The Iranian Version of Theory-Based Intention for Cesarean Section (IR-TBICS) Scale: Development and First Evaluation

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Abstract
Background: The rate of mothers experiencing a cesarean section in the absence of medical signs is growing in the world. Women's beliefs and intentions have an essential role in the request or choosing a delivery method. At present, there is no comprehensive, validated scale for assessing pregnant women's beliefs about the cesarean section in the Iranian population. This study performed to develop and assess the validity and reliability of the belief-based cesarean section scale using the theory of reason action (TRA) constructs as a theoretical framework for measuring intention toward delivery method selection. Methods: In this cross-sectional validation study, 480 pregnant women were recruited from Sari, north of Iran, through a multi-stage random sampling approach. Content validity was examined using the content validity index (CVI) and content validity ratio (CVR). Furthermore, both exploratory factor analyses (EFA) and confirmatory factor analyses (CFA) were applied to assess the construct validity of the developed scale. Reliability was measured by internal consistency and intraclass correlation coefficient (ICC). Quality criteria for floor and ceiling effects were derived from existing guidelines and consensus within our research group. Results: Results obtained from factor analysis showed that the data were fit to the model \( \chi^2 = 2298.389, P<0.001 \), and TRA consisted of 24 items assessing five domains, which describing 62.46% of the common variance. The CFA showed a model with suitable fitness for the data. Cronbach’s alpha coefficient for the domains of the scale ranged from .609 to .843, and the ICC value ranged from .71 to .84, which is within satisfactory ranges. The IR-TBICS scale had no floor and ceiling effect in the total score or any of the dimensions. Conclusion: The belief-based cesarean section scale appears to be a reliable instrument and now is suitable and can be applied in other researches in Iran. Keywords: Cesarean section, Intention, Scale development, Psychometrics, Pregnant women

Background
One of the most common significant surgeries around the world is the cesarean section, in which it’s prevalence is increasing in the world that caused the most common major concern in this case (1-3). The rate of cesarean section is about 27%, 25%, 22% in Chili, Brazil, and the USA, respectively (4, 5). Based on the World Health Organization (WHO), a suitable rate of cesarean section is 10-15%, which
is related to the lowest rate of maternal problems. Unfortunately, based on the results of different studies, the rates of cesarean are very high in Iran (6-8), and based on the studies, this rate was reported 26%-60% compared with some private clinics stated up to 87% (8). The elective cesarean section without medical signs has become the highest subject of concern among health experts raised sharply throughout the world as well as in Iran (9). Cesarean delivery on maternal request (CDMR) is responsible for some rise in the overall rate. In developed countries, conservative estimates of CDMR range 4%-18% of all cesarean deliveries (10). As the results of different studies of the choice of mode of delivery in different countries showed that 2% of Irish women, 7% of British women (11), 28% of Australian women (12), and 2.8% of Swedish women, would prefer to have a cesarean section (13). Though the rate of CDMR in Iran remains uncertain due to poor evidence, the CDMR is unfortunately high (14). This rate varied from 11.2 % to 22% in various studies (15, 16).

There are numerous studies on what lies behind a woman's request or desire of a cesarean section. There is no main reason. However, the most common reason in high-income countries is fear of childbirth, which again can have some reasons, for example, a previous traumatic childbirth experience. In a previous study, it was found that women's request was not a major indication for cesarean section, and it was questioned if the rise in overall cesarean section rate was due to women's requests. Based on the indications of the cesarean section, it was found that a medical indication frequently accompanied the maternal request. Sometimes doctors are grateful for a maternal request (17). In another study, it was reported that having severe fear of childbirth raises the risk of elective cesarean due to the lack of positive anticipation, particularly among multiparous women (18).

However, Iran is very different. There is a different idea about the elective cesarean section because of maternal demand. Previous studies in Iran have suggested several elements for an elective cesarean section, such as the lack of awareness and misrepresentation about natural childbirth (19, 20), the need to plan for the delivery date, fear, and pain of natural childbirth prior experience of delivery (21). Furthermore, a part of this rise is due to the changed attitudes of people to the delivery approaches, which can significantly raise the incidence of cesarean section (22). Other studies
showed that socio-cultural, religious, economic customs (23, 24), low perceived behavioral control, emotional causes, misconceptions, and wrong subjective norm in Iranian mothers were the main elements in their choice of delivery type (25). This sharp rise of the cesarean section shows a health-care difficulty in Iran and needs the consideration of health politicians to follow some programs to decrease the number of unnecessary cesarean sections and search for suitable approaches for decreasing the rate of cesarean section (26).

It looks that the high rate of cesarean delivery in Iran is a complex event. Thus, educational interventions to reduce the rate of cesarean delivery, improved quality of routine vaginal delivery services, and change in motherly and experts' outlooks to the mode of delivery are essential (27). Consequently, an instrument for assessing the delivery methods selected and carefully assessing factors that affect the choice of delivery methods by mothers is required. Fear, attitude, perceived behavioral control, subjective norms, and behavioral intention are one of the most common reasons to select cesarean section women might consider themselves at risk of possible morbidities (28-30) it was confirmed that negative attitudes are the leading causes in order to select any way of delivery (28). Other studies also confirmed that doctors, midwives, and relatives' thoughts, as well as following the style, are the most critical elements in selecting cesarean section delivery (28-30). Concepts such as attitude, perceived behavioral control, subjective norms, and behavioral intention are the key constructs of the theory of reason action (TRA). TRA which is based on the theory of the behavioral science is an interpersonal health education theory which is composed of theoretical constructs as attitude (beliefs about the outcome of the behavior and evaluations of expected outcomes) and subjective norms (normative believes and motivation to comply) (31). According to the reports mentioned above, TRA can be a suitable theory to design interventional programs.

Due to the importance of the intention in leading behavior, identifying underlying factors of behavior are essential to improve any health promotion plan. As such, a valid and reliable questionnaire is required to extract personal intention. Based on the prior study, there is no accurate assessment of maternal intention. Different studies have been conducted in the field of cesarean in Iran (14, 22, 26, 32, 33), but in these studies, researcher-made questionnaires were used, and there remains a lack of
suitably validated instruments on the intention of women about their delivery method selection. Since the fact that the nature of behavior is multipart as various psychosocial elements are affecting it, the existing questionnaires are not provided enough causes to extract essential maternal elements on the method of delivery (27, 34).

Thus, considering that the choice of delivery method is rooted in the socio-cultural background and lack of a valid scale in Iran and other countries about factors predicting choice of delivery methods, the current study was aimed to development and psychometric assessment of a multi-component questionnaire based on TRA to better understand Iranian pregnant women’s intention toward cesarean section. Such questionnaires could support to identify the viewpoints of health experts and policymakers and, in turn, help in developing extended interventional plans for regulating the rate of the cesarean birth procedure. Notably, items that assess women's attitudes toward the two delivery choices, her beliefs about how important others (her husband, her mother, and her mother-in-law) will respond to her choice about childbirth were developed and evaluated for their psychometric properties and their relation to intentions tested. It was wished this might aid in filling the gaps and maybe contribute to the current literature on the topic.

Methods

**Participants and procedures**

This cross-sectional validation study was applied in Sari city, the capital of Mazandaran province, the north of Iran, from February to June 2017. In the present study, the sample size was estimated based on the number of items in the scale multiplying by 10, as suggested (24×10=240). The most commonly used minimum sample size estimation method in structural equation modeling (SEM) is the ‘10-times rule’ procedure. The ‘10-times rule’ has been preferred due to its simplicity of use (35, 36).

In all, 480 pregnant women participated in EFA (240 pregnant women) and CFA (240 pregnant women). Data for this study come from pregnant women who attended a Baghban specialist clinic, public health care centers, and private clinics of gynecologists in Sari city, the capital of Mazandaran province. Women were chosen using a multi-stage random sampling method. The first step of the sampling method was aimed to select samples from all regions. To this end, a list of public health
care centers and gynecological clinics were provided. Subsequently, in proportion to the number of target groups in each of the public and private service centers, the number of samples required was consecutively entered into the study via a simple sampling method. The inclusion criteria were being pregnant women with gestational age from seventh to ninth month and interested in participating in the study. Exclusion criteria were a lack of willingness, having a mental disease, or having a specific physical condition like having complete placenta Previa that was not possible to cooperate and complete the questionnaire. The demographic characteristics of the women included age, level of education, and employment status. Data collection approaches were based on nameless scales that were completed by an expert interviewer. The interviewer received guidelines for similar completing the scales after attending a training session.

**The scale development process**

This study performed for developing an instrument to measure the intention of pregnant women for the cesarean section delivery method. Scale development was made following stages. The first stage was done to specify the content domain of a construct. In this stage, it was done interviews with the experts/pregnant women and the review of literature in this background relating to the TRA (37-41) for developing an item pool and content domain. The main dependent variable in the present analysis was the cesarean delivery method. Besides, the independent variables include five factors, organized into logical framework counting (a) behavioral beliefs, (b) evaluation of behavioral outcomes, (c) motivation to comply, (d) normative beliefs, and (e) behavioral intention. The item pool contained 39 items at this point. It was tried making clear the content of the items and deleted extra items via discussion. The principal researcher and other team members read items and removed extra items. To the end, the first draft of the instrument was developed and consisted of 27 items. In the second stage, the psychometric properties of the Iranian version of the theory-based intention to cesarean section (IR-TBICS) scale were done to assess the validity and reliability of a new scale.

**Content validity:**

It is a wide-ranging review by a panel of experts to determine whether items sufficiently contain the subject aimed at assessing them. It is a crucial phase for developing a tool and a method for linking
abstract notions with tangible and measurable indexes. The expert panel consisted of 10 specialists in health education and promotion, gynecologist, and instrumentalist. Qualitative content validity was assessed according to the wording, scaling, grammar, and item allocation indices (42). All items were tested, and the expert panel's suggestions were put into the scale. We applied the content validity index (CVI) and content validity ratio (CVR) for reaching the quantitative content validity of a new scale. For measuring CVR, the expert panel was questioned to assess each item through a 3-point Likert scale including, 1 = essential, 2 = useful but not essential, and 3 = unessential. The CVR for each item was assessed using formula CVR = \[\frac{Ne - (N/2)}{N/2}\] (Ne is the number of panelists demonstrating "essential" for each specific item and N is the total number of the expert panel). The numeric value of CVR is identified by the Lawshe table. Based on Lawshe's table (43), items with a CVR score of .62 or above were chosen (42). For the CVI, according to Waltz and Bausell (44) reference, the same panel was questioned to assess the items based on a 4-point Likert scale on 'relevancy,' 'clarity,' and 'simplicity.' The number of those stated the item as relevant or clear (rating 3 or 4) was allocated by the number of a content expert panel. A CVI score of .79 or above was measured acceptable (43, 45).

**Face validity:**

Face validity is an assessment of laywomen in understanding and knowing an instrument. In this step, both quantitative and qualitative approaches were used. For the quantitative step, ten pregnant women were questioned to assess the instrument and degree the importance of items on a 5-point Likert scale for evaluating 'Item Impact Score' (Impact Score = Frequency (%) × Importance). The impact score of equal to 1.5 or more was measured acceptable, as mentioned (46). For the qualitative step, the same pregnant women were questioned about the 'relevancy,' 'ambiguity,' and 'difficulty' of each item; and some minor modifications were performed to the primary instrument.

**A pre-final version of the instrument:** following the reflection of the above methods, the pre-final version of the instrument containing 24 items was created for the next phases (construct validity and reliability of the IR-TBICS scale).

**Statistical analysis**
**Construct validity**

The construct validity of the IR-TBICS scale was done using both exploratory (EFA) and confirmatory factor analyses (CFA).

**The main study and data collection**

A cross-sectional study was planned to assess the psychometric properties of the IR-TBICS scale. A consecutive sample of the pregnant women was recruited from Baghban specialist clinic, public health care centers, and private clinics of gynecologists affiliated to Mazandaran University of Medical Sciences.

*a) Exploratory factor analysis (EFA):*

A sample of 240 pregnant women completed the IR-TBICS scale, and its factor structure was extracted by the principal component analysis with varimax rotation. Bartlett's Test of Sphericity and Kaiser-Meyer-Olkin (KMO) were applied to assess the suitability of the sample for the factor analysis. Eigenvalues above one and scree plot were conducted for identifying the number of factors. Factor loadings equal/greater than 0.4 were considered appropriate (47).

*b) Confirmatory factor analysis (CFA):*

A separate sample of 240 pregnant women completed the IR-TBICS scale, and factor analysis was conducted to measure the model fitness. As suggested several fit indices counting relative Chi-square ($\chi^2$/df), goodness of fit index (GFI), Normed Fit Index (NFI), Non-Normed Fit Index (NNFI), Standardized Root Mean Square Residual (SRMR), Comparative Fit Index (CFI), and Root Mean Square Error of Approximation (RMSEA) were conducted (48, 49). Relative Chi-square is the ratio of chi-square to degrees of freedom, and its suggested reference value is less than three for accepting the fitness of the model. The value for GFI, CFI, NFI, and NNFI could range between ’0 to 1′ and values closer to 1 are revealing of data fitness (50, 51). An RMSEA ranged .08 to .10 displays an average fit, and less than .08 identifies a good fit (49). The satisfactory value for SRMR is below.10 where values under .08 display satisfactory fit and values less than .05 show good fit (52).

**Reliability**

Cronbach’s $\alpha$ coefficient assessed the internal consistency of the IR-TBICS scale. Cronbach’s $\alpha$
coefficient of equal to 0.7 and more were identified acceptable (53). Floor and ceiling effects were determined as present if more than 15 % of the responders attained the lowest or highest possible IR-TBICS scale total score (49). Furthermore, a sub-sample of pregnant women (n = 25) completed the IR-TBICS scale twice with a 2-weeks interval for testing the stability of the IR-TBICS scale by computing Intraclass Correlation Coefficient (ICC) where the ICC of 0.4 or more was reflected acceptable (54). All statistical analyses, except CFA, were done using the SPSS V.22.0 (55). The CFA was done using the AMOS software V.22.0 for Windows (56).

**Scoring**

In the final version of the IR-TBICS, for each construct, a minimum of three and a maximum of seven items were generated. In the present study, behavioral beliefs and outcome evaluation toward the cesarean section were measured with 7 and 5 items, respectively. The items were rated on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Higher scores display a more positive attitude to the cesarean section. Normative beliefs were assessed concerning other important. In the present study, normative beliefs toward the cesarean section were measured with six items. The items were rated on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Motivation to comply with each of the referent groups was measured with items for each group. In the present study, the motivation to comply with the cesarean section was measured with three items. The items were rated on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Higher scores indicate more subjective norms persuasive to the cesarean section. The intention to use was assessed using three items. The items were rated on a 5-point scale ranging from 1 (very unlikely) to 5 (very likely). Higher scores indicate the intention to cesarean section more frequently.

**Ethics**

The ethics committee of Mazandaran University of Medical Sciences approved the study. All pregnant participants gave their written informed consent.

**Results**

**Socio-demographic characteristic**

Overall, 480 pregnant women were entered into the study. The age of respondents ranged from 14 to
41 years, with a mean age of 27.72 years (SD=5.74). Regarding the educational level, 11.87% of respondents were primarily level, 33.33 % were secondary level, and 54.8 % were the higher level of education. The 23.9 of the participants was a housewife, and the majority of the women (76.05%) were employed. The characteristics of women are reported in Table 1.

Feasibility

The results showed that no Ceiling effect or Floor effect for the Iranian version of the belief-based cesarean section scale.

Content Validity

In the quantitative assessment of the IR-TBICS scale, items with a CVR and a CVI less than .62 and .80, respectively, were removed. Three items were deleted, resulting in a 24-item pool. The expert panel also revised the IR-TBICS scale about grammar, wording, and item allocation. Actually, the result of quantitative content validity indicated that the mean scores for the CVI and CVR were .87 and .83, respectively.

Face Validity

In the qualitative face validity, women stated small variations in the wording of some items for more description. The result of quantitative face validity indicated that the affects score was equal or more than 1.5 for all items of the IR-TBICS scale. None of the items were deleted, and the first draft of the IR-TBICS scale containing 24-item was developed for the next phase of psychometric evaluation. In other words, the participants showed that they experienced no trouble reading and understanding the 24 items.

EFA

The results of the EFA are presented in Table 2 and figure 1. The KMO and Bartlett's test revealed that the data was suitable for factor analysis (KMO index = 0.830, χ²= 2298.389, P<0.001). Principal component analysis with Varimax rotation recognized five factors with eigenvalues more than one and factor loading equal to or more than 0.50, accounting for 62.46% of the variance observed. The factor loadings were as follows: (a) Factor 1 (outcome evaluations) including 7 items (item 7-13); (b) Factor 2 (behavioral beliefs) including 6 items (item 1-6); (c) Factor 3 (injunctive normative beliefs)
including 5 items (item 14-18); (d) Factor 4 (behavioral intention) including 3 items (item 22-24); and (e) Factor 5 (motivation to comply) including 3 items (item 19-21).

**CFA**

The findings of the CFA of the general model with 24 items in five subscales indicated that the model was accepted in its present form (the relative chi-square (x2/df) =2.606<3, P<0.001; RMSEA=0.077 >0.08, (95% CI = 0.062-0.078); CFI= 0.931>0.9; IFI= 0.914 >0.9; TLI= 0.892>0.8; GFI= 0.913>0.9; AGFI= 0.905). Thus, the CFA displays the suitability of the model and the appropriate fit of its structural model for the study samples. (Figure 2)

**Reliability**

The reliability IR-TBICS scale was assessed using internal consistency. The Cronbach’s alpha coefficient for the dimensions ranged from .609 to .843. Furthermore, the ICC for the theory-based cesarean section beliefs instrument dimensions was assessed, which ranged from .71 to .84 (acceptable) lending support to the stability of the IR-TBICS scale. Internal consistency of behavior comprised one item; so, internal consistency reliability was not assessed. Ceiling and floor effect should be less than 15% to comprises all criteria and shows the variations during the time; in the current study, no ceiling and floor effect were detected in the total score or any dimensions of the IR-TBICS. The Cronbach’s alpha and ICC of the theory-based cesarean section beliefs instrument dimensions are presented in Table 3.

**Discussion**

Overall, the theory of planned behavior (TBI) provides a valuable theoretical framework for dealing with the difficulties of human social behavior (57). The evaluation of theoretical structures is one of the most problematic and essential sections in the study of theory-based health education and promotion. The evaluation of the theory of reason action (TRA) structures is likely by two approaches: a direct technique in which, for instance, the typical attitude of people is assessed towards certain behaviors and indirect (belief-based) technique in which the particular behavioral beliefs and their outcomes are assessed (57, 58). Indirect assessment of the TRA constructs concentrated on the cognitive structures of TRA. TRA assumes that people can have many opinions about any particular
behavior. TRA emphasizes two types of beliefs that include behavioral and normative (57). By knowing cognitive-behavioral beliefs, factors influencing the encouragement to do determined behaviors are recognized and impacted in the intervention researches. In the current project, the TRA structures were assessed by the complicated procedure.

The content of the theory-based intention to cesarean section (IR-TBICS) scale items was first established based on interviews with the experts/pregnant women and the review of the literature to ensure that this instrument covered all theoretical concepts linked to the intention of cesarean section. The results of the analysis due to the KMO index show adequate sample size and satisfactory factor analysis. After EFA, a five-domain scale extracted accounted for 62.46% of the variance, and the maximum expressed variations were linked to the behavioral beliefs as a first domain. In the study of Ghazanfari (2010) (59) also indicated that the theory of planned behavior (TPB) described 62% of the variance of physical activity and attitude explained the maximum amount of variance. A CFA disclosed that the fit of the data was satisfactory. As such, the final IR-TBICS scale contained 24 items, with seven items indicating outcome evaluations, six items representing behavioral beliefs, five items representing injunctive normative beliefs, three items representing behavioral intention, and three items representing motivation to comply of cesarean section.

The reliability is discussed about the consistency and stability of the domains of a scale that is representing the evaluation accuracy of the scale (60). Findings Cronbach's alpha coefficients between .609 and .843 for all domains offered that the IR-TBICS scale had satisfactory reliability. So, we believe the IR-TBICS scale represents a new scale for understanding the intention to choose the method of cesarean section delivery. Even though two domains (motivation to comply and behavioral intention) had a lower level of Cronbach's alpha (under .70), other domains had higher and acceptable levels of Cronbach's alpha coefficient. Although, it was not found any significant increase in the Cronbach’s alpha coefficient after deleting any items. The results of the study performed by Bordewich in 2005 (61) indicated the internal consistency of the TPB between .52 and .89. The internal consistency of the TPB domains was also reported ranged from .54 to .82 (59). In this study, there was no ceiling and floor effect in the total score or any dimensions of the IR-TBICS scale, which
shows good content validity of the IR-TBICS scale in the pregnant women. The low value of Cronbach's alpha coefficient in some domains may be as a result of the low number of items in the domains on and how to develop the scale. It is essential that in the current study, the domains of motivation to comply and behavioral intention had three items, although Francis has highlighted the existence of at least three items for each factor in the development guide of the TPB scale (58). Moreover, Ajzen believes that matching items with prior researches when developing the scale makes available an instrument with relatively low reliability, which may underestimate the correlation between domains of the theory (57). It looks that adding the items for some factor can raise the scale reliability, therefore considering this point, further research has been proposed.

Additionally, the ICC score revealed appropriate stability for the IR-TBICS scale as it was measured by 25 pregnant women with a 2-week interval (.79). As such, we believe that this newly developed scale may be particularly valuable for health care groups to know and plan procedures that are useful and targeted to specific conditions. The inclusion of five domains in the IR-TBICS scale further lets professionals identify and decide how domains in which a person can be improved.

Although the current study has several strengths, it has some limitations. First, the present study was done among a sample of pregnant women from Sari city (north of Iran) to express their beliefs and intention about the method of cesarean section delivery. Due to this, we cannot be definite that the conclusions perform to pregnant women in another geographic background. Consequently, further researches may be needed to support the applicability of the belief-based cesarean section delivery scale as a fully confirmed applied and useful measure in Iranian background. On the other hand, it would be better to investigate doctors' beliefs and intentions when choosing a delivery method for a woman. There is evidence of doctors' fear of childbirth and preference for cesarean section. Second, the Cronbach's alpha coefficients of some factors were not satisfactory. Future studies are needed to overcome these problems.

In summary, one of the objectives of the century is reducing unnecessary cesarean sections (62). To do so, we developed the IR-TBICS scale, which was revealed to have acceptable psychometric properties. The IR-TBICS scale assesses the beliefs and intention of choosing cesarean section
delivery that help to promote pregnant women's health.

Conclusion
Generally, the IR-TBICS scale indicated good construct validity and the majority of domains indicated high internal consistency reliability; so, the results of the present study offer that theory-based cesarean section delivery beliefs scale is a valid and reliable questionnaire for measuring beliefs of pregnant women. Furthermore, further studies are suggested to know the strengths and weaknesses of the IR-TBICS scale when it is applied to other backgrounds.

Abbreviations
CFI: Comparative Fit Index; CVI: Content validity index; CFA: Confirmatory factor analysis; CVR: Content validity ratio; CDMR: Cesarean delivery on maternal request; EFA: Exploratory factor analysis; GFI: Goodness of Fit Index; ICC: Intraclass correlation coefficient; KMO: The Kaiser-Meyer-Olkin; NFI: Normed Fit Index; NNFI: Non-Normed Fit Index; RMSEA: Root Mean Square Error of Approximation; SRMR: Standardized Root Mean Square Residual; TRA: Theory of reason action; TPB: Theory of planned behavior; Theory-based intention to cesarean section (IR-TBICS); WHO: World Health Organization.

Declarations
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Availability of data and materials
The datasets produced and analyzed throughout the present study are not publicly accessible because of protecting the pregnant women's anonymity but are accessible from the corresponding author on reasonable demand.

Ethics approval and consent to participate
The study method was approved by the Medical Ethics Committee of Mazandaran University of Medical Sciences [Ethic code: IR. MAZUMS.REC1394.1518]. The current study involved only pregnant women who gave their informed consent. Thus, verbal informed consent was obtained from all pregnant women before the start of the study, and all women completed informed written consent after being informed about the aims of the research. In participants under 16, husband and parent consent had been acquired. The IR-TBICS was distributed with the pregnant women' remaining anonymous; there was no private information that could relate the answers to any of the persons in the current study. In order to keep the rights of women, no records of consent by name were kept. Each completed scale was given to the study fellow on the same day of data gathering.

Consent for publication

N/A.

Competing interests

The authors declare that they have no competing interests.

Authors’ contribution

AN was the chief researcher, designed the study, and collected the data. MK participated in the statistics, the theory and design of the manuscript, and critically revised the final article. MM participated in the development of the project. All authors read and approved the final version of the manuscript.

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Tables
Table 1: Characteristics of the study sample
| Age (years) | EFA sample (n = 240) | CFA sample (n = 240) |
|------------|----------------------|----------------------|
| <20        | 12 (5)               | 10 (4.2)             |
| 20-29      | 132 (55)             | 136 (56.7)           |
| >29        | 96 (40)              | 94 (39.1)            |
| Mean (SD)  | 27.72 (5.74)         | 27.84 (4.77)         |
| Range      | 14-41                | 14-41                |
| Level of education |        |                      |
| Primarily  | 30 (12.5)            | 27 (11.2)            |
| Secondary  | 84 (35)              | 76 (31.7)            |
| Higher     | 126 (52.5)           | 137 (57.1)           |
| Employment status |        |                      |
| Housewife  | 69 (28.8)            | 46 (19.17)           |
| Employed   | 171 (71.2)           | 194 (80.83)          |

Table 2: Exploratory factory analysis of the IR-TBICS scale (n = 240)
Q8. Delivering my child by the planned cesarean section will aid make a healthy relationship between my spouse and me.

Q9. Caesarean section is generally easier than vaginal birth method.

Q7. A child born with cesarean section is more intelligent than a child born from vaginal birth method.

Q13. Delivering my child by the vaginal birth method can change my bodily form.

Q10. Caesarean section delivery does not have a negative effect on postpartum sex relationship.

Q11. Delivering my child by the planned cesarean section is convenient for me.

Q12. A planned cesarean section will relief me to link more with my child.

Q3. In my opinion, a woman with problems like pelvic stenosis should have a cesarean section.

Q1. In all situations, doing cesarean section is more appropriate than vaginal birth method.

Q5. Delivering my children by the planned cesarean section is a significant experience for me.

Q6. I don't think we have had any serious complications after childbirth by cesarean section.

Q2. In my opinion, the problems of vaginal birth method are greater than cesarean section.

Q4. It is important to me that I deliver my children by the planned cesarean section.

Q18. To my spouse, delivering my child at a specific time of day and at a specific time of the year can impact my child's success in life.

Q15. My spouse believes that the planned cesarean section is unsafe for me.

Q17. Delivering my child by the planned cesarean section is an important experience for my spouse.

Q14. My spouse believes that the planned cesarean section is risky for my child.

Q16. My family believe that the planned cesarean section is hazardous for my child.

Q20. I believe that it is important to my family that I deliver my child by the planned cesarean section.

Q19. I believe that it is important to my spouse that I deliver my child by the planned cesarean section.

Q21. I believe that it is preference of doctor that I deliver my child by the planned cesarean section.

Q22. I intend to have my childbirth with cesarean section method.

Q24. I plan to deliver my childbirth by the planned cesarean section method.

Q23. I would like to deliver my childbirth by the planned cesarean section method.

Note. Figures in bold are related to factor loadings equal to or greater than 0.40.

Table 3: Measures of internal consistency and stability of the IR-TBICS scale

| Factor | The name of factor                        | Number of items | Cronbach alpha (n = 240) |
|--------|------------------------------------------|-----------------|--------------------------|
| 1      | Outcome evaluations                      | 7 items (7-13)  | .74                      |
| 2      | Behavioral beliefs                       | 6 items (1-6)   | .80                      |
| 3      | Injunctive normative beliefs             | 5 items (14-18) | .84                      |
| 4      | Behavioral intention                     | 3 items (22-24) | .61                      |
| 5      | Motivation to comply                     | 3 items (19-21) | .64                      |
| Total  |                                          | 24 items        | .88                      |

Appendix

Behavioral beliefs

Q1. In all situations, doing a cesarean section is more appropriate than a vaginal birth method.
Q2. In my opinion, the problems of the vaginal birth method are more significant than a cesarean section.

Q3. In my opinion, a woman with problems like pelvic stenosis should have a cesarean section.

Q4. It is important to me that I deliver my children by the planned cesarean section.

Q5. Delivering my children by the planned cesarean section is a significant experience for me.

Q6. I don't think we have had any severe complications after childbirth by cesarean section.

Outcome evaluations

Q7. A child born with a cesarean section is more intelligent than a child born from a vaginal birth method.

Q8. Delivering my child by the planned cesarean section will aid make a healthy relationship between my spouse and me.

Q9. Cesarean section is generally more comfortable than a vaginal birth method.

Q10. Cesarean section delivery does not hurt postpartum sex relationship.

Q11. Delivering my child by the planned cesarean section is convenient for me.

Q12. A planned cesarean section will relieve me to link more with my child.

Q13. Delivering my child by the vaginal birth method can change my bodily form.

Injunctive normative beliefs

Q14. My spouse believes that the planned cesarean section is risky for my child.

Q15. My spouse believes that the planned cesarean section is unsafe for me.

Q16. My family believes that the planned cesarean section is hazardous for my child.

Q17. Delivering my child by the planned cesarean section is an essential experience for my spouse.

Q18. To my spouse, delivering my child at a specific time of day and at a specific time of the year can impact my child’s success in life.

Motivation to comply

Q19. I believe that it is important to my spouse that I deliver my child by the planned cesarean section.

Q20. I believe that it is important to my family that I deliver my child by the planned cesarean
section.

Q21. I believe that it is the preference of my doctor that I deliver my child by the planned cesarean section.

Behavioral intention

Q22. I intend to have my childbirth with the cesarean section method.

Q23. I would like to deliver my childbirth by the planned cesarean section method.

Q24. I plan to deliver my childbirth by the planned cesarean section method.

Figures

![Scree Plot](image)

Figure 1

Scree plot for determining factors of the designed instrument.
Figure 2

A five-factor model for the scale gained from confirmatory factory analysis (n = 240).