



PARENTAL BREASTFEEDING BEHAVIOR AND ATTITUDE QUESTIONNAIRE

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SUMMARY – A validated questionnaire is required to evaluate scientifically community-based breastfeeding support and promotion. The aim of this study was to create a valid and reliable questionnaire to measure parents' behavior and attitudes about breastfeeding. The items in the questionnaire were selected by the authors according to regular data from the professional literature, and in consultation with three pediatric lecturers at higher and secondary health education, fellow pediatricians, and parents. A working version of the questionnaire was available on the website of the For a Healthy and Happy Childhood association from February 1, 2019 to May 31, 2019. The study was approved by the Ethics Committee of the Bjelovar General Hospital. After item analysis, 15 behavioral questions that showed good internal consistency were retained. Concerning the attitudes, principal component analysis showed a four-factor structure with 17 items explaining 46.11% of total variance. Cronbach's alpha (0.88) indicated acceptable internal consistency. To analyze the ability of the questionnaire to differentiate parents according to the desired outcome, the χ^2 -test, correlation and logistic regression were used. In the study, the desired outcome was defined as exclusive breastfeeding for 5 or 6 months, as well as breastfeeding for 12 months or more. In conclusion, the final instrument is reliable and valid for collecting breastfeeding data and evaluating changes in parents' behaviors and attitudes achieved through participation in breastfeeding promotion and support programs. The questionnaire may, in addition to the BIAKQ questionnaire, support professionals and activists involved in breastfeeding to create methodologically well-conceived programs.

Key words: *Breastfeeding questionnaire; Validity; Reliability*

Introduction

The World Health Organization (WHO) and United Nations Children's Fund (UNICEF) currently recommend feeding infants mother's breast milk

exclusively until they are at least 6 months old and continue breastfeeding with gradual addition of complementary foods up to 2 years of age or more¹. Increasing breastfeeding globally can save thousands of children's and women's lives². Despite this, only 41% of infants under 6 months of age were exclusively breastfed in 2018³, 43% were breastfed within the first hour of life⁴, and in many countries less than one fourth of infants between 6 and 23 months of age

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received adequate nutrition and safe complementary food appropriate for their age⁵. In relation to infant nutrition, data are lacking in 36% of systematic review reports; in the group of infants aged 3-5 months the proportion of infants fed exclusively breast milk is 62.1%, and in the group aged 6-11 months the proportion of breastfed children is 59.1%⁶.

How can we explain the low rate of breastfeeding despite its clear benefits? Some of the important factors for starting breastfeeding are the parents' educational status and attitudes about breastfeeding, partner support, economic and cultural factors, the parents' willingness to adapt to their child's needs, health problems, support for health service and local communities^{7,8}. Higher education, knowledge about health benefits of long-term breastfeeding, positive attitudes and interest in breastfeeding were associated with a longer duration of breastfeeding⁹. Some authors believe that prenatal activities are paramount to breastfeeding success¹⁰. Gale and Davies point out that young people think about breastfeeding a child as early as adolescence¹¹, so breastfeeding promotion activities should be started as early as in childhood and adolescence¹².

Questionnaires and surveys used without any confirmation of their sensitivity, reliability and validity may provide valuable descriptive data but they are an unreliable data base for further analytical processing¹³. Several questionnaires exist to examine behaviors, attitudes, and knowledge related to breastfeeding, and some are designed for specific age groups^{14,15}. Others need to be adapted to cultural specificities of a particular country¹⁶, and some others are intended for persons of particular professions¹⁷. The aim of this study was to create a valid and reliable questionnaire on breastfeeding behaviors and attitudes for parents, aligned with the specific economic, cultural and traditional characteristics of the population of this part of Europe.

Methods

Design

The study was observational and cross-sectional, and the validity and relativity of the breastfeeding behavior and attitude questionnaire were examined using a sample of parents of children aged 2 to 5 years.

Setting

During the period from February 1, 2019 to May 31, 2019, at the selected pediatric clinic in Bjelovar, the

pediatrician introduced the purpose of the study to the parents of all children aged 2 to five 5 years who visited the outpatient clinic.

This clinic was chosen for the study because it has been certified by the Ministry of Health and UNICEF as a center for Child Counseling – Friend of Breastfeeding and the staff of the clinic were well educated and had already participated in projects run by the Ministry of Health of the Republic of Croatia. The questionnaire was posted on the website of the For a Healthy and Happy Childhood association because that association is regionally recognized and well-known for conducting preventative and promotional activities for children and parents, and its website is well visited.

Sample

The inclusion criteria were age 18 and over, giving informed consent, internet access, and having given birth to at least one child now aged 2 to 5 years. The age of 2 years was taken as the threshold because the WHO and UNICEF recommendations refer to the total duration of breastfeeding for 2 years or longer, so the exact duration of breastfeeding beyond 2 years could not be examined differently. The upper limit of 5 years was taken as it was not expected that a baby would be breastfed for more than 5 years.

The pilot study was conducted on 30 respondents, 22 (73.33%) women and 8 (26.67%) men, selected by the random selection method. Two hundred respondents participated in the survey, and 186 participants were processed, 153 (82%) female and 33 (18%) male. In terms of gender, a third option was offered that included other options and people who did not want to express themselves, however, none of the respondents indicated this option. The pediatrician offered all the parents of children 2 to 5 years old to participate in the study in the order they presented to the clinic. The participants were not given any incentive to participate in the survey.

Measurement

The items in the working version of the "breastfeeding scale and attitude" part of the breastfeeding questionnaire were formed according to the literature, knowledge and experience of the study authors, in consultation with three teachers of pediatrics in higher and high health schools (Bjelovar, Zagreb, and Zabok). We assumed that within the

questionnaire, especially on the Attitude Scale, the questions would be grouped into subcategories. Therefore, the questionnaire included logical hypothesized factors: breastfeeding in the maternity ward, the duration of exclusive and total breastfeeding, the role of the father in breastfeeding, breastfeeding in public, benefits of breast milk over substitute foods, breastfeeding and the mother's professional career. Several variables were selected for each hypothesized factor, with the aim of making these variables relatively 'pure' measures of the hypothesized factor.

Subsequently, the questionnaire was presented to the four primary care pediatricians (Bjelovar, Čazma, Daruvar, and Garešnica), whose practices are certified as Child Counseling – Friend of Breastfeeding, and their suggestions were appreciated. A working version of the questionnaire was created in this way to examine parent's behavior and attitudes related to breastfeeding. Subsequently, a request was made to the Ethics Committee of the Bjelovar General Hospital for approval of the research.

On preliminary testing, the authors selected 30 parents with whom they filled in the questionnaire. After completing the questionnaire, the respondents were asked to evaluate the clarity, understandability, and practical applicability of the question. The authors carefully considered all the parents' comments and suggestions. Minor corrections were made in order to make the questionnaire easier to understand and to clarify the questions, and a version of the questionnaire was created, which was used in subsequent research.

The questionnaire consisted of three parts, i.e., general part, 27-item behavioral scale, and 33-item attitude scale. The knowledge scale was not included in the research because it is an integral part of the BIAKQ questionnaire¹³, which has already been validated. There is no reason not to use the same scale to test parents' knowledge of breastfeeding, especially as this scale is used to test the knowledge of pregnant women during pregnancy courses, so using the same scale to test parents' knowledge makes it possible to monitor changes in the respondents' knowledge from pregnancy through parenting.

The first part of the questionnaire collected socio-demographic data (gender, age, education) and information about the duration of exclusive breastfeeding and breastfeeding in total, in months. Breastfeeding duration data were necessary for us to evaluate the validity of the construction of the

questionnaire, which was estimated by comparing the respondents' results on each scale and from the whole questionnaire, with data on the duration of exclusive breastfeeding and breastfeeding in total, in months¹⁴. The possible answers to questions about breastfeeding behavior were 'true' or 'false'. Parents evaluated their breastfeeding attitudes on a Likert scale graded from 1 (strongly disagree) to 5 (strongly agree).

Data collection

The parents at the selected pediatric clinic who had a child aged between 2 and 5 years were introduced to the study by the pediatrician and asked to take part. In the pediatric dispensary, the parents were introduced to the purpose and benefits of the study and security measures. Consent to participate in the survey was recorded in the child's medical record in the pediatrician's office. Parents who agreed to participate in the study were given the link to the website through which they accessed the questionnaire. The online questionnaire form was designed so that it was not possible to submit a questionnaire without confirming one's consent to take part in the study. Only the study leader had access to unencrypted data.

Missed data: data were collected from 200 respondents. Five parents were excluded from the study because their online consent to participate in the study was not accompanied by consent given to the pediatric practice. That meant that they did not obtain the study information from their pediatrician, which we perceived as a violation of the research protocol. Another nine parents were excluded from the survey because the breastfeeding behavior scale data did not match the breastfeeding duration data collected in the first part of the questionnaire.

Data analysis

First, descriptive analysis of the data on study participants was conducted (frequency, percentage, mean and standard deviation, median). Differences between the respondents' ages, gender, and education were analyzed. To measure the discriminating power of the test, the item was subjected to the extreme group approach. The item difficulty was computed by dividing the number of people who answered the item correctly by the total number of people who answered the item. The discrimination index was obtained by subtracting the item difficulty of the better group from the item difficulty of the worse group. The inter-

item correlations (seen from the correlation matrix), arithmetic mean (M), standard deviation (SD) and corrected item-total correlation (Itc) were used on decision making related to keeping or excluding items from the final form of the questionnaire. Cronbach's alpha coefficient (for attitudes) and KR-20 (for behavior) were used to assess the reliability of the questionnaire. Factor analysis was used to identify the factors that underlay the interconnectedness of manifest variables (by factorization process), and to determine the association of individual manifest variables with those factors (with factor rotation). The authors used the Guttman-Keiser criterion, scree plot diagram and Monte Carlo techniques on deciding how many factors would remain in the final factor solution. The principal component analysis is the ideal solution for reducing the many variables to a smaller number of components. Factor extraction results without rotation are complicated to interpret independently of the extraction method, so after extraction, rotation was used to help interpret the solution.

Discriminant validity is indicated by predictably low or weak correlations between the measure of interest and other measures that are supposedly not measuring the same variable or concept (the rule is that variables should relate more strongly to their own factor than to another factor). If a variable is not loaded on a single factor in the pattern matrix, then the cross-loadings should differ by more than 0.2¹⁸. The average percentage of variance extracted among the items of a construct (average variance extracted) for each of the factors is calculated manually for all the constructs using the formula. Convergent validity is the degree to which scores on a studied instrument are related to the measures of other constructs that can be expected on theoretical grounds to be close to the one tapped into by this instrument¹⁹. In order to test the relationship between achievements in the questionnaire and the properties measured, we analyzed the impact of the total score of the questionnaire both separately for the breastfeeding behavior questionnaire and the breastfeeding attitude questionnaire, in relation to positive outcomes. A positive outcome is defined as exclusive breastfeeding for 5-6 months and total breastfeeding for 12 months and longer. For exclusive breastfeeding, a limit of 5 to 6 months was taken because many parents stopped exclusive breastfeeding just a few days before the sixth month of a child's life, and we found it more acceptable to put them

in the 'successful outcome' group than in the other group. The χ^2 -test was used to distinguish the group of subjects with a positive outcome from the group of respondents with a negative outcome. The correlation was examined between the score on the breastfeeding behavior/attitude questionnaire and the outcome. We tested the capability of the breastfeeding behavior and attitude questionnaire separately to predict the event that represents a positive outcome by calculating using logistic regression the probability of an outcome for the groups of parents with a score on the questionnaire above and below the arithmetic mean.

Results

Socio-demographic data

The mean age of the respondents was 32.48 (SD 5.81), female (M=32.1, SD=5.69) and male (M=34.21, SD=6.14). Study participants did not differ significantly by age (χ^2 (26, N=186)=27.80, p=0.37). According to the level of education, 16% of respondents had elementary education, 53.2% secondary, 12.4% college, and 32.8% university education. Women were more represented in the group of people with college education (13.7% of women and 6.1% of men), and university education (33.3% of women and 30.3% of men). The difference between men and women in terms of education was not statistically significant (χ^2 (1, N=186)=1.25, p=0.26).

Breastfeeding behavior scale

Initially, 27 items were included in the breastfeeding behavior scale. The items were corrected in consultation with fellow primary care pediatricians; however, no particles were discarded at this stage. On preliminary testing, 4 items about parental behavior related to the workplace were dropped, as it turned out that most of the respondents were unemployed (items 7, 14, 17, 24 in Table 1). Three items about the behavior of parents in the maternity ward were also discarded because most of the parents replied that there was no possibility of behaving as described in that particular maternity ward (items 2, 12, 20 in Table 1). The item with the lowest discrimination index was related to breastfeeding in public only in the presence of a familiar person (0.07), and introducing supplemental feeding with seasonal fruits or vegetables (0.10) (items 16,19 in Table 1), so these items were excluded from further analysis. Analysis of the mean and standard deviations for each of the question items

Table 1. Breastfeeding behavior items (N=186)

In consultation with a partner		Mean	SD
1	Supplemental feeding was introduced into the diet of the baby immediately after the 4 th month of the baby's age	0.65	0.48
2 ^b	Our baby is breastfed for the first time within an hour of the birth		
3	Our baby is breastfeeding on request	0.90	0.30
4	Our baby is exclusively breastfed until the age of 6 months	0.61	0.49
5	Our baby is breastfed until the age of one year, not longer	0.67	0.47
6	Our baby is also breastfed in a public place	0.83	0.37
7 ^a	Our baby is breastfed together with supplemental feeding even after the mother started to work		
8	We gave our baby a pacifier	0.41	0.49
9 ^d	Together we decided that our baby would be breastfed	0.99	0.10
10	The father of the child attended childbirth	0.45	0.50
11 ^e	We introduced supplemental feeding into the baby's diet immediately after the 6 th month of the baby's age	0.78	0.41
12 ^b	The baby's first feeding was done in such a way that the infant found a nipple by itself		
13	Our baby is breastfed at the first signal of hunger	0.87	0.34
14 ^a	Baby's mother used the breastfeeding break after her return to work		
15	Our baby was breastfed for more than two years	0.39	0.49
16 ^c	Our baby was breastfed in a public place only when a well-known person was present	0.87	0.34
17 ^a	The baby's father used the right of parental leave for 2 months		
18	The mother of the child participated in the activities of breastfeeding support groups	0.47	0.50
19 ^c	Supplemental feeding started with seasonal fruits or vegetables	0.91	0.28
20 ^b	Our baby was in constant contact with mother 'skin to skin' within the first hour after birth		
21	The mother used to calm disturbed baby on her chest	0.76	0.43
22	Our baby was breastfed until two years old	0.46	0.50
23 ^d	When breastfeeding in a public place, the mother covered her breasts	0.26	0.44
24 ^a	After the mother returned to work, she nursed the baby only at home but not at work		
25	Partner helped in housekeeping while mother breastfed her baby	0.82	0.38
26	In addition to breastfeeding, we also fed the baby with infant formula	0.52	0.50
27	We did not give water or tea to a baby before 6 months of age	0.56	0.50

SD = standard deviation;

^aitems excluded at the request of the parent due to non-compliance with real working circumstances (7,14,17,24);

^bitems excluded at the request of the parent due to mismatch with real options in the maternity ward (2,12,20);

^citems excluded due to the discrimination index (16,19);

^ditems excluded from further processing due to deviations in arithmetic mean (9,23);

^eitems excluded from further processing due to Cronbach's alpha score (11)

followed. Any items with scores higher (or lower) than the others had to be removed from the questionnaire to make it more reliable. The item with the highest score was "We decided together that our baby would be breastfed" ($M=0.99$, $SD=0.10$) and the item with the lowest score was "When I breastfeed in a public place, I cover my breast" ($M=0.26$, $SD=0.44$) (items 9, 23 in Table 1).

The Kuder-Richardson Formula 20 test was used to check internal consistency. The Cronbach's alpha score was 0.84. After excluding questions about introducing nutrition after the 6th month of a child's life, Cronbach's alpha score went up to 0.847 (Table 2). Further exclusion of items would have had no positive effect on Cronbach's alpha score.

The ability of this group of items to predict the event based on the answers given, which is the subject of analysis (exclusive breastfeeding for 5-6 months and total breastfeeding for more than 12 months) was examined by establishing the duration of exclusive and total breastfeeding for the groups of subjects with a score on the behavior scale below and above the arithmetic mean of the score. The parents with a score from the behavior questionnaire above the arithmetic mean exclusively breastfed for 5-6 months statistically significantly more ($\chi^2(1, N=186)=74.01$, $p=0.00$) and total breastfeeding for up to 12 months ($\chi^2(1, N=186)=63.82$, $p=0.00$) than the parents in the group with a score below the arithmetic mean. The correlation was then examined between the scores on the

Table 2. Arithmetic mean and variance if item deleted, corrected item total-correlation and Cronbach's alpha if item deleted ($N=186$)

Item-total statistics		Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Cronbach's alpha if item deleted
1	We introduced supplemental feeding into the diet of the baby immediately after the 4 th month of the baby's age	8.71	13.03	0.44	0.84
2	Our baby is breastfed on request	8.46	13.67	0.46	0.84
3	Our baby is exclusively breastfed until the age of 6 months	8.75	12.26	0.66	0.83
4	Our baby is breastfed together with infant formula until the age of 6 months	8.69	12.80	0.52	0.84
5	Our baby is breastfed in public places	8.53	13.17	0.54	0.84
6	We gave our baby a pacifier	8.95	13.24	0.36	0.84
7	The father of the baby attended childbirth	8.91	13.37	0.32	0.85
8	Our baby is breastfed at the first signal of hunger	8.49	13.45	0.48	0.84
9	Our baby was breastfed for more than two years	8.97	12.83	0.49	0.84
10	The mother of the child participated in the activities of breastfeeding support groups	8.89	12.95	0.43	0.84
11	The mother used to calm disturbed baby on her chest	8.60	12.72	0.61	0.83
12	Our baby was breastfed up to 2 years of age	8.90	12.42	0.60	0.83
13	Partner helped in housekeeping while mother breastfed her baby	8.54	13.75	0.31	0.85
14	In addition to breastfeeding, we also fed baby with infant formula	8.84	12.54	0.56	0.83
15	We did not give water or tea to a baby before 6 months of age	8.80	12.95	0.44	0.84

Table 3. Breastfeeding attitude items (N=186)

My attitude is as follows		Mean	SD
1 ^b	It is more comfortable to see a mother feeding a baby with a bottle than a breastfeeding mother	4.44	0.87
2 ^c	The baby's father should help the breastfeeding and working mother by bringing the baby to the mother during her breastfeeding break	3.99	1.02
3 ^a	My religious community's views on breastfeeding are important and should be respected	2.36	1.27
4 ^c	Breastfeeding has adverse effects on mothers' workability and career	4.76	0.63
5 ^c	It is not profitable to invest in breastfeeding, either personally or at the society level	4.90	0.40
6	Breastfeeding support groups can help a father support his baby's mother in starting and maintaining breastfeeding	4.23	0.92
7	Breastfeeding in public places should be forbidden	4.89	0.50
8	It is wrong to breastfeed a baby after one year of age	4.56	0.85
9 ^c	The mother who feeds the baby with the infant formula misses some of the pleasures of motherhood	3.24	1.46
10 ^b	The baby's father should use part of the parental leave to help the mother in breastfeeding and caring for the child	3.63	1.08
11	Women should not breastfeed in public places	4.76	0.69
12 ^c	The employer should provide a space in which employed mothers will be able to breastfeed their baby or to collect breastmilk, whether or not the law obliges him/her	4.11	1.04
13 ^c	Breastfeeding in public places is natural	4.58	0.66
14	It is justified to breastfeed a baby after two years of age if it suits both the mother and the child	3.98	1.16
15	Awareness of breastfeeding can significantly help the father in assisting the breastfeeding mother	4.48	0.80
16	After giving birth, the mother should rest and therefore it is not advisable to breastfeed that day	4.59	0.85
17 ^c	It is alright to breastfeed a baby at work during breastfeeding break	4.23	1.01
18	The father does not play an essential role in the life of the baby while breastfeeding	4.77	0.69
19	It is not good to breastfeed a baby for more than two years as it increases the baby's attachment to the mother	4.17	1.00
20	People who have had the opportunity to see a woman breastfeeding in public are more willing to breastfeed themselves in public or support breastfeeding in public	3.81	1.02
21 ^b	It is one of the father's roles in the first year of the baby's life to provide the mother with support and all the help needed	4.72	0.64
22	The mother should give the baby first breastfeeding the second day after birth	4.43	0.96
23	Breastfed babies are healthier than formula fed babies	3.71	1.32
24	It is the task of the baby's father to monitor the condition of his partner and make sure that she is eating and resting enough	4.36	0.82
25	Breastfeeding in public is spreading and promoting the culture of breastfeeding as the best food for the baby	4.44	0.79
26 ^b	The man feels neglected when his wife is breastfeeding	4.44	0.99
27 ^b	Infant formula is not an adequate substitute for breast milk	3.10	1.42
28 ^b	It should be disabled by law to impede a breastfeeding mother in a public place	3.73	1.25
29 ^b	Learning about breastfeeding and the impact of breastfeeding on the development of a baby is necessary only for women because the baby is a woman's responsibility	4.41	0.98
30	Breastfeeding in public increases tolerance and understanding for breastfeeding	4.27	0.84
31	The mother should not breastfeed the baby on the day of birth	4.65	0.78
32 ^c	Public breastfeeding is part of breastfeeding promotion	4.11	1.03
33	The mother should breastfeed her baby within one hour of birth of the baby	4.28	0.87

SD = standard deviation;

aitems excluded from further processing due to deviations in arithmetic mean (3);

bitems excluded from processing due to a factor weight of less than 0.5 (1,10,21,26,27,28,29);

citems excluded from the questionnaire during the rotation process (2,4,5,9,12,13,17,32)

behavioral scale and the duration of breastfeeding in months. The results of the behavior questionnaire correlated significantly with the duration of exclusive and total breastfeeding in months (exclusive breastfeeding $r_s=0.70$, $p=0.00$; total breastfeeding $r_s=0.71$, $p=0.00$). In the logistic regression, the dependent variables in separate analyses were “exclusively breastfed for 5-6 months” and “total breastfeeding for >12 months”, the independent variable was “sum of scores on the behavior questionnaire”. A shift in the score scale for one unit increased the likelihood of an outcome of exclusive breastfeeding for 5-6 months by a factor of 1.78 (95% CI=[1.52, 2.08], c^2 (1, N=186)=107.78, $p=0.00$, Cox-Snell $R^2=0.44$, Nagelkerke $R^2=0.59$) and the likelihood of the outcome of total breastfeeding for >12 months by a factor of 1.75 (95% CI=[1.49, 2.06], c^2 (1, N=186)=93.69, $p=0.00$, Cox-Snell $R^2=0.40$, Nagelkerke $R^2=0.53$).

Breastfeeding attitude scale

Regarding breastfeeding attitude scales, 33 items were initially included in the processing. In the pilot study, none of these items was excluded from further analysis. The results for the item “Religious attitudes are important to me in deciding on breastfeeding” showed an arithmetic mean that deviated markedly from other results, so that the item was deleted first (item 3 in Table 3).

The primary Cronbach's alpha score was 0.88. According to the results, using Cronbach's alpha an item deleted in the item-total statistics table by exclusion of individual items could not achieve significant improvement in Cronbach's alpha value. According to Nunnally, a Cronbach value of 0.70 or higher is acceptable²⁰. The Cronbach value of the attitude scale was well above that, so further processing continued with 32 items. Already in structuring the questionnaire, it was clear that the questions were grouped around several factors, and principal component analysis or principal axis factoring was used as an extraction method. By analyzing the major components on the basis of the appearance of the scree plot, Kaiser criteria and parallel analyses with Monte Carlo, 4 components were abstracted. At that stage, for the purpose of forming coherent subsets, particles of factor weight less than 0.5 were from eliminated further analysis (items 10, 21, 26, 27, 28 in Table 3). To more clearly determine the attachment of individual items to factors, we used a number of different rotation techniques, and the clearest representation

was given by quartimax rotation (Table 4). The purpose of the procedure is to isolate variables that are as clean as possible, that is, they correlate well within their own component but correlate poorly with particles of other components. If this is not achieved, the questionnaire will not achieve satisfactory discriminant validity. In this process, the following items were excluded: 2, 4, 5, 9, 12, 13, 17, 32 (Table 3) and the components and their associated items are shown in Table 4.

We named the components: Breastfeeding in public and partner (items 6, 15, 20, 23, 24, 25 in Table 4), Misconceptions and denials (items 7, 11, 18 in Table 4), Breastfeeding in the maternity ward (items 16, 22, 31, 33 in Table 4), Duration of breastfeeding (items 8, 14, 19 in Table 4) and their AVE (average variance extracted) and CR (composite reliability) were 0.45 and 0.85 for the first, 0.43 and 0.69 for the second, 0.5 and 0.80 for the third, and 0.45 and 0.71 for the fourth component, respectively. The values of the AVE extracted were on the borderline, but according to Fornell and Larcker, if AVE is a little less than 0.5, but the composite reliability is higher than 0.6, the convergent validity of the construct is still adequate²¹.

The known-group validity, as explained by Bolarinwa²², is satisfactory if the questionnaire clearly separates the group of respondents who meet the criteria examined (exclusive breastfeeding for 5-6 months, and total breastfeeding for 12 months or more) from the group that does not meet the criteria. According to these outcomes, the results of the respondents who had an overall score above the arithmetic mean of all scores on the attitude scale were compared with the respondents whose score was on the rank scale below the arithmetic mean. Respondents who scored below the arithmetic mean on the attitude questionnaire had a statistically significantly lower affirmation of exclusive breastfeeding for 5-6 months (χ^2 (1, N=186)=29.65, $p=0.00$) and a statistically significant lower affirmation of total breastfeeding for >12 months (χ^2 (1, N=186)=8.30, $p=0.00$).

After that, the correlation was examined between the scores on the attitude scale and the duration of breastfeeding in months. A significant correlation was confirmed between the scores on the attitude questionnaire and the duration of exclusive breastfeeding ($r_s=0.49$, $p=0.00$) and the duration of total breastfeeding ($r_s=0.46$, $p=0.00$). For each additional point on the attitude questionnaire, binominal logistic regression showed an increase in the likelihood that a person

Table 4. Factor loadings and item distributions (N=186)

		Component			
		1	2	3	4
25	Breastfeeding in public is spreading and promoting the culture of breastfeeding as the best food for the baby	0.79			
15	Breastfeeding awareness can significantly help the father in assisting the breastfeeding mother	0.70			
20	People who have had the opportunity to see a breastfeeding woman in public are more willing to breastfeed in public or to support breastfeeding in public	0.70			
30	Breastfeeding in public increases tolerance and understanding for breastfeeding	0.69			
6	Breastfeeding support groups can help a father support his baby's mother in starting and maintaining breastfeeding	0.63			
23	Breastfed babies are healthier than infant formula fed children.	0.61			
24	It is the task of the child's father to monitor his partner's condition and make sure she is eating and resting enough	0.60			
7	Breastfeeding at public places should be forbidden		0.70		
11	Women should not be breastfeeding in public places		0.66		
18	The father does not play an essential role in the life of the baby while breastfeeding		0.61		
31	The mother should not breastfeed the baby on the day of birth			0.76	
22	The mother should breastfeed her baby on the second day after giving birth			0.74	
16	After giving birth, the mother should rest and therefore it is not advisable to breastfeed that day			0.70	
33	The mother should breastfeed her child within one hour of birth of the child			0.61	
14	It is justified to breastfeed a baby after two years of age if it suits both the mother and the child				0.70
8	It is wrong to breastfeed a baby after one year of age				0.66
19	It is not good to breastfeed a baby for more than two years as it increases the baby's attachment to the mother				0.65

Rotation converged in 5 iterations;

Extraction method: principal component analysis;

Rotation method: Quartimax with Kaiser normalization

would belong to the group of subjects whose child was exclusively breastfed for 5-6 months (Exp (B)=1.08, 95% CI=[1.05, 1.11], c^2 (1, N=186)=40.95, $p=0.00$, Cox-Snell $R^2=0.20$, Nagelkerke $R^2=0.26$) or to the group of subjects whose child was breastfed in total for >12 months (Exp (B)=1.07, 95% CI [1.04, 1.10], c^2 (1, N=186)=31.32, $p=0.00$; Cox-Snell $R^2=0.15$, Nagelk-

erke $R^2=0.21$). The scores on the behavior questionnaire and attitude questionnaire correlated significantly ($r_s=0.51$, $p=0.0$).

Known-group validity of the questionnaire

Finally, the known-group validity of the whole questionnaire was tested in the same way. Respon-

dents who scored below the arithmetic mean on the BBAQ had statistically significantly lower affirmation of exclusive breastfeeding for 5-6 months ($\chi^2(1, N=186)=49.43, p=0.00$) and a statistically significantly lower affirmation of total breastfeeding for >12 months ($\chi^2(1, N=186)=33.29, p=0.00$). For each additional point on the questionnaire, the probability that a person would belong to the group of people who answered the question on exclusive breastfeeding for 5-6 months positively increased by 1.243. For each additional point on the questionnaire, the probability that a person would belong to the group of people who answered the question about total breastfeeding for more than 12 months positively increased by 1.179, when all other factors in the model are equal. In the equation for predicting the positive outcome of exclusive breastfeeding, the results of the questionnaire were confirmed as the most significant predictor, while the other factors in the sample analyzed (age, gender, education) did not have a significant impact on outcomes.

Discussion

Analysis of the significance of differences in the results of the group of subjects who breastfed their baby according to the UNICEF and WHO recommendations (exclusive breastfeeding for 5-6 months, and total duration of breastfeeding of more than 12 months) in relation to the group of subjects whose children were not fed according to these recommendations confirmed the known-group validity of the questionnaire. The authors developed a validated questionnaire on breastfeeding behaviors and attitudes for parents, which can be supplemented by the scale of knowledge from the BIAKQ questionnaire. The BIAKQ is intended to evaluate changes in the intentions, attitudes and knowledge of young people who have no children yet²³. Both questionnaires can be used to evaluate project activities for other forms of community-based breastfeeding promotion and support²⁴. Following the psychometric rules of designing the questionnaire, we 'lost' some questions which, although dismissed from the professional point of view, deserve to be commented upon. Exclusion of the items about the first breastfeeding within one hour of the infant's birth, allowing the infant to find the nipple by itself, and the duration of 'skin to skin' contact after birth we consider to be a loss because of the importance of these procedures for the

health of the child, and quality assessment of the expertise of maternity work²⁵. We were very concerned by the explanation given by the study participants that they could not answer these questions because it was not possible to carry out those activities at the maternity ward, which points to the need of more consistent adherence to steps 4 and 7 of the BFHI²⁶. Similar observations were made by Zakarija-Grković²⁷ emphasizing the need of regular monitoring and reassessment, as well as ongoing, effective training for hospital staff.

We wanted to create a questionnaire that would be adjusted to the specific situation in our region, which also includes legislation directly or indirectly affecting breastfeeding²⁸. That is the reason why we included items in the paper relating to the rights of breastfeeding of working mothers. It turned out that there were a large number of unemployed parents in the sample, especially young mothers, which corresponds to the data from the Croatian Pension Insurance Institute²⁹. Considering the fact that our setting is founded on patriarchal traditions, we were particularly interested in the attitudes about breastfeeding in public places (in the presence of a well-known person), and the need to cover one's breasts when breastfeeding in public places. Other authors have noted the importance of this problem and paid attention to it³⁰. Equally, we were interested in the issue of religion and breastfeeding³¹, so we mentioned that topic in the questionnaire as well. However, all these items had to be excluded in making the questionnaire in order to achieve a satisfactory statistical reliability and validity of the questionnaire.

The final version of the questionnaire contains 15 items in the behavior scale, 17 items in the breastfeeding attitude scale, which can also include the knowledge scale with 13 items from the BIAKQ questionnaire. Behavioral scale questions cover the topic of exclusive breastfeeding/supplemental feeding, breastfeeding duration, father's support and the breastfeeding method (on demand, in public, with/without a pacifier), while on the attitude scale, the questions were grouped into 4 components: breastfeeding in public and partner support, misconceptions and denials, breastfeeding in the maternity ward, duration of breastfeeding.

We would like to discuss the topic of breastfeeding in public because of its importance.

Croatia does not have legal protection of breast-

feeding in a public place, as some other countries do³², but according to our results, only 13.9% of the respondents were against the attitude that preventing a mother breastfeeding a hungry child in a public place should be sanctioned by law. The problem of breastfeeding in a public place is not only a legal but above all a moral and ethical problem at the level of the whole community, as nicely said by Wollard³³: "Recognizing breastfeeding as a family way of life and loving interaction between parent and child gives rise to a moral right to breastfeed in public".

Hopefully, the questionnaire presented in this paper will facilitate collecting objective data on the success of the promotion and support activities for breastfeeding and their scientific presentation. This is important for many reasons, e.g., continuous monitoring of the results of breastfeeding promotion activities from pregnancy courses (BIAKQ), further through parenting (BBAQ) will provide scientifically measurable answers to the questions about the effectiveness of the activities undertaken. It has been shown that by numerous articles that parental involvement (e.g., participation in pregnancy courses) has a significant positive effect on breastfeeding outcome^{34,35}, but quite often, review papers based on a detailed, elaborated and rigorous methodology do not confirm these results³⁶. The use of validated questionnaires will allow the conduct of methodologically better designed studies, with the ability to measure easily and clearly changes in behavior, attitudes and knowledge in the study groups (e.g., participants in pregnancy courses or breastfeeding support groups compared to other subjects). Furthermore, continuous monitoring of the results of breastfeeding promotion activities will enable identification of weaknesses in the education, their correction and improvement, with the aim of achieving better outcomes (e.g., the duration of exclusive breastfeeding and total breastfeeding).

Limitations: the questionnaire satisfied the criteria of validity and reliability, but in the validation process, we lost items that are of interest to health and sociology. We suggest using the questionnaire with a survey that will contain some of the 'lost' items. These items, since they will not be collected by a reliable measurement instrument, will not be a basis for further analytical processing but can be presented using descriptive statistics methods and thus provide valuable information. Certainly, it is necessary to conduct the validated questionnaire with respondents from

outside the county, later also in neighboring countries, to confirm its validity and applicability. It is also necessary to develop a follow-up study comparing the respondents' results from the BIAKQ questionnaire with later results (when the respondents become parents) on the BBAQ, which will hopefully confirm the prognostic value of the questionnaire.

Conclusion

A questionnaire was developed to assess breastfeeding behavior and parents' attitudes. In this research, the questionnaire was shown to be a reliable predictor of successful exclusive and total breastfeeding. With the help of a reliable and validated questionnaire, it was possible to examine breastfeeding behavior and attitudes among parents. Moreover, the questionnaire could be a very convenient instrument in obtaining results relating to differences between distinct types of breastfeeding support activities and between different groups of respondents (e.g., persons participating in the work of breastfeeding support groups or other breastfeeding promotion activities, as opposed to persons not participating in these activities). The questionnaire may, in addition to the BIAKQ questionnaire, help professionals and activists involved in breastfeeding create methodologically well-conceived studies, thus positioning better these papers in professional and scientific journals.

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Sažetak

ANKETA O PONAŠANJU I STAVOVIMA RODITELJA PREMA DOJENJU

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Znanstvena evaluacija aktivnosti potpore i promocije dojenja u zajednici nije moguća bez uporabe validiranih upitnika. Cilj studije je bio izraditi valjan i pouzdan upitnik namijenjen mjerenju ponašanja i stavova roditelja o dojenju. Čestice upitnika su izrađene u skladu s podacima stručne literature, uz konzultaciju tri predavača pedijatrije u srednjim i visokim školama, kolegama pedijatrija i roditeljima. Radna verzija upitnika je postavljena na web stranicu udruge „Za zdravo i sretno djetinjstvo“ u razdoblju od 1. veljače do 31. svibnja 2019. godine. Istraživanje je odobrilo Etičko povjerenstvo Opće bolnice Bjelovar. Nakon provedene analize čestica ljestvice ponašanja u upitniku je zadržano 15 čestica koje su pokazale dobru unutarnju dosljednost. Što se tiče ljestvice stavova, analiza glavnih komponenata izdvojila je 4-faktorsku strukturu sa 17 čestica koje objašnjavaju 46,11% ukupne varijance. Cronbach alfa potvrđuje zadovoljavajuću unutarnju dosljednost ljestvice stavova (0,88). Sposobnost upitnika da diferencira skupine roditelja prema željenom ishodu potvrđena je pomoću χ^2 -testa, analizom korelacije i logističkom regresijom. Željeni ishod je definiran kao isključivo dojenje 5-6 mjeseci, odnosno ukupno dojenje 12 mjeseci i duže. Upitnik je pouzdan i valjan instrument za prikupljanje podataka o dojenju, kao i u evaluaciji promjena ponašanja i stavova roditelja postignutih programima izobrazbe. Upitnik se može primijeniti nakon prethodnog ispitivanja upitnikom BIAKQ te može pomoći stručnjacima i volonterima u izradi metodološki dobro koncipiranih programa promocije i potpore dojenja.

Ključne riječi: *Anketa o dojenju; Valjanost; Pouzdanost*