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Validity and reliability study for the Turkish adaptation of the Parent Satisfaction Questionnaire with Neonatal Hearing Screening Programs

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ABSTRACT

Purpose: To adapt the Parent Satisfaction Questionnaire with Neonatal Hearing Screening Programs (PSQ-NHSP) into the Turkish language and to measure the parents' satisfaction with the NHSP in a public hospital in Turkey.

Materials and methods: One hundred ninety-three parents of newborns participated in this study. Parents completed Turkish translations of PSQ-NHSP after the hearing screening process. Parents' satisfaction with the NHSP was measured in four dimensions: information about the NHSP, staff responsible for the hearing test, appointment schedule, and overall satisfaction.

Results: Overall, 75% of parents were satisfied with the NHSP. The corresponding satisfaction levels of parents in the specific dimensions were as follows: 68% for information, 75% for personnel responsible for the hearing test, 74% for the appointment schedule, and 78% reported overall satisfaction. The psychometric properties of the Turkish version of the PSQ-NHSP showed acceptable internal consistency reliability ($\alpha = 0.78$).

Conclusions: The Turkish version of the PSQ-NHSP is valid and reliable in measuring parent satisfaction with the NHSP, and the parents were generally satisfied with the NHSP in Turkey.

KEYWORDS

Newborn hearing screening; parent satisfaction; hearing loss

1. Introduction

Early detection of hearing loss and initiation of early intervention services, which are often referred to as 'Early Hearing Detection and Intervention' (EHDI) help children with hearing loss to catch up with their hearing peers in terms of language, cognition, and social-emotional development [1]. As 'National Newborn Hearing Screening Programs' (NHSPs) are an important dimension of EDHI, parents' cooperation is essential, and parental satisfaction measurements encourage good cooperation with the families. Parent satisfaction assessments in paediatric health care services are very important because of the parents' critical role in their children's lives [2], so the success or failure of the child's treatment may depend upon the parents' approach. Satisfied parents will cooperate well with healthcare providers, correctly follow the treatment plans, and be more likely to take the children for follow-up visits [3].

For early detection of hearing loss, the national NHSP was implemented in Turkey in 1994. With a screening rate of 93.4%, there are 950 hearing screening centres throughout the country [4]. Although

parents are considered a key factor in ensuring that the national NHSP is successful, their exact impact has not been documented well. The Joint Committee on Infant Hearing (JCIH) highlighted the importance of assessing the satisfaction level of parents for the success of the NHSP [1], but this still remains under-reported in Turkey.

Mazlan et al. developed the Parent Satisfaction Questionnaire with Neonatal Hearing Screening Program (PSQ-NHSP) [5] and it was adapted into many other languages [6–8]. The aims of the present study were to adapt the PSQ-NHSP into Turkish and then measure parents' satisfaction with the NHSP in a public hospital setting in Turkey.

2. Material and methods

The study was conducted in compliance with the Declaration of Helsinki. Before the study began, permission was obtained from Adana Provincial Health Directorate, and Ankara Yildirim Beyazit University Ethics Committee approved the study (2018-73). The parents whose babies completed the neonatal hearing screening test were informed about the study. The

researcher provided an informed consent form and the translated questionnaire to all who agreed to participate.

The present study was conducted in the neonatal department of a women and children's hospital in Turkey. In total, 193 parents whose babies had received hearing screening between July and September 2018 participated. The parents of well newborn babies were included before hospital discharge. Inclusion for participation was not restricted; only consent to participate was required.

Information provided by volunteer participants includes demographics, hearing screening results, and information offered *via* the translated questionnaire. All information is gathered after the NHSP process.

The English version of the PSQ-NHSP consists of four dimensions: information (items 3–5), staff responsible for the hearing test (items 9–16), the hearing screening process (items 8, 17–22), and overall satisfaction (items 23–26). The scale is composed of 22 Likert-type close-ended items with scores ranging from 1 to 5 (5 indicates 'strongly agree'). In addition, the PSQ-NHSP contains three open-ended items to get parents' suggestions for improving the program. Some items of the PSQ-NHSP were reverse-coded to reduce response-style bias. At the first stage of the Turkish adaptation study of the PSQ-NHSP we contacted with Rafidah Mazlan, who is the developer of the scale. After having her permission, the original English version of the questionnaire was translated into Turkish through by two independent audiologists. To follow 'forward-backward translation' procedure, the translated items and the response categories backward translated by an English Linguist. Subsequently, the authors of this study checked the items in the translated questionnaire to ensure cultural adaptation and then administered the initial version to 10 participants to check comprehensibility.

In this study, the Statistical Package for the Social Sciences (SPSS, version 26.0, IBM Corp., Armonk, NY, USA) was used for the statistical analysis. Descriptive statistics, including the frequency and

percentage of all items in the questionnaire, were computed. The mean scores for each item were also used to determine the degree of parent satisfaction with the NHSP in each of the four dimensions and in total. Cronbach's alpha analysis was used to assess the internal consistency reliability of the entire questionnaire and of each dimension of the Turkish version of the PSQ-NHSP. The open ended questions were analysed manually by authors: if applicable, all comments were grouped under four dimensions of the scale (information, staff responsible for the hearing test, the hearing screening process, and overall satisfaction).

3. Results

One hundred ninety-six parents were invited to participate in the study, and 193 of them agreed to participate voluntarily. All participants were mothers between the ages of 18–43 years (mean 27.4 ± 5.6 years), and 75% were housewives ($n = 145$). Only 11% ($n = 23$) of them had a university degree. Of among the 187 respondents to the item 'How did you hear about the program?', 97% said that they heard about the program at the hospital, 2% from relatives, and 1% from friends. For the item questioning whether the parents had received information about the program, of the 184 respondents, 50% reported that they had received information about the program before the appointment, while the other 50% had not. Out of 184 respondents, 171 mothers (93%) reported that their newborns passed the hearing screening test on the first attempt, 5 mothers (3%) declared that their newborns were referred for further testing, and 8 mothers (4%) did not know the test results of their newborns.

Statistics of 22 Likert-type close-ended items under four dimensions were examined. With regard to the first dimension which was about information received, the number of respondents and percentages for items 3, 4, and 5 are listed in Table 1. Satisfaction levels of parents for this dimension was 68%.

Table 1. Descriptive statistics for items in the dimension of 'information'.

Item	<i>n</i> (%)	Strongly disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly agree (%)
3. The content of the information sheet (brochure or leaflet) was sufficient.	181 (93)	6.6	13.8	39.2	27.6	12.7
4. The information about the infant hearing screening program was difficult to understand. ^a	179 (92)	19.6	22.9	46.4	6.7	4.5
5. The information about the infant hearing screening program was very useful before my child's first appointment.	184 (95)	5.4	6.0	40.8	29.9	17.9

^aReverse coded item.

Table 2. Descriptive statistics for items in the dimension of 'staff in charge of the hearing test'.

Item	<i>n</i> (%)	Strongly disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly agree (%)
9. The tester did not give clear information about the follow-up appointment. ^a	191 (98)	16.2	31.9	34.6	10.5	6.8
10. Now that I have had the follow-up appointment, I know what must be done next concerning my child's hearing.	188 (97)	5.3	8.5	40.4	33.5	12.2
11. The information I received regarding the testing procedure was not sufficient. ^a	191 (98)	19.4	46.1	13.1	14.7	6.8
12. The information on the results of the test was sufficient.	189 (97)	5.8	5.8	6.9	59.3	22.2
13. The tester was knowledgeable about the infant hearing screening program.	193 (100)	5.7	2.6	9.3	62.7	19.7
14. The tester was skilful with the equipment.	193 (100)	6.2	6.2	5.2	58	24.4
15. The tester was not approachable. ^a	189 (97)	32.8	46.0	9	5.8	6.3
16. The tester was gentle with my baby during the testing procedure.	192 (99)	3.6	5.2	4.2	52.1	34.9

^aReverse coded item.**Table 3.** Descriptive statistics for items in the dimension of 'appointment schedule'.

Item	<i>n</i> (%)	Strongly disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly agree (%)
8. I was satisfied with the interval between appointments.	193 (100)	6.2	7.3	29	43.5	14
17. I had the chance to ask more about the program.	192 (99)	3.6	9.9	15.1	52.6	18.8
18. I had the chance to ask more about the test procedure.	193 (100)	4.1	10.9	16.1	51.8	17.1
19. I had the chance to ask more about the results of the test.	192 (99)	4.2	12.0	12.5	52.1	19.3
20. The length of the appointment was not appropriate. ^a	191 (98)	31.4	47.1	8.9	8.9	3.7
21. I was satisfied with the waiting time for testing.	193 (100)	7.3	10.9	13	50.3	18.7
22. The testing site for this program was not appropriate. ^a	193 (100)	31.1	47.7	5.2	10.9	5.2

^aReverse coded item.**Table 4.** Descriptive statistics for items in the dimension of 'overall satisfaction'.

Item	<i>n</i> (%)	Strongly disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly agree (%)
23. Overall, I was satisfied with the infant hearing screening program.	193 (100)	5.7	2.6	4.1	56.5	31.1
24. I was not satisfied with the test process. ^a	193 (100)	29.5	42	4.7	17.1	6.7
25. I will recommend this infant hearing screening program to friends or relatives.	193 (100)	4.7	3.6	4.7	58	29
26. I will not use the same service in the future. ^a	193 (100)	32.1	48.2	4.7	8.3	6.7

^aReverse coded item.

The score for the items in the second dimension which explores the satisfaction with the staff performing the tests (items 9–16) are listed in the Table 2. The satisfaction level for this dimension was 75%.

The results for the appointment schedule (items 8, 17–22) are listed in Table 3. Over all satisfaction level for this dimension was 74%.

The percent scores for items related to overall satisfaction (items 23–26) are listed in Table 4. The results show that the satisfaction level for was 78% for this dimension.

In the open-ended items in the present study, only 35 parents (18.1%) commented about suggestions for improving written pre-appointment information and only 38 parents (19.6%) commented about how the service might be improved. The answers were mostly very short and included experiences instead of suggestions. Only 5 suggestions

(2.6%) were recorded for item 6, and 11 suggestions (5.7%) for item 28, respectively. For item 27; sum of 112 responses (58%) were recorded, while only 3 of them provided suggestions. The other answers were as 'none' or 'pleased'

Although 193 individuals participated in the study, due to some participants' missing answers to closed-ended questions, the data of only 171 individuals were included in the psychometric analysis. Internal consistency reliability of Turkish version of PSQ-NHSP was assessed by Cronbach's alpha coefficient. The Cronbach's alpha score for the entire questionnaire was 0.78 which indicates acceptable internal consistency. Additionally, the value of Cronbach's alpha was above 0.7 for all dimensions of satisfaction which indicates that the items in each dimension have adequate internal consistency and are measuring the targeted concept.

4. Discussion

For an EHDI program to be successful, the users of the service should be included in all screening, diagnosis, and intervention activities processed by the service providers. In addition to running the program, the service providers also perform program evaluations which include parental satisfaction measurements [9]. Understanding and reporting parental satisfaction with EHDI programs is important to fulfil service providers' responsibility for public accountability, beyond better understanding parents' expectations of EHDI services to improve quality of care [10]. In the present study by adapting PSQ-HNSPs in Turkish we measured parental satisfaction level with NHSP in Turkey. Actually, NHSP has been implanted by Ministry of Health in Turkey since 1994 and has become the standard of care, as in many other countries. As a vital part of the NHSP, parent/guardian counselling and education are carried out as advised JCIH (2007) and documented in the literature [11,12]. Although parent satisfaction is a very important dimension for measuring the parent/guardian's role in neonatal hearing screening [13,14] and to achieve diagnostic follow-up and effective compliance for intervention [3], the Turkish NHSP does not routinely carry out parent satisfaction and parent/guardian's role measures. In other words, assessing parent satisfaction with the NHSP remains under-reported in Turkey. It is obviously seen that the majority of the literature assessing NHSP in Turkey is either focussed on screening results [15,16] or they are small-scale studies [17]. Moreover, it is also observed that standard measurement tools are not included in many of those studies.

In this study, we translated the PSQ-NHSP into Turkish, evaluated the psychometric properties of the translation. Internal consistency reliability (Cronbach alpha coefficient of 0.78) of the Turkish version of PSQ-NHSP shows that it is a reliable instrument for measuring parent satisfaction with NHSP. This result is similar to results of the original version of the PSQ-NHSP (0.94) [5], the Spanish version of the PSQ-NHSP (0.75) [6] and the Malay version of the PSQ-NHSP (0.90) [8] in which parental satisfaction levels due to NHSP are also measured.

One of the limitations of satisfaction measurements is that the cut-off value was not specified in most studies. Instead, the percentages of the items are presented to describe satisfaction level (high or low) in those studies [5–8]. So, we expressed satisfaction level as other satisfaction measuring studies did. The results in regard to satisfaction level of parents with

the NHSP showed that most of the parents were satisfied with the program (total satisfaction level was 75%). The total satisfaction level in this study was quite similar to those obtained in the other programs. Some examples for those studies are 80–95% of parents were satisfied with the overall service provided by Wales' NHSP in the United Kingdom [18], 80% of parents were satisfied with a universal newborn hearing screening program in Kuala Lumpur, Malaysia [8], 90% of parents were satisfied with a universal newborn hearing screening program in Spain [6].

In this study, there was variability in the degree of satisfaction depending on the dimension. The satisfaction level for dimension of information about the NHSP was 68% which shows that the program needs to be supported for public awareness. The dimension which explores satisfaction with the staff performing the tests shows that the satisfaction level was 75% which is quite high compared to literature reporting dissatisfaction with screeners expressed by the parents [7,8,18]. The results for dimensions of the appointment schedule and over all satisfaction were 74% and 78% respectively. It was possible to compare results from this specific dimensions of satisfaction with results from other hearing screening programs [6–8].

Parents are allowed to express their thoughts and feelings towards the program with open-ended items. However, some of participants did not respond to those items. In another adaptation study [8], also it is seen that not all subjects respond to open-ended items. In this study, only 35 parents (18.1%) commented about suggestions for improving written pre-appointment information and only 38 parents (19.6%) commented about how the service might be improved. The answers were mostly very short and including experiences instead of suggestions and most of them said they were satisfied with the program. It shows that parents need motivation to express their thoughts and feelings to improve the service.

Although there are numerous studies and reviews about parental satisfaction with NHSP, it is observed that the relationship between satisfaction level and follow-up ratio has not been investigated exactly. In a study on parental satisfaction and outcomes, Young points out two questions about what makes for a good outcome for parents in their interactions with early intervention services and what works for which families in which circumstances still need to be investigated [19]. Despite the study that states mothers expressed high willingness to bring their babies to

follow-up assessment if required [20] we think that the parents who showed dissatisfaction to the program are the ones whose babies will be at the potential risk for lost to follow-up. Parents with more information generally have more positive attitudes towards universal NHSP [11] and they may give positive ratings for satisfaction with at least some dimensions of universal NHSP [20]. Therefore, we believe that providing more information to the parents prior to screening may increase parental satisfaction level with NHSP in Turkey. In addition, parents with low level of satisfaction should be handled with a special interest in order to prevent their loss from follow-up. Providing post-screening documents including milestones information to monitor any signs of hearing loss that develop after NHS and information on the follow-up assessments, hearing loss and possible treatments and etc. as suggested by Lam et al. may prevent lost to follow-up [20].

Parents' satisfaction with the NHSP process in a public hospital setting in Turkey is determined. As a valid and reliable instrument, The Turkish version of the PSQ-NHSP may be used routinely for assessing and improving NHSP in Turkey.

Two main limitations have been observed in this study. One of those concerns was that although 193 people participated in the study, only 171 of them answered all closed-ended items and only a few people made a comment in the open ended-items. It points out that parents need to be motivated to enable parental participation in assessing the program. In addition, it may be necessary to give the instruction in a detailed manner for this self-administered questionnaire. The other limitation was that all participants consisted of mothers. We think that fathers' views on the program should be also evaluated.

Considering the undetermined cut-off criteria for satisfaction level in the present study as in the other studies measuring satisfaction, it is recommended to future studies to focus on specifying the critical values to identify those who are satisfied. In addition, it will be useful to measure the satisfaction and report the results in other processes of the EHDI program. We know that relatively few studies undertaken not only in Turkey but also across the world to determine parental perspective on all processes in EHDI programs. Studies evaluating parental satisfaction in other processes (diagnosis, and intervention activities) of EHDI program in Turkey will make a great contribution to the evaluation and improvement of the program.

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Disclosure statement

No potential conflict of interest was reported by the author(s).

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Data availability statement

The datasets used during the current study are available from the corresponding author on reasonable request.

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