

## Caregiver's Awareness Regarding Their Children Under Five Years with Hearing Impairment

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### Abstract

**Background:** Hearing is important for language development in children, especially during the first 5 years of life. Hearing impairment (HI) during this critical period may have a negative impact on speech, language, academic, and socio-emotional development. **Aim:** the study aimed to assess caregiver's awareness regarding their children under five years with hearing impairment. **Design:** descriptive research design was applied in this study. **Sample:** Purposive sample of caregivers was equal 450 caregivers having child under five years. **Setting:** (Hearing And Speech Institute) at Embaba district (Giza, Egypt). **Tools:**one tool was used A structural interviewing questionnaire was used in the study, it contains four parts" Sociodemographic characteristics of caregivers, Past and present medical history of child and family , caregiver's knowledge about child hearing impairment, caregiver's attitude regarding their child with hearing impairment, caregiver's reported practice regarding their child with hearing impairment. **Results:** The study results revealed that 55.6% of studied caregiver's had poor knowledge about hearing impairment. While, 59% of studied caregiver's had positive attitude. Also, 64% of studied caregiver's had unsatisfactory practices about hearing impairment of their child. there was a highly significant correlation between total knowledge and their total reported practice, highly significant positive correlation between total knowledge and their total attitude regarding hearing impairment and there was highly significant correlation between total reported practice and their total attitude. **Recommendation:** Continuous providing health education program for caregivers to prevent hearing impairment and performing a mandatory hearing screening test for all children during the first month of birth to early detection and intervention.

**Key words:** caregiver's awareness, children under five years, hearing impairment

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Date of Submission: 07-08-2021

Date of acceptance: 21-08-2021

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### I. Introduction:

The first five years of life are a time of incredible growth and learning. An understanding of the rapid changes in a child's developmental status prepares parents and caregivers to give active and purposeful attention to the preschool years and to guide and promote early learning that will serve as the foundation for later learning. Understanding child development is an important part of teaching young children [1].

Hearing is one of the most important primary senses which help us to communicate smoothly with the hearing world. Unfortunately, the sense of hearing is often being kept neglected and people usually fail to realize its importance unless it is diminished or reduced gradually. Hearing also develops early in life and even before birth. child, from birth, will turn their heads toward a source or direction of sound and are startled by loud noises. The startle reaction is usually crying. Newborns also are soothed to sleep by rhythmic sounds such as a lullaby or heartbeat. Infants will look around to locate or explore sources of sounds, such as a doorbell. They also show reaction to a human voice while ignoring other competing sounds. A newborn can distinguish between the mother's and father's voices and the voice of a stranger by three weeks old [2].

Hearing impairment (HI) is a global problem, and is the one of the most prevalent disorder in the world. Disabling hearing impairment refers to hearing loss greater than 35 decibels (dB) in the better hearing ear. Nearly 80% of people with disabling hearing impairment live in low- and middle-income countries and 25% are born with or acquire HI during childhood. Compared with infants born in resource-rich countries, infants born in resource-poor countries have a nearly twofold risk. The prevalence of hearing impairment increases with age [3].

The consequences of hearing impairment are huge if it occurs before the speech language development. However, child hearing impairment will have negative effects not only on speech, language,

academic and socioemotional development but also in terms of costs. Thus, the appropriate way to diminish these consequences is through implementation early hearing impairment detection program. Along with professionals, parents are the major partners of these programs. Inappropriate parental decisions towards early identification and intervention of hearing loss may have life long consequences on the infant's life. The basis for these parental decisions is lack of knowledge and attitudes towards infant hearing loss [4].

A major challenge for many caregivers have children with hearing impairment is the general lack of awareness about issues relating to hearing impairment in all parts of society. There is thus a need to improve parental awareness regarding hearing impairment, ways to communicate with their children and to implement screening programmes. According to many developmental psychologists, caregivers have the most influence on children's social, emotional, physical and cognitive development when they have good self-perception, emotional health, economic stability and skills to nurture children successfully [5].

Hearing impairment is a common abnormality by birth, initial diagnosis of hearing impairment brings difficulties for most of the parents, the caregiver and hence the entire family system in the form of mental stress due to financial and time strains. Communicating with such children gets difficult especially when condition is accompanied by delayed speech, intellectual disability and communication development, which may lead to social stigma and isolation that entails them with feelings of grief, disappointment, helplessness, aggression. In addition to coping with the shock of the initial diagnosis, families must acquire a comprehensive understanding of how to manage the affected child, through getting information on hearing aids, sign language, educational methods, school placements, and legal issues [6].

The successful implementation of audiology services in developing countries depends on community support and acceptance of hearing healthcare programs. An appreciation of parental knowledge, attitudes and practices towards childhood hearing impairment and hearing services is essential to the development of relevant and contextually appropriate audiology programs for children. While negative attitudes may persist in some developing countries towards people with a hearing disability, there is also evidence that parents are generally very supportive of early identification and intervention services for infants and children with hearing impairment [7].

Measures for the management and control of hearing impairment in children. These are, the use of new drugs in treating infections of the ear, nose and throat, surgical treatment where possible, use of improved hearing test techniques and equipment for diagnostic purposes, use of improved hearing aids such as ear trumpets, giving of better prenatal care to expectant mothers, availability of good medical and nursing care during the period of delivery and control of accidents and possible brain injury during and immediately after, regular medical and health care in infancy and during the school years, firm control of contagious diseases via vaccination and immunization, prompt treatment of colds and coughs in children and prompt treatment of middle ear infection such as otosclerosis [8].

The community health nurse help for assess the presence of a hearing impairment and refer the child for audio logical evaluation and treatment. a nurse can play significant role in five additional areas a such as: a general practice environment, namely organizer, quality controller, problem solver, educator and agent of connectivity. The nurse also plays a key role in specialty sectors, such as those carried out within the neonatal intensive care unit. As the role of nurse is being diversified within the healthcare setting, the role of screening for disability within a neonatal or pediatric medical set-up could be promoted by the nurse [9].

#### **Significance of study:**

**In Egypt, In Egypt**, National household survey estimate the prevalence and causes of hearing impairment in Egypt. From 6 randomly selected governorates (Alexandria, Dakahlia, Luxor, MarsaMatrouh, Minia and North Sinai), 4000 individuals were screened for hearing loss. The prevalence of hearing loss was 16.0% with no significant sex differences. There were significant differences between the age groups and governorates: Marsa Matrouh governorate had the highest prevalence of hearing loss 25.7%and North Sinaigovernorate the lowest13.5%; those > or = 65 years had the highest prevalence 49.3%, but it was also high in those aged 0-4 years 22.4%. Otitis media with effusion 30.8% was the commonest cause of hearing loss [10].

**World Health Organization**, mention that disabilities and rehabilitation of the different types of disabilities/difficulties; deafness 3.5%, muteness 2.6% , deafness and muteness 6.6% [11].

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

The aim of this study is to assess caregiver's awareness regarding their children under five years with hearing impairment through the following objectives:

- Assess caregiver's knowledge about child hearing impairment.
- Assess caregiver's attitude regarding their child with hearing impairment.
- Assess caregiver's reported practice regarding their child with hearing Impairment.

**Research Questions:**

- What are caregiver's levels of knowledge about child hearing impairment?
- What are caregiver's attitude regarding their child with hearing impairment ?
- What are caregiver's reported practice regarding their child with hearing impairment ?
- Is there relation between caregiver's knowledge, attitude and reported practice with their sociodemographic characteristics ?

**Subject and Methods**

The subject and methods for this study will portray under the four main designs as follows:

- I-Technical design.                      II- Operational design.
- III- Administrative design.            IV- Statistical design.

**1-Technical design:**

The technical design includes research design, setting, subject and tools for data collection.

**Research design**

A descriptive research design was applied to achieve the aim of this study.

**Setting:**

The study was conducted in (Hearing And Speech Institute) at Embaba district (Giza .Egypt).

**Subject**

**Type of the sample:** purposive sample

**Sample size:** 450 caregivers having child under five years suffering from hearing impairment attended to outpatient clinic of (Hearing And Speech Institute) at Embaba district, which represent 10% from total of 4500 caregivers of children attended to outpatient clinic of (Hearing And Speech Institute) through 2018/2019.

**Sample criteria:**

**Inclusion criteria:**

- Accept to participate in the study
- Having child under 5 years and diagnosed with hearing impairment

**Tools of data collection:**

Data for this study will be collected through using the following tool:

A structural interviewing questionnaire: will be used in the study, it is developed by investigator after reviewing the national and international related literature and contains four parts:

**Part I: A:** Socio-Demographic characteristics of Caregivers: include data about age, sex, educational level, occupation, residence, family number, number of room.

**B:** Past and present medical history of child and family which include: child age, child gender, child condition after birth, exposure of the child to infectious diseases or ear infections, diagnosis , treatment and using hearing aids.

**Part II:** Caregiver's knowledge about child hearing impairment: such as meaning of hearing impairment, causes, sign and symptoms, types and health effects 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  $\geq 75\%$  ( $\geq 15$  grads)
- Fair knowledge  $50\% - < 75\%$  ( $10 < 15$  grads)
- Poor knowledge  $< 50\%$  ( $< 10$  grads)

**Part III: Part three:** Caregiver's attitude regarding their child with hearing impairment developed by (Kaspar et al [7]): concerned with caregiver's attitude and opinion regarding hearing impairment such as child hearing impairment like as any disease and importance of hearing sense for child, newborn hearing screening and child using of hearing aids.

**Scoring system:** For attitude items, which consists of (16) questions, agree was scored (three points), neutral was scored (two points), while disagree was scored (one point). 16 items with total score equal 48 grads, scale classified as:

- Positive attitude  $\geq 60\%$  (29-48 grads)
- Negative attitude  $< 60\%$  (16 < 29 grads)

**Part IV:** Caregiver's reported practice regarding their child with hearing impairment developed by (Ahmed et al.[12]) concerned with caregiver's practice regarding hearing impairment such as check the quality of the

headphone performance, care of hearing aids, medication, call the child by his name and maintain the eye level.

**Scoring system:** For reported practice items, which consists of (16) questions always was scored (three points), sometimes was scored (two points), while never was scored (one point). 16 items with total score equal 48 grads, scale classified as:

- Satisfactory practice  $\geq 60\%$  (29-48 grads)
- Unsatisfactory practice  $< 60\%$  (16< 29 grads)

**Validity:**

The developed tool was formulated and submitted to five experts from Community Health Nursing and community nursing in Faculty of nursing in Helwan University to review relevance of the tools for comprehensiveness, understanding and applicability.

**Reliability:**

Reliability of the tools was tested to determine the extent to which the questionnaire items related to each other. Cronbach's Alpha in this study found to be (.856) for knowledge, (.886) for attitude and (.901) for practice.

**Pilot study**

Pilot study has been conducted to test the clarity, applicability and understandability of the tool. It has been conducted on 10% (45) of caregivers. The results of the pilot helped in refining the interview questionnaire and to schedule the time framework. The caregivers participated in it will be excluded from the study sample.

**Field work:**

Data collection of the study was started at the beginning of June 2020 until the end of October 2020. The investigator introduced herself to caregivers of children, explained the aim of the study and its implications and how to fill in the questionnaire, and ensure their cooperation. Informed consent was obtained from the participants. Interviewing the caregiver was carried out in specialized room in new born hearing examination outpatient clinic (for child under five years) in Hearing And Speech Institute at Embaba district. The questionnaire sheet takes about 20-30 minutes to complete. Data will be collected two days per week from 9-1 pm and interview caregivers. The interviewing questionnaire sheet was completed by the investigator from each caregiver.

**Ethical consideration:**

An official permission to conduct the proposed study was obtained from the Scientific Research Ethics Committee. Participation in the study is voluntary and subjects was given complete full information about the study and their role before signing the informed consent. The ethical considerations were including explaining the purpose and nature of the study, stating the possibility to withdraw at any time, confidentiality of the information were guaranteed. Ethics, values, culture and beliefs were respected.

**Statistical item:**

Data collected from the studied sample was revised, coded and entered using Personal Computer (PC). Computerized data entry and Statistical analysis were fulfilled using the Statistical Package for Social Sciences (SPSS) version 24. Data were presented using descriptive statistics in the form of frequencies, percentages. Chi-square test (X<sup>2</sup>) was used for comparisons between qualitative variables. Spearman correlation measures the strength and direction of association between two ranked variables. Also used Mean  $\pm$  SD.

**Significance of the results:**

Highly significant at P-value $<0.01$

Statistically significant was considered at P-value $<0.05$

Non-significant at P-value  $>0.05$

## II. Results:

**Table (1)** demonstrates that 60% of studied caregiver, their age ranged between 20 - <30 years with the mean age  $27.52 \pm 6.23$  years. 91.3% of them were female. In relation to father's education, 46.9% of them had secondary education. While, 42.4% of mother's had secondary education. Also, 47.8% of father's were employed while 71.2% of mother's were house wife. While 46.7% of studied caregivers hadn't enough monthly income. Concerning place of residence, 53.1% of studied caregivers residing in rural areas.

**Figure (1)** demonstrates that, 55.6% of studied caregiver's had poor knowledge about hearing impairment. While, 33.3% & 11.1% of them had fair and good knowledge about hearing impairment, respectively.

**Figure (2)** illustrated that, 59% of studied caregiver's had positive attitude. While, 41% of them had negative attitude about hearing impairment of their child.

**Figure (3)** shows that, 64% of studied caregiver's had unsatisfactory practices. While, 36% of them had satisfactory practices about hearing impairment of their child.

**Table (2):** demonstrates that, there were significant relations between total knowledge of studied caregiver's and their age, father's education, mother's education and place of residence at ( $p = <0.05$ ). While, there was no significant relation with sex, father's job, mother's job and monthly income at ( $p = >0.05$ ).

**Table (3):** illustrates that, there were highly significant relations between total attitude of studied caregiver's and father's education. While, there were significant relation with sex, mother's education and place of residence. On the other hand, there were no significant relation with age, father's job, mother's job and monthly income at  $p$  value  $>0.05$ .

**Table (4)** demonstrates that, there were highly significant relations between total practice of studied caregiver's and father's education and mother's education at  $p$  value  $<0.01$ . While, there were significant relation with age, father's job and mother's job at  $p$  value  $<0.05$ . On the other hand, there were no significant relation with sex, place of residence and monthly income at  $p$  value  $>0.05$ .

**Table (5)** revealed that there was highly significant correlation between total knowledge and their total reported practice at  $p$  value  $<0.01$ .

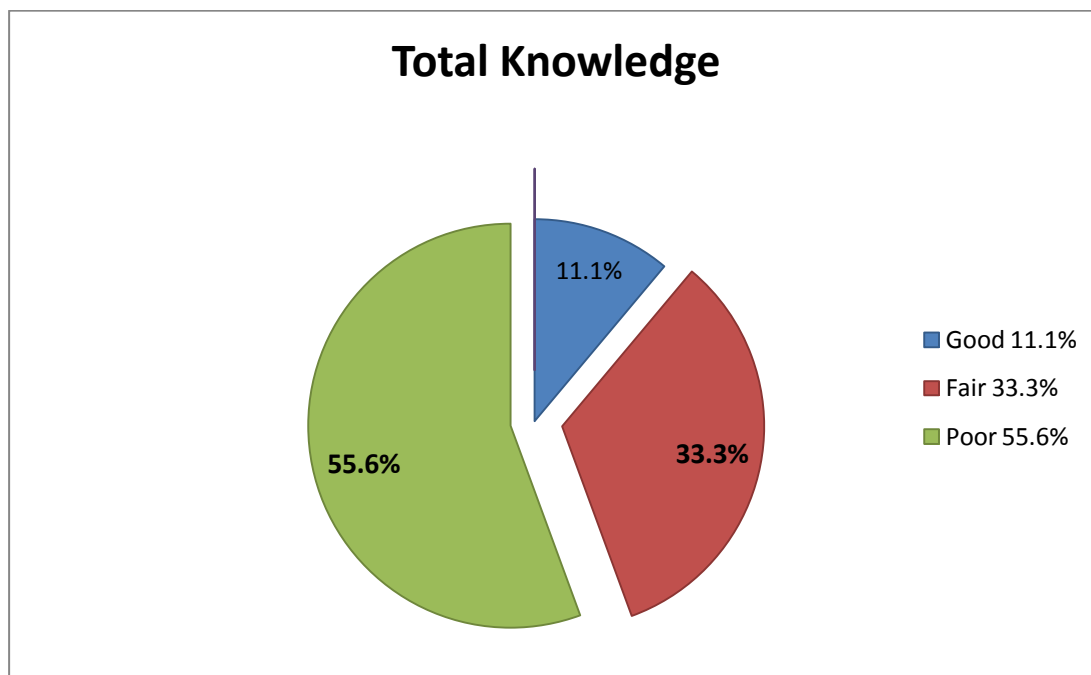
**Table (6)** revealed that there was highly significant positive correlation between total knowledge and their total attitude regarding hearing impairment at  $p$  value  $<0.01$ .

**Table (7)** revealed that, there was highly significant correlation between total reported practice and their total attitude at  $p$  value  $<0.01$ .

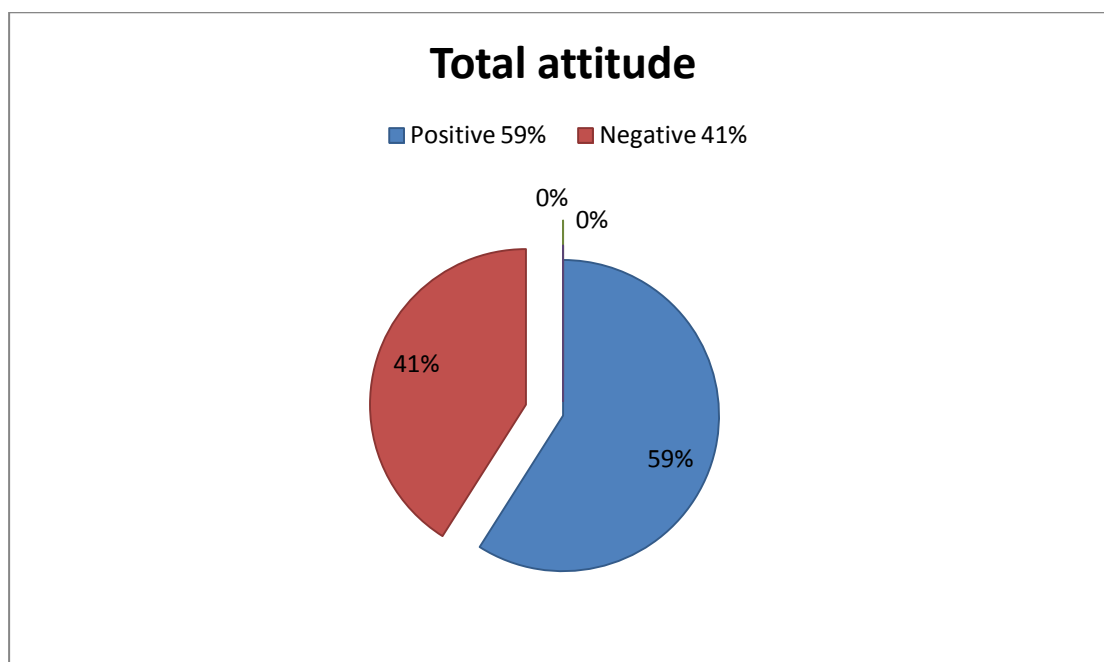
Sociodemographic characteristics of the caregivers.	No.	%
<b>Age/ Years</b>		
< 20	44	9.8
20 - <30	270	60
30 - < 40	121	26.9
≥ 40	15	3.3
$\bar{x}SD27.52\pm6.23$		
<b>Gender of caregiver</b>		
Male	39	8.7
Female	411	91.3
<b>Father's education level</b>		
Don't read & write	13	2.9
Read and write	28	6.2
Basic education	145	32.2
Secondary education	211	46.9
University education &more	53	11.8
<b>Mother's education level</b>		
Don't read & write	9	2
Read and write	56	12.4
Basic education	180	40
Secondary education	191	42.4
University education &more	14	3.2
<b>Father's job</b>		
Employed	215	47.8
Free business	174	38.7
Craftsman	61	13.5
<b>Mother's job</b>		
Employed	130	28.8
Housewife	320	71.2
<b>Monthly income</b>		
Enough and save	71	15.8
Enough	169	37.5
Not enough	210	46.7
<b>Number of rooms</b>		
Two	255	56.7
Three	93	20.7
Four	62	13.8
More than four individual	40	8.8
<b>Number of family member</b>		

Three	117	26
Four	179	39.8
Five	110	24.4
More than five	44	9.8
<b>Place of Residence</b>		
Urban	211	46.9
Rural	239	53.1

**Table (1):** Number and Percentage Distribution of the Studied Caregiver's According to their Sociodemographic Characteristics (n=450).



**Figure (1)** Total knowledge of studied caregiver's about hearing impairment of their child (n= 450)



**Figure (2)** Total attitude of studied caregiver's about hearing impairment of their child (n= 450).

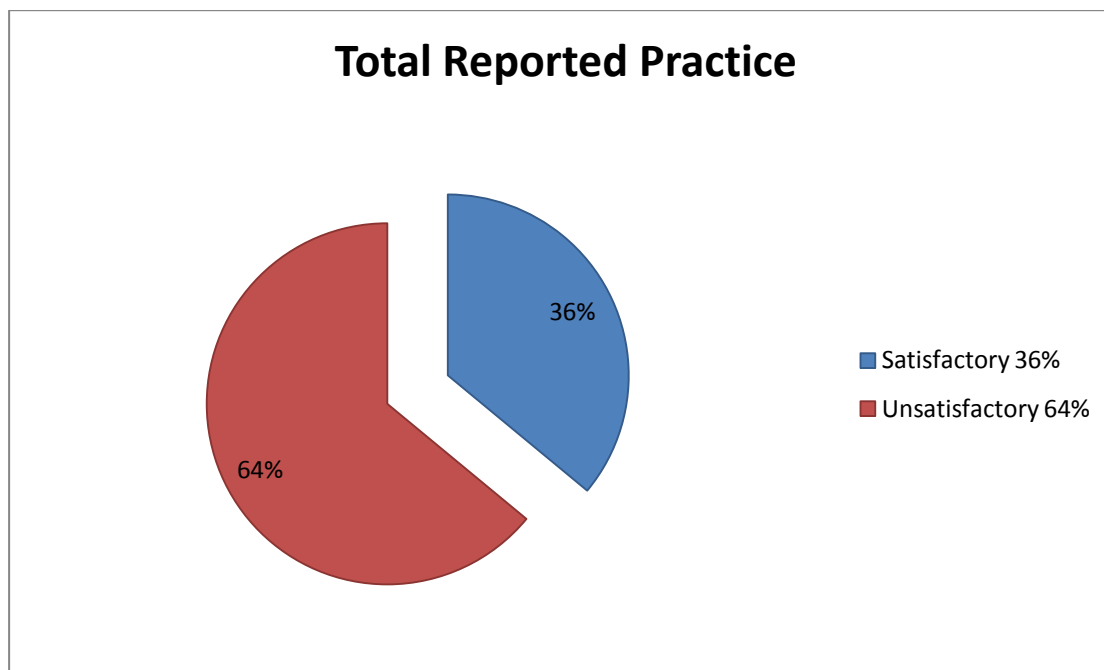


Figure (3) Total reported practices scores of studied caregiver’s about hearing impairment of their child (n=450)

Table (2): Relation between sociodemographic characteristics of the studied caregiver’s and their total knowledge regarding hearing impairment (n=450)

Sociodemographic characteristics		Total Knowledge						X <sup>2</sup>	P-Value
		Good n=50		Fair n=150		Poor n=250			
		No	%	No	%	No	%		
Age	<20	2	4	10	6.7	32	12.8	5.160	.034*
	20 - <30	8	16	63	42	199	79.6		
	30 - < 40	32	64	70	46.7	19	7.6		
	40 or more	8	16	7	4.6	0	0		
Sex	Male	5	10	8	5.3	26	10.4	2.106	.058
	Female	45	90	142	94.7	224	89.6		
Father's education	Don't read & write	0	0	1	0.6	12	4.8	4.001	.047*
	Read and write	0	0	9	6	19	7.6		
	Basic education	3	6	30	20	112	44.8		
	Secondary	5	10	100	66.7	106	42.4		
	University education & more	42	84	10	6.7	1	0.4		
Mother's education	Don't read & write	0	0	3	2	6	2.4	4.711	.040*
	Read and write	2	4	3	2	51	20.4		
	Basic education	4	8	37	24.7	139	55.6		
	Secondary	30	60	107	71.3	54	21.6		
	University education & more	14	28	0	0	0	0		
Father's job	Employed	29	58	81	54	105	42	1.996	.063
	Free business	12	24	50	33.3	112	44.8		
	Craftsman	9	18	19	12.7	33	13.2		
Mother's job	Employed	40	80	70	46.7	20	8	1.346	.071
	House wife	10	20	80	53.3	230	92		
Place of Residence	Urban	43	86	100	66.7	68	27.2	5.899	.011*
	Rural	7	14	50	33.3	182	72.8		
Monthly Income	Enough and save	8	16	24	16	39	15.6	1.425	.068
	Enough	18	36	50	33.3	101	40.4		
	Not enough	24	48	76	50.7	110	44		

\*significant p < 0.05. \*\*highly significant p < 0.001.

**Table (3):** Relation between sociodemographic characteristics of the studied caregiver's and their total attitude regarding hearing impairment (n=450)

Sociodemographic characteristics		Total Attitude					
		Positive n=238		Negative n=212		X <sup>2</sup>	P- Value
		No	%	No	%		
Age	<20	28	11.8	16	7.5	2.044	.056
	20 - <30	140	58.8	130	61.3		
	30 - < 40	62	26.1	59	27.8		
	40or more	8	3.3	7	3.7		
Sex	Male	9	3.8	30	14.2	5.681	.010*
	Female	229	96.2	182	85.8		
Father's education level	Don't read & write	1	0.4	12	5.7	8.023	.007**
	Read and write	10	4.2	18	8.5		
	Basic education	39	16.4	106	50		
	Secondary education	140	58.8	71	33.5		
	University education &more	48	20.2	5	2.3		
Mother's education level	Don't read & write	0	0	9	4.2	3.997	.045*
	Read and write	6	2.5	50	23.6		
	Basic education	60	25.2	120	56.6		
	Secondary education	160	67.2	31	14.6		
	University education &more	12	5.1	2	1		
Father's job	Employed	99	41.6	116	54.7	1.866	.074
	Free business	80	33.6	94	44.3		
	Craftsman	59	24.8	2	1		
Mother's job	Employed	80	33.6	50	23.6	2.007	.062
	House wife	158	66.4	162	76.4		
Place of Residence	Urban	150	63	61	28.8	5.006	.013*
	Rural	88	37	151	71.2		
Monthly Income	Enough and save	35	14.7	36	17	0.962	0.846
	Enough	89	37.4	80	37.7		
	Not enough	114	47.9	96	45.3		

\*significant p < 0.05.\*\*highly significant p < 0.01.

**Table (4):** Relation between sociodemographic characteristics of the studied caregiver's and their total reported Practice regarding hearing impairment (n=450).

Sociodemographic characteristics		Total Reported Practice					
		Satisfactory n=162		Unsatisfactory n=288		X <sup>2</sup>	P- Value
		No	%	No	%		
Age	<20	6	3.7	38	13.2	4.199	.046*
	20 - <30	62	38.3	208	72.2		
	30 - < 40	80	49.4	41	14.2		
	40or more	14	8.6	1	0.4		
Sex	Male	11	6.8	28	9.7	2.555	.061
	Female	151	93.2	260	90.3		
Father's education	Don't read & write	2	1.2	11	3.8	8.011	.007**
	Read and write	4	2.5	24	8.3		
	Basic education	10	6.2	135	46.9		
	Secondary education	100	61.7	111	38.5		
	University education &more	46	28.4	7	2.5		
Mother's education	Don't read & write	0	0	9	3.1	9.084	.005**
	Read and write	3	1.8	53	18.4		
	Basic education	25	15.5	155	53.8		
	Secondary education	120	74.1	71	24.7		
	University education &more	14	8.6	0	0		
Father's job	Employed	140	86.4	75	20.1	3.999	.049*
	Free business	15	9.3	159	55.2		
	Craftsman	7	4.3	54	18.7		
Mother's job	Employed	118	72.8	12	4.2	5.612	.037*
	House wife	44	27.2	276	95.8		
Place of Residence	Urban	72	44.4	139	48.3	1.936	.078
	Rural	90	55.6	149	51.7		
Monthly Income	Enough and save	21	13	50	17.4	3.145	.052
	Enough	69	42.6	100	34.7		



Not enough	72	44.4	138	47.9
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\*significant  $p < 0.05$ . \*\*highly significant  $p < 0.01$ .

**Table (5):** Correlation between total knowledge score and total reported practice score regarding hearing impairment among studied caregivers (n=450).

Total Reported practice	Total knowledge						R	p value
	Good		Fair		Poor			
	NO.	%	NO.	%	NO.	%		
Satisfactory No=162	101	62.3	56	34.6	5	3.1	.712	.000**
Unsatisfactory No=288	10	3.4	71	24.7	207	71.9		

**Table (6):** Correlation between total knowledge score and total attitude score regarding hearing impairment among studied caregivers (n=450).

Total attitude	Total knowledge						R	p value
	Good		Fair		Poor			
	NO.	%	NO.	%	NO.	%		
Positive N= 238	183	76.9	45	18.9	10	4.2	.834	.000**
Negative N= 212	13	6.1	95	44.8	104	49.1		

**Table (7):** Correlation between total attitude score and total reported practice score regarding hearing impairment among studied caregivers (n=450).

Total Reported practice	Total attitude				R	p value
	Positive		Negative			
	NO.	%	NO.	%		
Satisfactory No=162	154	95.1	8	4.9	.588	.005**
Unsatisfactory No=288	39	13.5	249	86.5		

### III. Discussion:

Childhood hearing impairment (CHI) is still a significant cause of disability in the 21st century in developing countries. Particularly, the burden is more severe in sub-Saharan Africa (SSA), where the majority of children with hearing problems is living. There are several possible explanations for this higher rate of childhood hearing impairment in developing and underdeveloped countries. Explanations may be the lack of preventative procedures arising from a lack of awareness within the general population regarding the different causes and the impact of hearing impairment, resulting in high rates of hearing impairment due to conditions such as chronic otitis media and noise induced hearing loss. Also, the higher rates of consanguinity and first cousin marriages among Arab populations in Middle Eastern countries. This may result in increased rates of genetic based hearing impairment [13].

Childhood hearing impairment have an enduring impact on cognitive, emotional and social development particularly with regards to the functional limitations of speech and language acquisition. Hearing impairment may be present at birth and can result from prenatal factors, congenital infections and genetic causes. Hypoxia, hyperbilirubinemia, meningitis, chronic otitis media, mumps, measles, cytomegalovirus, trauma, ototoxic drugs and head injury are causes of neonatal and childhood hearing impairment [14].

Permanent childhood hearing impairment is best identified through newborn hearing screening programmes. Early identification and effective management of hearing impairment can optimizes outcomes. For infants with profound hearing loss or auditory neuropathy the option of cochlear implantation may give improved hearing for speech, typically at around 12 months of age. The responsibility of using hearing aids and providing a suitable sound environment for the child falls on the caregivers [15].

Therefore; this study was conducted to assess caregiver awareness toward hearing impairment in children under five years.

Regarding to sociodemographic characteristics of the studied caregivers, three fifths of studied sample their age were 20-<30 years with the mean  $27.52 \pm 6.23$  years. This result was in the same line with the result of study performed by **Zaidman-Zait et al.** [16] whose conducted study in Tel Aviv University, Israel, and

entitled as "The Impact of Childhood Hearing Loss on the Family: Mothers' and Fathers' Stress and Coping Resources" who stated that, less than two thirds (62%) of study sample their age were 20-30 years.

Regarding to gender of the studied caregivers, the finding of the current study revealed that, majority of the studied caregivers were female. These results were accordance with **Zaidman-Zait et al.**[17] whose conducted study in Tel Aviv University, Israel, and entitled as "Mothers' and fathers' involvement in intervention programs for deaf and hard of hearing children" who found that, most of the studied caregivers were female. From the investigator point of view, these results might be due to mothers are considered the main caregivers to children with hearing impairment.

In relation to educational level of the fathers and mothers, the finding of the current study revealed that, less than half of the fathers and mothers had secondary education. These results were accordance with **Bayat et al.** [18], whose conducted study in Iran with and entitled as "Parent's Satisfaction of Universal Child Hearing Screening Program" who stated that, less than of the studied parents had secondary education. From the investigator point of view, these results might be due to increase the costs of the high education.

Regarding to fathers job, the finding of the current study revealed that, less than half of the fathers were employed. These result approved with the study performed by **Mavrogianni & Lampropoulou** [19] whose conducted study in Patras, Greece and entitled as "The Involvement of Fathers with Their Deaf Children" who found that, 48.2% of the fathers were employed.

Regarding to mothers job, the finding of the current study revealed that, more than two thirds of the mothers were housewife. These result approved with the study performed by **Ebrahimi et al.** [20] whose conducted study in Tehran, Iran and entitled as "The Experience of Mothers with Deaf Child" who found that, more than two thirds of the mothers were house wife. From the investigator point of view, these results might be due to loss of opportunity of jobs and community culture prefer the mothers stay at the home.

Regarding to monthly income, the finding of the current study revealed that, less than half of the studied sample had not enough monthly income. These result approved with the study performed by **Wong et al.**[21] whose conducted study in Australia and entitled as "Psychosocial Development in 5-Year-Old Children With Hearing Loss Using Hearing Aids" who found that, 47% of the studied sample had not enough monthly income. From the investigator point of view, these results might be due to high standard of living, high prices of products and more than two thirds of the mothers were housewife.

Regarding to number of family member, the finding of the current study revealed that, more than one third of them, their number of family members were four individuals. These results were accordance with **Zaidman-Zait et al.**[22] who found that, more than one third of them, their number of family were four individuals.

Regarding to place of residence, the finding of the current study revealed that, more than half of studied sample live in rural area. These results were accordance with **Banda et al.**[23] whose conducted study in Gaborone, Botswana and entitled as "Hearing Impairment Among Children Referred to a Public Audiology Clinic" who found that, more than half of studied sample live in rural area.

In relation to total knowledge of studied caregiver about hearing impairment, the finding of the current study revealed that, more than half of the studied samples had poor knowledge, one third of the studied samples had fair knowledge and only more than one tenth of the studied samples had good knowledge about hearing impairment. These results were accordance with **Alsudays et al.**[24] whose conducted study in Qassim, Saudi Arabia with and entitled as "Parental knowledge and attitudes to childhood hearing Loss and hearing services" who stated that, more than half of the studied samples had poor knowledge and only one tenth of the studied samples had good knowledge about hearing impairment. From the investigator point of view, these results might be due to lower level of education among caregiver which reflected in their lower awareness and poor knowledge.

Concerning to total attitude of studied caregiver about hearing impairment, the finding of the current study revealed that, less than two thirds of the studied samples had positive attitude. These results were accordance with **Ravi et al.**[25] whose conducted study in Karnataka, India entitled as "Knowledge and attitude (KA) survey regarding infant hearing loss" who stated that, less than two thirds of the studied samples had positive attitude and more than one third had negative attitude about hearing impairment. From the investigator point of view, these results related to hearing one of the most superior senses of human being. The privation of hearing sense does not mean that the child is just unable to hear the sounds. However, hearing impairment can lead to failures to attain beneficial and hopeful experiences in a child's social life. Early childhood years are a golden period for learning and education of children and consider the time they can learn efficacious social skills and education.

Concerning to total reported practices of studied caregiver about hearing impairment, the finding of the current study revealed that, less than two thirds of the studied samples had unsatisfactory practices. These results were accordance with **Graham et al.**[26] whose conducted study in Durban, South Africa entitled as "Mapping the content of mothers' knowledge attitude and practice towards universal newborn hearing

screening" who stated that, less than two thirds of the studied samples had unsatisfactory practices. From the investigator point of view, these results related to poor knowledge and lower general awareness among caregiver which reflected in their unsatisfactory practices.

Regarding the relation between sociodemographic characteristics of caregiver's and their level of knowledge about child hearing impairment, the present study revealed that, there were significant relations between total knowledge of studied caregiver's and their age, father's education, mother's education and place of residence at ( $p < 0.05$ ). This finding agree with study achieved by **Wong et al.** [27] conducted in Malaysia which entitled "Knowledge and attitude on childhood hearing Loss among mothers in urban and rural areas" whose mentioned that there were statistically significant relation between total knowledge of the studied sample and their age, mother education and father education. From the investigator point of view, these results related to the caregiver who had high educational level had the opportunity to acquire more knowledge about child hearing impairment.

Regarding the relation between sociodemographic characteristics of caregiver and their level of attitude about child hearing impairment, the present study revealed that, there were highly significant relation between total attitude of studied caregivers and father education. While, significant relations between total attitude of studied caregiver's and their sex, mother's education and place of residence at ( $p < 0.05$ ). This finding agree with study achieved by **Poole et al.**[28] whose conducted study in Pokhara, Nepal which entitled as "Knowledge, attitudes and practices related to chronic hearing impairment and suppurative otitis media in children "whose mentioned that there were significant relation between total attitude of the studied sample and their sex, mother education and father education. From the investigator point of view, these results revealed than caregiver who had high educational level had positive attitude regarding child hearing impairment.

Regarding the relation between sociodemographic characteristics of caregiver and their level of practice about child hearing impairment, the present study revealed that, there were highly significant relations between total practice of studied caregiver's and father's education and mother's education. While there were significant relation with age, fathers job and mothers job at ( $p < 0.05$ ). This finding agree with study achieved by **Mukara et al.**[29] whose conducted study in Kigali, Rwanda entitled as "Knowledge and care seeking practices for hearing impairment among parents of under five children" whose mentioned that there were statistically significant relation between total practice of the studied sample and their age, father education and mother education. From the investigator point of view, these results related to the caregiver who had high educational level had satisfactory practices about hearing impairment of their child.

#### **IV. Conclusions:**

On the light of results of the current study and answers of research questions, it could be concluded that there was 55.6% of studied caregiver's had poor knowledge about hearing impairment. While, 33.3% & 11.1% of them had fair and good knowledge about hearing impairment, respectively. Moreover, 59% of studied caregiver's had positive attitude. While, 41% of them had negative attitude about hearing impairment of their child. 64% of studied caregiver's had unsatisfactory practices. Also, 36% of them had satisfactory practices about hearing impairment of their child. Moreover, there were significant relations between total knowledge of studied caregiver's and their age, father's education, mother's education and place of residence. Also, there were highly significant relations between total attitude of studied caregiver's and father's education. While, there were significant relation with sex, mother's education and place of residence. Also, there were highly significant relations between total practice of studied caregiver's and father's education and mother's education. While, there were significant relation with age, father's job and mother's job. Also, there was highly significant correlation between total knowledge and their total reported practice, highly significant positive correlation between total knowledge and their total attitude regarding hearing impairment and there was highly significant correlation between total reported practice and their total attitude

#### **V. Recommendation:**

From the previous findings, the following recommendation are suggested:

\*Continuous providing health education program for caregivers through strengthen immunization programs to prevent hearing impairment, which is a complication of infectious diseases, such as congenital rubella, meningitis, mumps and measles.

\*Continuous supervision of maternal and neonatal care by the Ministry of Health and Population.

\* Performing a mandatory hearing screening test for all children during the first month of birth to early detection and intervention.

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