Original Article

Development of a Questionnaire to Measure Attitude Toward Birth Method Selection

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Abstract

Background: The rate of mothers undergoing cesarean section in the absence of medical indication is increasing in the world. Women attitude have an essential role in the request or selecting a birth mode. This study aimed to develop a scale for measuring attitude toward birth method selection. **Materials and Methods:** The study was conducted in two qualitative and quantitative parts. Data collection was conducted from June to December 2012 in Ahvaz, Iran. In the qualitative part of the study, 21 interviews were conducted with pregnant or parturient women and key informants. Consequently, content and face validity were performed to provide a pre-final version of the questionnaire. Then, in the quantitative part of the study, validity, exploratory factor analysis, and reliability were performed to assess the psychometric properties of the scale. **Results:** A 130-item questionnaire was developed through the qualitative phase. It was reduced to an 82-item questionnaire after content and face validity. Exploratory factor analysis loaded a 68-item with an 8-factor solution ("beliefs and attitudes," "sexual and physical attitudes," "fear of childbirth," "preference of convenience, health, and supporting," "socio- cultural norms," "confidence to the birth practitioner," "personal and practical choice," and "sources of motivations," which jointly accounted for 42.97% of the observed variance. Cronbach's alpha coefficient showed excellent internal consistency ($\alpha = 0.87$), and test–retest of the scale with 2-week intervals indicated an appropriate stability for the scale (0.89). **Conclusions:** The findings showed that the designed questionnaire was a valid and reliable instrument for indicating the pregnant womens' attitudes to their birth method selection. Also, ATBMS is an easy use questionnaire and contains the most significant factors persuading women to choose vaginal delivery or cesarean section.

Keywords: *Birth method, cesarean section, Iranian women, selection, questionnaire*

Introduction

Cesarean delivery is the most common surgery performed in the world, and a large part of these operation interventions are performed without a medical indication.[1] Therefore, the global number of women undergoing cesarean section based on their choice and without any medical indication is rising. The main cause of this tendency is not obvious, however, some factors such as the need to control and plan for the delivery date and psychological factors, such as fear of childbirth, and previous experience of delivery are the major factors that play a role in the willingness of women to do a cesarean section. Also a part of this increase is because of the changed attitudes of pregnant women and healthcare providers to the delivery methods, which can substantially increase incidence of cesarean section.[2,3] Maternal request cesarean section rates range from 1 to 48%.[4] In the UK, 3.3–12% of nulliparous women preferred to have a cesarean delivery.[5,6] According to a report of World Health Organization (WHO) (2010), cesarean birth rate in Iran (2008) was 41.9% of total deliveries,[7] and the frequency of elective caesarean section varied from 6–17%,[8] whereas the recommendation for the number of cesarean birth was up to 15% by 2010.[9] In a recent study to explore the attitudes of obstetricians to perform a cesarean section on maternal request in the absence of medical indication showed that the differences in obstetricians' attitudes were not founded on concrete medical evidence, and cultural factors, legal liability, and variables associated with the specific perinatal care organization of the various countries played a role.[10]

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On the basis of this increasing rate of cesarean section in Iran, health policy makers follow some programs to reduce the number of unnecessary caesarean sections, and they are searching for acceptable ways for reducing the rate but do not increase the rate of fetomaternal death due to performing non on-time cesarean section. Developing and applying these policies requires adequate information about one of the most important factors underlying such maternal requests for cesarean section.[11,12] Therefore, a tool for measuring the birth method selected and comprehensively evaluating the factors that affect the choice of birth method by mothers is required. All the tool maker experts agree on that the contents of the tool should be directly extracted from people who are tool references reference and it must consider in the item generation and also wording of the questions.[13] If the birth method selection items be extracted directly from the views of participants, it can be made ensure that this tool covers all aspects of the study concepts. In addition, the content of a tool should be matched with the culture and lifestyle of the communities and countries in which the tool is applied. A tool that is designed in a particular country only reflects the language and culture of that society, and using it in another community even after accurate translation will result in many problems due to inappropriate content.[14]

To date, there are two instruments that have been specifically designed to address fear associated with childbirth, namely, fear of childbirth, Wijma-Wijma,[15] and childbirth experience questionnaire (CEQ).[16]

However, there remains a dearth of adequately validated instruments on attitude of women regarding factors that affect their birth method selection. Therefore, considering that the choice of birth method is rooted in cultural, social, and economical context and lack of a valid tool in Iran and others countries regarding factors predicting choice of birth methods, this study was designed with the propose of development and psychometric assessment of a multidimensional questionnaire regarding attitude toward birth method selection (ATBMS) in Iranian pregnant women.

Such instruments could help to understand the prespectives of health professionals and policy makers and in turn help in designing comprehensive interventional programs for controlling the rate of cesarean birth method.

Materials and Methods

Scale development

A descriptive qualitative design using a content analysis approach was conducted to explore what does birth method selection means to pregnant women and what factors affect their decision making on the birth method. For data analysis, content analysis Granhaym-Landmn (2004) was used.[17]

This study was conducted in two stages. First, in qualitative phase and determining the dimensions of the delivery method, 21 interviews were conducted with a sample of pregnant or parturient women delivered through normal vaginal delivery or cesarean section, their partners, obstetrics, and midwives. Participants were recruited from three semi-public and public hospitals and two healthcare centers affiliated to the Ahvaz Jundishapur University in an urban area in the south of Iran. The average number of daily births in these centers was 4 to 10. Data collection was conducted from June to December 2012. Unstructured interviews were held with the participants by the first author. The location of interviews was the health centers or postpartum wards convenient to the participants. In total, 21 sessions were held and unstructured in-depth individual interview with 18 pregnant and parturient women (4 pregnant and 14 postnatal) and 3 with key informants was conducted. Inclusion criteria for the selection of the participants were: Over or equal to 18-year-old individuals; with an experience of selection of a birth method; and being pregnant in the third trimester or in their first week postpartum period after cesarean section or vaginal delivery at the time of data collection. Suffering from severe medical complications and having any difficulty in communicating in Persian language were exclusion criteria. Maximum variation was achieved in sampling through selection in terms of women's social class, economic status, educational and employment status, and being in pregnancy or postpartum period.[17] Interviews were started with the general question "How did you decide to undergo the natural delivery process or cesarean section," along with probing questions regarding how they chose their birth method.

Each interview lasted approximately 30 to 60 min. All the interviews occurred with the first researcher in a separate room in the health center or in postpartum wards. Data collection and data analysis were conducted concurrently (conventional analysis) and interviews were continued until the interviews did not add any new data and the data were saturated.

To analyze the data, the interviews were transcribed verbatim and read several times to reach an overall understanding of women's perspectives on choosing the birth method. At first, meaning units as words, sentences, or paragraphs were identified, then they were abstracted and labeled with codes, after that, the codes were sorted into sub-categories and categories, based on their similarities and differences and finally, themes were emerged.[17] Trustworthiness of the results also was investigated. As suggested, four criteria were considered for the trustworthiness, namely, credibility, transferability, dependability, and confirmability.[18,19] The theoretical and operational definitions by using the themes, categories, and subcategories were extracted by using these definitions and using meaning units from the content of interviews, related items that represent an aspect of the birth method selection were designed. These items were the

base of questions in ATBMS questionnaire. In the second stage of study, the validity and reliability of questionnaire was investigated.

Validity

To check the validity of the questionnaire, content validity, face validity, and construct validity (exploratory factor analysis) were used.

Content validity

It is an essential step for developing a scale and a mechanism for linking abstract concepts with tangible and measurable indicators.[20] The expert panel consisted of 13 specialists in obstetric, reproductive health, midwifery, and nursing. Qualitative content validity was determined based on "grammar," "wording," "item allocation," and "scaling" indices.[16] In order to perform quantitative content validity, content validity ratio (CVR) and content validity index (CVI) were calculated. For calculating CVR, the expert panel was asked to comment independently on the necessity of each item using a 3-point Likert scale; 1 = essential, 2 = useful but not essential, and 3 = unessential. Following the expert's assessments a CVR for the total scale was computed. According to the Lawshe table, an acceptable CVR value for 13 expert panels is 0.56 or above.[21] For the CVI, based on the recommendation od Waltz and Bausell,[22] the same expert panel was asked to evaluate the items according to a 4-point Likert scale on "relevancy," "clarity," and "simplicity." A CVI score of 0.80 or above was considered satisfactory.[23]

Face validity

Face validity is concerned with how appropriate, relevant, and understandable the items on a questionnaire are concerning the focus or aim of the questionnaire.[24]

In this part, both quantitative and qualitative methods were applied. For quantitative part, 10 women were asked to evaluate the questionnaire and score the importance of each item on a 5-point Likert scale in order to calculate "item impact score" (impact score = frequency (%) × importance). An impact score of 1.5 or above was considered satisfactory as recommended.[16] For the qualitative part, the same patients were asked about the "relevancy," "ambiguity," and "difficulty" of the items; and some minor changes were made to the preliminary questionnaire.

The pre-final version of the questionnaire included 101 items, following the reflection of the abovementioned approaches in two times; finally, 19 items were removed and the pre-final version of the questionnaire consisting of 82 items was provided for the next stages (validity and reliability of the questionnaire).

Construct validity

The dimensionality of the questionnaire was determined using exploratory factor analyses (EFA). The women completed the questionnaire and its factor structure was extracted using the principal component analysis with varimax rotation. In order to evaluate sampling adequacy to perform a satisfactory factor analysis, Kaiser–Meyer–Olkin measure of sampling adequacy (KMO) and Bartlett test of sphericity was calculated. To determine the best structure, an eigenvalue greater than 1.2 and a factor loading equal to or greater than 0.3 and scree plot were applied.[25,26]

Reliability

- Internal consistency: The internal consistency of ATBMS questionnaire was estimated by computing Cronbach's alpha coefficient. Alpha values of 0.60 or above were considered satisfactory[21]
- Test–retest: A subsample of patients (n = 30) completed the questionnaire twice with a 2-week interval in order to examine the stability of the scale by calculating Spearman–Brown test. Correlation coefficient is significant at the 0.01 level (two-tailed). Spearman correlation coefficient showed a high reliability, r = 0.916, (P = 0.000).[21] All statistical analyses were performed using the Statistical Package for the Social Sciences version 18.0. (SPSS Inc.,Chicago,IL).[27]

Scoring

To provide row scores, each item was scored from 5 to 1, except for items 1–12, 66–68, 59–61, and 18–54 where scoring should be reversed that is 1 to 5, and to calculate the row score for each subscale, raw score items are added which are then divided by number of items in that subscale.

A linear transformation was used to calculate scores ranging from 68 to 204 where higher scores (158–204) indicate normal delivery selection (a positive attitude), lower scores (68–113.3) indicate cesarean section (a negative attitude), and middle level scores indicate no differences in choosing a birth method in aspect of women (no specific attitude).

Trustworthiness

Credibility of the data was established through peer and member checking. Peer checking was conducted by 4 expert supervisors to verify coding and categorization process. In member checking, seven interview drafts were returned to the participants to verify that the researchers were presenting their real perceptions. Prolonged engagement with data and immersion in them along with writing field notes, helped in ensuring the quality of the data.[18,19]

Ethical considerations

The ethics committee of the Tarbiat Modares University approved the study. Before entering the research field, official permissions were obtained. All the participants were informed about the purpose of the study and were assured that their confidentiality would be maintained; signed informed consent forms were obtained from all the participants. In addition, permission to record the interviews

was obtained; the participants had a right to withdraw from the study at any stage.

Results

In the qualitative section, the mean age of the participants was 26.83 (15–46) years. Four women were pregnant (2 women had chosen cesarean section and 2 vaginal delivery). In addition, 3 and 11 women had undergone vaginal delivery and elective cesarean section, respectively. Nine out of 18 women had a Bachelor of Science degree (nine in cesarean section and 0 in vaginal delivery groups). Nine women were employed and 9 were housewives (6 women in cesarean section and 3 in vaginal delivery groups); hence, the women who chose cesarean section were mostly employed and educated. Among 200 meaning units, 130 preliminary items were extracted, and after examining the repeated data, 101 items remained. Through face and content validity process, the item numbers reduced to 82 before construct validity. Eight subscales, namely, beliefs and attitudes, sexual and physical attitudes, fear of childbirth, preference of convenience, health and supporting, social-cultural norms, confidence to the birth practitioner, personal and practical choice, and sources of motivations were extracted.

In the sexual and physical attitudes subscale affecting the women's decision of choosing a birth method, the participants suggested that the matter of choosing a birth method was a complex and difficult decision influenced by sociocultural beliefs and attitudes. In this respect, the women's husbands, family members, friends, and peers had fundamental roles. Women expressed that postpartum sexual function and sexual satisfaction of their husbands played a significant role in choosing their birth method. The followings narratives are participants' direct quotations.

One of postnatal woman expressed that

"*Those who had vaginal delivery said that their husbands were not satisfied with their sexual relationships after vaginal delivery (W19).*"

One pregnant woman mentioned that

For my some relatives that it was their second or third childbirth, I witnessed that they chose cesarean sectoion to prevent sexual dysfunction after vaginal delivery (W3)."

Another postnatal woman expressed that

"My sister experienced vaginal delivery in her first pregnancy and CS section in her subsequent pregnancy. In her first delivery, she had several sutures and her vaginal opening was so stretched that her husband was not satisfied with their sexual relationship at all and he forced her to perform genital cosmetic repair (W9)."

Construct validity

In the quantitative section, the participants who selected their birth method comprised 420 women with vaginal delivery (n = 228) and cesarean section (n = 192), who were referred to three semi-public and public hospitals and two healthcare centers affiliated to the Ahvaz Jundishapur University. All women had no previous childbirth or a previous vaginal delivery. Among women who had a previous vaginal delivery, 31 (7.4%) had chosen cesarean section in their present pregnancy. The mean age of the participants was 26.80 (5.16) years, and the cesarean section group was older with a higher marriage age and lesser gravity number. In addition, the women who selected cesarean section were more educated and employed with better an economic status in an urban area. Table 1 shows particular characteristics of participants ($P < 0001$).

Exploratory factor analysis

The Kaiser–Meyer–Olkin was 0.829 and the Bartlett's test of sphericity was significant (2278, $P < 0.001$) showing sampling adequacy. In early draft of questionnaire with 82 items, the initial analysis indicated a 15-factor structure for the questionnaire with 14 items loading unexpectedly and irrelevant to the loaded construct or repeated in other questions; Thus, repeated and irrelevant items were removed and a final 68-item questionnaire loaded on 8 distinct constructs that jointly accounted for 42.97% of variance observed [Table 2].

Consistency and stability reliability of the scale was measured by Cronbach's alpha coefficient. This coefficient for the whole scale was 0.87 and for subscales ranged from 0.40 to 0.90.

Cronbach's rate should be between 80–70%,[28] and for context-based studies, higher than 60 is acceptable.[21] Spearman–Brown test also showed that the instrument have an excellent internal consistency (0.889). The present study was conducted among pregnant women and key informants' perceptions about any factors affecting women to choose their birth method. This research is an innovation because this scale was developed on the basis of the context and passed the psychometric stages for the first time in the world.

Discussion

The purpose of this study was to develop a scale for measuring attitude toward birth method selection in an Iranian sample population. This paper presents the procedure of tool development, structure, validity, and reliability of the ATBMS instrument. For measures of content validity, we used both quantitative and qualitative methods to assess face and content validity to take advantage of this combination in evaluating construct validity.[13]

Assessment of the content validity of a scale by experts is one of the best ways for gathering evidence for supporting a tool.[29] There are similar studies utilizing the ideas of expert panel to confirming their instrument's content validity.[30,31]

Table 1: Baseline women characteristics in the normal delivery and cesarean section groups (*n*=420)

Characteristic	Chosen birth method			*P*
	ND (*n*=228)	CS (*n*=192)	Total (*n*=420)	
Age (years), mean (SD)/*n* (%)	26.95 (3.65)	32 (7.60)	26.80 (5.16)	0.014
Marriage age, *n* (%)				
<15	15 (3.57)	8 (1.90)	23 (5.47)	0.031
16-20	97 (23.09)	61 (14.52)	158 (37.61)	
21-25	89 (21.19)	71 (16.90)	160 (38.09)	
26-30	23 (5.47)	44 (10.47)	67 (15.95)	
31-35	4 (0.95)	8 (1.90)	12 (2.85)	
Gestational age, Week, mean (SD)	27.77 (2.34)	27.95 (2.12)	27.86 (2.23)	0.728
Gravidity, *n* (%)				
Primigravida	114 (27.14)	105 (25.00)	219 (52.14)	0.049
2-4	111 (26.5)	81 (19.28)	192 (45.71)	
≥5	3 (0.71)	6 (1.42)	9 (2.14)	
Parity, *n* (%)				
Nulliparous	121 (28.80)	115 (27.38)	236 (56.19)	0.417
1-3	105 (25.00)	73 (17.38)	178 (42.38)	
≥4	2 (0.47)	4 (0.95)	6 (1.42)	
Education, *n* (%)				
Primaryschool	46 (10.95)	13 (3.09)	59 (14.04)	<0.001
Secondary	36 (8.57)	14 (3.33)	50 (11.90)	
High school	25 (5.95)	17 (4.04)	42 (10.00)	
Diploma	63 (15.00)	74 (17.61)	137 (32.61)	
University	58 (13.80)	74 (17.61)	132 (31.42)	
Husband's education, *n* (%)				
Primaryschool	33 (7.85)	11 (2.61)	44 (10.47)	<0.001
Secondary	45 (10.71)	13 (3.09)	58 (13.80)	
High school	19 (4.52)	12 (2.85)	31 (7.38)	
Diploma	48 (11.42)	60 (14.28)	108 (25.71)	
University	83 (19.76)	96 (22.85)	179 (42.61)	
Employment, *n* (%)				
Employer	3 (0.71)	2 (0.47)	5 (0.12)	<0.001
Employee	11 (2.61)	35 (8.33)	46 (10.95)	
Unemployed (household)	214 (50.95)	155 (36.90)	369 (87.85)	
Economy status, *n* (%)				
Good	78 (18.57)	61 (14.52)	139 (33.09)	0.015
Moderate	125 (29.76)	125 (29.8)	250 (59.52)	
Week	25 (5.95)	6 (1.42)	31 (7.38)	
Place of residency, *n* (%)				
Urban	191 (45.47)	185 (44.04)	376 (89.52)	<0.001
Rural	37 (8.80)	7 (1.66)	44 (10.47)	

CS: Cesarean section; SD: Standard deviation; ND: Normal delivery

Construct validity using factor analysis indicated 8 factors, including "beliefs and attitudes," "sexual and physical attitudes," "fear of childbirth," "preference of convenience, health and supporting," "Socio-cultural norms," "confidence to the birth practitioner," "personal and practical choice," and "sources of motivation." To our knowledge, this is the first time that a qualitative study is conducted to develop a birth method selection questionnaire thus, this scale and its subscales did not compare to the specific childbirth scale but some relevant scales regards to childbirth were compared.

The internal consistency of the ATBMS scale was calculated to be more than 0.87. This finding is confirmed by the Wijma-Wijma study .The Cronbach's alpha coefficient in Wijma-Wijma study, for A version was 0.93, and for B version, were 0.95, and 0.96, 2 hours and 5 weeks postpartum, respectively. Wijma-Wijma study is the first tool for measuring the fear associated with childbirth among 196 women in their 32nd week of pregnancy (version A), and 166 women during the first 2 hours and 5 weeks after childbirth (version B). In addition, our results showed that "fear of childbirth" as

Table 2: Attitude toward birth method selection scale and its factor loading obtained from exploratory factor analysis (*n*=420)

Items	Factor loading							
	1	2	3	4	5	6	7	8
1. I am afraid of cesarean section complications	0.475							
2. I do not want a cesarean scar on my abdomen	0.534							
3. Recovery after cesarean delivery takes longer than normal delivery	0.465							
4. Anesthetic drugs in cesarean section are harmful for fetus and make the baby sleepy with trouble in breathing	0.508							
5. Normal vaginal delivery is easy and preserves womens' health	0.634							
6. Probability of occurring serious problems in vaginal delivery compared with cesarean section is less	0.646							
7. Normal vaginal delivery is a natural birth method	0.595							
8. In vaginal delivery, fetal growth is complete but in cesarean delivery embryo is removed from the uterus earlier	0.383							
9. In cesarean section, length of stay in hospital is longer than vaginal delivery	0.435							
10. Complications of cesarean delivery are more than normal delivery	0.642							
11. The pain of vaginal delivery is more acceptable than complications of cesarean section	0.576							
12. Childbearing preparation classes will affect the choice of birth method	0.406							
13. If my husband or any relatives can accompany me during labor, I will choose vaginal delivery	0.385							
14. Vaginal delivery is a natural process and devised by God, but cesarean is a man-made and synthetic method	0.527							
15. Religious beliefs and appeals of religious leaders influence the choice of birth method	0.451							
16. Satisfaction with the birth practitioners (doctors and midwives) and their behavior will affect the choice of vaginal delivery in the next pregnancy	0.580							
17. Advices and support of medical staff (midwives, doctors, nurses, and operating room staff) affect the choice of birth method	0.420							
18. I do not trust vaginal delivery for myself and my baby's health		0.475						
19. I underwent cesarean because I do not have access to the physiological childbirth.		0.507						
20. Vaginal delivery is an old fashioned method, but cesarean is an advanced and scientific technique		0.436						
21. My husband prefers cesarean section due to more sexual satisfaction		0.738						
22. I am worried of decreased sexual satisfaction following vaginal delivery		0.631						
23. I prefer cesarean due to possible delay in regaining sexual relations after vaginal delivery		0.682						
24. After vaginal delivery, I may need surgery to repair genital system, bladder, or uterus		0.562						
25. I feel incapable of ending a normal delivery process		0.566						
26. In my husband and my family's opinion I do not have the strength to go through vaginal delivery		0.593						
27. I do not have enough confidence to undergo vaginal delivery		0.56						
28. I am looking for a justification for undergoing cesarean delivery		0.598						

Contd...

Table 2: Contd...

Items	Factor loading							
	1	2	3	4	5	6	7	8
29. Despite the high cost of cesarean section my husband insists on doing it		0.636						
30. I want to ligate my tubes, so I chose cesarean delivery		0.394						
31. I am afraid of vaginal delivery			0.469					
32. I am terrified of labor pain			0.562					
33. I am afraid of frequent and painful vaginal exams during labor			0.692					
34. I am ashamed to be placed in vaginal delivery position			0.564					
35. Vaginal delivery environment makes me stressful and anxious			0.623					
36. I am afraid that in spite of bearing labor pain, I may have to do an emergency cesarean			0.531					
37. I am afraid that my baby will have problems during vaginal delivery			0.596					
38. I am scared of getting vaginal tears and deformed genitalia because of vaginal delivery			0.544					
39. I am scared of getting uterus prolapse, urinary, or fecal incontinence after vaginal delivery			0.450					
40. Babies born by cesarean delivery are more intelligent				0.448				
41. It is the benefit of cesarean delivery that you do not see the process of labor				0.452				
42. Duration of labor in caesarean delivery is shorter than vaginal delivery				0.502				
43. Cesarean is a comfortable way of delivery and calms me in spite of having a duration of pain after it				0.476				
44. I accept the cesarean delivery complications for getting rid of the pain in vaginal delivery and inadequate analgesia procedures				0.526				
45. Cesarean pain is eliminated by drugs				0.305				
46. In a cesarean birth, I can choose the birth date and be more prepared with previous planning				0.538				
47. Cesarean delivery is more convenient than vaginal delivery				0.497				
48. In cesarean delivery, attention and care of the practitioner is better than vaginal delivery				0.311				
49. Cesarean delivery is better because it is done by a specialist				0.313				
50. Cesarean delivery is better because it is in fashion					0.389			
51. I choose caesarian because it has been experienced by my close relatives and friends					0.391			
52. People with higher social status mostly choose cesarean over vaginal delivery					0.661			
53. Most medical graduates choose cesarean over vaginal delivery					0.649			
54. With cesarean delivery, the interest and attention of my husband and family members to me will be more					0.496			
55. Encouragement and desires of my husband and family influenced me in choosing my birth method					0.332			
56. The experience of friends and close relatives influenced me in choosing my birth method					0.422			
57. The method of delivery of health staff (midwife, nurse, doctor, gynecologist) influenced me to choose the birth method					0.352			
58. Choosing the birth method is not related to culture					0.305			
59. I do not trust the information and skills of midwives in performing vaginal delivery						0.565		

Contd...

Table 2: Contd...

Items	Factor loading							
	1	2	3	4	5	6	7	8
60. The physician not attending at time of vaginal delivery makes me anxious						0.630		
61. I prefer the doctor who has performed my prenatal care during pregnancy, do my delivery						0.609		
62. After caesarian because of the pain, a caregiver is required for mother and baby nursing care							0.446	
63. I am sure with my decision and I insist on it							0.592	
64. I am satisfied that I can choose my birth method							0.616	
65. I do not have a good experience from my previous delivery								0.398
66. Physicians simply accept the request of cesarean by women								0.592
67. Physicians encourage women that cesarean is an easy and comfortable birth method								0.587
68. Physicians do not explain about vaginal delivery and do not encourage women to perform vaginal delivery								0.547
Eigen value	11.234	4.767	3.031	2.373	2.236	2.084	1.814	1.681
Explained variance (%)	16.521	7.01	4.458	3.489	3.288	3.065	2.667	2.472
Cumulative variance (%)	16.521	23.531	27.989	31.478	34.767	37.832	40.499	42.971

Factor 1: Beliefs and attitudes; Factor 2: Sexual and physical attitudes; Factor 3: Fear of childbirth; Factor 4: Preference of convenience, health and support; Factor 5: Socio-cultural norms; Factor 6: Confidence in the birth practitioner; Factor 7: Personal and practical choice; Factor 8: Sources of motivation

a 10-item domain in the ATBMS scale is an important factor in the willingness of women to do a cesarean section. This dimension corresponds with the Wijma Delivery Expectancy/Experience Questionnaire (W-DEQ) scale specifically measuring the fear of childbirth with 33 questions about anxiety, control, and personal feelings in one domain, and all questions are asked both before and after the birth, which is a way to include the influence on the memory.[15] Childbirth is a stressful event and some women have traumatic stress symptoms, such as anxiety and fear of childbirth postpartum.[16]

In addition, the findings are in line with the childbirth experience study that was shown CEQ questionnaire have a Cronbach's alpha coefficient ranged between 0.62–0.88 for 4 subscales containing own capacity (8 items regarding sense of control, personal feelings during childbirth, and labor pain, with Cronbach's alpha coefficient of 0.82), professional support (5 items about information and midwifery care with Cronbach's alpha coefficient 0.88), perceived safety (6 items about sense of security and memories from the childbirth with Cronbach's alpha coefficient 0.78), and participation (3 items regarding own possibilities to influence the birthing situation with Cronbach's alpha coefficient 0.62).[16]

Women expressed that "confidence in the birth practitioner" played a significant role in choosing their birth method. This domain is almost in line with the perceived safety domain in CEQ. Items regarding sense of security correlated with statements about memories formed the dimension labeled perceived safety. The own capacity dimension included items relating to experienced emotions and sense of control, together with experienced labour pain. Professional support and participation are other dimensions of the four-dimensional model of the childbirth experience as a tool to identify women with negative experiences and for evaluating efforts to improve the quality of childbirth care.[16]

The reliability of the instrument is one of the most important criteria that indicate the quality of the ATBMS instrument. The questionnaire had an acceptable internal consistency and stability. A reliable scale increases the power of a study detecting significant differences and relationships that actually occur in the study.[32] In a study by Dencker regarding development and evaluation of CEQ similar measurements were used for assessing the validity and reliability of the scales and the level of test–retest reliability weighted kappa of 0.68, and hence reported demonstrating a good test–retest reliability of the CEQ.[16] In addition, the examination of construct validity of W-DEQ both before and after delivery, in nulliparous as well as in parous women, indicated a construct more clearly in parous than in nulliparous women. Internal consistency reliability and split-half reliability of the W-DEQ of ≤0.87 was reported to be good for a new research instrument.[15] In addition, the psychometric properties of an abbreviated version of the pregnancy experience scale (PES) designed to evaluate the maternal appraisal of positive and negative stressors during pregnancy showed that internal reliability is high for both the uplifts (α = 0.82) and the hassles (α = 0.83) subscales and the Spearman–Brown prophecy formula generated a minimum required alpha coefficient of

0.71 for uplifts (full PES α = 0.91) and 0.82 for hassles for each subscale.[33] One of the characteristics of ATBMS questionnaire is its relation to the norms, values, and beliefs in Iranian society to the childbearing methods. One of these aspects is religious beliefs as one of the factors influencing the choice of birth method. Statements such as "appeal to the leadership religious (Imams)," "natural delivery as a method that has brought from God" shows that Iranian women choose their birth method based on their religious believes, especially about natural childbirth. This questionnaire has been designed and developed based on the concepts of birth method selection by pregnant women in Ahvaz city. For using this tool (ATBMS) in assessing the selected birth method for pregnant women in other ethnic and cultures groups, performing psychometric process is required.

As a limitation, this study focused mainly on the experiences of pregnant and early postnatal women. It is suggested to explore women's satisfaction with their birth method in postnatal as well as their subsequent childbirth.

Conclusion

On the basis of the results, the ATBMS scale for determining the attitudes and factors influencing the choice of birth method in the Iranian culture were designed. ATBMS questionnaire has developed based on the exploration of the birth method experience of pregnant women and key informants through a qualitative study via in-depth interviews. This scale is an easy tool for understanding and can be completed by women in 15–20 min duration, with an appropriate validity and reliability. Due to the lack of any reliable and validated tool to assess the birth method selection and factors influencing women's decision making, considering the focus of WHO to reduce unnecessary cesarean sections as well as to detection factors that motivate women to choose cesarean section in absence of any medical indication. ATBMS questionnaire can be useful for effective recognition, planning, and intervention by governments. Usage of this scale is suggested in other studies.

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Conflicts of interest

There are no conflicts of interest.

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