Midwifery 67 (2018) 32–38

Contents lists available at ScienceDirect

Midwifery

journal homepage: www.elsevier.com/locate/midw

Fathers for the first time: Validation of a questionnaire to asses father experiences of first childbirth in Latin America

Leslie Molina-Velásquez[a], José M Belizán[b], Cristhian Pérez-Villalobos[c], Yolanda Contreras-García[d,*]

[a] Midwife of Las Higueras Hospital, Obstetrics and Gynecology Service, Chile
[b] Researcher of the Institute for Clinical Effectiveness and Health Policy (IECS) Argentina, Department of Mother & Child Health Research, Argentina
[c] Departament Medical Education, Medicine Faculty, Universidad de Concepción, Chile
[d] Departament Obstetrics and Puericulture, Medicine Faculty, Universidad de Concepción, Casilla 160-C, Chile

ARTICLE INFO

Article history:
Received 16 February 2018
Revised 14 August 2018
Accepted 4 September 2018

Keywords:
Fathers
Birth
Questionnaire
Validation
Reliability

ABSTRACT

The active incorporation of men in the process of childbirth is an increasingly common practice internationally. However, there are no validated instruments for Latin America.
Objective: To validate an instrument to assess new fathers' experiences during childbirth in Latin America.
Design: Prospective validation study.
Setting: Talcahuano, Chile.
Population: Fathers who participated in the birth of their first child ($n = 220$) between September 2015 to May 2016, in a public hospital in Chile.
Methods: The Swedish questionnaire "First Time Fathers Questionnaire" was used. As a first step, the questionnaire was translated to Spanish, followed by expert judgment of such translation and validation. For content validity, a descriptive analysis of the expert judgment and combined Kappa evaluation was performed. Construct validity with Exploratory Factor Analysis was done. Reliability based on internal consistency, was tested using Cronbach's Alpha. Criteria validity was tested with Pearson correlation and Student *t*-test, and logistic regression.
Main outcome measures: Questionnaire in Spanish with adequate evidence of reliability and validity.
Results: Two components were identified: "Support from the Health System" and "Father Worry", with 19 items and adequate internal reliability (0.84 and 0.79 respectively). There is a statistically significant inverse correlation between "Father Worry" and "Support from the Health System". There is a statistically significant association between "Father Worry" and the type of delivery, being higher in Caesarean sections. There is a statistically significant association between "Support of the Health System" and preparation for childbirth being higher in those who were prepared.
Conclusions: This study provides a validated instrument to assess the experience of fathers who participate in the birth of their first child in Latin America.
Implications for practice: The evaluation of the paternal experience during birth contributes to the knowledge of the male's emotional processes involved in this event. Midwifery is in a key position to promote a transcendent parental experience.

Introduction

The pioneer studies of Kennel and Klaus showed both biological as well as affective benefits of continuous support during labor (Sosa et al., 1980; Bohren et al., 2017). To offer and enable continuous support during labor is a good maternity practice that is even considered a womanś right in some contexts (Belizán and Cafferata, 2005).

Various studies have shown fathers´satisfaction with respect to their participation and their subsequent improved relationship with their child (Hildingsson et al., 2011; Villalón et al., 2014; Brandão and Figueiredo, 2012; Howarth et al., 2017). Recent research emphasizes that some fathers have experienced anxiety, feelings of being excluded, and inability to face the process, while others even perceive their participation in labor to have

* Corresponding author.
E-mail addresses: lesmolina@udec.cl (L. Molina-Velásquez), jbelizan@iecs.org.ar (J.M. Belizán), cperezv@udec.cl (C. Pérez-Villalobos), ycontre@udec.cl (Y. Contreras-García).

https://doi.org/10.1016/j.midw.2018.09.002
0266-6138/

had some influence in subsequent depression (Nishimura et al., 2015; Zerach and Magal, 2016; Philpott et al., 2017; Eggermonta et al., 2017). Of consideration is that fathersśatisfaction responds to multi-factorial issues covering issues such as culture, previous family history, exposure to birth, cultural perceptions of birth among others (Johansson et al., 2015).

In Latin America and the Caribbean, both policies and the organization of health systems define opportunities for parental participation. In addition, the way in which care providers perceive men determines their level of involvement (IPPF/WHR y Promundo 2017).

In this context, in the last time the paternal father involvement in labor and delivery is encouraged by all local and international organizations (IPPF/WHR y Promundo, 2017; Ministerio de Salud de Chile, 2008; Aguayo and Kimelman, 2012). An international study on masculinity and gender equity in six countries showed that the presence of the father during labor varies greatly by country context (2–50%) (World Health Organization, 2016) . In addition, it has been shown that continuous support during labor provided by the child's father is positively perceived by women in labor (Bohren et al., 2017; Barker et al., 2011; Fenwick et al., 2012).

There is a need to assess new fathers' experiences with the process that could help inform future actions to improve men's satisfaction and behavior with respect to labor and delivery. A systematic review found 16 mostly European studies, which incorporated scales of maternal satisfaction, identifying that only one of them measured their partner's satisfaction (Alfaro et al., 2017). Currently, there is no questionnaire to assess new father's experience in the process of labor and deliver that is validated in Latin America, though there is a validated and tested instrument developed in Sweden, which presents four factors resulting a Cronbach's alpha of 0.82 for the dimension of concern, 0.73 for the information, 0.65 for the emotional support and 0.66 for the acceptance, while the validation in France resulted in three factors with a Cronbach's alpha of 0.84 for the support dimension, 0.86 for concern and 0.70 for the prenatal period (Premberg et al., 2012; Capponi et al., 2016). Due to the differences in culture and language between Sweden, France and Latin America we see the need for an instrument that can be used in our region.

Therefore, the aim of this study is to validate a questionnaire to assess new fathers' experiences during labor and delivery that can be applied in Latin America.

Methods

Translation and cultural adaptation of the "First Time Fathers Questionnaire" consists of an adaptation into Spanish of the "*First Time Fathers Questionnaire*" (FTFQ), developed by Premberg et al. (2012).

This questionnaire seeks to assess fathers' experiences of participating in the birth process of their first child. It includes 33 questions, of which 22 assess the experience itself before, during and after childbirth, with a Likert-type response scale including four alternatives (1 = disagree, 2 = slightly agree, 3 = strongly agree and 4 = totally agree). The scores of each alternative are added to obtain the final score, whose maximum is 88 points. The other 11 questions refer to socio-demographic data, type of birth and father's prenatal preparation. Specifically, the questionnaire evaluates paternal participation in formal prenatal preparation sources (workshops in healthcare centers, Lamaze) as well as learning from the personal environment (internet, chat, friends, relatives).

According to the authors, the 22 questions of the questionnaire would measure four dimensions of the father experience: Worry, (items from 14 to 20, and 23), Information (items 5, 6, 11 and 13), Emotional support (items 12, 21, 22, 24, 25 and 26) and Acceptance (items 7–10). (Premberg et al., 2012).

For the Spanish adaptation (Ramada-Rodilla et al., 2013; Muñiz et al., 2013) the authorization of FTFQś main author was obtained. Three translations were performed. The first one was carried out by the Swedish research team from Swedish into English and into European Spanish, following ISPOR recommendations. Then, in Chile we performed two translations from the English version into Spanish, with two local independent bilingual translators whose mother tongue is Spanish. Only one of the translators was aware of the research purpose. These translations ensured that Chilean vocabulary and cultural context were represented in the final translated questionnaire used in the study. Subsequently, a review that included each and every question was performed to finally get a final Spanish language version that would be appropriate for the Chilean context.

This final version was submitted for expert review consisting on eight specialists in subjects such as gender issues, masculinity, labor and delivery. Four of them are midwives, two psychologists, one social worker and one anthropologist. A document for the members of the expert panel t was sent by e-mail. They assessed each question on the criteria of sufficiency, clarity, coherence and relevance. Scores were awarded in a 1 to 4 scale (1: does not meet criterion; 2: low level of compliance; 3: moderate level of compliance and 4: high level of compliance). The interjudge reliability of the evaluators was calculated by means of the Kappa coefficient that measures the concordance rate over the total of the items, having excluded the concordance attributable to chance. The closer to ±1, the greater the degree of inter-observer concordance (Martínez-Arias et al., 2006). After incorporating the observations of the experts, a pilot test was carried out with 12 new fathers to assess translation quality, cultural adaptation and local applicability.

Questionnaire validation

Questionnaires were applied in written form during the hospital visit of 220 fathers that participated in the birth of their first child; sample size was determined by recommendations that suggest a number of 10 respondents per question (Lloret-Segura et al., 2014; Morales, 2013).

For this purpose new parents whose partners delivered at the hospital were invited to participate by means of a prior informed consent, following by consecutive sampling. The site is a public hospital where health care is provided free of charge.

Inclusion criteria were: new fathers, fathers that participated in the labor and/or in delivery of their partners, father of an alive, healthy, and term newborn . The exclusion criteria were: fathers whose live newborns were delivered via elective or scheduled Caesarean section.

Data analysis*:* Evidence about content-related validity was assessed through a descriptive analysis and a combined Kappa inter-rater reliability evaluation of expert judgement. Construct-related validity was obtained from an Exploratory Factorial Analysis (EFA), using Principal Axis (PA) as factor extraction method (Muñiz et al., 2013; Hair et al., 2005).

Reliability of identified factors was evaluated using Cronbach's alpha analysis and their discriminative power was assessed using item-corrected total correlation.

In order to assess criteria-related validity of factors, its association with age, type of delivery, educational level and training before delivery was evaluated. In the first association, Pearson correlation was used, and a Student *t*-test was performed in the rest of the cases. These factors were also considered as predictors with linear multiple regressions.

A value of $\alpha < 0.05$ was defined as a statistical significant *p*-value. Data analysis was performed using STATA SE 11.0.

Table 1
Socio-demographic characteristics of the study group ($n = 220$).

Variables	Descriptive statistics	
Mean age (SD)	25.3 (5.4)	
Educational level	*n*	%
Elementary school	17	7.73
High school	115	52.3
University/Superior Technique	88	40
Type of relationship with the mother of the newborn		
Married / cohabiting	131	59.6
Couple not cohabiting	80	36.4
Single	8	3.63
No answer	1	0.45
Mode of delivery		
Vaginal	156	70.9
Forceps	6	2.73
Caesarean during labour	58	26.4
Preparation for Childbirth*	*n*	%
Consulted family and friends	148	67.3
Internet / social networks	88	40
Self study	59	26.8
Workshops in health centers	49	22.3
No preparation	31	14.1
Another type of preparation	2	0.91

n = Frequency; * More tan one alternative was possible.

The procedures of the study received ethics approval from the "Comité Ético Científico del Servicio de Salud Talcahuano" on February 6, 2015, Reference number 0554″.

Results

Surveyed fathers' characteristics are shown in Table 1. More than 90% of new fathers reported having achieved secondary education or higher, and almost 60% reported living with their partner. In the surveyed population, 26.4% of deliveries ended by emergency caesarean section. With respect to training before delivery, fathers reported using formal information sources such as workshops offered by health center (22.3%) or other kind of psychoprophylactic workshops (example yoga). They also reported to learning about labor and delivery through social media (40%) or relatives and friends (67.3%).

Content-related validity

For the expert judgement, combined Kappa inter rater coefficient mean was 0.07, considered light by Landis and Koch (1977). Each of the expert judges considered that the four dimensions in the questionnaire were sufficient to assess new fathers' experiences. Only three of the items evaluated failed to show clear phrasing, two were rated as failing to show coherence with the theoretical dimensions and five were rated as failing to demonstrate their relevance. All of these items were modified by researchers to respond to comments made by judges.

Construct-related validity

In order to evaluate the construct validity of the instrument, an EFA was performed. However, a first step for this is to calculate if the data obtained are adequate for this analysis. Adequacy is estimated by the Meyer–Olkin Measure (KMO) test of Sampling Adequacy (value should be close to 1) and the Bartlett's test of sphericity, which must be statistically significant.

In our study, Meyer-Olkin Measure was 0.77 and Bartlett's test of sphericity was significant, $\chi^2(231) = -1563.72$; $p < 0.001$. These outcomes showed that data was adequate for an EFA.

The second step of the EFA is to identify the number of factors in which the questionnaire items can be summarized. With this purpose, factors quantity was estimated using three criteria: Kaiser–Guttman, Horn's Parallel Analysis and Screeplot. Kaiser–Guttman found three factors that showed eigenvalues over 1.0 (4.33, 2.70 and-1.01). The proportion of the total variation explained by these three factors was 87%. Horn's Parallel Analysis identified three factors with eigenvalues (4.33, −2.70 and −1.01) higher than those presented by 95% of 5000 random samples (0.72, −0.61and −0.51). Screeplot test also identified three factors.

Considering the resulting three factors, a pattern matrix was calculated using Oblimin oblique rotation. The rotation methods seek to approximate the factorial solution to the simple structure principle where the items have high weights in one factor and weights close to zero in the rest, facilitating their allocation and are usually used in an EFA. Specifically, oblique rotation was used because it is applied when it is assumed that the factors are strongly correlated with each other (Martínez-Arias et al., 2006).

But, obtained matrix showed that three of 22 items of the questionnaire (items 2, 3 and 9) had factor loadings under 0.30, the least value to consider a load as significant. Due these results, item 3, which exhibited lowest loads was eliminated (In Spanish: "Tuvimos la posibilidad de escoger entre esta maternidad u otra [clínica, pensionado, otro]", in English: "We had theoption to choose between this hospital or another (private hospital)". This procedure was repeated considering with 21 and 20 items, when criteria identified two factors. In these cases, item 2 (In Spanish: "Me sentí bien preparado", in English: "I felt prepared") and 9 (In Spanish: "Me faltó contar con alguna información"; in English: "I did not received enough information") were eliminated sequentially, because they showed loads lower than 0.30.

Finally, considering 19 remaining items, KMO was 0.78 and Bartlett test was significant, $\chi^2(171) = 1469.94$; $p < 0.001$, supporting EFA adecuation.

About factors quantity, Kaiser–Guttman identified two factors with eigenvalues higher than 1.0 (4.15 and 2.65) which explained 81% of total variance of all items.

Parallel analysis also indicated two factors with eigenvalues (3.48 and 2.09) higher than those presented by 95% of 5000 random samples (0.66 and 0.55).Screeplot agreed with two factors structure. (see Fig. 1)

Then, a pattern matrix of two factors was calculated using PA, Oblimin oblique rotation and remaining 19 items. This time every item showed loads higher than 0.30 and they were distributed according to these loads in two factors, that were labeled as: "Support from health system", (11 items) including items related to reception, information, care and interaction with staff, and "Father Worry", (8 items) including concern for your partner, your child, the unknown, your role as a parent and the unexpected results (Table 2).(in Appendix n°1 is Pattern matrix with Principal Axis Method and Oblimin oblique rotation of the Parents Questionnaire for the first time, adapted to Spanish (19 items))

Reliability

To estimate the accuracy of the measurements, Cronbach's alpha coefficient was calculated, resulting in a value of $\alpha = 0.84$ for the factor Support From Health System. Its item-corrected total correlation were between $r = 0.38$ (item 4) and $r = 0.64$ (item 7), the mean score was 30.98 (±7.38;), with a skewness of −0.30 and Kurtosis of 2.37. For factor Father Worry Cronbach's alpha was $\alpha = 0.79$ and this factor showed item-corrected total correlation between $r = 0.36$ (item 10) and $r = 0.62$ (item 12),the mean score was 21.61 (±5.69;), with a skewness of −0.43 and Kurtosis of 2.37.

Criteria-related validity

In order to estimate criteria-related validity, the association between questionnaire scores for two factors (perceived degree of

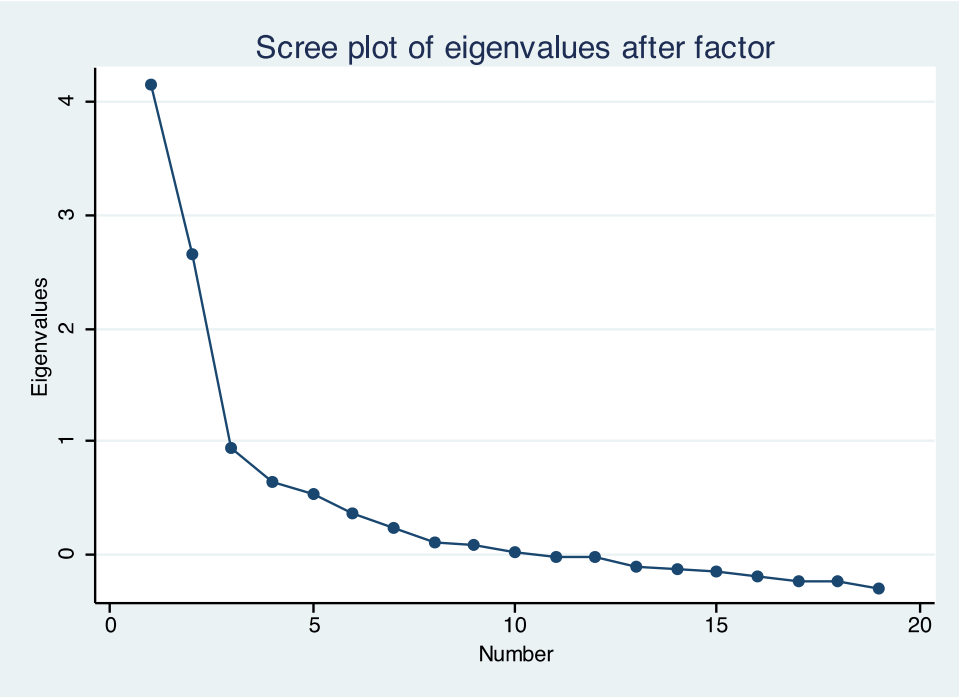

Fig. 1. Sedimentation chart for the Parents Questionnaire for the first time adapted to Spanish.

Table 2
Factorial Analysis of the Parents Questionnaire for the first time. adapted to Spanish (19 items).

Items	Factor I: Support from health system	Factor II: Father Worry
I felt well-informed (1)	0,62	
I felt welcomed upon my arrival tot the delivery ward (4)	0,40	
I was treated well when admitted to delivery ward(5)	0,50	
I felt enough attention by the staff (6)	0,60	
I received enough information (7)	0,70	
I received indications on how to better support my woman/couple (8)	0,50	
I felt that midwives and other staff were interested in how I felt (17)	0,63	
The staff offered to support my woman/partner so that I could take a break (18)	0,59	
I felt supported when I was restless or nervous (20)	0,62	
I was taught about how to hold my child (21)	0,48	
I was encouraged to Handle my chils (22)	0,46	
There were situations I would rather avoid to face (10)		0,37
I felt worried about my partner (11)		0,79
I felt worried about my child (12)		0,80
I felt worried that something would go wrong (13)		0,62
I felt worried about not being able to provide support (14)		0,46
I felt worried about the unknown (15)		0,65
I felt worried about my reaction during the process (16)		0,45
Some things scared me (19)		0,54

(number of items).

support from the health system and father worry) and four variables were evaluated. These variables were age, mode of delivery, educational level and training before delivery. Age did not show statistically significant correlation with either factor ($p > 0.05$). Fathers of children born via Caesarean section reported higher levels of worry than fathers of children via by vaginal delivery, (mean values 24.06 and 20.73 respectively; $p < 0.001$). Fathers who reported higher training before delivery reported better support from the health system (mean values 31.47 and 28.03 respectively; $p < 0.05$). There were no statistically significant differences related to educational level in both factors ($p > 0.05$) (Table 3).

Two linear multiple regression models were estimated using the same four criteria variables as independent variables and two dimensions of the questionnaire (perceived degree of support from the health system and father worry) as dependent variables. The first model showed a significant prediction of support from health system with an explanation of 3.69% of its variation ($p < 0.05$). Individually, only training before delivery was a significant predictor of this factor ($p < 0.05$) explaining at 3.31% of its variation. In the second model, all independent variables showed a significant prediction of father worried with and explanation of 7.1% of its variation ($p < 0.001$). Individually, only vaginal delivery was a significant predictor of this factor ($p < 0.001$) explaining at 6.67% of its variation (Table 4).

Resulting questionnaire

On the basis of previous evaluations and considerations a revised questionnaire was developed. Due to lack of validity, the following variables were removed: “We had the option to choose between this hospital or another (private hospital)". "I felt prepared "and “I did not receive enough information". Over all, a total of 19 of the 22 original items from the Swedish questionnaire were selected. The survey identified two components for the First Time

Table 3
Comparison of the scores obtained in the Parents Questionnaire for the First Time according to type of delivery, educational level and previous preparation.

		Support from health system			Father **worry**		*t*-test
		M	SD		M	SD	
Delivery	Vaginal delivery	31.47	7.23	−1.64	20.73	5.57	3.95***
	Cesarean section	29.62	7.68		24.06	5.29	
Educational level	Without university or superior technique education.	31.00	7.50	0.03	22.15	5.58	1.75
	With university or superior technique education.	30.96	7.23		20.79	5.77	
Training before delivery	Yes	31.47	7.15	2.43*	21.51	5.77	−0.64
	No	28.03	8.13		22.22	5.16	

$N = 220$; *: $p < 0.05$; **: $p < 0.01$; ***: $p < 0.001$

Table 4
Multiple linear regression of age, kind of delivery, educational level and training before delivery as predictor of support from health system and father worry.

Factor	Predictors	*B*	*EE*	*B*	sr^2
Support from health system	Intercept	26.71			
	Vaginal delivery (1 = Yes)	2.15	1.11	0.13	0.02
	Tertiary education (1 = Yes)	−0.47	1.01	−0.03	<0.01
	Age	0.14	0.09	0.10	0.01
	Training before delivery (1 = Yes)	−3.81*	1.40	−0.18	0.03
	$R^2 = 0.05$*; Adjusted $R^2 = 0.04$				
	Predictors	*B*	*EE*	*B*	sr^2
Father worry	Intercept	23.37			
	Vaginal delivery (1 = Yes)	−3.37	0.86	−0.26	0.07
	Tertiary education (1 = Yes)	−1.52	0.78	−0.13	0.02
	Age	0.05	0.07	0.04	<0.01
	Training before delivery (1 = Yes)	0.87	1.07	0.05	<0.01
	$R^2 = 0.09$*; Adjusted $R^2 = 0.07$**				

B = Regression coefficient; *EE* = Standard error; β = Standardized regression coefficents; sr^2 = Squared semipartial correlation; R^2 = Coefficient of determination; *Adjusted* R^2 = Adjusted coefficient of determination. *: $p < 0.05$; *: $p < 0.01$; *: $p < 0.005$.

Fathers Questionnaire: Support from the health system, with 11 items and Worry,8 items, that account for 81% items variance.

The original FTFQ version in Swedish consists of four components for 22 items: Worry, Information, Emotional Support and Acceptance (Premberg et al., 2012). According to the results obtained in our analysis, the first two components of the Swedish questionnaire (Worry and Information) were condensed into the Worry component of the Spanish questionnaire and the Emotional Support and Information components of the Swedish questionnaire were condensed into the Support from the health system dimension of the Spanish questionnaire. (The Final Questionnaire in Spanish and its English translation are attached as appendix2 and 3 respectively).

Discussion

This study provides a validated questionnaire that can assess new fathers' satisfaction with accompany their partners during labor and delivery in Latin America. A very rigorous evaluated translation into Spanish was accomplished and a thorough validation of the questionnaire was carried out. As a result, the current questionnaire shows some variations with respect to the original Swedish version, such as the removal of three questions due to their lack of validity and the grouping of the questions into two components rather than the four used in the Swedish questionnaire.

The study's strengths are that the Spanish translation was reviewed by experts and then tested for comprehension by new fathers. Validation was carried out in a representative and numerous sample of new fathers and the tool was refined jointly with accurate statistical methods to validate the questions.

This study offers initial evidence of the validity and reliability of the questionnaire, and must complemented permanently with new studies, for example, by performing confirmatory factorial analyzes of the solution obtained or obtaining other evidence of reliability, such as the test-retest. Regarding its use in Latin America, the questionnaire would need to be translated to Portuguese to be used in Brazil, though a French version is already available to be used in Haiti (Capponi et al., 2016).

This questionnaire can be used in Spanish-speaking countries from Latin America to assess new fathers' satisfaction with their experiences during labor accompaniment. Previous studies have shown that validated questionnaires developed in European countries and subsequently translated and validated in one Latin American country can be later successfully applied in other countries in the region (one such example is the Edinburgh Questionnaire to measure postnatal depression (Jadresic et al., 1995; Pham et al., 2017). The use of our tool across the region will allow for an evaluation of first time fathers' experiences that could help inform interventions to improve this experience.

Our results showed a statistically significant inverse correlation between "Paternal concern" and "Support of the health system", which means that the greater the support of the health system there is less parental concern. Parents need more interaction during childbirth and the information they receive is transcendental for their experience (Johansson et al., 2015). They recognize the need to feel safe about the obstetric care their women receive, and they want to participate and be supportive (Johansson and Hildingsson, 2013). The midwife facilitates this access to information and allows men to assume a leading role in childbirth (Johansson et al., 2015). We infer that it is necessary for the health personnel to integrate the father, in all possible opportunities, from the moment of his admission to the maternity and during the entire birth process of his baby.

On the other hand, we found that in vaginal delivery there is a lower "paternal concern" compared to cesarean delivery. Parents have a rational approach and experience feelings of helplessness as the progress of labor is stopped (Hasman et al., 2014). Emergency caesarean section negatively modifies the experience of labor (Nystedt and Hildingsson, 2018). We consider it necessary for health personnel to receive training in paternity and birth, so that they can improve their abilities and thus manage to identify the diverse needs of the psycho-emotional sphere expressed by the father.

We also found a greater "Support of the health system", in parents who were prepared for childbirth as opposed to those who did not. Many parents are not prepared for their personal transition to parenthood and this has important implications for the whole family. It is likely that prenatal education will be more effective for parents when addressing their own needs (May and Fletcher, 2013). We believe it is necessary to review the focus of

the prenatal education workshops held in Chile and Latin America countries and to integrate the gender approach of birth."

Curiously, other variables such as the educational level and age of the parents, did not turn out to be associated with father´satisfaction recognizing that in Chile the majority of the population has a medium level of education and massive access to virtual information in available networks.

It would be of interest to replicate this validation in another sample of first time fathers in another Latin American site.

Limitations

The study limitations are that the tool has not been tested in a sample different from the one in which it was validated. Another limitation is that the parents did not attend emergency caesarean sections, since by hospital regulations their participation in these cases was restricted, and they responded only about the period of labor in which they participated together with their partners. It is important to consider that the population migrations that exist today, is a factor that must be taken into account in any new study of the health systems of Latin American countries.

Conflict of interest

None declared.

Ethical approval

The procedures of the study received ethics approval from the "Comité Ético Científico del Servicio de Salud Talcahuano" on February 6, 2015, Reference number 0554″.

Funding sources

This project did not have external financing.

Clinical trial registry and registration number (if applicable)

Not applicable.

Author agreement

All authors have seen and approved the final version of the manuscript being submitted. They warrant that the article is the authors' original work, hasn't received prior publication and isn't under consideration for publication elsewhere.

Acknowledgment

This study was possible thanks to the generous contribution of Asa Premberg and her team who provides the questionnaire and also had the courtesy of doing the first translation into Spanish.

We thank Catlin Williams and Alisha Dziarski for her thoughtful collaboration on the revision an English edition of the manuscript.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.midw.2018.09.002.

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