, many women cannot return to their weight or shape before pregnancy.^{5,6} These physical changes may prevent women from having the body image considered ideal by society.⁷ Some pregnant women do not accept these changes and do not cope with them, and some become concerned about their body image. Pregnancy-related changes in weight and appearance may be upsetting for some women while acceptable for others.⁷⁻⁹

A mother's body image during pregnancy can be an essential predictor of body image after giving birth and the mother's weight before and after childbirth.¹ Satisfaction with body image affects a mother's weight after giving birth. Hence, women with a positive body image before planned pregnancy show a more positive reaction to physical changes during and after giving birth. Goodwin et al., maintained that as pregnancy progresses, body image becomes increasingly hostile, and this negative attitude is at its peak after giving birth.¹⁰ The difference between a woman's actual body image and the ideal body image imposed by society can lead to body image dissatisfaction and considerable psychological suffering.^{5,11} Pregnant women may have different body image perceptions because it is influenced by culture. During pregnancy, women often have three major body image concerns: How they look during pregnancy, what parts of their body undergo changes, and how easy it would be for them to return to their previous weight and shape.^{12,13} Body image disturbance during pregnancy is related to adverse health outcomes, including mother's depression, eating disorders, attachment problems, obesity, mother's decision to reduce breastfeeding, and mother's lowered self-esteem, that in turn have negative consequences for the baby.¹⁴⁻¹⁶

Most of the available instruments for assessing body image do not specifically assess it during pregnancy, and the specific instruments are usually old; therefore, new instruments should be designed according to the needs of the current societies.¹⁷ The body image concern during pregnancy scale (BICPS) is a new instrument with excellent psychometric properties designed in Turkey and compatible with Iranian culture. In addition, it has a low number of items, and the statements are simple enough to be easily understood by Iranian pregnant women. The BICPS has 23 items and four subscales, including avoidance and social concerns, concerns about weight gain, concerns about the future, and concerns about physical appearance.²

Objectives

Examination of this seemingly simple problem that can have adverse consequences for both mother and baby

requires a valid and reliable instrument with a few items with simple and understandable statements. Therefore, the present study aims to examine the psychometric properties of the Farsi version of the Body image concerns during pregnancy scale (BICPS) in Iranian pregnant women.

Methods

Sample and setting

The appropriate sample size for exploratory factor analysis is 200 to 300 samples, and some have suggested that 20 people are needed for each modern item. It is also recommended that the sample size be not less than 200 for confirmatory factor analysis.^{18,19} The study sample included 500 pregnant women referred to obstetrics and gynecology clinics in Sanandaj (Kurdistan province), Asadabad, and Hamadan (Hamedan province). The participants randomly assigned into two groups. Exploratory factor analysis was performed on one of them and confirmatory factor analysis was performed on the other. They were selected using a convenience sampling method in January and February 2021. The inclusion criteria was a willingness to participate in the study, ability to read and write, and gestational age over four weeks. Incomplete questionnaires were removed from the analysis.

Measures

The Body image concerns during pregnancy scale (BICPS)

The participants were asked to complete the demographic form and report data related to pregnancy, including the mother's age, husband's age, mother's education, husband's education, mother's job, husband's job, and the number of pregnancies. The body image concerns during pregnancy scale (BICPS) was developed by Uçar et al., (2018) in Turkey. This scale is available in English and Turkish. It has 23 items rated on a 5-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). It also has four subscales, including Avoidance and Social Concerns (10 items), Concerns about Weight Gain (5 items), Concerns about the Future (4 items), and Concerns about Physical Appearance (4 items). Higher scores indicate more body image concerns.²

Translation process

After obtaining permission from the author of the scale, it was translated into Farsi using the forward-backward method.²⁰ In the first step, two translators independently translated the original version of the scale into Farsi. Then, the translated version was given to five pregnant women who were asked to read the items aloud, answer the questions, and determine the items they found ambiguous. We sent this version to 10 experts and asked them to examine the content of the items. After applying experts' opinions, we developed the final Farsi version. In the next step, the Farsi version was translated into English by two other translators; this translation was compared to the original version of the scale by the research team.

Data analysis

SPSS 16 and Lisrel 8.8 were used to analyze the data. The demographic description of the sample and means, standard deviations, frequency estimates, and percentages were reported. Floor and ceiling effects were calculated to ensure the content validity of the Farsi version of the scale. If more than 15% of participants obtained the lowest or highest scores, floor and ceiling effects were considered present.²¹

We used the EFA to examine the construct validity. Sampling adequacy was assessed using the Kaiser-Meyer-Olkin (KMO) coefficient. The KMO test determines the suitability of the data for factor analysis. KMO values of 0.7 or more show an appropriate factor analysis. Bartlett's test of sphericity was employed to examine the correlation matrix between variables. Latent variables were extracted using Maximum likelihood and Promax rotation. This rotation is an oblique rotation, which allows factors to be correlated. A cutoff point of 0.30 was considered for factor loadings. The CFA was performed among the second 300-member group. The goodness-of-fit of the model was assessed using relative chi-square, Minimum Discrepancy Function by Degrees of Freedom divided (CMIN/DF), the goodness-of-fit index (GFI), the comparative fit index (CFI), the normed fit index (NFI), the root mean square error of approximation (RMSEA), and the standardized root mean square residual (SRMR).²² For goodness-of-fit indexes, the following values thought acceptable: were $\chi^2/df \leq 2$, GFI, CFI, and NFI > 0.95, RMSEA < 0.06, and

SRMR < 0.08.^{23,24} Internal consistency was calculated using Cronbach's alpha coefficient and McDonald's omega, and relative stability of the scale was assessed using interclass correlation coefficient (ICC) with two-way mixed effects at a 95% confidence interval (95% CI) acceptable in values higher than 0.75%.²⁵ Absolute stability was calculated by assessing the standard error of measurement (SEM). SEM and Minimal detectable change (MDC) was calculated using the following formulas, respectively: $SEM = SD_{\text{baseline}} \times \sqrt{1 - ICC}$ and $MDC = 1.96 \times \sqrt{2} \times SEM$.^{26, 27}

Ethical considerations

Ethical approval for the present study was obtained from the Ethics committee at Asadabad University of Medical Sciences (IR.ASAUMS.REC.1399.028). Study objectives were explained to participants, questionnaires remained anonymous, and participants were reassured that their personal information remained confidential.

Results

The sample included 500 pregnant women referred to medical clinics in Sanandaj, Asadabad, and Hamadan. The mean age of participants was 27.94 ± 5.98 years, ranging from 15 to 42 years, and the mean age of husbands was 32.25 ± 6.02 years, ranging from 19 to 50 years. The average gestational age was 28.52 ± 8.07 weeks. In addition, 244 (48.8%) women were first-time pregnant, and 174 (34.8%) had had a previous pregnancy. Most of the women and husbands had high school education. Regarding career, 139 (27.8%) women worked outside the home. Demographic data is presented in Table 1.

In examining the face and content validity, two lengthy statements were divided into shorter sentences according to the participants' feedback and expectations. After the face and content validity, a comprehensible and clear Persian version was compiled, which was also approved by the original designer.

Construct validity

Exploratory factor analysis

In examining the face and qualitative content validity according to feedback from qualified experts, including nurses, slight changes were made to some statements. Skewness and kurtosis values were acceptable, showing

that the data had a normal distribution. The KMO coefficient was 0.866, and Bartlett's test of specificity was significant ($X^2=2630.674$, $df=253$, $p=0.001$). Factor analysis using Maximum likelihood and Promax rotation led to 5 factors that together explained 53.86% of the total variance. The first factor (dissatisfaction with body parts and social concerns) had 7 items (items #2, #4, #9, #10, #11, #12, and #16), the second factor (concerns about abdominal obesity) had 5 items (items #17, #18, #19, #20, and #21), the third factor (concerns about weight and appearance) had 4 items (items #5, #6, #9, #7, and #8), the fourth factor (concerns about skin changes) has 3 items (items #3, #13, and #14), and the fifth factor (concerns about the future) had 2 items (items #22 and #23). The five factors explained 30.262%, 10.098%, 5.020%, 4.867%, and 2.839% of the total variance, respectively (together 53.86%). In addition, the factors had the following eigenvalues: 7.444, 2.787, 1.662, 1.477, and 1.066. Floor and ceiling effects for the total scale were zero percent. Items #1 and #15 were removed because they were not included in any factor. Floor and ceiling effects for the total scale were zero percent.

Table-1. The characteristics of participants

Variables	N	%
Literacy (Women)		
Primary school	38	7.6
High school	220	44
Academic	242	48.4
Literacy (Men)		
Primary school	25	5
High school	218	43.6
Academic	257	51.4
Occupation (Women)		
Employed	139	27.8
Unemployed	361	72.8
Occupation (Men)		
Employed	487	97.4
Unemployed	13	2.6
Number of pregnancies		
0	244	48.8
1	174	34.8
More than 1	82	16.4

Confirmatory factor analysis

The fitness of the five-factor model was tested. The results showed a good fit for the data. The goodness fit indices for the proposed model were as follows: RMSEA=0.063, CMIN/DF=2.6, NFI=0.96, NNFI=0.97, CFI=0.98, IFI=0.98, GFI=0.88, RFI=0.95 and SRMR=0.049. The results of the confirmatory factor analysis are presented in Figure-1.

Reliability

The internal consistency of the F-BICPS questionnaire based on Cronbach's alpha coefficients was 0.896. The McDonald omega's five dimensions of dissatisfaction with body parts and social concerns, concerns about weight and appearance, concerns about skin changes, concerns about abdominal obesity, and concerns about the future were 0.774, 0.749, 0.823, 0.740, and 0.781, respectively. Also, the relative stability (ICC) of the questionnaire with a two-week interval was 0.953 (with a 95% confidence interval: 0.915- 0.980, $P<0.001$). Examination of absolute stability revealed the SEM of 3.85 and the MDC of 5.43.

Discussion

The Body image concerns during pregnancy scale (BICPS) is a valid and reliable instrument focused on assessing pregnant women's concerns about body image and changes in their appearance. In the present study, the psychometric properties of the Farsi version of this instrument were examined. In contrast to the original version of the BICPS, which has four factors, we found five factors for the Farsi version using the EFA. the factors included dissatisfaction with body parts, social concerns, concerns about abdominal obesity, concerns about weight and appearance, concerns about skin changes, and concerns about the future together explained more than half of the total variance of body image concerns during pregnancy.² However, in contrast with the original scale with 23 items, the Farsi version had 21 items because two items were not loaded on any factor due to a low factor loading.

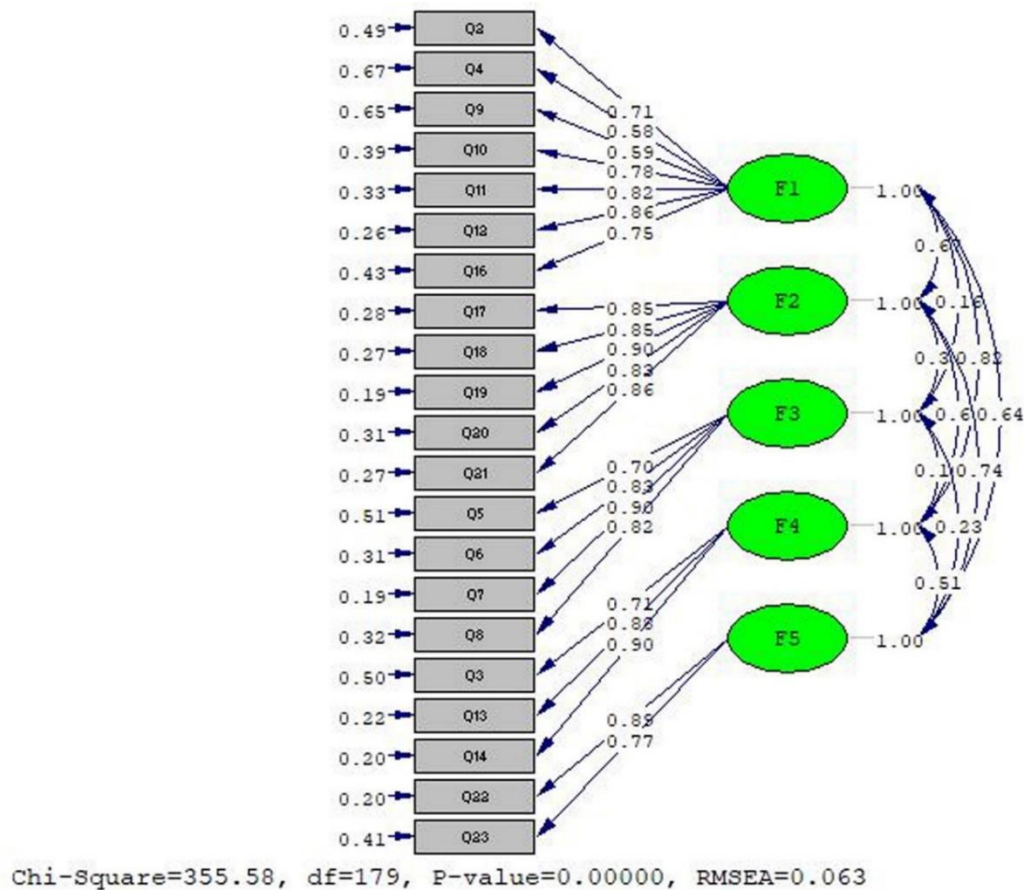


Figure-1. Final model

The first factor (dissatisfaction with body parts and social concerns) refers to dissatisfaction with different body parts and not participating in social activities due to changes in physical appearance. Dissatisfaction with body parts was also a factor in the original version of the BICPS.²⁸ Body satisfaction is often lowered during pregnancy, and pregnant women tend to have ambivalent feelings about their own body image.^{7,29} This factor had ten items in the original version of the scale, but in the Farsi version, items #1, #13, and #14 were not loaded on it. Due to a lower factor loading, item #1 was not loaded on any factor, and items #13 (When I am with others, I try to hide my baby bump.) and #14 (When someone takes a picture of me, I try to hide my baby bump) and #3 (I try to wear clothes that cover my baby bump) together formed a separate factor. These items all refer to a similar concept, and their placement on a single factor in the Farsi version seems more appropriate. This factor is consistent with the Shame factor in the Prenatal Body Image Questionnaire.³⁰ The first factor had the highest number of items and explained the highest amount of variance; therefore, it has

an essential role in measuring body image perceptions in pregnant women.

The second factor was Concerns about Abdominal Obesity. This factor in the Turkish version of the BICPS had five items (items #3, #15, #17, #18, and #19). Item #15 was discarded due to a low factor loading, and item #3, referring to the salience of the abdomen, formed the factor of Concerns with Abdominal Obesity. Therefore, in the Farsi version of the scale, this factor consists of the three remaining items of the original version (items #17-19) and two other items (items #20 and #21) that were on the Concerns about the Future factor in the original version. Items of these factors have a good placement in the Farsi version of the scale. Clark et al., maintain that weight gain complaints are common in pregnant women, despite knowing that it is crucial for fetal growth.³¹ Pregnancy is the only time women are encouraged to gain weight, and gaining weight is not considered a stigma.^{5,32} Women rarely return to their pre-pregnancy shape after pregnancy, and many women are not prepared for this amount of physical changes.³³

Table 2. Exploratory factor analysis of the Body Image Concerns during Pregnancy Scale (BICPS) (n=250)

Factors	Items	h^2	Factor loading	% variance	Eigenvalue	Internal consistency
Dissatisfaction with Body Parts and Social Concerns	10- I do not like myself due to swelling in my body parts (hands, feet, face...)	0.575	0.828	30.262	7.444	$\alpha = 0.853$ $\Omega = 0.774$
	11- I hate my body image when I am naked.	0.549	0.799			
	9- I feel that this body does not belong to me.	0.416	0.707			
	12- I get upset when I see my body in the mirror.	0.461	0.570			
	4- It upsets me when I cannot wear my favourite clothes.	0.587	0.516			
	2- I get upset when people comment on my body image.	0.449	0.434			
	16- I avoid social activities because of changes in my body image.	0.461	0.416			
Concerns about Weight and Appearance	19- I am worried that I may not be able to return to my average weight after giving birth.	0.709	0.931	10.098	2.787	$\alpha = 0.890$ $\Omega = 0.749$
	21- I am worried about my body shape after giving birth.	0.692	0.812			
	20- I fear that the physical changes I experience during pregnancy may be permanent.	0.685	0.795			
	18- I feel I have become too bulky due to gaining weight.	0.634	0.737			
	17- I am worried I may not be able to return to weight before pregnancy.	0.492	0.617			
Concerns about Skin Changes	8- I am not worried about marks on my face and body.	0.609	0.807	5.020	1.662	$\alpha = 0.828$ $\Omega = 0.823$
	7- I am not worried about increased hair on my belly and other body parts.	0.660	0.780			
	6- I am not worried about stretch marks on my belly.	0.556	0.755			
	5- I am not worried about marks on my face.	0.421	0.625			
Concerns about Abdominal Obesity	13- When I am with others, I try to hide my baby bump.	0.762	0.916	4.867	1.477	$\alpha = 0.804$ $\Omega = 0.840$
	14- When someone takes a picture of me, I try to hide my baby bump.	0.562	0.702			
	3- I try to wear clothes that cover my baby bump.	0.483	0.629			
Concerns about the Future	23- I would consider plastic surgery after pregnancy if I could afford it.	0.606	0.796	2.839	1.066	$\alpha = 0.617$ $\Omega = 0.781$
	22- I am worried my husband may not find me attractive after giving birth.	0.379	0.525			

Items of the third factor were the same in both the Farsi and Turkish versions of the scale (Items #5 to #8). In the original version of the scale, this factor is called “concerns about appearance,” but its items are focused on pregnant women’s concerns about spots on the face, lines on the abdomen, increased hair growth, and acne during pregnancy; therefore, the factor was renamed to concerns about skin and hair. The term appearance refers to the whole body, while the items mentioned above specifically refer to skin changes during pregnancy. Skouteris et al., found that pregnant women felt less attractive than when not pregnant.³⁴ The fourth factor was “Concerns about Abdominal Obesity,” which included items #3, #13, and #14. The Prenatal Body Image Questionnaire developed by Sohrabi et al., in Iran has 30 items and seven factors. One of the factors of this questionnaire is “lower body fat,” referring to enlargement of the pelvis during pregnancy that is consistent with the factor extracted in the present study.³⁰

The fifth factor (concerns about the future) included two items, i.e., item #22 (concerns about not being attractive) and item #23 (I would consider plastic surgery after pregnancy if I could afford it.) that long with item #20 (fear that the physical changes are permanent) and #21 (I am worried about my body shape after giving birth) formed the concerns about the Future factor in the Turkish version. There seems to be a higher congruence between these factors in the Farsi version of the scale than in the Turkish version. The goodness of fit indices of the Farsi version of the scale was satisfactory. Like those of the original version of the scale, different subscales of the Farsi version had an excellent internal consistency. Due to only having two items, the fifth subscale had a lower Cronbach's alpha estimate. Pregnant women re-evaluate their body image standards to adapt to rapid bodily changes.^{16,34} It has been shown that concerns about body image are different in pre-pregnancy and post-pregnancy periods and even in different stages of pregnancy. Some studies have shown that body image is relatively stable in this period,^{35,36} and may even show improvements compared to pre-pregnancy.^{37,38}

Our results showed that no ceiling or floor occurred. The ceiling and floor effect occurs when tests or scales are

relatively straightforward or complicated so that significant proportions of people score at the maximum or minimum, and the true extent of their abilities cannot be determined. Given that Cronbach's alpha coefficient is influenced by the number of items, internal consistency was also assessed using McDonalds' omega and found acceptable.^{39,40} In the Farsi version, unlike the original version, absolute stability SEM and MDC were found to be 3.85 and 5.43, respectively. SEM = 3.85 indicates that if there are 3.84 points change in the total score after the intervention, we can be 95% confident that an actual change has occurred in body image concerns during pregnancy. One of the strengths of the present study is related to cultural similarities between Iran and Turkey that make the BICPS appropriate for use in Iranian populations. One of the limitations of the present study is related to the fact that pregnant women were only selected from the Kurdistan and Hamadan provinces of Iran, which may limit the generalizability of the findings.

Conclusions

Physiological changes in pregnant women occur to adjust their body to pregnancy, and lack of adjustment to this condition may lead to adverse physical and psychological consequences. The Farsi Version of the Body image concerns during pregnancy scale (F-BICPS) is a valid and reliable instrument that can adequately measure pregnant women's concerns about their body image.

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Competing interests

The authors declare that they have no competing interests.

Abbreviations

BICPS: Body image concerns during pregnancy scale

F-BICPS: Farsi version of body image concerns during pregnancy scale

EFA: Exploratory factor analysis
 CFA: Confirmatory factor analyses
 ICC: Interclass correlation coefficient

Authors' contributions

AF and RGG: manuscript preparation and study conceptualization; MA, HS, and SZ: data collection and manuscript preparation; RGG and FM: study design; AE and RGG: final revision and grammar editing; AE: statistical analysis. All authors read and approved the final manuscript. All authors take responsibility for the integrity of the data and the accuracy of the data analysis.

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Role of the funding source

None.

Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Ethics approval and consent to participate

According to the standards of ethics in research, the objectives of the study were explained to the research participants, and their written informed consent was obtained to participate in the study. They were assured during the investigation that the information contained in the questionnaires would remain confidential. This study is the result of the project approved by the Asadabad University of Medical Sciences (IR.ASAUMS.REC.1399.028).

Consent for publication

By submitting this document, the authors declare their consent for the final accepted version of the manuscript to be considered for publication.

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