



The Children with Hearing Disabilities: Mothers' General Health Status and Children's Quality of Life

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Received 2021 April 20; Revised 2021 September 05; Accepted 2021 September 12.

Abstract

Background: Having disabled children can definitely hurt the mental health status of parents, especially mothers, and even directly affect children's behaviors as well as their adaptability and progress during all care and rehabilitation programs.

Objectives: The main purpose of this study was to investigate general health status of mothers having children with hearing disabilities and reflect on children's quality of life (QoL).

Methods: This descriptive-analytical study was performed on all children with hearing disabilities covered by the State Welfare Organization (SWO) of Iran in northern Khuzestan province in 2019. Accordingly, a total of 44 children aged 1-6 years and their mothers were included. The data were collected using a demographic characteristics information form, the 28-item General Health Questionnaire (GHQ) and the Netherlands Organization for Applied Scientific Research Academic Medical Centre (TNO-AZL) Preschool Children Quality of Life (TAPQOL) questionnaire. The data were entered into the SPSS Statistics software (ver. 22) and analyzed using descriptive statistics, Pearson correlation coefficient, Spearman's rank-order correlation coefficient, and chi-square test.

Results: According to the results, 79% of the mothers had severe general health problems. The severity of such problems had further elevated in the dimensions of "physical symptoms", "anxiety and sleep disorders", "depression", and "social functioning", respectively. The mean score of the children's QoL was 79.13 ± 14.48 , which was at a moderate level. The study findings showed a significant relationship between some demographic characteristics and the mothers' general health status and the children's QoL. Moreover, there was a reciprocal correlation between mothers' general health and children's QoL scores ($P = 0.049$, $r = -0.29$).

Conclusions: Although QoL in the children having hearing disabilities was at a moderate level, the majority of mothers had severe general health problems. The study results could be useful for health system officials in terms of the promotion of children's QoL by designing and implementing programs to improve the general health status of the mothers of these children.

Keywords: Children with Disabilities, Children's Life Quality, Mothers' General Health

1. Background

Disabilities due to physical problems and social limitations, and stressors can have adverse consequences for children and their families (1, 2). Hearing disabilities refer to hearing loss greater than 35 decibels (dB) in the better hearing ear. It has been estimated that 34 million of the world's children suffer from hearing impairment (HI). The major causes of hearing loss include congenital or early-onset childhood hearing loss, chronic middle-ear infections, noise-induced hearing disabilities, age-related hearing loss, and taking ototoxic drugs that damage the inner ear. Most people with HI live in low- and middle-income countries (3). Having disabled children in this regard can hurt the general health status of parents, especially mothers, and consequently affect their Quality of Life (QoL) (4).

In comparison with fathers, mothers are more likely to feel distressed with their children's disabilities in the family. Since these mothers must constantly adjust themselves to the changing needs of such children, they feel more anxious and depressed than mothers of healthy children and experience more problems with physical symptoms and social functioning (5). In many studies in Iran, general health status in mothers with disabled children has been reported at mild-to-moderate levels (4, 6, 7). In the study by Ramires et al., the mean score of QoL for mothers with children having HI was 53 on a linear scale of 0-100 (8).

The impacts of HI are broad and can be profound. They include the loss of the ability to communicate with others and delayed language development in children, which can lead to social isolation, loneliness, and frustration (3). In

many studies, QoL in children and teenagers with HI has been thus far reported to be moderate to favorable (9-11). In this respect, Looi et al. (2016) reported that QoL in hearing-impaired children aged 2-18 years in Singapore was poor to moderate, depending on the HI severity (12). HI is a disability that may affect QoL in affected people, although support from family and friends can help boost it (9).

Studies have further shown that mothers' general health status is effective in such children's behaviors and their adaptability and progress during all care and rehabilitation programs. In a systematic review, Hohlfeld et al. (2018) found that the parents of children with disabilities aged less than five years, who had high levels of stress, experienced the highest increase in self-efficacy after some interventions (13).

Therefore, determining the general health status of mothers and reflecting on the QoL of children with HI is of particular importance for the care of these children, and this allows them and their families to live better (14, 15). Given the possibility of the side effects of disabilities on the health status of children and their families, as well as the priority of the research on the general health status of children aged 0-8 years with disabilities and the absence of such studies on children with HI in northern regions of Khuzestan province in Iran, this study was conducted to investigate general health status in mothers with children having HI and assess children's QoL. The study results could help determine the problems of these children in terms of planning to promote their QoL. In addition, health system officials may improve the health status of children by paying more attention to their families, especially mothers.

2. Methods

This cross-sectional and descriptive-analytical study was conducted in 2019. The statistical population consisted of all children with HI living in the cities of Dezful, Andimeshk, Shush, and Gotvand in northern regions of Khuzestan province, Iran. All subjects had been covered by the State Welfare Organization (SWO) of Iran in the city of Dezful. The SWO of Iran is a government-run agency affiliated to the Ministry of Welfare and Social Security that provides services to people in need. Sampling was done based on the census method, and the samples included 44 children with HI aged 1-6 years and their mothers.

The inclusion criteria were having a complete health document, availability of the children, and their parents' consent to participate in the study. The exclusion criteria were mothers and children having other severe or chronic illnesses.

The mothers were asked to refer to Tanin Health Center at a predefined time. The demographic characteristics information questionnaire, the 28-item General Health Questionnaire (GHQ-28), and the Netherlands Organization for Applied Scientific Research Academic Medical Centre (TNO-AZL) Preschool Children Quality of Life (TAPQOL) questionnaire (1-6 years) were then used to assess general health status in mothers and QoL in children and to gain access to the demographic characteristics information of families. The GHQ was first published by Goldberg in 1972 to distinguish between healthy and sick individuals. This questionnaire has been widely used in many countries, and all its forms have been confirmed with high validity and reliability. The reliability of this 28-item questionnaire was reported to be 0.87. The scores in this questionnaire range from 0 to 84, wherein lower scores indicate better general health status. Moreover, the score above 41 represents moderate to severe severity of general health problems. In Iran, the reliability and validity of the given questionnaire were confirmed by test-retest (0.70), split-half (0.93), and Cronbach's alpha (0.90) methods (16). The TAPQOL (Fekkes, 2000) contains 43 items calculated based on a 0-100 linear scale, in which higher scores indicate better QoL. This questionnaire has been translated into several languages worldwide, and its validity and reliability have been confirmed in a population of healthy and sick children (17). In Iran, Cronbach's alpha coefficient for this questionnaire was 0.8, and the correlation between the items and their sub-scales was above 0.6 (18). The researchers personally distributed the questionnaires among the families and collected the data within two days; if there was any ambiguity, face-to-face explanations were given.

2.1. Ethical Considerations

This study was approved by the Iran National Committee for Ethics in Biomedical Research at Islamic Azad University (code: IR.IAU.SHK.REC.2019.031). Informed consent was further obtained from the parents of all children. The main objectives of the research were explained to the children's parents, and they were assured that their children's information would remain confidential.

2.2. Statistical Analysis

The data analysis was performed using descriptive and inferential methods. In this regard, Pearson correlation coefficient, Spearman's rank-order correlation coefficient, and Chi-square test were utilized to determine the correlation between the interval, ordinal, and nominal variables. The collected data were also analyzed at a significance level of 0.05 using the SPSS Statistics software (ver. 22).

3. Results

The study participants included 25 females and 19 males with a mean age of 4.85 ± 1.01 years. The age range of mothers and fathers was 26 - 42 and 29 - 55 years, with a mean age of 34.68 ± 4.23 and 35.86 ± 5.12 years, respectively. The level of education in 68% of the fathers and 50% of the mothers was the secondary school. Also, the number of children in each family in 90% of the families was more than three (Table 1). Over 90% of the hearing-impaired children had been born to healthy parents who were completely unfamiliar with this situation and had no history of hearing disabilities in the family. The economic status of most families was poor based on their SWO documents. All the fathers were self-employed, and the mothers were housewives except in one case, who was a teacher. All the children had HI of more than 30 dB in the better hearing ear. The older children were using lip-reading, whereas the younger ones had hearing aids, and two cases had cochlear implants.

Table 1. Family Characteristics of Children

	Frequency (%)
Mothers' age (y)	
< 30	3 (6.8)
30 - 35	19 (43.1)
35 - 40	13 (29.5)
> 40	9 (20.4)
Mothers' education	
High school	22 (50)
Diploma	14 (31.8)
College education	8 (18.1)
Number of children in each family	
3	4 (9)
4	15 (34)
5	15 (34)
6	10 (22.7)
Fathers' age (y)	
< 30	2 (4.5)
30 - 35	21 (47.7)
35 - 40	7 (15.9)
> 40	14 (31.8)
Fathers' education	
High school	30 (68.1)
Diploma	8 (18.1)
College education	6 (13.6)

The mean score of general health status in the mothers was 72.29 ± 10.58 , and 79.5% of them had severe health problems (Table 2). The severity of such problems had further increased in the dimensions of "physical symptoms", "anxiety and sleep disorders", "depression", and "social functioning", respectively.

Table 2. Frequency of Mothers' General Health Status

Mothers' General Health Status	Frequency (%)
Reduce general health to a minimum or none	0 (0)
Mild decrease in general health	1 (2.3)
Moderate decrease in general health	8 (18.2)
Severe decrease in general health	35 (79.5)

On a linear scale of 0 - 100, the mean score of QoL in the children was 79.13 ± 14.48 , which was at a moderate level. The scores of cognitive, physical, emotional, and social dimensions were also 82.24, 81.93, 77.14, and 67.27, respectively. The data analysis showed a direct significant relationship between QoL and age in the children ($P = 0.017$, $r = 0.35$) and their father's age ($P = 0.019$, $r = 0.35$) (Table 3).

Our findings also demonstrated a significant relationship between the mothers' general health status and the number of children ($P = 0.010$, $r = 0.38$) as well as maternal age ($P = 0.019$, $r = 0.35$) (Table 3). In other words, the general health status of the mothers had declined following the growth in the number of children and mothers' age. There was also a reciprocal correlation between mothers' general health status and children's QoL ($P = 0.049$, $r = -0.29$). In this sense, the children's QoL was better with the increase in the mothers' general health status.

4. Discussion

In this study, the majority of mothers had severe general health problems in all dimensions. In this regard, Quittner et al. reported that the parents of children with hearing impairment experienced unusual levels of stress in comparison with those having children with normal hearing (19). In Iran, previous research reported the general health status in mothers having disabled children at mild-to-moderate levels, which was better than the results of the present study (4, 6, 7). This might be attributed to the fact that some of the individual characteristics of the mothers recruited in these studies, such as occupation and age, were different from each other (5). Mazaheri and Sadeghi stated that such results depend on family responses to stressful events, children's behaviors, parental and child age, levels of social support, economic resources,

Table 3. Relationship Between the Children's Quality of Life and Their Mothers' General Health with Demographic Information

	Children's Quality of Life		Mothers' General Health	
	P	r	P	r
Child age	0.01	0.35	0.88	0.02
Number of children	0.56	0.08	0.01	0.38
Parental age				
Father	0.01	0.35	0.97	0.00
Mother	0.24	0.17	0.01	0.35
Parental education				
Father	0.47	0.11	0.78	0.04
Mother	0.23	0.18	0.15	0.22

and parent-child relationships (7). Parental previous experiences in dealing with hearing impairment could be further effective in adapting to the birth of a child with such a condition. The majority of the hearing-impaired children in this study had been born to healthy parents who were completely unfamiliar with this situation and had no history of hearing impairment in the family. Although the findings of Ziadman-Zeit et al. showed no significant difference between mothers and fathers in terms of the levels of stress and acceptance of such children, mothers had more significant self-efficacy; thus, implementing health education and health-promoting programs would be effective in this regard (20). Therefore, paying much attention to mothers' general health status having children with hearing impairment during the periodic examinations of children would reduce aggravated family problems because they would be recognized as early as possible, and further attempts would be made to correct them. They also demonstrated that health problems increased following the growth in the number of children and mothers' age. Mirsamadi and Abdi (2017) claimed that the increasing number of children in families with a disabled child could be associated with greater stress in mothers (4). Although maternal age would not affect their coping styles, it would be expected that stress would ascend as the age increased (21). The higher number of children could thus cause physical and psychological harm to mothers due to their greater economic burden, as well as much force imposed on mothers for their daily activities and care of such children. Older mothers would be more vulnerable to illnesses due to physiological reasons, and they would be more likely to get chronic diseases and spend more time caring for themselves; hence, they should receive more help in caring for their disabled children.

The study findings showed that the children's QoL was at a moderate level. Some research studies in the United States and Portugal found no significant differences be-

tween QoL scores in children with normal hearing and those with implants (22, 23). The results of many other studies showed that most early interventions in these children and their families were associated with positive outcomes for mental health and well-being in children and teenagers in developing countries (24). One of the important factors in examining QoL in children with disabilities is the type of disability. Non-visible disabilities such as hearing impairment are less stressful than those that are visible, such as blindness and motor disorders (7). In this study, the lowest score for QoL was reported for the social dimension. Social interactions are the exchange of ideas between two or more individuals as the building block of society. Among people with normal hearing, language is also the most common way of conveying messages. Given the society's dependence on language, it is not surprising that many researchers concluded that hearing-impaired individuals had different personalities and social characteristics in comparison with those with normal hearing (25).

In this study, there was a relationship between the children's age and their QoL. In other words, their QoL had improved, as they had got older. These findings might be attributed to more adjustment of older children to the problems and treatment modalities compared with younger peers. Therefore, younger children would need intensive care even during treatment interventions (18). Moreover, as children get older, their primary care needs dwindle, and they become more educated. In this situation, children would spend more time with their families and add to their mental and social abilities to improve their QoL.

The relationship between QoL in children with disabilities and family characteristics was additionally significant with reference to the father's age in the present study. In a systematic review, Gholami Jam et al. (2018) found that most studies (64%) focused on mothers of children with disabilities, and the father's role had been dis-

regarded. Moreover, the studies had not emphasized the father's characteristics and their impact on the health status of children with disabilities (26). Due to the prominent role of fathers in childcare in recent years and children's special dependence on fathers, it is thus necessary to conduct more studies in this field.

The results of this study showed a significant relationship between mothers' general health status and children's QoL. Prior et al. also reported mothers' general health as an important variable in predicting behavioral problems in hearing-impaired children and strongly emphasized support for mothers with hearing-impaired children to prevent behavioral maladaptation in this age group (27). Due to the greater economic pressure on the families of children with disabilities, fathers are forced to work hard to earn more money. Since QoL in children with disabilities depends on the care of mothers owing to their greater intimacy, maternal health problems can harm children in different way.

One of the limitations of this study was the small sample size. It is suggested to conduct further research with larger samples in different communities with regard to various family characteristics and even consider the impacts of numerous factors on the quality of childcare to find the best strategies to improve general health status in children with disabilities and their families.

4.1. Conclusions

Our results showed that the majority of mothers with children having hearing disabilities, especially the older ones with more children, experienced severe general health problems. Therefore, these mothers are more vulnerable and should be helped more in caring for their disabled children. According to the results of this study, younger children with disabilities, especially in the dimension of social interactions, would need more support with an emphasis on the prominent role of fathers in their care. The findings also showed that QoL in such children decreased with a rising trend in maternal health problems. These results further emphasize the importance of paying attention to maternal health. Our results would be useful for health system officials in the field of health promotion of children with hearing disabilities. Such goals would be fulfilled by designing and implementing programs to promote the general health status of children's mothers, including periodic checkups and further support for such families.

Acknowledgments

The authors wish to express their gratitude to the Research Administration of the Islamic Azad University of

Dezful, the officials of the Welfare Organization, the staff of Tanin Health Center in Dezful, and all the mothers who participated in the study.

Footnotes

Authors' Contribution: Study concept and design: M.R and F.P.; Analysis and interpretation of data: M.R, F.P., H.S, F.F, and A.A.; Drafting of the manuscript: M.R and H.M.; Critical revision of the manuscript for important intellectual content: M.R, H.S, F.F., and A.A.; Statistical analysis: H.S and A.A.

Conflict of Interests: The authors declare that they have no conflict of interest.

Ethical Approval: This study was approved by the Iran National Committee for Ethics in Biomedical Research at Islamic Azad University (code: IR.IAU.SHK.REC.2019.031).

Funding/Support: This study was funded by Islamic Azad University of Dezful, Iran.

Informed Consent: Informed consent was obtained from the parents of all children.

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