Mothers' Practices regarding Health Problems and Health Needs of Their Deaf and Hearing-Impaired Children

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ABSTRACT

Background: Children who have hearing impaired need exceptional attention from their families, especially from mothers, as they are the most person contact with their children from birth and throughout life. Aim of the study: To assess mothers' practices regarding health Problems and health needs of their deaf and hearing-impaired children. Setting: the study was conducted at Cairo governorate at Al Amal for deaf and hearing-impaired schools affiliated to Ministry of Education in Al Mataryia and Abbassia. Sample: simple random sample used for selecting the setting for data collection and a convenience sample used for selecting the subjects. The sample size was 230 mothers. Tools: One tool was used; an Interviewing Questionnaire to assess part (1) Socio demographic data for mother and child; Part (2) Child's medical history; part (3) The knowledge of mothers regarding health problems and health needs and Part (4) Reported practices of mothers regarding health problems and health needs. Results: 62.6% of the studied mothers had unsatisfactory knowledge regarding total health problems and health needs and 79.6% of the studied mothers did unsatisfactory reported practices of their deaf and hearing-impaired children. Conclusion: There was a positive relation between total score of knowledge and total score of reported practices and there were no statistically correlation between the two variables. Recommendations: Health education directed to mothers of children of hearing-impairment or hearing loss to improve their knowledge and practices regarding health problems and health needs.

Keywords: Mothers' Practices, Health Problems, Health Needs, Deaf, Hearing-Impaired Children.

Introduction

Hearing loss (HL) can affect one or both ears and range from mild to complete deafness. The Global Burden of Disease study defines hearing impairment as an HL >20 decibels (dB) in the ear with better hearing, based on the average across 500, 1000, 2000, and 4000 Hz This definition is consistent with the WHO's definition of Hearing Loss (World Health Organization, 2024).

The main areas of the world affected by disabling Hearing mpairementI are South Asian and African regions, with prevalence rate almost four times that of the high income regions. 12.5% of children between 6 and 19 years of age suffer from different degrees of hearing impairment. Approximately 38 to 42% of students become deaf through viral infection or congenital syndromes also have cognitive, language, learning, emotional, neurological and physical disabilities or a combination of all which affect development and school achievement (Abdel-Wahab et al., 2023).

School age students with hearing impairment and deafness are known to have more school and mental health problems, have a negative impact on the learning of verbal language, lack of cognitive function, reading, writing and academic performance, have moderate to depression. significantly severe associated with anxiety and impaired social interaction and communication. Also, school age students constitute an important group and deserve to experience well-being as health and wellbeing for this population group is important for potential societal influence and lifestyle related attitudes and habits are formed at this stage and persist across the life span (Abdel-Wahab et al., 2023).

Deaf children have problems in language and communication skills which has negative effects on auditory perception verbal intelligibility and skills in comparison with hearing children. Hearing- impairment is slightly more common among boys. Not recognizing or treating impairment can seriously impair a child's ability to speak and understand language (Ashori and Jalil-Abkenar, 2019).

Hearing problems in children often go unnoticed at first. If parents notice that there's a problem, it's usually because their child doesn't react to sounds – or has stopped reacting to sounds. Or because the child only notices that they are being spoken to when they can see the speaker's face (**Brandes et al., 2019**).

Children with hearing impairment have unique needs that require tailored support to ensure their optimal development and inclusion in society. These needs encompass various domains, including communication, education, and socialemotional development. Effective communication is essential; thus, access to appropriate audiological services, such as hearing aids or cochlear implants, is crucial. Additionally, early intervention programs that promote speech and language development are vital for helping children acquire communication skills and navigate social interactions. Inclusive educational settings that foster collaboration between educators, specialists, and families are also essential for addressing their learning needs (Flexer, 2020).

Furthermore, social-emotional support is critical, as children with hearing impairments may experience feelings of frustration isolation or due to Creating communication barriers. an inclusive environment, providing access to resources. and fostering supportive relationships can significantly enhance the overall well-being and development of with hearing impairment children (American Speech-Language-Hearing Association. (2023).

Mothers of children with hearing impairment often engage in various practices to address health education challenges and ensure the well-being of their children. These practices are essential for promoting their children's overall health and enabling them to navigate their unique healthcare needs effectively. One key practice among mothers is seeking out reliable health information and resources specific to hearing impairment. They may actively educate themselves about their child's condition, available treatments, and potential complications, empowering themselves to make informed healthcare decisions (Crowe et al., 2020).

Mothers involve the child with his peers in their parties and games, which keeps the child away from introversion and helps the child to acquire proper speech and pronunciation. Mothers encourage the child to see his grandparents, aunts, uncles and cousins. If they live far away, talk to them on the phone, write letters or emails, or make video calls. Mothers get the child involved in a local community group or sports club. This gives the child the chance to get to know new people and see community members working together. Mothers invite grandparents, aunts, uncles, cousins or family friends to sporting events that are important to the child – for example, an awards ceremony or performance (Matthews et al., 2021).

Community health nurse as a medical professional should work to establish relationships that are responsive to the needs of the child and family for dealing with the disability and should be oriented with the numerous community resources for disabled child to become strong advocate (Morera-Balaguer et al., 2023).

Significance of the study

Egypt experiences a higher rate of hearing loss compared to many other developing countries, with a prevalence of study 16.02%. А involving 4.000 Egyptians from six randomly selected governorates-Alexandria, Dakahlia. Luxor, Marsa-Matrouh, Minia, and North Sinai-was conducted to assess hearing loss. The widespread nature of hearing impairment in the country is attributed to the combined effects of noise exposure and genetic factors. Accurately determining the extent of hearing loss in Egypt is challenging, as there was no nationwide hearing screening program in place before 2020; consequently, available data rely solely on academic studies conducted in hospitals (Elsayed-Shrief e al., 2024).

Aim of the study

This study aimed to assess mothers' practices regarding health problems and health needs of their deaf and hearing-impaired children through:

- 1. Assessing mothers' knowledge regarding health problems of their deaf and hearing-impaired children.
- 2. Assessing mothers' knowledge regarding health needs of their deaf and hearing-impaired children.
- 3. Assessing mothers' reported practices regarding health problems and health needs of their deaf and hearing-impaired children.

Research Questions

1-Is there a correlation between mothers' knowledge and reported practices regarding health problems and health needs of their deaf and hearing-impaired children?

Subjects and Methods

The subject and methods used for achieving the study, portrayed under the four main designs as follows:

1) Technical Design:

Technical design of this study included description of research design, setting, subject and tools of data collection.

Research Design:

A descriptive analytical design used in this study.

Study Settings:

Cairo governorate included four schools for deaf and hearing-impaired children affiliated to Ministry of Education; two of them were selected randomly. This study was conducted at Al Amal for deaf and hearing-impaired schools in Al Mataryia and Abbassia which serve the whole students with deaf and hearing-impaired children from many surrounding places each student were available as daily school. The first school in Almataria consisted of four floors and two buildings. It was the first school for D&HI children in the Middle East. The second one in Abassia following Al-Waily administration and consisted of four floors and two buildings. Both introduced educational and daily behaviors

activities and emergency services regarding these children.

Subjects

A convenient sample used for selecting the subjects include 230 mothers representing all available children attending the previously mentioned settings.

- Al matarya: 130 male and female children.
- Alabbasia: 100 male and female children.

Sampling type: A simple random sample used for selecting the setting and a convenient sample used for selecting the subjects.

Sampling size: the sample composed of 230 included all available mothers attending with their children as daily school and participated in the study.

Tools of Data Collection:

One tool used in this study for data collection and classified as the following:

First Tool: Structured interviewing questionnaire: was developed by the investigator after reviewing the relevant recent literature and was written in a simple Arabic language and consisted of four parts to collect data as the following: Part I: Demographic data adapted from Mohammed et al., (2020) and included 2 items:

- A) Personal data of the mother to assess (age, education level, marital status, occupation, place of residence and family income) Q1-Q6.
- B) Personal data of the child to assess (age, educational stage, gender and child's birth order in the family) Q7-Q10.

Part II: The child's medical history to assess (the onset of hearing-impairment or deafness, level of hearing-impairment

or deafness, kinship relation between parents and it's degree, previous family medical history, the siblings suffer from deafness or hearing-impairment, current treatment, child's periodic follow up and causes of neglecting follow up) Q11-Q18.

Part III: Mothers' knowledge was used to assess mothers' knowledge regarding health problems and health needs of their deaf and hearing-impaired children adapted from **Gad et al. (2020)** and composed of 3 items included:

A) General information of the subjects about (definition, causes, types, signs and symptoms, methods of early detection, complications, prevention and treatment methods) of deafness and hearingimpairment Q19-Q26.

B) Health problems of the child (personal, physical, social, behavioral, psychological & emotional and educational & cognitive problems) Q27-Q32.

C) Health needs of the child (personal, communication, social, behavioral, psychological& emotional, educational& cognitive, rehabilitation needs and information source) Q33- Q40.

Scoring system for knowledge: The Knowledge included (21) questions. The correct answer was scored one degree and incorrect answer and don't know was scored zero.Total score of knowledge 21 degrees. These scores were summed up and converted into a percentage score and classified into 2 categories:

- Score $\geq 50\%$ (11-21): Satisfactory knowledge.
- Score <50% (<11) degrees: Unsatisfactory knowledge.

Part IV: Mothers' reported practices was used to assess mothers' reported practices regarding health problems and health needs of their deaf and hearing-impaired children and composed of 2 items.

(A): To assess mothers' reported practices regarding health problems of

their deaf and hearing-impaired children adapted from **Mohamed et al. (2022)** and contained 9 statement's:

- Communication problems (9 items) and included:
- Using sign language (20 items).
- Training the child to begin using hearing aids gradually (8 items).
- Daily care of hearing aids (6 items).
- Dealing with the problem of using hearing aids (5 items).
- Commitment to follow up use of hearing aid (7 items).
- Caring for cochlear implant device (5 items).
- Reported practices toward behavioral problems (9 items)
- Reported practices toward Psychological and emotional problems (6 items).

(B) To assess mothers' reported practices regarding health needs of their deaf and hearing-impaired children adapted from Ali et al. (2018) towards:

- Physiological needs (4 items).
- Social needs (7 items).
- Educational and cognitive needs (14 items).

Scoring system for reported practices: The reported practices included (100) items. Each statement was assigned a score according to mothers' reported practices, practices were done scored one degree and not done scored zero degree. Total score of total reported practices was 100 degrees, these scores were summed up and converted into a percentage score and classified into 2 categories:

- Score $\geq 60\%$ (60-100 degrees): Satisfactory practices.
- Score < 60% (<60 degrees): Unsatisfactory practices.

II) Operational design

• Content validity

Was tested by three experts from Community and Environmental Health Nursing Department, Faculty of Nursing, Ain Shams University to review the tools for clarity, relevance, understanding and applicability and needed modifications were done based on the jury's opinions.

Reliability

The tool was modified and rephrased based on the jury's opinions. This phase took two weeks. Testing reliability of proposed tools was done by Cronbach's Alpha test through SPSS computer package. It was 0.816 for "structured interviewing questionnaire sheet"

Reliability of structured interviewing questionnaire sheet: Cronbach's Alpha was 0.816.

Pilot study

A pilot study was conducted on 10% of total sample those represent 23 mothers having deaf or hearing-impaired children at the previous mentioned settings in order to ensure the clarity of the questions, applicability, feasibility & relevance of the constructed tools used and to determine the time needed to complete the study tools. The results obtained from the pilot study helped in the modification of the study tools where items were corrected, omitted and added as necessary.

Fieldwork

The investigator met the mothers who have deaf and hearing-impaired children to collect the data through three months in a period from the beginning of February 2024, until the end of April 2024. The study was done during the morning time, two days per week (Sundays and Mondays). The investigator attended at the schools from 08.00 a.m. to 01.00 p.m. 30 minutes were needed for data collection from each participant. The questionnaire required to fill was filled by the investigator. The investigator reassure that the joining is voluntary and the participant has the right to withdraw at any time, beside that all information is confidential and the name is anonymous. Data collected were done through interviewing with participant at school.

Ethical considerations

Prior study conduction is required ethical approval letter was obtained from the Scientific Research Ethics Committee of Faculty of Nursing /Ain Shams University before starting the study. The investigator clarified the objectives and aim of the study to mothers included in the study before starting. Verbal approval consents were obtained from the mothers having deaf or hearing-impaired children to participate in this study; a clear and simple explanation was given according to their level of understanding. They were assured and secured that all gathered data was confidential and used to research purpose only. The investigator was assuring maintaining anonymity and confidentiality of subjects' data would be guaranteed in the study.

III) Administrative design:

To carry out this study, an official permission was obtained from the dean of Faculty of Nursing, Ain Shams University to the directors of these schools for explaining the aim of the study in order to obtain their permission and cooperation for explaining the aim of the study.

IV) Statistical design:

Recorded data were analyzed using the statistical package for social sciences, version 22.0 (SPSS Inc., Chicago, Illinois, USA). Quantitative data were expressed as mean± standard deviation (SD). Qualitative data were expressed as frequency and percentage.

The following tests were done:

- > Chi-square (χ^2) test of significance was used in order to compare proportions between qualitative parameters.
- Pearson's correlation coefficient (r) test was used to assess the degree of association between two sets of variables
- The confidence interval was set to 95% and the margin of error accepted was set to 5%. So, the p-value was considered significant as the following:
- Probability (P-value)
- P-value <0.05 was considered significant.
- P-value <0.001 was considered as highly significant.
- P-value >0.05 was considered insignificant.

Results

Table (1): Represents that, 44.8% of mothers age ranged between 35-<45 years with mean & SD of age 35.41±5.31 year. As regard educational level 69.6% weren't read or write, 84.8% of them were married while, 88.3%, 90.0% and 93.0% were house wives, from urban place and had insufficient family income level respectively.

Table (2): Reveals that, 40% of the children's age ranged between 7-<13 years old with mean &SD 12.25 ± 1.84 of age and at primary stage of education. Males and females are in two equal proportions 50%, as regard child's birth order in the family 44.8% they represent the third child in the family.

Figure (1): Illustrates that, 62.6% of mothers had unsatisfactory knowledge

regarding health problems and health needs. Meanwhile, 37.4% of them had satisfactory knowledge regarding health problems and health needs about their deaf and hearing-impaired children.

Figure (2): Shows that, 79.6% of mothers did unsatisfactory reported practices while, 20.4% did satisfactory reported practices regarding the total health problems and health needs of their deaf and hearing-impaired children.

Table (3): Clarifies that, there were positive relation between total score of knowledge and total score of reported practices regarding deaf and hearingimpaired children. Also, there were no statistically correlation between the two variables regarding health problems and health needs about their deaf and hearing-impaired children.

Table (1): Number and percentage distribution of mothers according to their sociodemographic data (N=230).

Personal data of the mother	No.	%
Age (years):		
<25 years	35	15.2
25-<35 years	69	30
35-<45 years	103	44.8
\geq 45 years	23	10
Mean± SD	35.41±3	5.31
Education level:		
Don't read and don't write	160	69.6
Primary education	35	15.2
Intermediate education	23	10
University/Postgraduate	12	5.2
Marital status		
Married	195	84.8
Divorced	23	10
Widow	12	5.2
Occupation:		
Housewife	203	88.3
Employee	10	4.3
Other (freelancer)	17	7.4
Place of residence:		
Urban	207	90
Rural	23	10
Family income:		
Sufficient	16	7
Insufficient	214	93

Socio demographic data for child:	No.	%
Age (years)		
<7 years old	23	10
7-<13 years old	92	40
13-<16 years old	69	30
16-18 years old	46	20
Mean± SD	12.25±1.84	
Educational Stage:		
Kindergarten (Nursery)	23	10
Primary stage	92	40
Preparatory stage	69	30
Secondary stage	46	20
Gender (Sex):		
Male	115	50
Female	115	50
Child's Birth Order in the Family:		
First	32	13.9
Second	58	25.2
Third	103	44.8
Fourth	23	10
Fifth or more	14	6.1

Table (2): Number and percentage distribution according to the child's demographic data (N=230).



Fig. (1): Percentage distribution of mothers' total knowledge regarding health problems and health needs of their deaf or hearing-impaired children



Fig. (2): Percentage distribution of the total mothers' reported practices regarding health problems and health needs of their deaf /hearing-impaired children.

 Table (3):
 Correlation between total score of knowledge and total score of reported practices regarding deaf and hearing-impaired children (N=230).

		Total score of practice
Total score of	r	0.197
knowledge	p-value	0.583
	Ν	230

Discussion

As regard to age of mothers, the present study result represented that, less than half of mothers age ranged between 35 - -< 45 years with mean & SD of age 35.41 ± 5.31 year (Table 1).

This result disagreed with **Bakry et al.** (2019) who studied "Hearing loss-related knowledge and attitude toward neonatal hearing screening among Egyptian parents" among 384 parents in Egypt and found 57% of mothers were in the age group of 30-40 years.

As regard educational level among mothers, less than three quarters of mothers weren't read or write **(Table 1)**.

This finding contradicted with **Graham et al. (2019)** who studied "Mapping the content of mothers' knowledge, attitude and practice towards universal newborn hearing screening for development of a KAP survey tool" among 145 participants in South Africa and found 31% of them had high school education.

From the investigator point of view this result may be due to Egyptian culture and community usually attention to marriage of women than education. As regard to marital status among mothers, the present study result showed that most of mothers were married (**Table 1**). This result supported by **Abo Zed**, & **Metwally**, (**2024**) in a study entitled " Stress coping strategies and their relationship to family adjustment for mothers of hearing-impaired children" among 100 mothers in Egypt and reported that 100% of mothers were married.

The present study result showed that, the majority of mothers were housewives, living in urban place and had insufficient family income level respectively (**Table 1**).

This result was supported with **Elsayed et al. (2023)** who applied study to "assess mothers, knowledge and attitude regarding early detection of hearing loss among their children in Port Said City" among 279 mothers in Port Said Egypt and showed that highly percentage of mothers 58.8% of them living in urban areas, 36.2% had insufficient family income. While disagree in relation to occupation, 67.7% of them were working.

The present study result revealed that, less than half of the studied children their age ranged between 7-<13 years old with mean &SD 12.25±1.84 of age and at primary stage of education (**Table 2**).

This result agree with **Karakoc**, & **Mujdeci**, (2021) who applied a study entitled " Evaluation of balance in children with sensorineural hearing loss according to age" among 80 children in Turkey and reported that 40% of the children in the age group from 6-10 years old.

As regard child's birth order in the family, less than half of them they are the third child in the family **(Table 2).**

This result was in agreement with **Mohamed et al. (2022)** who conducted a study to "assess mothers awareness toward care of their children suffering from

hearing loss" among 150 mothers in Egypt and revealed that 44.7% less than half of the studied children were third and more in their families

As regard to gender of the studied children, the present study result showed that half of the children were male, and female respectively (**Table 2**).

This result agreed with Qi et al. (2020) who studied "Quality of Life of Hearing-Impaired Middle School Students: a Cross-Sectional Study in Hubei Province, China." Among 437 students and found that 51.70% of the studied children were male. with Also. this result contradicted Alramamneh et al.,(2020) who applied a study entitled " Psychological and social problems of hearing-impaired students and the adopted coping strategies in deaf schools" among 150 hearing-impaired students in Jordan and reported that 45% of the studied children were males

Concerning total knowledge of mothers' regarding health problems and health needs about their deaf or hearingimpaired children, the present study result illustrated that less than two thirds of mothers had unsatisfactory knowledge regarding health problems and health needs about their deaf and hearing-impaired children (Figure, 1).

This finding is in consistent with Elbeltagy et al. (2019), who found that 50% of the parents had a good level of knowledge about hearing loss. These results were in accordance with Alsudays et al. (2020) whose conducted study in Oassim, Saudi Arabia among 243 participants as "Parental entitled knowledge and attitudes to childhood hearing loss and hearing services" who stated that, 57.6% of the studied samples had poor knowledge and only 20% of the studied samples had good knowledge about hearing impairment. This result was supported with **Mahmoud et al. (2021)** who applied study to examine "caregiver's awareness regarding their children under five years with hearing impairment" among 450 caregivers in Egypt and reported that 55.6% highly percentage of studied caregiver's had poor knowledge about hearing impairment. This could be attributed to lack of the mothers' knowledge about the nature of the disease, poor representation of the disability and its effects in mass media and poor counseling systems in rehabilitation centers.

As regard total reported practices of mothers regarding health problems and health needs about their deaf /hearingimpaired children more than three quarters of mothers did unsatisfactory reported practices, while less than one quarter did satisfactory reported practices regarding the total health problems and health needs about their deaf and hearing-impaired children (Figure, 2).

This result was supported bv Mohamed et al. (2022) who conducted a study to assess "mothers' awareness toward care of their children suffering from hearing loss" among 150 mothers in Egypt and revealed that 60% less than two thirds of them had inadequate reported practices regarding care of their children. while disagree with El Mezaven et al. (2023) who showed that 74% of the studied parents had reported inadequate practices related to hearing aids skills for their children hearing aids. From the investigator point of view, this result may be due to level of education among mothers and level of unsatisfactory knowledge regarding health problems and health needs about their deaf or hearingimpaired children.

As regard correlation between total score of knowledge and total score of reported practices regarding deaf and hearing-impaired children, the present study result clarified that, there were positive relation between total score of knowledge and total score of reported practices regarding deaf and hearingimpaired children. Also, there were no statistically correlation between total score of knowledge and total score of reported practices regarding deaf and hearingimpaired children.(Table 3).

This result was unsupported by Said et al. (2023) who applied a study to explore "the effect of empowerment Program on reducing burnout for mothers having children suffering from hearing impairment" among 220 mothers in Egypt and reported that there were negative correlations between mothers' total knowledge, and reported practices about hearing impairment.

Conclusion

There were a positive correlation between mothers' knowledge and mothers' reported practices regarding health problems and health needs about their deaf and hearing-impaired children represented positive relation.

Recommendations

- Health education directed to Mothers' children of hearing-impairment or hearing loss to improve their knowledge and practices regarding health needs and problems
- Improving social skills and communication for children with family, peers, teachers and/or others to improve sign language using.
- Rehabilitation program should be held to satisfy the requirements of the children who are deaf or have hearing loss.

Coordination with other community resources to manage deaf and hearingimpaired children's problems.

Further research

- To apply more researches for children with hearing impairment for early detection of any physical, social and psychological health problems.
- Factors make the mothers of deaf and hearing-impaired children not commit periodic follow up.

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