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Persian version of the support and control in birth questionnaire among Iranian women

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Abstract:

BACKGROUND: Lack of perceived support and control during labor and childbirth is known as an important predictor of post-traumatic stress disorder following childbirth. However, there is no standard scale to measure perceived support and control for Iranian women. This study determined the validity and reliability of the support and control in birth questionnaire for Iranian women.

MATERIALS AND METHODS: Support and control in the birth questionnaire were translated into Persian by the forward and backward translation method in 2019. Among a total of 102 healthcare centers in Tabriz, 50 urban and 10 rural centers were selected randomly. Then, 660 women with vaginal childbirth during the postpartum period were extracted by each center and selected randomly. The validity of the Persian version was evaluated in terms of face, content, and construct validity. Internal consistency and reliability were assessed by Cronbach's alpha coefficient and intraclass correlation coefficient, respectively. Exploratory and confirmatory factor analyses were used for evaluating the construct validity of the tool.

RESULTS: Cronbach's alpha coefficient (0.95) and intraclass correlation coefficient (0.99) were acceptable. In an exploratory analysis, three factors were extracted and these three factors explained 63.1% of the total variance. Items 14 and 17 were removed from the Persian version due to low factor loading and impact factor values. Confirmatory factor analysis supported the three factors extracted in the exploratory analysis. Confirmatory factor analysis showed suitable indexes of fitness for 31 items.

CONCLUSION: Persian version of the support and control in the birth questionnaire is a valid and reliable tool for the Iranian women population.

Keywords:

Internal-external control, parturition, psychometrics

Introduction

Post-traumatic stress disorder (PTSD) following childbirth is significant psychological distress, which can result in adverse consequences, such as postpartum depression, mother-infant emotional detachment, reluctance to future pregnancy, and fear of childbirth.^[1-3] The prevalence of PTSD 3–12 months postpartum has been reported in up to 14.9% of women.^[4] The important predictors of

PTSD are primiparity,^[5] low perceived social support,^[6] fear of childbirth,^[7] instrumental delivery, emergency C-section,^[8] negative childbirth experience,^[9] and religious attitude.^[10] Among them, negative childbirth experience is reported as the most important factor.^[11]

Although the majority of women are satisfied with their childbirth, there are women with negative childbirth experiences. The prevalence of negative childbirth

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experiences varies from 9.3% in Canada^[12] to 21% in Norway.^[13] The childbirth experience is a mental concept and can be influenced by fulfillment of expectations, engagement in decision-making, and perceived support and control during labor and childbirth.^[14,15] The lack of maternal control can result in stress, anxiety, depression, and traumatic childbirth experience by influencing the physical and emotional responses of the mother.^[16] Perceived control is defined as participation, engagement in decision-making, accessibility of information, and freedom in adopting palliative methods. In other words, perceived control means that the mother believes her actions affect the conditions of the childbirth environment or shape those.^[17] It is divided into internal and external controls. Internal control means that the mother has control over her physical symptoms, feelings, and behaviors. External control means maternal control over the labor and childbirth setting, engagement in decision-making, and accessibility of information.^[15] A woman with high perceived control over her body and environment during labor and childbirth will have lower pain, and higher positive emotions and childbirth satisfaction.^[17,18]

Maternal control and support are two linked concepts so that the perceived control is improved with increasing support services during labor and childbirth. Therefore, they should be evaluated together.^[17] Supportive care during labor and childbirth refers to physical, informational, and emotional support, including sympathy, encouragement, having a voice, and getting help from doctors, midwives, nurses, etc.^[19]

Although it is proven that the lack of maternal control and poor support may result in traumatic childbirth and adverse consequences,^[20] these important factors are sometimes evaluated with one or few questions.^[1] It is worth noting that maternal control and support have different dimensions and should be defined carefully and evaluated with specific instruments. A systematic review of 83 trials identified 37 different instruments to measure women's childbirth experience.^[21] Among those instruments, the Support and Control in Birth (SCIB) questionnaire was one of the reliable and validated tools that measured different dimensions of control and support during labor and birth. The SCIB questionnaire was developed by Ford *et al.*^[19] in 2009 and includes 33 items with three subscales. The subscales are a) internal control with 10 items that measure control of emotions, response to pain, and mental and physical reactions, b) external control with 11 items that quantify the access to information, involvement in decision making, and change of position, and c) support with 12 items that assess tangible effective, informational, and advocacy support. Subscales of SCIB had good reliability and accounted for approximately 55% of the variance.

The SCIB questionnaire has been culturally validated and tested among Chinese^[22] and Turkish.^[23] Birth is a complex and multidimensional event. Birth is experienced differently for each woman and is influenced by personal, cultural, and social factors, the dynamics of the provider and mother relationship, pain, perceived support, previous experience, and the outcome of birth and labor.^[24] Cultural beliefs toward the management of labor pain and expectations from a woman during labor and birth have an important role in women's perception.^[25] For instance, Chinese mothers are usually embarrassed by screaming during labor. However, Finnish mothers felt it was necessary to trust themselves and they described the birth as a health indicator.^[26] Turkish mothers also considered pain during labor as a normal event in their life.^[27]

Considering that women's response to childbirth physiological and psychological changes can be affected by healthcare policies and mechanisms of childbirth management in different countries with different cultural situations,^[28] there is a need for adopting a standard scale to measure support and control during labor in Iran that is culturally suitable for the population. As a result, this study aimed at evaluating the reliability and validity of the Persian version of SCIB to assess perceived support and control in childbirth among Iranian women.

Materials and Methods

Study design and setting

This research was a cross-sectional study conducted in Tabriz healthcare centers. Women with vaginal childbirth at 1 to 4 months postpartum were enrolled in the study. Exclusion criteria were adolescence (younger than 18 years old), multiple pregnancies, preterm, post-term, psychological problems such as the history of depression, postpartum depression, antidepressant use, and major congenital abnormalities according to the electronic health records.

Study participants and sampling

In this study, cluster sampling was employed. Among a total of 102 healthcare centers in Tabriz, 50 urban and 10 rural centers were selected randomly, using the randomizer website. Then, the number of women with vaginal childbirth within 1 to 4-month postpartum was extracted by each center. The eligible ones were randomly selected from their electronic medical records. The study objectives were explained to them via telephone contacts and they were invited to complete the questionnaires. During in-person interviews, demographic questionnaires, and SCIB were completed.

According to the recommendations, the sample size needed for factor analysis was 10 samples for each item.

As a result, the sample size initially accounted for 330 women; however, due to the use of the cluster sampling method and use of design effect of 2, the sample size was increased to 660.

Data collection and technique

The SCIB questionnaire is a validated and reliable tool^[15] that contains 33 items measuring internal control (items 1 to 10), external control (items 11 to 21), and support (items 22 to 33). All items are scored based on a 5-point Likert scale (agree completely, agree slightly, neither, disagree slightly, and disagree completely). Higher scores indicate more support and control. Items of 1, 2, 6, 7, 10, 14, 17, 28, 29, and 33 are negatively scored.^[19]

The instrument was separately translated into Persian by two expert translators. The contradictions in the initial Persian versions were corrected by the research team. Two other expert translators converted the Persian version into English. The final questionnaire, translated from the target language to the source language, was reviewed. The translated version was edited by two experts in concepts and the final version was created.

For quantitative assessment of face validity, 20 postpartum women completed the face validity checklist and were asked to comment on the simplicity, clarity, and relevance of items. Based on these comments, the translated items were modified. The participants were also asked to comment on the impact score of the items on a 4-point Likert scale. The percentage of participants who scored 4 on the items was multiplied by the mean total impact score to obtain the impact score. Then, the score of each item was calculated based on the participants' opinions, and scores higher than 1.5 were considered acceptable.^[29]

To assess content validity, 10 experts in Midwifery, Gynecology, Clinical psychology, Psychiatric nursing, Reproductive health, and Health promotion were requested to comment on the transparency, relevance, and simplicity of items (CVI = content validity index) and the necessity of items (CVR = content validity ratio). Responses are scored based on the 4-point Likert scale ("completely appropriate" [4], "appropriate but need to modify" [3], "need to revise" [2], and "inappropriate" [1]). A CVI higher than 0.79^[30] and CVR higher than 0.62 were considered acceptable.^[31] The expert opinions on the translation of technical terminology and use of culturally appropriate terms were collected and suitable changes were made.

Ethical consideration

The study protocol was confirmed by the Ethics Committee of Tabriz University of Medical Sciences (code:

IR.TBZMED.REC.1396.786). Before starting the process of adaptation of the SCIB tool to Iranian culture, permission was given from the developer (Dr. Ford) through email. In the implementation stage, after providing the eligible participants with adequate information about the objectives of the study and the confidentiality of their information, written informed consent was obtained.

Statistical analysis

SPSS version 25.0 (IBM Inc., Armonk, NY, USA) and AMOS software were used for data analysis and determination of psychometric characteristics of the questionnaire. To describe the participants' characteristics, frequency (percentage), and mean (standard deviation) were used for dichotomous and continuous variables, respectively.

Internal consistency was calculated using Cronbach's alpha coefficient. Cronbach's alpha higher than 0.7 was considered reliable. The test-retest reliability was estimated through a test-retest of 20 women with a 14-day interval and the calculation of intra correlation coefficient (ICC). An ICC higher than 0.80 was considered reliable.^[30]

Factor analysis was used to assess the construct validity of the questionnaire. Before performing the factor analysis, Kaiser-Meyer-Olkin (KMO) was evaluated to ensure that the sampling was adequate and Bartlett's test of sphericity was checked to ensure that the data were correlated. To ensure the suitability of the factor analysis, KMO should be greater than 0.7 and Bartlett's test significant.^[32] In exploratory factor analysis, the principal axis factoring method (PAF) and oblimin rotation were used to extract and rotate the factors. If the item loading is lower than 0.3, the item may be removed.^[33] After exploratory analysis, confirmatory factor analysis was used to support the findings of the questionnaire dimensions. Indicators with acceptable values for the model to be approved include root mean square error of approximation (RMSEA) < 0.08, Tucker-Lewis Index (TLI), Comparative Fit Index (CFI), and Incremental Fit Index (IFI) > 0.90, $\chi^2 / df < 5$.

Results

A total of 660 eligible women (response rate: 74%) were included in the study between May and September 2018. The mean age of participants was 23.7 years. About 24% of women's labor lasted over 12 hours. The augmentation rate was 67.0%. About 40% of women were not allowed to move during labor. Only about 18% of women were free to choose their delivery position. The characteristics of the participants are presented in Table 1.

Table 1: Characteristics of study participants (n=660)

Variables	Number (%)
Maternal age* (years)	23.7 (4.8)
Education	
Illiterate	9 (1.4)
High school or below	288 (43.6)
Diploma	243 (36.8)
College or above	120 (18.2)
Occupation	
Housekeeper	613 (92.9)
Employed	38 (5.7)
Student	9 (1.4)
Gestational age* (week)	39.0 (1.3)
Gravida	
1	560 (84.8)
2 or above	100 (15.3)
Labor duration >12 h	158 (24.0)
Oxytocin augmentation	443 (67.1)
Permission for moving during labor	386 (58.5)
Free in the choice of birth position	117 (17.7)
Episiotomy	650 (98.5)
Hospital type	
Public	467 (70.8)
Private	108 (16.4)
Organizational	85 (12.9)

*Mean (SD)

According to the opinions of 20 participants, all items, except items 14 and 17, were clear and understandable. The impact score of each item was in the range of 1.0 and 4.0. The lowest impact factors belonged to items 14 and 17. CVI (ranged from 0.69 to 1.00) and CVR (ranged from 0.60 to 1.00) values were accounted for that were not satisfactory for items 8, 14, 17, and 20 [Table 2].

The KMO (0.851) and Bartlett test results were at a significant level ($P < 0.001$), indicating the sufficiency of sample size for factor analysis. A scree plot was used to decide how many factors should be extracted. The first three factors could explain the variance better than other factors. As a result, these three factors were maintained to be used for the next analyses. Factor rotation was the second stage of exploratory factor analysis. The PAF method was used for factor extraction and oblimin rotation was used for factor rotation.

Factor loading values for internal control, external control, and support were 0.34 to 0.83, 0.32 to 0.76 and 0.57 to 0.87, respectively. The explained variance values for SCIB and support, internal control, and external control subscales were 63.1, 49.4, 8.5, and 5.1%, respectively. As a result, the support dimension was the best predictor of support and control in the birth concept. Three (items 18, 19, and 20), one (item 21), and one (item 11) items, which were expected as the external control, were categorized as the support and internal control dimensions, respectively. One item (item 31) of the

Table 2: The impact score, CVI, and CVR for the SCIB

Items	Impact score	CVI	CVR
1	3.5	0.9	0.8
2	3.7	1	1
3	3.7	1	0.8
4	4	1	1
5	4	1	1
6	3.7	1	1
7	4	1	1
8	3.7	0.7	0.6
9	3.7	0.8	0.8
10	3.7	0.9	0.8
11	3.7	1	1
12	3.7	0.9	1
13	4	0.8	0.8
14	1.0	0.7	0.6
15	3.5	0.8	0.8
16	4	1	1
17	1.0	0.7	0.6
18	3.7	0.8	0.8
19	3.7	0.8	0.8
20	3.5	0.7	0.6
21	3.7	0.8	0.8
22	4	1	1
23	4	1	1
24	4	1	1
25	3.7	1	1
26	4	1	1
27	3.7	0.8	0.8
28	4	1	1
29	3.7	0.8	0.6
30	4	1	1
31	4	1	1
32	4	1	1
33	4	1	1

support dimension was loaded on the external control. Due to the failure of obtaining the minimum score (0.3), items 14 and 17 were likely candidates for removal. The factor loading values of exploratory analysis are shown in Table 3.

Confirmatory factor analysis supported the three factors extracted in exploratory analysis. Confirmatory factor analysis showed suitable indexes of fitness for 31 items ($X^2/df = 4.63$, RMSEA = 0.07, CFI = 0.91, TLI = 0.90, IFI = 0.91) [Table 4]. The maximum likelihood was estimated between 0.36 and 0.92 between each of the items and dimensions. The path diagram of the confirmatory factor analysis for the SCIB questionnaire is shown in Figure 1. The correlation between internal and external control, external control and support, and internal control and support was estimated as 0.89, 0.92, and 0.68, respectively. As a result, all three subscales had a direct and positive correlation with each other ($P < 0.001$).

Table 3: Factor loadings^a, Cronbach's alpha, and intraclass correlation coefficient of the SCIB (n=660)

Items	Internal control	External control	Support
1. The pain was too great for me to gain control over it	0.766		
2. I was overcome by the pain	0.639		
3. I was able to control my reactions to the pain	0.798		
4. I was mentally calm	0.553		
5. I was in control of my emotions	0.762		
6. I felt my body was on a mission that I could not control	0.835		
7. Negative feelings overwhelmed me	0.534		
8. I gained control by working with my body	0.304		
9. I could control the sounds I was making	0.720		
10. I behaved in a way not like myself	0.789		
11. I had control over when procedures happened	0.559		
12. I could influence which procedures were carried out		0.761	
13. I decided whether procedures were carried out or not		0.670	
14. The people in the room took control		0.135	
15. I had control over the decisions that were made		0.724	
16. I could get up and move around as much as I wanted		0.323	
17. People coming in and out of the room were beyond my control		0.118	
18. I chose whether I was given information or not			0.823
19. I could decide when I received information			0.857
20. I had control over what information I was given			0.809
21. I felt I had control over the way my baby was finally born	0.553		
22. The staff helped me find the energy to continue when I wanted to give up			0.756
23. The staff seemed to know instinctively what I wanted or needed			0.635
24. The staff went out of their way to try to keep me comfortable			0.783
25. The staff encouraged me to try new ways of coping			0.587
26. The staff realized the pain I was in			0.811
27. The staff encouraged me not to fight against what my body was doing			0.688
28. I felt the staff had their own agenda			0.811
29. I felt like the staff tried to move things along for their own convenience			0.817
30. I was given time to ask questions			0.871
31. The staff helped me to try different positions		0.463	
32. The staff stopped doing something if I asked them to stop			0.579
33. The staff dismissed things I said to them			0.703
% Variance explained	8.5	5.1	49.4
		Total score=63.1	
Cronbach's alpha	0.85	0.89	0.96
		Total score=0.95	
Intraclass correlation coefficient (95% CI)	0.97 (0.93-0.99)	0.98 (0.96-0.99)	0.99 (0.98-0.99)
		Total score=0.99 (0.98-0.99)	
Mean (SD)	3.2 (1.1)	3.0 (0.9)	3.6 (1.2)
		Total score=9.8 (2.9)	

^aExtraction Method: Principal Axis Factoring**Table 4: Fit indices of the confirmatory factorial analysis for the SCIB (n=660)**

Model	χ^2	Df	χ^2/df	RMSEA (90%CI)	GFI	NFI	IFI	TLI	CFI	RFI
Exploratory	2126.1	459	4.63	0.074 (0.071-0.078)	0.794	0.894	0.915	0.902	0.915	0.878

χ^2/df =Normed Chi-square, RMSEA=Root Mean Square Error of Approximation, GFI=Goodness of Fit Index, NFI=Normed Fit Index, IFI=Incremental Fit Index, TLI=Tucker-Lewis Index, CFI=Comparative Fit Index, RFI=Relative Fit-Index

Internal consistency was confirmed by Cronbach's alpha coefficient of 0.95 for all items. Cronbach's alpha coefficient for the "Internal control," "External control," and "Support" subscales were 0.85, 0.89, and 0.96, respectively. The ICC for the SCIB and its subscales were higher than 0.9, indicating an acceptable agreement between test-retest scores.

Discussion

The assessment of SCIB psychometrics among the Iranian women population showed that it is a valid and reliable instrument for the assessment of maternal control and support in childbirth among women with vaginal delivery. The results of the exploratory analysis

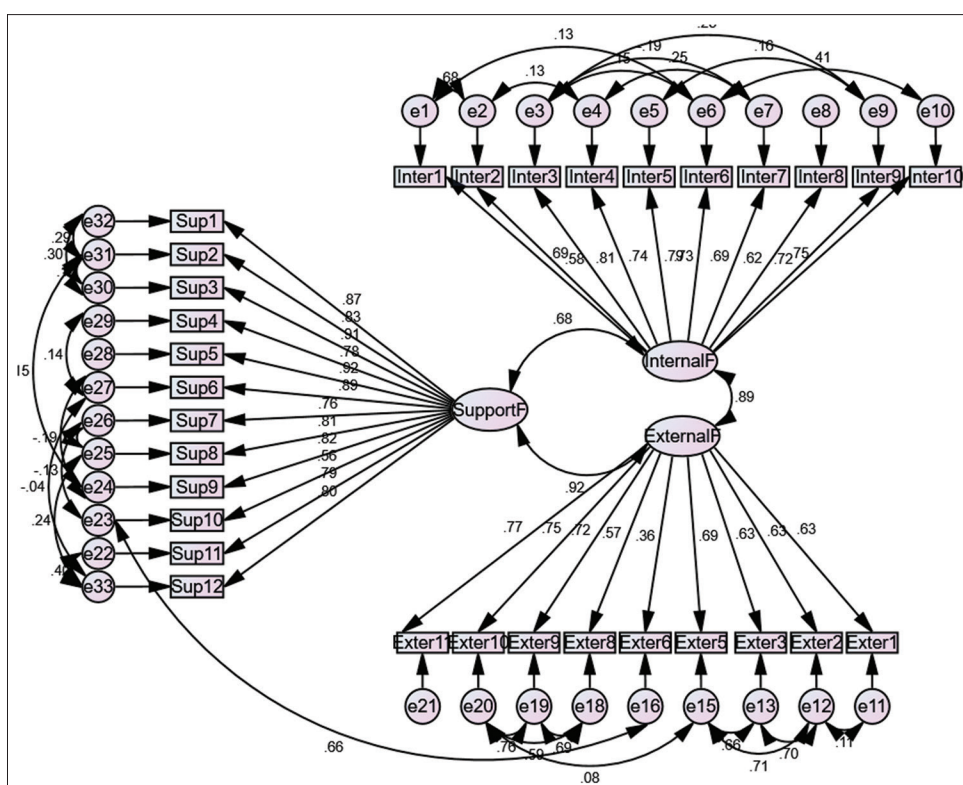


Figure 1: Factor structure model of the SCIB

showed the similarity of factor patterns in the original and Persian instruments; however, some items in the Persian version were categorized differently from the original instrument.^[19] Items related to receiving information and the time and content of the information received (items 18, 19, and 20) were loaded on the support dimension; in addition, items related to different positions of the mother during labor (item 31) were loaded on the external control dimension. The results of the Persian version of psychometric were similar to those of the Turkish version of the questionnaire [Inci] where items 16, 18, 19, 20, and 21 were loaded on the support dimension instead of external control. The loading of these items on the support dimension and vice versa may be due to a strong correlation between the subscales of external control and support (0.98).^[23] Ford *et al.*^[19] showed a moderate correlation between internal control and support (0.51), and between internal and external control dimensions (0.55); however, the correlation between the external control and support was strong (0.69).

Regarding that labor and childbirth are generally uncontrollable, the sense of control may be correlated with interpersonal variables, such as respectful, careful, and supportive behavior of staff toward the patients, and vice versa.^[34] A qualitative study showed that receiving support from healthcare personnel improved perceived control.^[35] In contrast, the perception of Iranian women of external control and support may be different from that of

British women. In the study setting, women received the required information from the hospital staff (midwife and physician) and might perceive it as support from medical personnel. However, receiving recommendations, advice, and information is perceived as a type of support.^[36] Due to undesirable CVR, CVI, impact factor, and loading values, items 14 and 17 (two items of external control) were removed from the Persian version. Item 14 "The people in the room took control" was unclear to the majority of eligible women and experts. They asked what is meant by the people in the room and what they are controlling. Item 17 "People coming in and out of the room was beyond my control" was removed due to the lack of compliance with the context. Because women in the study setting had no control over others' activities (medical or non-medical staff), the majority of women and experts reported it as an unnecessary item. As a result, these items were removed from the Persian version, and finally, 31 items remained in the Persian version.

Based on the confirmatory analysis, the model showed a sufficient fit index. Variance explained by factors of support, internal and external was 49.4%, 8.5%, and 5.1%, respectively. Also, the variance explained for the original version was 39.9%, 8.9%, and 7.0%, respectively. The variance explained for the Persian version was similar to the original version. Cronbach's alpha and ICC of the Persian version were satisfactory. Cronbach's alpha of the Persian version ($r = 0.95$) was the same as the

original version ($r = 0.95$).^[19] The time of questionnaire completion may have played a role in the way the items were responded. We assumed that the completion of the questionnaire shortly after delivery may result in false responses, due to maternal fatigue. In contrast, responding to the items after a long time may affect the accuracy of responses because of probable forgetfulness. As a result, the questionnaire was completed within 1–4 months postpartum. Any current or history of psychological disorder in the mother, such as depression and anxiety, may affect maternal responses. As a result, women with a history of psychological disorders, or postpartum psychosis and depression were excluded. The participants were selected using the random sampling technique. Therefore, research samples can represent the research population. The Persian version of the questionnaire did not fit women with C-sections, as they were excluded from the study. It is recommended that future studies are conducted on multiparous women to improve generalizability. Furthermore, the assessment of psychometric properties of the SCIB among women of other ethnicities and languages is recommended.

Conclusion

The results showed that the Persian version of SCIB appropriately fit the original version and was a valid and reliable instrument for the evaluation of maternal control and support in childbirth that culturally suits the Iranian population. This instrument has been used in descriptive studies to evaluate childbirth control and support, and their predictors. It has been also used in interventional studies to evaluate the effect of interventions on maternal control and support.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Authors' contributions

SGH, MM, SMA, SM, EM, and MAJ involved in the conception and design, acquisition of data and drafting the manuscript. SGH, MM, SM, and MAJ involved in the conception and design, acquisition of data, analysis of the data, interpretation of data and writing this manuscript. All authors gave their final approval of this version to be published.

Ethics statement

The study protocol was confirmed by the Ethics Committee of Tabriz University of Medical Sciences,

Tabriz, Iran (code number: IR.TBZMED.REC.1396.786). Before starting the process of adaptation of the SCIB tool to the Iranian culture, permission was given from the developer (Professor Ford) through email. In the implementation stage, after providing the eligible participants with adequate information about the objectives of the study and confidentiality of their information, the written informed consent was obtained.

Acknowledgments

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Conflicts of interest

There are no conflicts of interest.

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