



## **Effect of Empowerment Program on Reducing Burnout for Mothers having Children Suffering from Hearing Impairment**

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### **ABSTRACT**

**Background:** Childhood hearing impairment is a significant cause of disability and affects not only the language development of the child but also, can affect in child's social, emotional, cognitive and educational development. As well, hearing impairment can increase the negative attitude and burnout of their mothers.

**Aim:** This study was carried out to assess the effect of empowerment program on reducing burnout for mothers having children suffering from hearing impairment. **Research Design:** A quasi-experimental research design was used.

**Setting:** The study was conducted at the Hearing and Speech Institute in Embaba, Nile Corniche, Cairo, Egypt. **Sample:** A purposive sample composed of 220 mothers having children with hearing impairment.

**Tools:** Four tools were used in this study: **Tool one:** An interview questionnaire which consisted of the following: **Part I:** a) Characteristics of studied mothers. b) Characteristics of studied children. c) Past and present medical history of child and family. **Part II:** Mothers' knowledge about hearing impairment.

**Tool II:** Mothers' Attitude Likert Scale regarding their children with hearing impairment. **Tool III:** Mothers' Reported Practice Likert Scale. **Tool IV:** Mothers' Burnout regarding their children with hearing impairment.

**Results:** The current study revealed that, 61.4% of studied mothers had poor knowledge, 58.2% of them had a negative attitude, 61.8% of them had inadequate reported practices and 69.1% of studied mothers had high burnout regarding hearing impairment at preprogram, which changed to 87.3% of them had good knowledge, 85% of them changed to positive attitude, 86.4% of them had adequate reported practices and 74.1% changed to low burnout at post program. **Conclusion:** The empowerment program improved the studied mothers' good knowledge, positive attitude, adequate reported practices and decreased mothers' burnout about hearing impairment of their children. As well, there were negative correlations between mothers' total burnout, knowledge, attitude and reported practices about hearing impairment.

**Recommendations:** Mothers of children with hearing impairment should be provided with continuous workshops about hearing impairment and its management. Children suffering from hearing impairment should have periodical hearing assessment.

**Keywords:** Burnout for mothers, Empowerment program, Hearing impairment.

## Introduction

Hearing impairment (HI) refers to any degree of hearing loss, that range from mild to severe and can occur when there is a problem with a part of the ear, including the inner, middle and outer ears, or the nerves needed for hearing. Hearing impairment is often used generically to describe a wide range of hearing losses. An impairment in hearing, whether permanent or fluctuating, that adversely affects a child's educational performance (Cohen et al., 2020).

Hearing impairment is a handicapping condition that affects the normal functioning of the child and is considered one of the most prevalent global health concerns. Hearing impairment is the most prevalent sensory impairment in both childhood and adulthood. Childhood hearing impairment is a significant cause of disability and affects not only the language development of the child but also many aspects of the child's social, emotional, cognitive and educational development (Banda et al., 2021).

Signs and symptoms of hearing impairment are different, for different child they include; infant move or cry in reaction to unexpected loud noises after 6 months of age, does not say single words, such as “dada” or “mama” by one year of age, infant turns head when sees persons but not if call out name. These sometimes are resulting from a partial or complete hearing impairment, pays attention to vibrating noises or noises that can be felt rather than heard and seems inconsistent response to

sound (Centers for Disease Control and Prevention (CDCP), 2019).

The other signs and symptoms include the child complains of a buzzing or ringing sound in the ear, discharge from the ears, frequent colds, frequent earaches, fails to respond when called from a distance, fails to respond to verbal directions, the child responds only when child sees the speakers face, asks the speaker to repeat words (often says huh) and gives wrong answers to simple questions (American Speech-Language-Hearing Association, 2020).

Hearing impairment in children can be classified into congenital and acquired. Congenital hearing impairment can be caused maternal infections such as rubella, cytomegalovirus or herpes simplex virus; prematurity; low birth weight, complications associated with the Rhesus (Rh) factor in the blood maternal and toxemia during pregnancy (Samdi et al., 2019). Acquired HI may be the result of an illness or injury such as perforations of the eardrum are usually due to untreated ear infections as otitis media (very common in children), certain drugs as antibiotics, chemotherapy drugs, head injury, tumor, foreign bodies in the ear canal can block the passage of sound and blockage in the middle ear is most common cause of hearing impairment (World Health Organization (WHO), 2020).

Hearing screening for all newborns infants is recommended for early detection and intervention to all newborn infants within one

month of age, ideally before going home from the hospital. A variety of tests can be used to identify and diagnose a hearing impairment such as Auditory Brainstem Response (ABR) Test, Otoacoustic Emissions (OAE) Test, Pure-tone test also known as Behavioral Audiometry Test and Visual Reinforcement Audiometry Test. The method used depends on the age of the child and degree of hearing impairment (Khan et al., 2020).

Hearing impairment, if left untreated can cause social, psychological, behavioral and cognitive problems which include reduced quality of life and well-being, increased stress, shy, social withdrawal, embarrassment and fear of rejection from peers caused by a drop in self-esteem and confidence. Potential health complications from hearing impairment can include vestibular, balance and motor dysfunctions as muscle tension, severe headache, severe otalgia, disequilibrium and vertigo (Brown, 2020).

The presence of hearing impairment in under-five year's children may have substantial impact on a child's social, emotional and language development. Mothers play a pivotal role in how children with hearing impairment function within their families, school, and environment. Mothers are central to the development of communication and other social skills among children with hearing impairment. In addition, seeking about best interventions to improve child health (Ahmed et al., 2020).

Mothers' burnout is a state of physical, emotional and mental exhaustion that may be

accompanied by a change in attitude from positive and caring to negative and unconcerned. Burnout can occur when mothers don't get the help they need or if try to do more than they are able physically or financially. Other risk factors that increase mothers' burnout include mother's characteristics, when has lower knowledge about hearing impairment, lower monthly income acts as barrier in regularity of treatment and follow up for their affected children, lower education level acts as a barrier in understanding the nature of disease and lower physical health makes mothers' fatigue easily and leads to increase burnout (Beheshtipour et al., 2021).

Empowerment program for mothers is a process, where mothers are encouraged to take charge of their lives. They do this by addressing their situation and then take action in order to improve their access to resources and transform their consciousness through their beliefs values, attitudes and practices. Empowerment programs of mothers facilitate improving self-efficacy and self-esteem in order to improve developmental outcomes and positive transitions to caring their child with hearing impairment (Ahmed et al., 2020).

Nurse plays an important role in educating mothers about pathologies and risk factors for hearing impairment following illnesses such as; meningitis and certain infections and viruses. Nurse should inform mothers about the importance of hearing screening of newborn infants. Therefore, nurse is in a good position to integrate information and provide mothers with appropriate referral sources. The nurse plays an important role in

coordinating first-level detection and intervention. In addition, nurse can successfully raise awareness about hearing impairment to encourage participation in screening programs in order to reduce complications for child and burnout for mothers (Kilkenny, 2019).

#### Significance of the study

In Egypt, the prevalence of hearing impairment among children under five years was reported as 13.8%. Over 30% of childhood hearing impairment is caused by acquiring certain infections during pregnancy of the mother such as; rubella and cytomegalovirus which lead to hearing impairment in the child. Infections of the ear are quite common in children in low-resource settings (Hamid et al., 2019).

According to United Nations International Children's Emergency Fund (UNICEF, 2019), under-five year's children, in Egypt, constitutes more than a tenth of Egyptian population, about 11.5% of the total population. Fortunately, more than half of under-five child deaths are due to diseases that can be treated or prevented through simple and affordable interventions.

According to (WHO, 2020), the incidence of childhood hearing impairment is very common with global estimates that 5 of every 1000 infants are born with or develop hearing impairment in early childhood. It estimated that around 34 million (>5%) children worldwide have hearing impairment. It is estimated that by the year 2050 over 78 million children will have hearing impairment. Impairment of hearing among children

increases their mothers' burnout and has many undesirable physical, psychological and social effects.

#### **Aim of the study**

The current study aimed to assess the effect of empowerment program on reducing burnout for mothers having children suffering from hearing impairment.

#### **Research hypotheses:**

**H<sub>1</sub>:** Empowerment program will improve studied mothers' knowledge, attitudes and reported practices about hearing impairment of their children in posttest than pretest.

**H<sub>2</sub>:** Empowerment program will reduce burnout of studied mothers in posttest than pretest.

**H<sub>3</sub>:** There will be significant correlations between knowledge, attitudes, reported practices and burnout of studied mothers regarding to their hearing impairment children in posttest than pretest.

#### **Subjects and Methods**

##### **Research design:**

A quasi-experimental research design was used to achieve the aim of the study.

##### **Research setting:**

The study was conducted at the Hearing and Speech Institute in Embaba, Nile Corniche, Cairo, Egypt. It is the first institute in the Middle East to provide an integrated service in the diagnosis and treatment of hearing impairment, speech diseases and speech defects.

## Sample

A purposive sample composed of 220 mothers having children with hearing impairment, attending the previously mentioned settings over a period of eight months were recruited for the study.

### Inclusion criteria

- Mothers having children under 5 years with confirmed diagnosis of hearing impairment.
- Mothers willing to participate in the study and have the ability to complete the questionnaire.

### Exclusion criteria

- Mothers having children with congenital anomalies or other chronic illnesses.

### Sample size:

Based on data from literature **Masoumi et al., (2020)** considering level of significance of 5%, and power of study of 80%, the sample size can be calculated using the following formula:

$$n = \frac{(Z_{\alpha/2} + Z_{\beta})^2 \times 2 \times (SD)^2}{d^2}$$

Where, SD = standard deviation;  $Z_{\alpha/2}$ , for 5% this is 1.96;  $Z_{\beta}$ , for 80% this is 0.84; and d is expected mean difference. Therefore,

$$n = \frac{(1.96 + 0.84)^2 \times 2 \times (1.08)^2}{(0.2885)^2} = 219.7$$

Based on the above formula, the sample size required is 220.

## Tools for Data Collection:

### Tool 1: A structured designed interviewing questionnaire

It was developed by the researchers, based on reviewing the related literature. It was written in simple Arabic language and it includes the following:

**A:** Data characteristics of mothers which include: age, educational level, occupation and place of residence.

**B:** Data characteristics of child which include: age, gender, birth order and kinship between father and mother.

**C:** Past and present medical history of child and family which include: Child condition after birth, previous exposure of the child to otitis media, hereditary of hearing impairment in the family, child exposed to a perforation of the eardrum and degree of hearing impairment.

**Part II:** Mothers' knowledge about hearing impairment of her child such as; meaning of hearing impairment, causes, signs and symptoms, types, degrees and complications of hearing impairment, importance of early detection, type of treatment, method of prevention and role of family in early detection of hearing impairment.

**Scoring system:** For knowledge items, a complete answer was scored 2 grades, incomplete answer was scored 1 grade, and don't know or incorrect was scored zero. Total scores were 20 grades for 10 items, their knowledge was categorized into good knowledge  $\geq 75\%$  equal  $\geq 15$  scores, fair knowledge  $50\% - < 75\%$  equal  $10 - < 15$  scores

and poor knowledge < 50% equal <10 scores.

**Tool II: Mothers' Attitude Likert Scale regarding her child with hearing impairment:** It was adapted by **Kaspar et al., (2017)**. It consisted of 16 statements to assess mother attitude about hearing impairment of her child, for example hearing is an important sense for every child, an audiometer check is useful for child, child with hearing impairment will put a strain on the family, hard to deal with a difficulty hearing child, child with hearing impairment needs more care and attention than his/her sibling, the patience of a mother is very important to deal with a hearing impaired child, feels sympathy and intense love with any child wearing a headphone, feels anxious when child use the headset at a young age, prefers social isolation to the child while wearing the headphone in order to preserve the psychological state and raising awareness about hearing impairment in children is beneficial for dealing with child. The attitude Likert Scale was rated from 1- 3, as follows: Agree equals (3), Neutral equals (2) and disagree equals (1).

#### **Scoring system:**

The total attitude scores were ranged from 16-48 for 16 statements with total score equals 48 grade and classified as:

- Positive attitude  $\geq 60\%$  equals 29-48 grade.
- Negative attitude < 60% equals 16-< 29 grade.

**Tool III: Mothers' Reported Practice Likert Scale regarding Care for her Child with Hearing**

**Impairment:** It was adapted by **Riddhima & Rajesh (2021)**. Reported Practices consist of 12 items such as, check the quality of the hearing aids performance, clean the speaker with a dry soft cloth, ensure that the mold is dry before reconstituting, give the child treatment regularly as prescribed by the doctor, mixing tablets or capsules with essential foods such as milk and follow up with the doctor continuously. The Practices Likert Scale was rated from 1- 3 as follows: Always (3), Sometimes (2), and Never (1).

#### **Scoring system:**

The total practices' score were ranged from 12-36 for 12 items and categorized as the following:

- Adequate ( $\geq 60\%$ ) equals 22-36 grade.
- Inadequate (<60%) equals 12-< 22 grade.

**Tool IV: Mothers' burnout regarding their child with hearing impairment:** It was adapted by **Schaufeli et al., (2019)**. It consists of 4 dimensions as follows, emotional exhaustion contains 16 items, social exhaustion contains 15 items, depersonalization contains 4 items and involvement contains 3 items. The Burnout Likert Scale was rated from 1- 3 as follows: Always (3), Sometimes (2), and Never (1).

#### **Scoring system**

The total scores were 114 for 38 statements and were classified as the following:

- High burnout  $\geq 75\%$  equals  $\geq 86$  scores.
- Moderate burnout 50% - < 75% equals 57-< 86 scores.
- Low burnout < 50 % equals <57 scores.

**Data collection procedures:**

- **Study Period:** Data were collected during a period of 8 months started from started from 20<sup>th</sup> of December 2021 to 20<sup>th</sup> of August 2022.

- **Approval:** An official letter was addressed to the director of the Hearing and Speech Institute. The researchers explained the purpose and benefits of this study. The director was informed about the study aim, time and date of data collection.

- **Ethical considerations:** The agreement of the studied mothers to participate in the study was taken. Mothers were assured that all collected data taken from them would be treated confidentially and used for the research purpose and their benefit only. Mothers' anonymity, confidentiality, privacy, safety and protection were secured.

**Tool development:****a- Validity**

The study tools were evaluated for validity by a panel of 3 experts from Pediatric and Community Health Nursing Departments. Modifications requested were done accordingly to ascertain relevance and completeness.

**b- Reliability**

Reliability coefficients were calculated as follows: for the studied mothers' knowledge, Cronbach's Alpha was 0.897; for attitude of mothers toward hearing impairment of their children, Cronbach's Alpha was 0.921, for mothers' reported practices, Cronbach's Alpha was 0.954; and for mothers' burnout, Cronbach's Alpha was 0.882.

**c- Pilot study**

A pilot study was conducted on 10% (22) of the studied mothers to test the tools for clarity and applicability and to estimate the time needed for filling in the tools. Data obtained from the pilot study were analyzed and accordingly the necessary modifications on the study tools were done. Mothers who participated in the pilot study were included in the main study sample.

**d- Field work:** The researchers were available in the study settings for two days per week. The researchers introduced themselves and explained the aim of the study to mothers before their enrollment in the study and mothers' consents were obtained. Each mother was interviewed individually using the previously mentioned study tools. The questionnaire was introduced to the mother and the answers were marked by the researchers. Each interview took about 15-20 minutes to fill in the questionnaire at pretest.

**Empowerment program:** It was designed by researchers to satisfy the actual need of the studied mothers to enhance their knowledge, attitudes, reported practices; and to reduce mothers' burnout about their children with hearing impairment. The empowerment program was constructed in four phases:

**1. Assessment phase:** The preliminary stage was done by utilizing the assessment tools after being revised and tested for general information about hearing impairment. It consisted of the pretest results for identification of studied mothers' needs and time expended for answering the study sheets ranged from 15-20 minutes. An analysis of the obtained pretest data was then done to help in designing the empowerment program.

**2. Planning phase:** A program about hearing impairment was developed based on the outcome acquired from the

assessment phase. The educational sessions were designed small group discussions, lectures, brainstorming, after reviewing of related literature, detected needs handouts, role playing, demonstration and requirements and deficiencies were converted into aim and demonstration wherever needed. The teaching aids used objectives of the educational sessions.

**3. Implementation phase:** Mothers under study were 220, they were divided into 11 groups and each group consisted of 20 mothers. The empowerment program was implemented in the form of four sessions: two sessions for theory and two sessions for practices. The length of every session was distinctive according to studied mothers' response and time accessible. At the beginning of each session, the researchers started by a summary about what was given through the previous session and objectives of the new one, taking into consideration using simple and clear Arabic language to suite the educational level of the studied mothers.

The theoretical sessions cover the part, which included: Meaning of hearing impairment, causes, signs and symptoms, types, degrees and complications of hearing impairment. It includes also, the importance of early detection, types of treatment, methods of prevention and role of family in early detection of hearing impairment.

The practical sessions cover practices regarding cleaning ear phone, checking the batteries, checking the quality of ear phone performance. These sessions includes also, assuring proper positioning for child during giving treatment, and different methods of medication for children under five years.

The studied mothers were interviewed in a private room. Different teaching methods were used including

were brochures and colored posters. At the end of each session, the studied mothers were informed about the content of the next session and its time. The empowerment program was guided by an illustrated booklet developed by the researchers and offered to the studied mothers as reference, containing necessary information about hearing impairment and important practices to reduce mothers' burnout.

**4. Evaluation of the program:** Sessions were done immediately after intervention by comparing the changes in studied mothers' levels of knowledge, attitudes, reported practices and burnout through applying the same tools of pretest as posttest.

### Statistical Analysis

Data were analyzed using the Statistical Package for Social Sciences (SPSS), version 22. The first part of data was descriptive data, which were coded, revised, tabulated and statistically analyzed using numbers, percentages, mean, standard deviations; variables were compared using paired t-test. The second part of data dealt with correlations between different variables, Spearman's correlation analysis was used for the assessment of the interrelationships among scored and ranked variables. Degrees of significance of the results were non-significant (NS) if  $P > 0.05$ , significant (S) if  $P \leq 0.05$  and highly significant (HS) if  $p \leq 0.001$ .

### Results



**Table (1).** Shows characteristics of studied mothers, 43.2% of them were in the age group between 30 - < 40 years with a mean  $\pm$ SD of  $39.6 \pm 6.1$ , while 50% of them had secondary education and 77.3% of them were married. However, 59.1% of studied mothers were housewives and 65.5% were belonging to urban residence.

**Table (2).** Reveals that 59.1% of the studied children aged 1- < 3 years with a mean  $\pm$  SD of  $2.7 \pm 0.9$  and 60.5% of them were male. As well, 56.8% of studied children were first order between their siblings. As regards kindship, between husband and wife only 43.2% of studied children have relative relationship and 47.4% of them were first degree of kindship.

**Table (3).** Shows that, 47.9% of studied children were normal at birth and 71.4% were exposed to recurrent otitis media, while 39.5% them were exposed to otitis media from 3-< 6 times. As regards history of hearing impairment in the family, 81.8 % had negative history. As well, 39.1% of children were exposed to a perforation of the eardrum and for 48.8% of perforations the cause was frequent infections of the middle ear. Concerning the degree of hearing impairment in a child, 66.8% of them had mild degree.

**Figure (1).** Demonstrates that, 61.4% of studied mothers had poor knowledge at preprogram, which improved to 87.3% of them had good knowledge at the post program. The difference among pre and post intervention was a highly statistically significant difference ( $X^2 = 235.811$  at  $P < 0.001$ ).

**Figure (2).** Clarifies that, 58.2% of studied mothers had a negative attitude regarding hearing impairment in preprogram, while at post program, 85% of them changed to positive attitude. The difference among pre and post program was a highly statistically significant difference ( $X^2 = 88.403$  at  $P < 0.001$ ).

**Figure (3).** Illustrates that, 61.8% of studied mothers had inadequate reported practices at preprogram, which improved to 86.4% of them had adequate practices at post program. The difference between pre and post program was highly statistically significant difference ( $X^2 = 108.694$  at  $P < 0.001$ ).

**Table (4).** Reveals highly statistically significant differences regarding domains of burnout of studied mothers at pre/post program ( $p < 0.001$ ). Mean  $\pm$ SD of emotional exhaustion, social exhaustion, depersonalization and involvement were  $47.6 \pm 6.0$ ,  $42.7 \pm 6.4$ ,  $9.7 \pm 2.5$  and  $7.0 \pm 2.4$  respectively at preprogram which decreased to  $26.5 \pm 4.0$ ,  $23.9 \pm 3.5$ ,  $5.2 \pm 1.8$  and  $3.9 \pm 1.5$  respectively at post program.

**Figure (4).** Clarifies that, 69.1% of studied mothers had high burnout regarding hearing impairment of their children in preprogram, while at post program it decreased to 11.4% of them had high burnout. The difference between pre and post program was a highly statistically significant difference ( $X^2 = 205.375$  at  $P < 0.001$ ).

**Table (5).** Shows a negative statistically significant correlation between total burnout scores and total knowledge scores ( $r = - 0.256$  at  $p = 0.006$ ), as well, a negative statistically significant correlation

between total burnout scores and total attitude scores ( $r = -0.231$  at  $p = 0.013$ ), and also, a negative statistically significant correlation between total burnout scores and total reported practice scores ( $r = -0.207$  at  $p = 0.027$ ) at post program regarding hearing impairment.

**Table (1): Characteristics of Studied Mothers (n=220).**

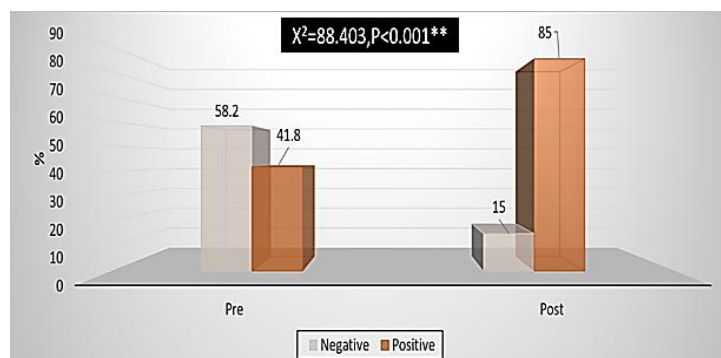
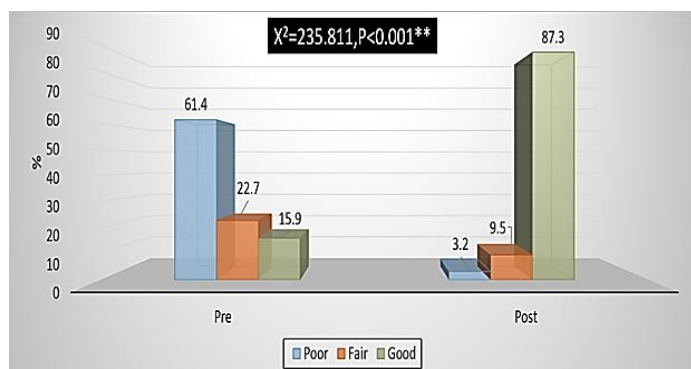
Variables	No.	%
<b>Mothers' age (years)</b>		
< 20	25	11.4
20 - <30	65	29.5
30 - < 40	95	43.2
40 - ≤ 50	35	15.9
<b>Mean ±SD</b>	39.6 ±6.1	
<b>Mothers' education level</b>		
Don't read & write	10	4.5
Read and write	25	11.4
Basic education	35	15.9
Secondary education	110	50.0
University education & higher	40	18.2
<b>Marital status</b>		
Married	170	77.3
Divorced	31	14.1
Widow	19	8.6
<b>Mothers' job</b>		
Employed	90	40.9
Housewife	130	59.1
<b>Residence</b>		
Urban	144	65.5
Rural	76	34.5

**Table (2). Characteristics of the Studied Children with Hearing Impairment (n=220).**

Variables	No.	%
<b>Child's Age (Years)</b>		
1- < 3	130	59.1
3- < 5	90	40.9
<b>Mean ±SD</b>	2.7 ± 0.9	
<b>Child's Gender</b>		
Male	133	60.5
Female	87	39.5
<b>Child's order among sibling</b>		
First	125	56.8
Second	45	20.5
Third	35	15.9
Fourth and more	15	6.8
<b>Kindship between husband and wife</b>		
Yes	95	43.2
No	125	56.8
<b>If yes, the degree of kindship with the husband (n=95)</b>		
1 <sup>st</sup> Degree	45	47.4
2 <sup>nd</sup> Degree	50	52.6

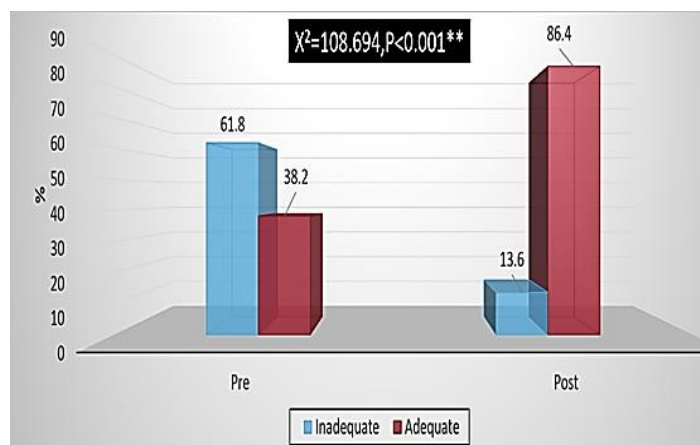
**Table (3). Past and Present Medical History of Child and Family (n=220).**

Variables	No.	%	cont...	No.	%
<b>Condition of the child at birth</b>			<b>If yes, who is suffering from hearing impairment (n=40)</b>		
Normal	105	47.9	Father	14	35.0
Cyanosis	18	7.8	Mother	11	27.5
Low birth weight	72	32.7	Brother/Sister	10	25
Premature	13	6.0	Grandfather /grandmother	5	12.5
Hyperbilirubinemia	12	5.5			
<b>Child exposed to recurrent otitis media</b>			<b>Child exposed to a perforation of the eardrum</b>		
Yes	157	71.4	Yes	86	39.1
No	63	28.6	No	134	60.9
<b>If yes, how many times (n=157)</b>			<b>Causes of perforation of the eardrum (n=86)</b>		
< 3	57	36.3	Frequent infections of the middle ear	42	48.9
3- < 6	62	39.5	loud noise like explosions	23	26.7
≥ 6	38	24.2	Slapping on the ear	11	12.8
			Foreign bodies entering the ear	10	11.6
<b>Hereditary of hearing impairment in the family</b>			<b>Degree of hearing impairment in children</b>		
Positive	40	18.2	Mild hearing impairment	147	66.8
Negative	180	81.8	Moderate hearing impairment	46	20.9
			Severe hearing impairment	27	12.3

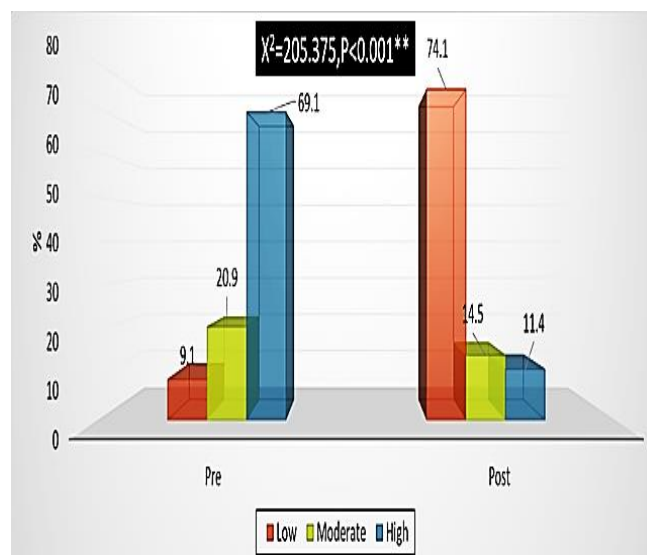


**Figure (1). Total Knowledge Score of Studied Mothers at Pre / Post Program about Hearing Impairment of their Children (n=220).**

**Figure (2). Total Attitude of Studied Mothers at Pre/Post Program regarding Hearing Impairment of their Children (n=220).**



**Figure (3). Total Reported Practices of Studied Mothers at Pre/Post Program regarding Hearing Impairment of their Children (n=220).**



**Figure (4). Total Scores of Mothers' Burnout regarding Hearing Impairment of their Children at Pre/ Post Program (n=220).**

**Table (4). Mothers' Burnout regarding Hearing Impairment of their Children at Pre / Post Program (n=220).**

Total domains of burnout	Pre-program	Post-program	Mean - difference	t-test	P
	Mean ±SD	Mean ±SD			
Emotional exhaustion	47.6 ±6.0	26.5 ±4.0	21.1	43.189	<0.001**
Social exhaustion	42.7 ±6.4	23.9 ±3.5	18.8	38.086	<0.001**
Depersonalization	9.7 ±2.5	5.2 ±1.8	4.5	21.504	<0.001**
Involvement	7.0 ±2.4	3.9 ±1.5	3.1	16.838	<0.001**
Total Burnout Scores	107.1 ±17.2	59.5 ±9.5	47.6	35.822	<0.001**

**Table (5): Correlations between Scores of Burnout, Knowledge, Attitudes and Reported Practice at Post Program (n=220).**

Items	Total burnout scores						r	P
	Low (n=163)		Moderate (n=32)		High (n=25)			
	No.	%	No.	%	No.	%		
<b>Knowledge Scores</b>								
Poor knowledge	7	4.3	0	0.0	0	0.0		
Fair knowledge	21	12.9	0	0.0	0	0.0		
Good knowledge	135	82.8	32	100.0	25	100.0	- 0.256	0.006*
<b>Attitude scores</b>								
Negative attitude	30	18.4	3	9.4	0	0.0		
Positive attitude	133	81.6	29	90.6	25	100.0	- 0.231	0.013*
<b>Reported practice scores</b>								
Inadequate practice	28	17.2	2	6.3	0	0.0		
Adequate practice	135	82.8	30	93.7	25	100.0	- 0.207	0.027*

## Discussion

Hearing impairment has a significant impact on both the child and the mother. In children, the problem is compounded since normal hearing provides the primary source for acquisition of language, speech and cognitive skills. The HI can cause delay in the development of communication skills, learning problems that result in reduced academic achievement and communication difficulties which often lead to social isolation. Early interventions in the form of mothers' psychological supports will help them overcome the

effects of their children's disability. Furthermore, these interventions can support the mothers, reduce their burnout and enhance the child's growth (American Speech-Language-Hearing Association, 2020).

Therefore, this study was conducted to assess the effect of empowerment program on reducing burnout for mothers having children suffering from hearing impairment.

Concerning characteristics of studied mothers, the present study results revealed that, more than

two fifths of the studied mothers were in the age group from 30 - < 40 years with a mean  $\pm$ SD of 39.6  $\pm$ 6.1, more than three quarters of the sample were married, half of them had secondary education, more than half of them were housewives and slightly less than two thirds of sample reside urban areas. From the researchers' point of view, these may be due to increased awareness about the importance of education, lack of opportunity of jobs and community culture that prefers the mothers to stay at home. The current results are congruent with those of **Ehlert & Coetzer (2020)**, in South Africa, who studied "Maternal knowledge and views regarding early hearing detection and intervention in children aged 0-5 years at a semi-urban primary care clinic in South Africa", and found that 44.8 % of mothers were in age 30-<40, 50.1% of mothers had secondary education and about two thirds of them were housewives and reside urban areas. As well, these results were supported by **Ayas & Yaseen (2021)**, in Arab Emirates, whose study entitled "Knowledge and attitudes of parents towards childhood hearing loss and pediatric hearing services in Sharjah, United Arab Emirates" and found that about half of mothers had secondary education and more three fifths were housewives.

Regarding to characteristics of child with hearing impairment, the current study results indicated that, less than three fifths of children's age ranged from 1 - <3 years with a mean age of 2.7  $\pm$ 0.9 years, slightly more than three fifths of studied children were males, more than half of children were first order among their siblings and more than two fifths of studied children have relative relationship. The current results agreed

with those of **Ali et al. (2019)**, in Egypt, whose study entitled "Family caregiver's adjustment for their children with hearing impairment", and reported that, 58.6% of children aged 1- < 3 years, 60.1% of them were males and 43.9 % of them have relative relationship. This result was also consistent with those of **Zaqqout and Hamad (2022)**, in Palestine, who in their very recent study entitled "Risk factors for hearing impairment in infants and toddlers in the Gaza governorates: A case-control study", and revealed that, more than half of studied infants and toddlers were in age group from 1 -<3 years with a mean age of 2.1  $\pm$ 0.6 years, and also more than half of them were males and were first order among their siblings.

Concerning past and present medical history of child and family with hearing impairment, the present study showed that less than half of children had normal condition at birth, less than three-quarters of them were exposed to recurrent otitis media, more than three quarters had negative family history of hearing impairment, slightly less than two fifths of them were exposed to a perforation of the eardrum and almost two thirds of studied children had mild hearing impairment. From the researchers' point of view, these results could be explained as otitis media and perforation of the eardrum are considered the main risk factors for hearing impairment in children. These current results are similar to those of **Ankle et al. (2019)**, in India, who studied "Hearing impairment and its associated causes among children below 5 year age group using brainstem evoked response audiometry", and found that, 78.2% had negative family history of hearing impairment, 69.2 % of children were exposed to recurrent otitis media and 67.8% of children had mild

hearing impairment. Similarly, these results were congruent with those of the study carried out by **Poole et al. (2021)**, whose study conducted in Pokhara, Nepal, entitled "Knowledge, attitudes, beliefs and practices related to chronic hearing impairment and suppurative otitis media in children" and found that, 61.2% and 34.8% of the children were exposed to recurrent otitis media and perforation of the eardrum respectively.

Regarding to total knowledge scores of the studied mothers about hearing impairment, the current study result demonstrated that, more than three fifths of studied mothers had poor knowledge before the program, while after program implementation, the majority of them improved to good knowledge. From the researchers' point of view, this may be due to an unawareness of mothers regarding knowledge about hearing impairment of their children before program while after educating them, the mothers' knowledge was improved. Interestingly, this may be attributed to mothers' desire to seek information to increase their awareness about their children's condition. So, mothers' knowledge played a crucial role in determining the success of the Universal Newborn Hearing Screening UNHS, since poor knowledge of the mothers can lead to late diagnosis and treatment. These current result was consistent with the finding of a study conducted by **Ingber et al. (2019)**, in Israel, who studied "Mothers' involvement in early intervention for children with hearing loss" and reported that in pretest, 62.8% had poor knowledge and only 13.8% of them had good knowledge, while in the post test 87.9% of studied sample had good knowledge regarding hearing impairment. These

results were similar to those of **Firoozeh et al. (2019)**, in Iran, who studied "Family-based training program: The role of mothers' empowerment in the speech development of children with hearing impairment", and reported that more than half of mothers had poor knowledge at preprogram which improved to reach more than four fifths of them had good knowledge at post program and there was a significant difference between pre-test and post-test knowledge scores. As well, all these previous results were in agreement with those of **Doostzade et al. (2019)**, in Iran, whose study entitled, "The effectiveness of family-centered early intervention based on psychological well-being on the general health of mothers of children with hearing impairment", which revealed that, there was significant increase in the mean score of knowledge of mothers in the experimental group than the control group at post intervention.

Regarding total attitude scores of studied mothers, the current study results showed that, more than half of studied mothers had a negative attitude at preprogram about hearing impairment, while at post program, the majority of them changed to positive attitude. From the researchers' point of view, this may be attributed to the positive effect of the program implementation among studied mothers in enhancing of their attitudes about hearing impairment of their children. This finding was in agreement with that of **Bashatwa (2021)**, in Saudi Arabia who studied "The effectiveness of a counseling program in reducing psychological stress and changing the attitudes of families of hearing disabilities towards their children with

hearing disabilities" and reported that a change was done in attitude to be positive after counseling program. This result was in the same line with that of the study done by **Ashori & Abkenar (2019)**, in Iran whose study entitled "The effect of positive parenting program on interaction of mother and deaf child" revealed that a highly statistically significant improvement in positive attitude in post program than preprogram..

Concerning total reported practices scores of studied mothers, the current study results showed that, more than three fifths of them had inadequate reported practices at preprogram about hearing impairment of their children, while at post program, the majority of them had adequate reported practices with a highly statistically significant difference. This may be due to that mothers' knowledge reflected on the level of practices toward hearing impairment of children as well as the effectiveness of the program in improving their practices. The current result is in accordance with that of the study conducted by **Ingber et al. (2019)**, which reported that statistically significant improvement in reported practices of mothers about hearing loss of their children at post intervention. As well, this result is congruent with that of **Amiri et al. (2021)**, in Iran, who recently studied "Behavioral modification methods and maternal parenting styles among mothers with hearing-impaired children" and found improvement in practices in their experimental group than the control group of studied mothers with hearing impaired children.

Hence, the research hypothesis (H1) which stated that, empowerment program will improve studied mothers' knowledge, attitudes and reported practices about hearing impairment of their children in posttest than pretest was justified.

As regards mothers' burnout about hearing impairment of their children, the results of the current study indicated that, there were highly statistically significant differences regarding all domains of burnout (emotional exhaustion, social exhaustion, depersonalization and involvement) of studied mothers at pre/post program. As well, this study findings showed highly statistically significant difference in mothers' total burnout scores. The results revealed also that, more than two thirds of them had high burnout score at preprogram, while at post program, it decreased to only more than one tenth of them had high burnout score and slightly less than three quarters of them had low burnout. These findings may be attributed to improvement of mothers' knowledge, attitudes and reported practices at post program which led to decreased burnout among mothers related to their children with hearing impairment. The current results were congruent with those of **Masoumi et al. (2020)**, in Iran, whose study entitled "The effect of supportive-training intervention on the burnout of mothers with disabled child", and found that after the intervention, the mean score of burnout in the intervention group was significantly lower than that of the control group. Furthermore, this result was in agreement with that of **Sadziak et al. (2019)**, in Poland, who conducted a study entitled "Parental burnout as a health determinant in mothers raising



disabled children", and revealed that the low burnout was shown in mothers of children with hearing impairment at post than preprogram.

So, the research hypothesis (H2) which stated that, empowerment program will reduce burnout of studied mothers in posttest than pretest was accepted.

The present study results revealed that, there were negative statistically significant correlations between total burnout scores and total knowledge, attitude and total reported practice scores at post program regarding hearing impairment. This result may be due to the effectiveness of the program in improving of knowledge, attitudes and reported practices which led to reduction of burnout among studied mothers with hearing impaired children. These study finding is in accordance with that of the study of **Masoumi et al. (2020)**, who found that a negative significant correlation between total burnout scores and total knowledge scores among studied mothers. As well, these results were similar to that of **Karkhaneh et al. (2020)**, in Iran, who studied "Effectiveness of encouragement training in alleviating burnout among mothers of children with hearing impairment" and reported that negative correlation between total burnout scores and total attitude scores and between total burnout scores and total practice scores at post training in the experimental group of mothers than in the control group.

The above mentioned results proved the research hypothesis (H3), which revealed that, there will be significant correlations between knowledge,

attitudes, reported practices and burnout of studied mothers regarding to hearing impairment of their children in posttest than pretest.

### Conclusion

The study findings revealed that, more than three fifths of studied mothers had poor knowledge scores, inadequate reported practices and less than three fifths of them had negative attitude. However, more than two thirds of them had high burnout about hearing impairment of their children at preprogram. The empowerment program helped in improving the studied mothers' good knowledge, positive attitudes, adequate reported practices and decreased mothers' burnout about hearing impairment of their children. As well, there were negative correlations between mothers' total burnout, knowledge, attitudes and reported practices about hearing impairment at post program.

### Recommendations

Based on the findings of the current study, the following recommendations are suggested:

- Mothers of children having hearing impairment should be provided with continuous workshops about hearing impairment and its management.
- Children suffering from hearing impairment should have periodical hearing assessment.
- Simple educational pamphlets and posters about hearing impairment should be provided for all mothers in outpatient clinics.
- Periodical assessment of mothers' knowledge, attitudes and practices

about hearing impairment should be done.

- Similar studies should be conducted on a larger sample of children with different ages and regions for generalization of the results.

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