

Effect of Educational Program on Nurses' Performance and Communication regarding Patients with Hearing Impairment

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Abstract

Background: Hearing impairment is the most common sensory defect in humans. Nurses have a primary role in communicating with and offering care to patients with hearing impairment. **Aim:** To evaluate the effect of educational program on nurses' performance and communication regarding patients with hearing impairment. **Design:** A quasi-experimental design. **Sample & Methods:** The study was conducted in ear, nose and throat (ENT) department at Beni-Suef University hospital. A convenient sample of 30 nurses: 12 nurses in medical ENT department, and 18 nurses in surgical ENT department in the previously mentioned setting. **Tools:** Four tools were used for data collection, Tool (I): A self-administered questionnaire. Tool II: Observational checklist for nurses practice regarding hearing impairment patients. Tool III: Nurses' Attitudes towards hearing impairment patients. Tool IV: Nurses' Communication with patients with hearing impairment. **Results:** There was a statistically significant difference between nurses' performance and communication regarding patients with hearing impairment pre- and post-application of the educational program with $P = (<0.001)$. **Conclusion:** The study proved that; educational program improve nurses' performance and communication regarding patients with hearing impairment. **Recommendation:** Plan and implement an educational program related to nurses' performance and communication as an in-service training program for nurses as well as to be involved in nursing curriculums.

Keywords: Educational Program, Nurses' Performance, Communication, Hearing Impairment.

Introduction

Every organism's life was significantly influenced by its senses. They are in charge of how we perceive the world around us, influencing how we interact with it and forming our experiences. (Mohammed, et al., 2020). One of the most crucial fundamental senses that enables us to effectively communicate with the hearing world is hearing. Unfortunately, people rarely pay attention to their sense of hearing and rarely recognize its significance until it gradually declines (Sanju, et al., 2019). Hearing impairment could be present from birth as well could be onset at any age. A person's ability to communicate, quality of life, ability to participate in social activities, and health can all be significantly impacted by hearing loss, which can happen gradually or suddenly, mildly or severely. (Blazer et al., 2016).

In humans, hearing impairment (HI) is the most prevalent sensory deficiency. Based on estimates, it ranks as the fourth most common cause of disability. Due to a lack of electrical stimulation to the brain, hearing loss may be

partial or total. While they are not the same, the disability categories of HI and deafness are comparable. Deafness is a severe kind of hearing loss that involves language deprivation as well as sound deprivation. Reduced acuity to noises that one would ordinarily be able to hear is known as hearing impairment, and the inability to understand speech even with amplification is known as deafness (Abdel-Wahab et al., 2023).

Individuals with hearing impairments cannot hear as well as those with normal hearing, which is defined as having hearing thresholds of 20 dB or higher in both ears. One or both ears may be affected, and it may be mild, moderate, moderately severe, severe, or profound. The following are some of the main causes of hearing loss: age-related hearing loss, noise-induced hearing loss, chronic middle ear infections, ototoxic medicines that harm the inner ear. Hearing loss can have a wide range of potentially significant effects. These include a person's inability to interact with others, delayed language development in youngsters, and the possibility of social isolation,

loneliness, and frustration, especially in elderly individuals with hearing loss. Inadequate accommodations for hearing loss exist in many places, which has an impact on students' academic achievement and career opportunities. In poor nations, deaf and hard of hearing people seldom ever attend school. According to WHO estimates, untreated hearing loss costs the world economy US\$ 980 billion yearly in lost productivity, educational support expenses, health sector costs (not including the cost of hearing aids), and social costs (WHO., 2023).

When it comes to nursing care for patients with hearing loss, the main focus is on managing cerumen to minimize hearing impairment, using hearing aids, and educating patients to help prevent complications, encourage rehabilitation, and facilitate efficient communication (Wagner., 2023). So, the roles of nurses who dealing with these patients are important.

Nurses have a primary role in communicating with and offering care to patients with hearing impairment. Therefore, it is necessary that they should have the adequate knowledge, practice and attitudes to provide quality care to those group of patients, also the decisions taken is dependent on their knowledge and attitude. Positive attitudes and interactions between nurses and patients with hearing impairment improve patients' quality of life and their psychological and social well-being. Effective communication even in the absence of adequate hearing is achieved through attitude. If a professional nurse determines that the patient has a hearing impairment, she may recommend audiological testing and therapy. The nurse offers assistance, guidance, and recommendations for finding reasonably priced services and obtaining the right kind of intervention (Mohammed et al., 2020).

Effective communication between the nurses and patients is vital to providing safe and high-quality care. Nurses may lack knowledge and awareness to understander that the hospitalized patients with hearing-impaired their ability to communicate, learn and care for oneself had also affected. Nurses on the inpatient departments provide important components of direct patient care that includes

admission assessment, ongoing nursing assessment, patient teaching, and discharge care. Poor communication between the nurses and the patients could lead to misdiagnoses, medication errors, unnecessary transfers, poor assessments, noncompliance with care, missed appointments, increased testing, higher hospital admission rates, and inadvertent patient harm So, nurses should be knowledgeable about the important of communication strategies for patients with hearing impairment (Ruesch., 2018).

The provision of patient care requires effective communication abilities. Better patient outcomes come from nurses who take the time to listen to and comprehend each patient's concerns. This is because they are better equipped to handle problems as they emerge. Conversely, patients may misunderstand instructions and disregard treatment regimens if healthcare practitioners are incompetent or do not communicate well with one another. It might also result in team workflow disruptions and a medical error. According to a Joint Commission report from 2019, 80% of major medical errors were caused by inadequate communication between patients and healthcare providers. (Arnold & Boggs., 2020).

When a patient or nurse cannot communicate properly, both parties become impatient and may experience hurdles that lead to feelings of failure and negative emotions for both parties. The patient may feel he is not understood and is not receiving the treatment he needs, and the nurse may feel she is not providing enough care. These feelings could cause more issues (Mattjus., 2021)

Significance of the study

Millions of individuals worldwide suffer from hearing impairment (HI). In varying degrees, almost 360 million people worldwide experience HI. In poor nations, there are about 75% of people who are deaf. Nearly 2.5 billion individuals are expected to suffer hearing impairments of some kind by 2050, and at least 700 million of them will need hearing rehabilitation. South Asian and African regions are the most afflicted by HIV/AIDS globally, with prevalence rates about four times higher than those of high-income areas. In addition to

having cognitive, language, learning, emotional, neurological, and physical problems, or a combination of all, 38 to 42% of people who are deaf due to viral infections or congenital disorders (WHO., 2021).

Egypt has a greater prevalence of hearing loss than many other developing nations, at 16.02%. Egypt's rate is higher than that of Oman (5.53%) and Saudi Arabia (13%), two Arab nations with comparable racial, cultural, and traditional backgrounds. Four thousand Egyptians were examined for hearing loss from six governorates that were chosen at random: Alexandria, Dakahlia, Luxor, Marsa-Matrouh, Minia, and North Sinai. The combined impacts of the noise and genetics made the HI a widespread issue. Due to the lack of a nationwide hearing screening program until 2020, it is challenging to accurately estimate hearing loss in Egypt; instead, the assessment is based only on hospital-based academic studies (Abdel-Wahab., 2023). In 2020, Egypt launched a trial program for neonatal auditory screening, which screened over 40% of babies. Targeted newborn hearing screening is still essential (ElGindy et al., 2022).

The objective

This research aimed to assess the impact of educational program on nurses' performance and communication regarding subjects with hearing impairment.

This aim will be achieved through:

1. Assess the influence of educational program on nurses' knowledge regarding cases with hearing impairment.
2. Assess the impact of educational program on nurses' practice regarding individuals with hearing impairment.
3. Assess the impact of educational program on nurses' attitude regarding cases with hearing impairment.
4. Determine the influence of educational program on nurses' communication regarding those with hearing impairment.

Hypotheses:

H1: Nurses' knowledge regarding patients with hearing impairment will be increased following educational program implementation.

H2: Nurses' practice regarding patients with hearing impairment will be improved post educational program implementation.

H3: Nurses' attitude regarding patients with hearing impairment will be improved post educational program implementation.

H4: Nurses' communication regarding patients with hearing impairment will be enhanced post educational program implementation.

H5: Positive association existed between nurses' performance and communication following the implementation of the program.

Subjects and Methods

Design:

A quasi-experimental design (one group pre/posttest) was used.

Technical design:

Includes the setting, subjects and tools of data collection.

A. Setting:

The ear, nose and throat (ENT) department at Beni-Suef University hospital.

B. Subjects:

All convenient sample included 30 nurses: 12 nurses in medical ENT department, and 18 nurses in surgical ENT department at the previously mentioned setting.

C. Tools of data collection:

Four tools were constructed to collect pertinent data, including:

Tool I: A self-administered questionnaire:

It was established by the researchers based on previous related literatures (Mohammed et al., 2020); (Who., 2023). It involved two parts:

Part one:

It focused on the demographics of the nurses (sex, age, marital status, academic qualifications, years of experience and specialty).

Part two:

Assessed nurses' knowledge regarding patients with hearing impairment as the

following issues: Definition, types and causes, risk factors, symptoms, degrees, diagnoses, methods, and complications of hearing impairment.

Scoring system:

The nine knowledge variables were closed ended questions and were scored as the following.

- The correct answer was given one grade.
- The incorrect one was given zero.

The score of each item was stumped up and then converted into a percent score.

Total knowledge score was ranged from (0-9) and classified as the following:

Poor $\geq 50\%$

Average 50-70%

Good $<70\%$

Tool II: Observational checklist for nurses practice regarding patients with hearing impairment:

It was adopted from (Wilkinson., 2016) and used to assess nurses' practices regarding hearing impairment patients as the following: caring for hearing aids as removing, cleaning, and reinserting, variation for detachable ear mold, storing the hearing aid and replacing the battery.... etc.

Scoring system:

- Done practices was assigned a score of (1).
- Not done practices was assigned a score of (0).

Total practice score was equal (0-27)

Total score of practice will be classified into:

- $\geq 75\%$ considered competent practice.
- $< 75\%$ considered incompetent practice.

Tool III: Nurses' Attitudes

This tool was adopted from (Oketch., 1982), it was Likert scale questionnaire and modified to outfit the situation in Egypt. It encompassed Domains of positive attitude (14 items) and Domains of negative attitude (13 items). It was consisting of twenty-seven items.

It measures feelings, beliefs, and behaviors of nurses regarding patients with hearing impairment.

Scoring system positive attitude:

- Agree = 3
- Uncertain = 2
- Disagree = 1

Scoring system negative attitude:

- Agree = 1
- Uncertain = 2
- Disagree = 3

Tool IV: Nurses' Communication with patients with hearing impairment

This tool was developed by the researchers based on reviews of relevant recent literatures (Mattjus., 2021), (Akeely et al., 2022) and (Lieu et al., 2017) included three sections:

I: Nurses' Communication Methods Questionnaire

Assessed nurses' communication methods regarding patients with hearing impairment. It included 6 items as: showing, writing, speech, manual alphabet, sign language and lips reading (Mattjus., 2021).

Scoring system:

- Done was received one score.
- Not done received zero score.

- Total Nurses' Communication Methods was ranged from 0-6

And classified as the following:

- $\geq 75\%$ considered satisfactory level of Nurses' Communication Methods.
- $< 75\%$ considered unsatisfactory level Nurses' Communication Methods.

II: Obstacles in Communication for patients with hearing-impairment

This part was assessed obstacles in communication for patients with hearing-impairment. It included 10 items (Akeely., et al 2022)

- Occurred = 1
- Not Occurred = 0

Total Obstacles in Communication score was ranged from (0-10) and classified as the following:

- $\geq 75\%$ considered satisfactory level of Obstacles in Communication

- < 75% considered unsatisfactory level
- Obstacles in Communication III: Nurses' strategies in Communicating patients with Deaf.**

This part assessed nurses' strategies for communicating patients with hearing-impairment. It was included 23 items as: Reduce unnecessary noise, keep your head, if possible, still when talking,... etc. (Lieu et al., 2017)

Scoring system:

- Done = 1
 - Not done = 0
- Total Nurses' strategies in Communicating patients with hearing-impairment score was ranged from (0-23) and classified as the following:
- $\geq 75\%$ considered satisfactory level of Nurses' strategies in Communicating patients with hearing-impairment
 - < 75% considered unsatisfactory level Nurses' strategies in Communicating patients with hearing-impairment

Validity and reliability:

• Content validity:

A panel of five experts in medical surgical nursing specialties revised the tools to ensure they were still valid. The tool was examined by experts to ensure objectivity, clarity, appropriateness, and comprehensiveness. Minor adjustments were made.

The reliability:

It was estimated for tool I and II by using alpha Cronbach's test ($r = 0.932, 0.965$).

Operational design

Included a preparatory phase, pilot study, ethical consideration, and field work.

Preparatory phase:

This phase started with a review of the recent and past, national and worldwide literatures, as well as theoretical understanding of many aspects of the study utilizing books, papers published on a regular basis, scientific websites, and periodicals.

Pilot study:

It was done on 10% of the entire research sample. This was done to gauge how long it would take to complete the study tools and to test

the tools' efficiency, clarity, and usefulness. The nurses who participated in the pilot trial were included in the sample because no changes were made.

Ethical consideration:

Official permissions to conduct the study were secured. The researchers made the goal and objective of the investigation clear to the nurses who were the subject of the study. The participants were guaranteed that their information would be kept private for the purposes of the study, and the researchers advised them of their right to participate in the study or to withdraw at any time for any reason.

Field work:

Data were collected from the beginning August 2023 to the end of January 2024. The program was implemented for nurses working in ENT unit and operation at Beni-Suef University Hospital.

Program phase:

The researchers designed the schedule for program implementation. Objectives, instructional strategies, media, and learning activities were designed. The training program's content was broken up into ten sessions, each lasting roughly 45 minutes.

By submitting an appropriate letter from the Beni-Suef University faculty of nursing, permission was granted by the hospital administrative person for the study's implementation and data collecting to take place in the hospital. Before any data was collected, meetings and conversations between the researchers and nurses were conducted to explain the purpose and nature of the study and obtain their consent to participate.

Educational booklet:

It was written in Arabic language by the researchers according to the identified nurses needs which obtained from pre assessment of the nurses' performance regarding communication with patients with hearing impairment. which included definition, types, signs and symptoms and complications, ... etc. The researchers produced the information following a review of the relevant literature.

Program assessment:

The researchers assess nurse's performance and communication regarding patients with hearing Impairment at Beni-Suef University Hospital through questionnaire and observational checklist. Four days a week, the researchers' morning and afternoon shifts were monitored.

- 1) Regarding the questionnaire, it was conducted to evaluate the nurse's knowledge regarding patients with hearing impairment.
- 2) Regarding the observational checklist questionnaire, it was conducted to evaluation the nurse's practice for patients with hearing impairment.
- 3) As regards to the Likert scale questionnaire, it was conducted to assess the nurses' attitudes regarding patients with hearing impairment.
- 4) Regarding the questionnaire, it was conducted to identify the nurses' communication regarding patients with hearing impairment.

Evaluations of the nurses' performance and communication were conducted twice: once prior to the start of the training program, and again just after. The researchers watched the nurses and completed the observational checklist. The allotted time for answering the appendix took roughly thirty to forty minutes.

Program implementation:

- This was based on the studied nurses. The content of the sessions of the training program was organized as the following:
- Following official approval from the nursing director and director of Beni-Suef University Hospital, the implementation phase began.
- The program was run over the course of 20 weeks. The researchers spoke with the nurses in the ENT unit at Beni-Suef University Hospital three days a week, during their morning and afternoon shifts.
- Individual interviews with nurses were conducted to clarify the goals and design of the study, secure informed permission, address needs and expectations, go over the program's outline, and decide how best to handle content for the following visit.

The theoretical section:

- All nurses will participate in each theoretical session in the classroom. Every subject was covered using Power Point presentations, movies, and posters as needed.
- The theoretical session began with a 10-minute discussion to gauge the nurses' awareness of related subjects, and then the researchers broke down the session's substance for the next thirty minutes.
- They were given ten minutes for a session break, which was followed by a discussion to gauge the nurses' comprehension and feedback (10 minutes).
- Each session began with a 10-minute discussion to gauge the nurse's impressions of the technique, followed by the training portion as described below:
 - General information about hearing impairment such as (definition causes, signs and symptoms, complications and...etc.).
 - Information about caring or hearing aids.
 - Information about nurses' attitude
 - Information about nurses' communication methods, obstacles in communication and strategies for communicating with hearing-impairment patients.

The practical section:

To assist nurses in presenting the process, the researchers produced instructional videos on it. Both before and after the demonstration period, videos were shown.

Every clinical session was conducted twice, once on the same day and once on a different day, to ensure that all nurses had attained the necessary level of procedure proficiency. To verify proper practice and pinpoint any weak points, each nurse in the study group performed the technique once or more while being observed by the researchers.

Every nurse in every study group received a booklet containing all of the theoretical and practical information, along with a copy of the training program in both Arabic and English.

Educational resources such as handouts, posters, and clinical videos that showcased the

treatment being given were utilized to clarify the subjects.

Researchers and nurses were able to communicate openly and honestly in order to guarantee that any questions were answered and that the knowledge and practical abilities were verified.

During the data collecting process, the observational checklist was utilized to assess the nursing staff's proficiency in applying and handling hearing aids, ensuring that they maintain their abilities until they attained the competency level. After each group completes a one-week training program in the ENT department, the second week of the program is when the nurses' skills are evaluated.

Teaching methods:

Lecture, discussion and demonstration

Teaching media:

Power Point & Data show, booklet, and picture

The Evaluation stage:

Using the same questionnaire and observational checklist from the pre-test, a posttest was given to evaluate nurses' performance and communication following the training program's implementation. It was completed just once, just after the training program ended, which made it easier to assess how the program's implementation had gone.

Administrative design:

The director of Beni-Suef University Hospital provided the necessary approval to conduct the investigation. To get approval for data gathering, the faculty of nursing sent out a letter outlining the purpose of the project.

Statistical Design:

Data was stored, analyzed, and graphic presentations were created using an IBM-compatible personal computer for several significant outcomes. Since SPSS version 24 includes the significance test included in conventional statistical textbooks, it was utilized for the statistical analysis of the data. The results were significant at the 5% level (Charlotte., 2014).

Descriptive statistics

The arithmetic mean, central tendency, standard deviation, frequency, and percentage of observations were used to describe the data. The standard deviation served as a measure of the results' dispersion around the mean. The relationship between the overall knowledge score and the total practice score was ascertained using other statistical tests, such as the correlation coefficient, which were computed and the p value. The Alpha Cronbach test was also utilized to evaluate the tools' dependability.

Results:

Table 1 : showed the distribution of the nurses regarding socio-demographic characteristics. As patient age, mean \pm SD of patients were 27.2 \pm 4.7. Patients sex showed more than two-thirds (70.6%) of the nurses were females, as well as half (50%) of nurses were married, had a diploma, and (5<10) years of experience. As regard the nurses' specialties, less than two-thirds (60%) were in the surgical ENT department.

Figure 1 clarified the distribution of nurses based on their total knowledge about patients with hearing impairment pre and post intervention. The data reveals that there were statistically significant improvements regarding nurses' total levels of knowledge done at post-intervention, compared with pre-intervention in all knowledge items at $p \leq 0.001$.

Figure 2 showed the nurses' distribution regarding their practice regarding patients with hearing impairment pre and post intervention of the educational program. The data reveals that there were significant improvements regarding nurses' total levels of practice done at post-intervention, compared with pre-intervention in all practice items at $p \leq 0.001$.

Table 2 & Table 3 displayed the positive and negative attitude of nurses toward patients with hearing impairment. Regarding to positive attitude pre intervention, 66.6% among the study sample reported that, they always disagree to care for patient with hearing-impaired, but post intervention, 66.6% of study sample reported that, they always caring for their patient with hearing-impaired (agree). While 66.6% of studied sample reported that

they disagree to accept patient with hearing impairment but post intervention 50% of the studied nurses accept that they care for patient with hearing impairment (agree).

Table (4) Displayed the difficulties (obstacles) facing nurses during communicating patients with hearing-impaired. It clarifies that the mean and standard deviation of each obstacle during pre-intervention were much lower than post intervention. It also could be noticed that there were statistically significant differences between all obstacles. The most obstacles occurred in pre intervention were that patients with Hearing-impaired were hardly understand the instructions, patients with Hearing-impaired rarely understand the message, and nurses do not listen to the end of patients with hearing-impaired conversation (93.3%, 90.0 %, 90.0 %); compared to (46.6 %, 43.3%, 26.7%) among the study group respectively.

Table (5) Displayed the communication between nurses and patients with hearing-impaired which was happens post intervention through speech (90.0%), then through writing and lips reading (83.4%) and then through sign language (73.4%). All that Showed that (66.6%) and manual alphabet (60.0%) are less common ways of communication used by the nurses. Compared to (30.0%, 40.0%, 36.6%, 33.4%, 26.6% and 16.6%) in pre intervention respectively. This table showed a statistically significant difference between pre and post intervention regarding the nurses' using of communication methods at $p < 0.001$.

Table (6) Presented nurses' strategies for communication with patients with hearing-impaired. As 90.0% were done with five nurses' strategies among the study group post intervention: face the light and be patient at all times; do never stand in front of the light so that it is lighting up your back, talk straight to the patient with hearing-impaired, speak clearly and not too fast, and repeat or rephrase if necessary, keep checking to make sure that the patient understands the communed , and all important facts should be written down; compared to only 26.7% among the control group pre intervention. This table clarifies a statistically significant difference between the control and study groups with ($P=0.001^*$).

Table (7) Portrayed the Relation between nurses' Demographic Characteristics and total knowledge. It revealed a significant variance between pre and post intervention regarding the nurses' knowledge and their demographic characteristics at $p < 0.001$.

Table (8) Showed the correlation between nurses' Demographics and total practice. It clarified a statistically significant difference between pre and post intervention regarding the nurses' practice and their demographic characteristics at $p < 0.001$.

Table (9) Illustrated a significant variation between the mean scores of practices, and knowledge scores post intervention at $p \leq 0.001$

Table (10): Showed that there was a significant difference between the mean scores of demographic characteristics, and total communication skills post intervention at $p \leq 0.001$.

Table (1): Distribution of nurses regarding their Characteristics (n=30).

Variables		No =30	
		f	%
Age Mean \pm SD 27.2 \pm 4.7	<25 years	10	33.4
	25<35	13	43.4
	35< 45	5	16.6
	>45	2	6.6
Sex	Male	10	33.4
	Females	20	70.6
Marital status:	Married	15	50.0
	Single	8	26.7
	Widowed	2	6.6
	Divorced	5	16.7
Level of education	Diploma degree	15	50.0
	Associated degree	5	16.7
	Bachelor degree	10	33.3
Years of experience	1-<5	8	26.7
	5<10	15	50.0
	10<15	5	16.7
	>15	2	6.6
Unit (specialties):	Medical ENT Department	12	40.0
	Surgical ENT Department	18	60.0

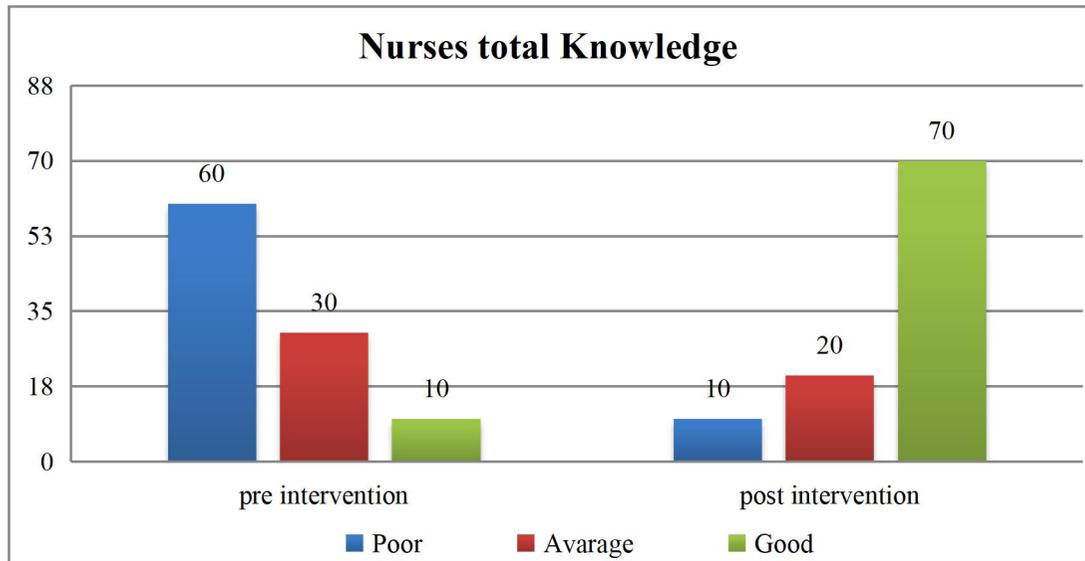


Figure (1): Displays significant improvements among nurses total levels of knowledge at the post-intervention, compared to the program in all knowledge items at $p \leq 0.001$.

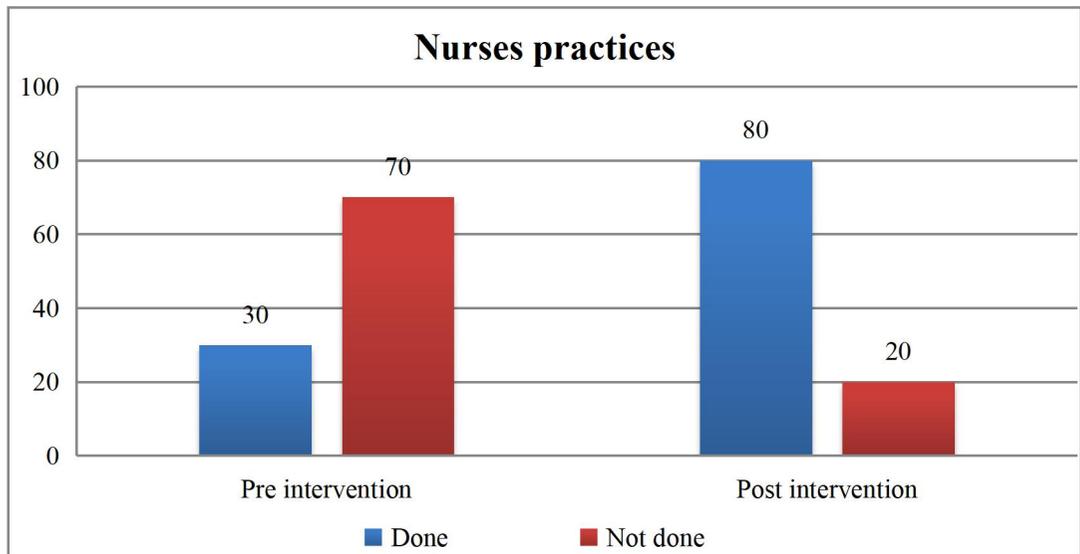


Figure (2): Distribution of nurses regarding their practice regarding patients with hearing impairment during pre and post intervention

Table (2): Nurses' positive attitude regarding patients with hearing impairment (N=30)

Domains of positive attitude	Pre intervention						Post intervention						P value
	Agree		Uncertain		Disagree		Agree		Uncertain		Disagree		
	f	%	f	%	f	%	f	%	f	%	f	%	
Believe that a hearing-impaired patient can be enhanced if helped and supported.	5	16.7	10	33.3	15	50.0	20	66.6	5	16.7	5	16.7	0.001
I believe taking care of a hearing-impaired patient is a blessing.	8	26.6	12	40.0	10	33.3	15	50.0	10	33.4	5	16.7	0.001
Believe that it is my responsibility to take care of my hearing-impaired patient	10	33.4	5	16.6	15	50.0	20	66.6	10	33.4	0	0.0	0.001
Feel motivated when I see my hearing-impaired patient.	5	16.6	10	33.4	15	50.0	15	50.0	10	33.4	5	16.7	0.001
Respect my hearing-impaired patient.	10	33.4	8	26.7	12	40.0	20	66.6	10	33.4	0	0.0	0.001
Provide everything that my hearing-impaired patient needs	5	16.7	10	33.3	15	50.0	17	56.6	10	33.4	3	10.0	0.001
Protect my hearing-impaired patient.	5	16.6	10	33.4	15	50.0	20	66.6	5	16.7	5	16.7	0.001
I am always there for my hearing-impaired patient.	5	16.6	5	16.6	20	66.6	20	66.6	5	16.7	5	16.7	0.001
Accept that my patient has a hearing impairment	3	10.0	7	23.4	20	66.6	15	50.0	10	33.4	5	16.7	0.001
Do not except my hearing-impaired patient from the duties, tasks or from obedience properly demanded from all other patients	5	16.7	10	33.3	15	50.0	20	66.6	5	16.7	5	16.7	0.001
Persons with hearing-impairment are just as intelligent as non-disabled ones.	8	26.6	12	40.0	10	33.3	15	50.0	10	33.4	5	16.7	0.001
People with hearing-impairment are usually easier to get along with than other people.	10	33.4	8	26.7	12	40.0	20	66.6	10	33.4	0	0.0	0.001
People with hearing-impairment are often the same as anyone else.	5	16.7	10	33.3	15	50.0	15	50.0	10	33.4	5	16.7	0.001
Believe that people with hearing-impairment are as happy as people without disabilities.	8	26.6	12	40.0	10	33.3	15	50.0	10	33.4	5	16.7	0.001

Table (3): Nurses' negative attitude regarding patients with hearing impairment (N=30)

Domains of negative attitude	Pre intervention						Post intervention						P value
	Agree		Uncertain		Disagree		Agree		Uncertain		Disagree		
	f	%	f	%	f	%	f	%	f	%	f	%	
Hearing impairment is punishment by God.	20	66.6	5	16.7	5	16.7	10	33.4	5	16.6	15	50.0	0.001
Hearing impairment is a result of witchcraft	20	66.6	5	16.7	5	16.7	5	16.6	10	33.4	15	50.0	0.001
Believe that a hearing-impaired patient is not a burden	15	50.0	10	33.4	5	16.7	10	33.4	8	26.7	12	40.0	0.001
Feel sad when I see my hearing-impaired patient.	20	66.6	5	16.7	5	16.7	5	16.7	10	33.3	15	50.0	0.001
Do not show impatience to my hearing-impaired patient	15	50.0	10	33.4	5	16.7	10	33.4	8	26.7	12	40.0	0.001
Felt confused when I learnt that my patient was hearing impaired	20	66.6	10	33.4	0	0.0	5	16.6	5	16.6	20	66.6	0.001
Most people with hearing-impairment feel sorry for themselves.	15	50.0	10	33.4	5	16.7	3	10.0	7	23.4	20	66.6	0.001
It would be best for persons with hearing-impairment to live and work in special communities.	20	66.6	10	33.4	0	0.0	5	16.7	10	33.3	15	50.0	0.001
It is up to the government only to take care of persons with hearing-impairment.	17	56.6	10	33.4	3	10.0	10	33.4	8	26.7	12	40.0	0.001
Most people with hearing-impairment worry a great deal.	15	50.0	10	33.4	5	16.7	8	26.6	12	40.0	10	33.3	0.001
People with hearing-impairment should not be expected to meet the same standards as people without disabilities	20	66.6	10	33.4	0	0.0	15	50.0	10	33.4	5	16.7	0.001
It is almost impossible for a person with a hearing-impairment to lead a normal life.	15	50.0	10	33.4	5	16.7	10	33.4	0	0.0	20	66.6	0.001
You should not expect too much from people with hearing-impairment.	20	66.6	10	33.4	0	0.0	15	50.0	5	16.7	10	33.4	0.001

Table (4): Difficulties (obstacles) facing nurses in Communicating with patients with hearing-impaired N=30

Ser.	Difficulties in communication	Pre intervention				Post intervention				P value
		Occurred		Not occurred		Occurred		Not occurred		
		f	%	f	%	f	%	f	%	p
	Communication problems strongly expressed	20	66.6	10	33.4	10	33.4	20	66.6	0.001
	Hearing-impaired patients are not responding	25	83.3	5	16.7	13	43.3	17	56.7	0.001
	Hearing-impaired patients hardly understand instructions	28	93.3	2	6.7	14	46.6	16	53.4	0.001
	Hearing-impaired patients rarely understand the message	27	90.0	3	10.0	13	43.3	17	56.7	0.001
	Hearing-impaired patients, I don't remember you looking into eyes	19	63.3	11	36.7	10	33.4	20	66.6	0.001
	Nurses do not understand what a Hearing-impaired patients' needs	22	73.3	8	26.7	5	16.7	25	83.3	0.001
	Nurses do not listen to the end, to Hearing-impaired patients	27	90.0	3	10.0	8	26.7	22	73.3	0.001
	Low-interest nurses in the problems of Hearing-impaired patients	22	73.3	8	26.7	12	40.0	18	60.0	0.001
	Low-patience nurses	25	83.3	5	16.7	10	33.4	20	66.6	0.001
	<u>No</u> visible mark to facilitate movement in the institution	20	80.0	10	20.0	0	0.0	30	100.0	0.001

Table (5): Nurses' Communication methods for patients with hearing-impaired N=30

Item	Communication methods								P value
	Pre intervention				Post intervention				
	Used		Not Used		Used		Not Used		
	f	%	f	%	f	%	f	%	
Showing	8	26.6	22	73.4	20	66.6	10	33.4	0.001
Writing	12	40.0	18	60.0	25	83.4	5	16.6	0.001
Speech	9	30.0	21	70.0	27	90.0	3	10.0	0.001
Manual alphabet	5	16.6	25	83.4	18	60.0	12	40.0	0.001
Sign language	10	33.4	20	66.6	22	73.4	8	26.6	0.001
Lips reading	11	36.6	19	63.4	25	83.4	5	16.6	0.001

Table (6): Nurses' Strategies for Communicating patients with hearing-impaired N=30

Ser.	Strategies	Pre- intervention				Post intervention				P value
		Done		Not done		Done		Not done		p
		f	%	f	%	f	%	f	%	
	Receive the hearing-impaired patient's attention before speaking	5	16.7	25	83.3	22	73.3	8	26.7	0.001
	Make sure the room is well-lighted so that the patient can see your face clearly.	5	16.7	25	83.3	22	73.3	8	26.7	0.001
	Face the light and be patient at all times; do never stand in front of the light so that it is lighting up your back.	8	26.7	22	73.3	27	90.0	3	10.0	0.001
	Reduce unnecessary noise	7	23.3	23	76.7	20	66.6	10	33.4	0.001
	Keep your head, if possible, still when talking	5	16.7	25	83.3	22	73.3	8	26.7	0.001
	Do not hide your mouth when talking, behind e.g., your hand, a paper, or facial mask	7	23.3	23	76.7	20	66.6	10	33.4	0.001
	Talk straight to the hearing-impaired patient	8	26.7	22	73.3	27	90.0	3	10.0	0.001
	Do not have a conversation with other people at the same time as you are dealing with your hearing-impaired patient	5	16.7	25	83.3	22	73.3	8	26.7	0.001
	Maintain eye contact whilst communicating	5	16.7	25	83.3	22	73.3	8	26.7	0.001
	Use normal lip movement	7	23.3	23	76.7	20	66.6	10	33.4	0.001
	Speak at a normal volume	5	16.7	25	83.3	22	73.3	8	26.7	0.001
	Speak clearly and not too fast, and repeat or rephrase if necessary	8	26.7	22	73.3	27	90.0	3	10.0	0.001
	Speak in plain Arabic at a normal speed.	5	16.7	25	83.3	22	73.3	8	26.7	0.001
	Use written notes or diagrams	5	16.7	25	83.3	22	73.3	8	26.7	0.001
	Use gestures and facial expressions to help explain yourself	7	23.3	23	76.7	20	66.6	10	33.4	0.001
	Point to parts of your body if necessary	7	23.3	23	76.7	20	66.6	10	33.4	0.001
	Keep checking to make sure your patient understands you	8	26.7	22	73.3	27	90.0	3	10.0	0.001
	All important facts should be written down	8	26.7	22	73.3	27	90.0	3	10.0	0.001
	Do never shout into someone's ear or hearing aid	7	23.3	23	76.7	20	66.6	10	33.4	0.001
	Remember that a hearing aid does not cut out background noise completely	5	16.7	25	83.3	22	73.3	8	26.7	0.001
	Book an interpreter	7	23.3	23	76.7	20	66.6	10	33.4	0.001
	Talk directly to your patient, not the person interpreting for them	5	16.7	25	83.3	22	73.3	8	26.7	0.001
	Be patient	7	23.3	23	76.7	20	66.6	10	33.4	0.001

Table (7): The correlation between nurses' Demographics and overall knowledge

Demographic Characteristics		Total knowledge												P value
		Pre- intervention						Post-intervention						
		Poor		Average		Good		Poor		Average		Good		
		f	%	f	%	f	%	f	%	f	%	f	%	
Age	<25	8	44.4	3	33.3	1	33.3	1	33.3	2	33.4	10	47.6	0.000
	25<35	6	33.3	4	44.3	1	33.3	1	33.3	1	16.6	8	38.1	
	35< 45	3	16.7	1	11.2	1	33.3	1	33.3	2	33.4	2	9.5	
	>45	1	5.6	1	11.2	0	0.0	0	0.0	1	16.6	1	4.8	
Sex	Male	10	55.6	3	33.3	2	66.7	2	66.7	3	50.0	10	47.6	0.000
	Females	8	44.4	6	66.7	1	33.3	1	33.3	3	50.0	11	52.4	
Marital status:	Married	8	44.4	5	55.4	2	66.7	1	33.3	3	50.0	10	47.6	0.000
	Single	8	44.4	2	22.2	1	33.3	1	33.3	1	16.6	9	42.8	
	Widowed	1	5.6	1	11.2	0	0.0	0	0.0	1	16.6	1	4.8	
	Divorced	1	5.6	1	11.2	0	0.0	1	33.3	1	16.6	1	4.8	
Level of education:	Diploma degree	11	61.2	4	44.4	2	66.7	2	66.7	1	16.6	2	9.5	0.000
	Associated degree	3	16.6	2	22.3	0	0.0	1	33.3	1	16.6	3	14.3	
	Bachelor degree	4	22.2	3	33.3	1	33.3	0	0.0	4	66.8	16	76.2	
Years of experience	1-<5	11	61.2	1	22.2	1	33.3	1	33.3	1	16.6	1	4.8	0.000
	5<10	2	11.1	4	44.4	2	66.7	1	33.3	2	33.4	2	9.5	
	10<15	2	11.1	2	22.3	0	0.0	1	33.	2	33.4	2	9.5	
	>15	3	16.6	2	22.3	0	0.0	0	0.0	1	16.6	16	76.2	
Unit specialties	Medical ENT Department	10	55.6	7	77.8	1	33.3	2	66.7	3	50.0	5	32.8	0.000
	Surgical ENT Department	8	44.4	2	22.2	2	66.7	1	33.3	3	50.0	16	76.2	

Table (8): Relation between nurses' Demographics and overall practice

Demographic Characteristics		Pre- intervention				Post- intervention				P value
		Done		Not done		Done		Not done		
		f	%	f	%	f	%	f	%	
Age	<25	1	11.2	7	33.3	11	45.8	2	33.3	0.000
	25<35	2	22.2	8	38.2	7	29.2	2	33.3	
	35< 45	2	22.2	1	4.7	4	16.6	1	16.7	
	>45	4	44.4	5	23.8	2	8.4	1	16.7	
Sex	Male	3	33.3	9	42.8	11	45.8	2	33.3	0.000
	Females	6	66.7	12	57.2	13	54.2	4	66.7	
Marital status:	Married	1	11.2	1	4.7	2	8.4	1	16.6	0.000
	Single	3	33.3	10	47.7	10	41.6	1	16.6	
	Widowed	1	11.2	1	4.7	2	8.2	0	0,0	
	Divorced	4	44.3	9	42.9	10	41.6	4	66.7	
Level education of	Diploma degree	2	22.2	4	19.1	6	25.0	1	16.6	0.000
	Associated degree	3	33.4	2	9.5	3	12.5	1	16.6	
	Bachelor degree	4	44.4	15	71.4	15	62.5	4	66.8	
Years experience of	1-<5	3	33.4	10	47.7	10	41.6	3	50.0	0.000
	5<10	2	22.2	6	28.5	8	33.3	2	33.4	
	10<15	1	11.2	4	19.1	4	16.7	1	16.6	
	>15	3	33.4	1	4.7	2	8.4	0.0	0.0	
Unit (specialties):	Medical ENT Department	5	55.6	14	66.6	10	41.6	2	33.3	0.000
	Surgical ENT Department	4	44.4	7	33.4	14	58.4	4	66.7	

Table (9): The relationship between nurses total score of knowledge and practice pre- and post-intervention (n =30).

Item	Total knowledge			
	Pre- intervention		Post- intervention	
	r	P value	R	P value
Total practice	- 0.197	0.03	- 0.173	0.058

(*) statistically significant & (**) high statistically significant $P \leq 0.001$

Table (10): Relation between nurses 'Demographic Characteristics and total communication skills (n=30)

Demographic Characteristics		Pre- intervention				Post- intervention				P value
		Done		Not done		Done		Not done		
		f	%	f	%	f	%	f	%	
Age	<25 years	2	16.6	4	22.3	7	33.3	2	22.3	0.000
	25<35	3	25.0	8	44.4	8	38.1	3	33.3	
	35< 45	2	16.6	1	5.6	4	19.1	3	33.3	
	>45	5	41.8	5	27.7	2	9.5	1	11.1	
Sex	Male	3	25.0	8	44.4	12	57.2	3	33.3	0.000
	Females	9	75.0	10	55.6	9	42.8	6	66.7	
Marital status:	Married	2	16.6	2	11.1	2	9.5	1	11.1	0.000
	Single	3	25.0	10	55.6	9	42.8	2	22.3	
	Widowed	3	25.0	2	11.1	2	9.5	2	22.3	
	Divorced	4	33.3	4	22.2	8	38.2	4	44.3	
Level of education	Diploma degree	2	16.6	4	22.3	6	28.5	3	33.3	0.000
	Associated degree	6	50.0	2	11.1	3	14.3	2	22.3	
	Bachelor degree	4	33.3	12	66.6	12	57.2	4	44.4	
Years of experience	1-<5	4	33.4	7	38.8	10	47.7	3	33.3	0.000
	5<10	2	16.6	6	33.3	7	33.3	2	22.3	
	10<15	2	16.6	4	22.3	2	9.5	1	11.1	
	>15	4	33.4	1	5.6	2	9.5	3	33.3	
Unit specialties	Medical ENT Department	5	55.6	14	66.6	10	41.6	2	33.3	0.000
	Surgical ENT Department	4	44.4	7	33.4	14	58.4	4	66.7	

Discussion:

Despite hearing impairment (HI) having a higher prevalence than asthma, heart disease or diabetes, people with HI experience persistent health inequalities with poorer experiences and outcomes in disease management. Clear communication and patient engagement are the keys to better outcomes, which poses a challenge for the nurses unprepared to accommodate a patient's hearing needs. Poor communication

could lead to a lack of nurse–patient trust and to many errors. (Rogers et al., 2018)

The current study aimed to evaluate the effect of educational program on nurses' performance and communication regarding patients with hearing impairment.

The current research outcomes exhibited that the majority of nurses were females aged between 25 <35 years. Half of nurses were married, had

diploma degree and had 5<10 years of experience. The majority of nurses are working in Surgical ENT department. This study findings were supported by the finding of a study done by (Hajbaghery & Shahsavarloo., 2015) who stated that nurses' age was range between 20–33 years old. In total, 69.9% of the participants were female.

Finding of the current study revealed that nurses' knowledge was increased post implementation of the educational program, compared to pre-educational program, the lacks of nurses' knowledge in pre-educational program were mostly related to: types of hearing impairment, degrees of hearing impairment among patients, and risk factors of hearing impairment. These findings agree with (Velonaki et al., 2015) who conducted a study named: nurses' knowledge, attitudes and behavior toward deaf patients, and stated that nurses had a lack of relevant knowledge; which came in accordance with (Ruesch., 2018) who also found only 35% of nurses correctly identified the term of hearing loss. Also in a study done by (Foondun et al., 2023) who conducted research in Mauritius and the results reflected inadequate knowledge regarding some risk factors and the identification of hearing loss.

However, the results of a study by Bergonia (2021) indicate that a majority of nurses are not only aware of the hazards associated with hearing loss, but also know the type of hearing loss and can identify the medical word for it.

The results of the current research exhibited increasing in nurses' practice regarding patients with hearing impairment post educational program implementation, compared to pre-educational program ($p \leq 0.001$). Lack of nurses' practice in pre-educational program were mostly related to care of hearing aids like: cleans the external surfaces of the hearing aid with a damp cloth; does not immerse the hearing aid in water; for detachable earmold disconnects the earmold, soaks in soapy water, rinses than dries well, reattaches, and remove and reinsert the hearing aid. This finding is consistent with that of a research done by (Bergonia., 2021) and asserted that the participants did not have sufficient practices on dealing with hearing aids. She found that nurses are not completely confident in their capacity to clean hearing aids and suggest that

cleaning hearing aids may take longer. These results are also consistent with (Solheim et al., 2016) who found that only a small number of nurses who could practice on hearing aid use and upkeep, as inserting, removing hearing aids, demonstrating a lack of routine and proper hearing aid cleaning ear molds regularly of ear wax.

The results of current research exhibited relatively increasing in nurses' attitude regarding patients with hearing impairment post implementation of the educational program, compared to pre-educational program. Lack of nurses' domains of positive attitude pre-educational program were mostly related to attitude as the majority of nurses were disagree with items as: I am always there for my patient with hearing-impaired; I accept that my patient has a hearing impairment. Compared to minority of nurses post educational program implementation. The finding of present study confirmed that half of nurses were disagreed with items as: I believe that a patient with hearing-impaired could be enhanced if helped and supported, I believe that it is my responsibility to take care of my patient with hearing-impaired, I feel motivated when I see my patient with hearing-impaired, I provide everything that my patient with hearing-impaired needs, I do not except my patient with hearing-impaired from the duties, tasks or from obedience properly demanded from all other patients; and people with hearing- impairment are often the same as anyone else. Compared to minority post educational program. From the researchers' point of view, the findings of the current study could be interpreted on the fact that; attitudes are not innate attributes of mankind. They are learnt, relatively stable but can be modified. With action goals activated, attitudes are more easily remembered and more difficult to modify. (Albarracin & Shavitt., 2018).

These finding go with the findings of study done in India 2018 and revealed poor attitude towards patients with hearing impairment among nurses (Sanju et al., 2019). The results were also matched with the finding of a study done by (Velonaki et al., 2015) who supported that appropriate educational programs, is contribute in improving nurses' attitude toward deaf people and would be welcomed by the majority. Contrary to the present findings of the current

study, (Foondun et al., 2023) who conducted a study named "Knowledge of and attitudes toward hearing loss among community health workers" and found that most participants exhibited positive attitudes toward hearing loss.

The study finding indicates that obstacles in Communication with hearing-impaired patients were decreased post-program implementation compared to pre-program. This finding may be explained that the nurses are not so familiar with knowledge about how to communicate with patients with hearing impaired and that there are deficiencies in the nursing training regarding such point.

The current study results were matched with (Mattjus., 2021) who revealed a significant statistical difference between pre and post educational program regarding obstacles in communication with hearing-impaired patients. From the researchers' point of view improper insertion of hearing aids not only means the hearing aids are not able to provide the appropriate amount of amplification it has been programmed to but it could also result in whistling hearing aids which could lead to annoyance, pain, and the rejection of hearing aid used especially for new users' patients. The present study results stated that most nurses reported obstacles in communication with hearing-impaired patients. This finding was coincided with (Britto & Samperiz., 2020) who conducted a study named "Communication difficulties and strategies used by the nurses and their team in caring for the hearing impaired" and asserted that the nursing team faces difficulties with regard to providing information to patients with hearing impaired and in understanding the patient based on his/ her way of communicating.

Current study showed the most obstacles in communication with hearing-impaired patients that found in pre-program were: patients with Hearing-impaired hardly understood the instructions, rarely understand the message, and nurses do not listen to the end of conversation with them. This finding agrees with the finding of (Ljubicic et al., 2017) who asserted in a study coined " Communication Between Nurses and Deaf People in Health Institutions" which was conducted in Croatia and assured those difficulties in the communication between the nurses and deaf people is significantly

pronounced. The difficulties include the lack of response of deaf people when being called and the lack of understanding of messages.

According to the researchers, in order for nurses to provide care, patients need to feel comfortable and trust them. This connection of trust is based on interpersonal communication, which helps them get past any barriers to communicating with patients who are hard of hearing.

Regarding communication methods the study results confirmed that nurses who using communication methods was significantly increased post program implementation than pre. The findings displayed the most communication methods that used by nurses' post- educational program were speech, writing, lips reading and then sign language. While showing and manual alphabet are fewer common ways used for communication.

The current study results were contradicted with (Ljubicic et al., 2017) whose research shows that the nurses mostly communicate with deaf people by showing and writing.

It could be interpreted; from the researchers' point of view, as nurses' knowledge and practice of sign language isn't found in the curriculum of nurses.

In relation to nurses' strategies for communication with hearing-impaired patients the finding of the present study confirmed that the minority of nurses used communication strategies at pre-educational program especially in some items related to the nurses and message as: receive the hearing-impaired patient's attention before speaking, keep your head, if possible, still when talking, do not involved in conversation with other people at the same time as nurses are dealing with hearing-impaired patient, maintain eye contact whilst communicating, speak at a normal volume, speak in plain Arabic at a normal speed, use written notes or diagrams, , and talk directly to patient, not the person interpreting for them. These finding confirmed inconsistent knowledge in nurses' communication strategies. This indicates that the nurses need for further education and training. These finding agrees with (Bergonia., 2021) and (Ruesch., 2018) who found generally inadequate using of communication strategies by nurses as they are

not known how to rephrase, repeat, allow for extra time and confirm that the resident has understood what was said. The lack of nurses who are keeping verbal messages short and simple suggests that nurses communicate with their residents using longer and more complex sentences.

Also, the current study results confirmed that minority of nurses used communication strategies at pre-educational program especially strategies those related to environment as: make sure the room is well-lighted so that the patient can see her face clearly, remember that a hearing aid does not cut out background noise completely. This finding disagrees with (Bergonia., 2021) who found that most participants are aware about the need for communication to occur in quiet environments where background noise is eliminated or kept it to a minimum.

It could be explained from the researchers' point of view as nurses are very busy and typically multi-task in order to get tasks done in a timely manner; this is due to a result of the shortage of professional nurses which is the main problem facing nurses in Beni Seuf and Egypt as a whole (Abdelhamed et al., 2017). The balance between getting things done in a timely manner and ensuring that communication with the resident is efficient and successful is a challenge facing nurses.

The results of current study portrayed a strong relation between nurses' Demographic Characteristics and their total knowledge. This finding is in contrast with the finding of study done by (Ljubicic et al., 2017) who applied in Croatia and found that there is no significant difference in relation to age, sex, level of education & the length of service, nurses' total knowledge and total practice.

The results of the current study illustrated that there was a considerably difference between nurses' practices, and knowledge in post and pre-educational program. implementation which indicates the effectiveness and support the objectives of our study. This finding is supported by (Sabry et al., 2021) who concluded a study proved that nursing intervention had a significant effect in improving level of knowledge.

From the researchers' point of view nurses had poor communication knowledge skills

probably due to the lack of an independent course in this regard in the curriculum of the bachelor's nursing degree as the current study cleared that, most nurses inefficiently communicated although communication is one of special importance in development of positive attitude and important in-patient care; thus, nurses should acquire and apply skills of efficient communication. The level of efficient communication could be promoted through culturalization and training.

The finding of the current study confirmed a considerable difference between the demographic characteristics, and total communication skills post educational program. This finding is congruent with (Mansoorian et al., 2016) who conduct a study in Iran titled; The impact of workshop instruction on nurses' ability to effectively communicate with clients about their health.

Generally, the results of the present study showed that, nurses' performance and communication were significantly improved in total levels of knowledge and practice post educational program implementation, compared to pre-educational program which was statistically very clear. From the researchers' point of view, this finding may be explained in the light of the fact that; Faculty of Nursing in Beni-Suef University does not have both theoretical nor practical curriculum about how to care for patients with hearing impairment; so, graduated nurses had not specific knowledge, skills and communication strategies regarding caring for such group of patients with hearing impairment. One of the notable findings in this study, is that nurses had negative attitudes regarding patients with hearing impairment, and it is known that attitudes have a significant impact on one's performance, (Albarracín & Johnson., 2019), this effect was clearly evident in the nurses' performance which explains information, and practices towards patients with hearing impairment especially before the implementation of the educational program.

Conclusion:

The study proved that; educational program improved nurses' performance and communication regarding patients with hearing impairment.

It is intended that this research sparks an idea to work on developing and putting into practice nurse education and training programs. In order to give all patients in Egypt's care facilities for the hearing impaired the same level of support and care, it is also hoped that training programs will be uniform.

Recommendations:

The current study recommended that:

- Develop and implement an educational program for nurses' performance and communication in nursing curricula and in-service training programs for nurses.
- Educate nurses on the rapidly evolving field of hearing aid technology.
- The challenges encountered and the approaches used by the nursing staff when interacting with patients who are hard of hearing support the necessity for these workers to have more humane training in order to create a more inclusive community for those with special needs.
- Further research to attempt understanding the most effective modes for the provision of training, particularly considering the busy lives that nurses lead.
- In a medical facility, an interpreter is required for efficient communication.
- Encouraging nurses to communicate effectively with patients who have hearing impairments is a top goal.

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