Awareness and Perception of Nurses Regarding Telenursing at Primary Health Care Setting

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Abstract: Background: Telenursing improve accessibility to health care, faster services development, increase in the esteem of the profession, data security, facilitated communication between nursing staff as well as saving time. **Purpose**: Assess the awareness and perception of nurses regarding telenursing at primary health care setting. Design: Descriptive research design. **sample**: All nurses (300) were working at previously mentioned settings. **Setting**: The study was carried out in primary health care centers, in two districts of Menoufia governorate, Egypt. **Instruments**: interviewing questionnaire about sociodemographic characteristics, awareness assessment questionnaire about telenursing and nurses' perception scale regarding telenursing. **Results**: Findings of study revealed that, studied nurse's age was between 20 – 30 years, with mean age 32.9 ± 8.8 years. Furthermore, 90.3% of studied nurses were females. The total number of studied nurses had mobile and 98% of them using internet. Moreover, 77.7 % of studied nurses didn't have training courses on telenursing. In addition, 74% of the studied nurses had poor awareness regarding telenursing. Furthermore, 74% of the studied nurses had very good perception regarding telenursing. **Conclusions**: The majority of the studied nurses had Poor level of awareness regarding telenursing, while, three quarters of the studied nurses had very good level of perception regarding telenursing. **Recommendations**: Develop and implement educational training programs to increase awareness and perception about telenursing.

Keywords: Awareness, Perception, Primary Health Care Setting, Telenursing.

Introduction

Telehealth is a multi-phase system that benefits both patients and healthcare professionals by giving the resources to obtain suitable healthcare, as well as the opportunity to participate in training programs and perform research (Alipour & Haghighi, 2021).

Telenursing is a subset of telehealth, which is an information technology-based long-distance health service that provides nursing care remotely to increase patient access and efficiency. Many countries have implemented telenursing as a part of the healthcare services (Yu-Tong et al., 2022).

Telenursing is an important way for reaching modern nursing care, to improve the quality of care and quick access to nursing care services by overcoming geographical barriers. Telenursing focuses on patients' long-term wellness and health as well as empowerment of nurses with opportunity of education, follow up and family support through using information and communication technology system (ICT) as telephones, fax, internet, soft applications as Facebook, WhatsApp, audio and video conferencing and computer system (Koivunen & Saranto, 2019).

Telenursing provides several benefits such as improving access and quick patient engagement at a cheaper cost. It supports in filling the gap resulting from the burden of patients and a scarcity of healthcare providers. Among many advantages of telenursing in nursing care are improved accessibility to health care, faster services development, data security, better information flow, facilitate communication between nursing staff and hospitals and improvement of time and resource allocation (Asimakopoulou, 2020).

Egypt is deploying technology in all its services in different socio-economic applications. As an example of these applications are e-government, e-businesses and e-learning. Minor steps have been taken in telehealth but not yet enough. Egypt is aiming to reach universal health coverage; this increases the demand of telehealth in routine health services (Al-shorbaji et al., 2018).

There are some difficulties with telenursing application, such as available healthcare providers and patients who have troubles with using the technology due to lack of support, education, and guidance. Therefore, if nurses want to provide telenursing, they need to be optimistic, open-minded, knowledgeable about the technology, its use, and aware of its limits. They ought to be able to determine if hospitalization or changes in the care plans are necessary (Rizk & Siam, 2021).

Community health nurses have been participating in the telehealth continuum since 1996, mainly using telephone interviews to initiate and coordinate follow-up after discharge, provide guidance and education on self-care at home, as well as to respond to any health inquiries during home-based care after discharge to home. Since then, tele-technologies such as remote patient monitoring, and in some instances mobile devices, have been used to monitor and record patient physiological data and provide general nursing educational information to patients and caregivers (Yu, 2022).

The role of Community health nurses is an indispensable part of telehealth implementation and nurses' skills and attitudes could be preventive factors in the implementation of telehealth and telenursing. However, while demand

for telehealth care and involvement of nursing staff is increasing, knowledge of factors that influence nurses' intention and willingness to practice telenursing is limited (Venville et al., 2021).

Community health nurses should enhance their skills and procedures to prevent illness and control its spread, especially those working in isolation hospitals and playing a vital role in infection control (Fawaz et al., 2020). The basis for changing behavior is knowledge, beliefs, and attitudes which are considered significant motivators of behavior change. In addition, the ability to deliver competent care while maintaining patient safety is one of the nurse's basic skills (Zhou, et al., 2020).

Significance of the Study:

Telenursing is a technology-based nursing service that was created to provide convenience to health services for patients especially in isolation hospitals to minimize the risk of exposure to infection between patients and health care workers. health care providers must be equipped with the necessary knowledge, training, experience and should have positive attitude toward telenursing in order to utilize it effectively in meeting patient needs and provide competent patient care (Canady, 2020).

The level of awareness about telenursing is encouraging, but a little effort would be required to bring technology into practice. The goal of telehealth is to improve the standards of health care and the well-being of under-care patients. Many studies have proved that healthcare quality has tremendously improved throughout the world by utilizing tele services in regular consultation programs (Haleem et al., 2021).

In PHC settings, telenursing can be applied when monitoring devices are combined with computer-based systems that make use of voice and video properties. These approaches enable nurses to better consult and give continuous care, which improves the results of health services (Hasani et al., 2020). Thus, the current study conducted to assess the awareness and perceptions of nurses regarding telenursing.

Purpose of the Study

The purpose of the study was to assess awareness and perception of nurses regarding telenursing at primary health care setting.

Research Questions

1. What is the level of nurses' awareness regarding telenursing at primary health care setting?
2. What is the level of nurses' perception regarding telenursing at primary health care setting?
3. Is there a relation between nurses' awareness and perception about telenursing and their sociodemographic characteristics?

Definition of Variables

Awareness is theoretically defined as the state or ability to perceive, to feel, or to be conscious of events, objects, or understanding of someone or something such as facts, skills, or objects (Brown et al., 2019). In this study awareness will be defined as the state of being aware and understanding of issues related to

telenursing. It will be assessed through awareness assessment questionnaire (Instrument one part 2).

Perception is described as a process of actions for acquiring information. That acquisition can stem from the environment and a set of beliefs and behaviors toward a particular thing or event is often the result of experience and can have a powerful influence over behavior (Smith & Spoehr 2021). In this study perception will be defined as belief of the respondents towards the facts of telenursing. It will be assessed through nurses' perception scale about Telenursing (Instrument two).

Telenursing is defined as the delivery, management, and coordination of care, and services provided through information and telecommunication technologies (Schlachta et al., 2017). In this study telenursing will be defined as, method of interaction and communications between the nurses and their clients at primary health care setting to deliver nursing care or nursing instructions through mobile or social media.

Method

Study Design:

A descriptive design was used to carry out this study.

Study Settings:

The study was conducted at Primary Health care settings in Menoufia governorate. The required Primary Health Care settings were chosen using multistage random selection according to the following: First, two districts from all districts (ten districts) of the Menoufia governorate were selected using a simple random sample. These districts were Shebin El-kom and Tala district. Second, Shebin El-kom district will include: Shebin El-Kom Quebly and Bahary health centers, Kafr Tambdy, El Batanon and Kafr El Meselha health units. Tala district will include Tala health center, Meat Abo Elkom, Zurqan, Zinara, toukh dalaka, Babel and Kafr El-sokaria health units.

Study Sample:

All nurses (300) were working at previously mentioned settings.

Instruments:

First Instrument:

A structured self-administer questionnaire included two parts:

- **Part one:** This part was concerned with socio demographic characteristics of studied nurses and was included age, gender, level of education, place of work, years of experience and accessibility to computers, the internet, frequency of internet use per day and obtaining telenursing courses.
- **Part two:** This part was concerned with assessment of nurses' awareness about Telenursing which included; meaning of TN, the goal of TN, advantages of TN, requirements for TN practice, nursing services that can provide by TN, types of TN, the guiding rules for providing TN, challenges facing TN and Fields of applications of TN.

Scoring System

Awareness assessment questionnaire regarding telenursing included 11 items. Each item was three points

Likert scale (0 – 2) as (0) for Don't know, (1) for Incomplete correct answer, and (2) for complete correct answer. The nurses' total awareness Score was raged from 0 -22. The total score of each nurse was categorized into Poor awareness, when he/she achieved ≤ 50% (0-11) of the total score ; fair awareness, when he/she achieved 51 % to < 75 % (12-17) of the total score, while good awareness was considered when he/she achieved > 75% of the total score (18-22).

Second Instrument:

Nurses' perception scale about telenursing. This scale was adopted from Glinkowski et al., (2013). It was used to assess the nurses' perception regarding telenursing. The items of scale were consisted of importance of TN as adding telenursing to the nursing curriculum is necessary, there is a need to use telenursing, the facilities for TN service are available and using of TN technology has appositive impact on the patient. Advantages of TN as TN can improve the efficiency of the health staff, TN can facilitate the communication of health staff with patients and the TN can reduce the cost of patient care.

Scoring System:

The perception questionnaire consisted of 14 items. Each item was rated by a five-point Likert scale and ranged from 1–5, where 1= Strongly disagree, 2 = disagree, 3= Neutral, 4=Agree and 5 = Strongly agree. Nurses' total perception score was ranged from 14 -70.14 -70. the total score of each nurse was categorized into poor perception level when he/she

had from 1 - 14 points (≤ 20 %) of the total score; acceptable perception level when he/she had from 15 - 28 points (> 20 - ≤ 40 %) of the total score; good perception level when he/she had from 29- 42 points (> 40 - ≤ 60 %) of the total score; very good perception level when he/she had from 43- 56 points (> 60 - ≤ 80 %) of the total score and ;excellent perception level when he/she had from 57- 70 points (> 80 % -) of the total score.

Validity of the Instrument:

The data collection instrument was translated and modified by researcher after translation by Arabic/English speaker specialist. After revision for translation, the data collection instrument was revised for content validity by a jury of five experts in family and community health nursing and recommended modifications were carried out based on jury comments.

Reliability of the Instrument:

The reliability of the instrument was done to determine the extent to which items in the questionnaire were related to each other by using test-retest reliability method to measure the internal consistency and this method was done by administrating the same instrument to the same subjects under similar condition on one or more occasions. The reliability test and result showed that reliability was equal r = (0.82%) for nurses' awareness about telenursing instrument and r = (0.83%); for nurses' perception regarding tele-nursing instrument. Based on these results, the

study instruments were considered reliable to be used for data collection.

Pilot Study:

A pilot study was conducted on 10% of the total sample (30 nurses) to test the feasibility, applicability and understandability of the instruments. The needed modifications were done as revealed from pilot study. This pilot sample was not included in the actual study sample.

Ethical Considerations

The approval of the study was obtained from the Ethics Committee of Scientific research in the Faculty of Nursing, Menoufia University before starting of the study. An official letter for data collection was sent from the Dean of Faculty of Nursing, Menoufia University to the directors of selected primary health care centers in each district. It was included the purpose of the study, methods of data collection and duration of data collection. The rights of privacy and safety of subjects were secured and they were allowed to withdraw from the study whenever they want.

Procedure:

The data collection was planned according to time available for nurses to be two days per week. The study conducted firstly by a permission that was obtained from the Directors of both study settings.

The researchers introduced their selves to studied nurses; the purpose and nature of the study were explained to gain their cooperation with promise of close confidentiality of data. The researchers carried out the interview with nurses in private room to confirm privacy, comfort of nurses and freely reporting information. The room is located in the first floor and had enough seats for the subjects and researchers.

The interview was carried out on two days per week from the 10:00AM to 1:00 PM. About 12-13 nurses per day. Approximately 24-25 nurses per week. A self-administer questionnaire was distributed to the studied nurses who were present at the time of interview. The researchers supervised the completion of the questionnaire during data collection hours. This was done by explaining to selected nurses why this was being done and giving instructions on how to complete questionnaire. The time that taken to fill the questionnaire ranged from 20-25 minutes. The study duration was three months which extended from July to the end of September, 2023.

Statistical Analysis:

Data was entered and analyzed by using SPSS (Statistical Package for Social Science) statistical package version 22. Graphics were done using Excel program.

Quantitative data were presented by mean (X) and standard deviation (SD). It was analyzed using student t- test for comparison between two means, and ANOVA (F) test for comparison between more than two means.

Qualitative data were presented in the form of frequency distribution tables, number and percentage. It was analyzed by chi-square ($\chi 2$) test. However, if an expected value of any cell in the table was less than 5, Fisher Exact test was used (if the table was 4 cells), or Likelihood Ratio (LR) test (if

the table was more than 4 cells). Level of significance was set as P value <0.05 for all significant tests.

Results

__Table 1__ shows that, 46.7% of studied nurses are between 20 – 30 years while, 3.3% are 50 - < 60 years of age; with mean age 32.9 ± 8.8 years. Also, 90.3% of the studied nurses are females, while, 9.7 % are male. Regarding to marital status, 72 % studied nurses are married while 2.7% are widowed; also, 44.7% of them have technical institute and 4.3% have postgraduate education. Also, 63.0% of studied nurses are working at rural units while 37.0% of them are working at urban centers. Regarding to years of experience, 62.7% of the studied nurses have from 1-10 years while 13.6 % have ≥ 20 years; with 10.4 ± 3.8. mean years of experience.

__Table 2__ shows that, total number of studied nurses have mobile and 98.0 % of them using internet. Furthermore 83.7% of studied nurses use internet through phone, 4.3 % through computer and 12.0 % through both phone and computer. Additionally, 40.0 % of studied nurses spend on internet for 1hour/day while 23.3% of them spend ≥ 3hours/day.

__Table 3__ shows that, 67%to 88% of the studied nurses have Correct incomplete correct response, regarding the concept of telenursing 80.3%, the goal of telenursing 88%, advantages of telenursing 83.7%, disadvantages of telenursing 76%, the means of communication 88%, the factors of widespread of TN around the world 86.7%, nursing services that can be provide by TN 84.3 %, types of TN 67

%, the guiding rules of TN 75.3 %, the challenges facing telenursing 86 % and fields of applications of telenursing 76 %. While 7.7% to 19.7% of the studied nurses have complete correct response. Also, the mean of total score of nurse's awareness of telenursing is 11.3 ± 3.6.

__Fig 1__ highlights that, 74% of the studied nurses have Poor level of awareness response about telenursing while 18% of the studied nurses have Fair awareness response. On the other hand, 8% of the studied nurses have Good awareness response. This result answers the first research question of this study, which stated 'What are the awareness levels of nurses regarding telenursing at primary health care settings?

__Table 4__ shows that, the majority of the studied nurses demonstrate Agree response about the importance and advantages of TN with a range of 25.7% to 58.3 %, which follow by Neutral response with a range 22.3% – 43%. Presents the mean of total score of nurses' perceptions about telenursing are 49.6 ± 7.3 (range: 28 - 70).

__Table 5__ presents that, approximately three quarters 74% of the studied nurses have "very good perception" response regarding telenursing while 15.7% of the studied nurses have "good perception" response. While 9.3% of the studied nurses have excellent perception level.

__Table 6__ shows that there is high significant relation between sociodemographic characters (age, marital status, education, and experience) and awareness levels among studied nurses (p<0.000). On

the other hand, there is no statistically significant relation between gender and awareness levels among studied nurses (p =0.43).

Table 7 presents that there is high statistically significant relation between sociodemographic characters

(age groups, marital status, education, and experience) and perception levels among studied nurses (p<0.0001). But no significant relation between gender and perception levels among studied nurses (p =0.71).

Table 1: Distribution of Studied Nurses according to their Socio-Demographic Characteristics (n=300)

Socio Demographic Characteristics	Frequency	
	No.	%
Age groups / years		
20 -	140	46.7
30 -	116	38.7
40 -	34	11.3
50 - < 60	10	3.3
Mean ± SD years	32.9 ± 8.8 Years	
Gender		
Male	29	9.7
Female	271	90.3
Marital status		
Single	67	22.3
Married	216	72.0
Divorced	9	3.0
Widowed	8	2.7
Level of education		
Secondary education	77	25.7
Technical institute	134	44.7
Bachelor	76	25.3
Postgraduate	13	4.3
Work place		
Rural	189	63.0
Urban	111	37.0
Experience (years)		
1 -	188	62.7
10 -	71	23.7
20 - >	41	13.6
Mean ± SD Years	10.4 ± 3.8 Years	
Total	300	100

Table (2): Distribution of Studied Nurses According to Technology Utilization. (n=300)

Technology Use	Studied Nurses	
	No.	%
Having mobile		
Yes	100	100
Using internet		
Yes	294	98.0
No	6	2.0
If yes, using internet through		
Computer	13	4.3
Phone	251	83.7
Use together	36	12.0
Hours spend on internet /day		
1 hr /day	120	40.0
2 hrs /day	110	36.7
≥ 3 hrs /day	70	23.3
Having training courses on telenursing		
Yes	67	22.3
No	233	77.7
If yes, what courses: (n=67)		
TN courses	23	34.3
Using and application of TN	11	16.4
Digital transformation courses	33	49.3
Total	300	100

Table (3): Distribution of Studied Nurses according to their Awareness about Telenursing (n=300)

Awareness about Telenursing	Studied Nurses					
	Don't Know (0)		Incomplete Correct Answer (1)		Complete Correct Answer (2)	
	No.	%	No.	%	No.	%
Concept of telenursing	36	12.0	241	80.3	23	7.7
Goal of telenursing	7	2.3	264	88.0	29	9.7
Advantages of telenursing	14	4.7	251	83.7	35	11.7
Disadvantages of telenursing	23	7.7	228	76.0	49	16.3
Means of communication	11	3.7	264	88.0	25	8.3
Factors that led to widespread of telenursing around the world	12	4.0	260	86.7	28	9.3
Nursing services that can be provided by telenursing	11	3.7	253	84.3	36	12.0
Types of telenursing	72	24.0	201	67.0	27	9.0
Guiding rules for providing TN	15	5.0	226	75.3	59	19.7
Challenges facing telenursing	18	6.0	258	86.0	24	8.0
Fields of applications of telenursing	33	11.0	228	76.0	39	13.0
Total Mean of nurses' awareness about TN	11.3 ± 3.6					

Fig. 1: Awareness Levels of Telenursing among Studied Nurses (N=300)

: Awareness levels of telenursing among studied nurses (n=300)
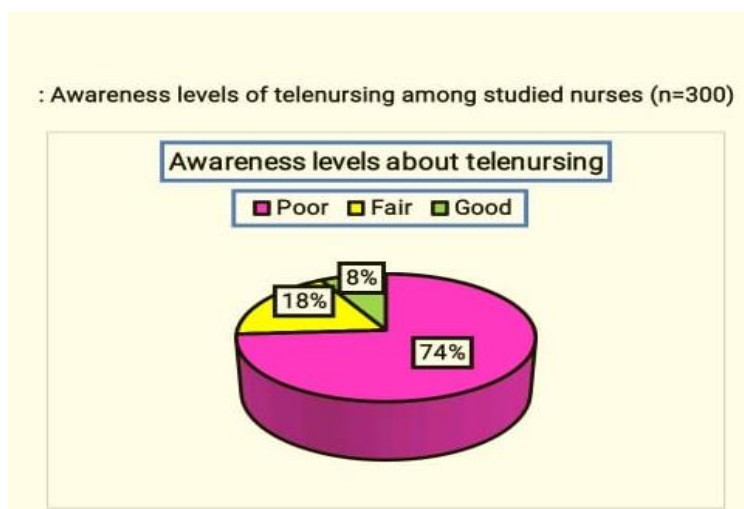
Table (4): Distribution of Studied Nurses according to their Perception about Telenursing (n= 300)

Perception about Telenursing	Studied Nurses					Mean± SD
	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)	
	%	%	%	%	%	
Providing telenursing services in the field of nursing is important	0.0	3.0	25.0	58.3	13.7	3.8 ± 0.6
Adding telenursing to the nursing curriculum is necessary	1.3	5.0	31.7	45.3	16.7	3.7±0.8
There is a need to use telenursing	0.7	4.3	35.7	49.3	10.0	3.6 ±0.7
Facilities for TN service available	5.3	22.0	30.0	35.4	7.3	3.2 ±1.0
Using of telenursing technology has a positive impact on the patient	1.3	5.3	32.4	49.0	12.0	3.6 ±0.8
Telenursing can facilitate the contact of medical staff with patients	2.0	5.7	32.0	54.0	6.3	3.6 ±0.8
Telenursing can reduce the cost of health care	1.0	4.7	30.7	51.0	12.7	3.7 ±0.8
Telenursing can improve the efficiency of the medical team	2.3	3.0	42.7	42.7	9.3	3.5 ±0.8
Telenursing saves time	0.3	2.0	29.0	53.7	15.0	3.8 ±0.7
Telenursing saves effort	2.0	5.0	22.3	52.3	18.3	3.8 ±0.8
Patient will trust the nursing service provided through TN technology	4.3	10.3	38.0	38.4	9.0	3.4 ± 0.9
TN preserves patient privacy	5.3	6.7	40.3	41.0	6.7	3.4 ± 0.9
Recording patient data through TN technology is safe	1.0	5.6	43.0	42.7	7.7	3.5 ±0.7
Telenursing has no disadvantages	8.3	21.3	40.0	25.7	4.7	2.9 ±0.9
Mean of total score of perceptions about Telenursing	49.6 ± 7.3 (range:28 -70)					

Table 5: Distribution of Studied Nurses according to the Levels of Perception (n=300)

Perception Levels	Frequency	
	No.	%
Acceptable level	3	1.0
Good level	47	15.7
Very Good level	222	74.0
Excellent level	28	9.3
Total	300	100

Table (6): Relation between Sociodemographic Characteristics and Awareness Levels among Studied Nurses (n=300)

Sociodemographic Data		Awareness Levels						LR/ X2	P value
		Poor		Fair		Good			
Total (No.)		No.	%	No.	%	No.	%		
Age (Years):									
20 -	140	87	62.1	40	28.6	13	9.3	LR=40.1	<0.0001
30 -	116	91	78.4	14	12.1	11	9.5		
40 -	34	34	100	0	0.0	0	0.0		
50 - < 60	10	10	100	0	0.0	0	0.0		
Gender									
Male	29	21	72.4	7	24.2	1	3.4	LR=1.7	=0.43NS
Female	271	201	74.2	47	17.3	23	8.5		
Marital status									
Single	67	42	62.7	23	34.3	2	3.0	LR=39.9	<0.0001
Married	216	174	80.6	22	10.2	20	9.2		
Divorced	9	5	55.6	4	44.6	0	0.0		
Widower	8	1	12.5	5	62.5	2	25.0		
Educational level									
Diploma	77	64	83.1	10	13.0	3	3.9	LR=28.0	<0.0001
Technical Institute	134	103	76.9	28	20.9	3	2.2		
Bachelor	76	49	64.5	12	15.8	15	19.7		
Post graduate	13	6	46.1	4	30.8	3	23.1		
Experience / years									
5 -	188	122	64.9	46	24.5	20	10.6	LR= 36.8	<0.0001
15 -	71	66	93.0	1	1.4	4	5.6		
> 25	41	34	82.9	7	17.1	0	0.0		
Total	300	222	74.0%	54	18.0%	24	8.0%		

Table (7): Relation between Sociodemographic Characteristics and Perception   Levels among Studied Nurses (n=300)

Sociodemographic Data		Perception Levels								LR*	P value
		Acceptable		Good		Very Good		Excellent			
Total (No.)		No.	%	No.	%	No.	%	No.	%		
Age (Years)											
20 -	140	0	0.0	13	9.3	105	75.0	22	15.7	LR=45.3	<0.0001
30 -	116	0	0.0	21	18.1	89	76.7	6	5.2		
40 -	34	2	5.9	13	38.2	19	55.9	0	0.0		
50 - < 60	10	1	10.0	0	0.0	9	90.0	0	0.0		
Gender											
Male	29	0	0.0	5	17.2	20	69.0	4	13.8	LR=1.4	= 0.71
Female	271	3	1.1	42	15.5	202	74.5	24	8.9		
Marital status											
Single	67	0	0.0	3	4.5	52	77.6	12	17.9	LR=19.6	<0.0001
Married	216	3	1.4	40	18.5	162	75.0	11	5.1		
Divorced	9	0	0.0	2	22.3	3	33.3	4	44.4		
Widow	8	0	0.0	2	25.0	5	62.5	1	12.5		
Educational level											
Diploma											
Technical Institute	77	3	3.9	13	16.9	58	75.3	3	3.9	LR=33.8	<0.0001
Bachelor	134	0	0.0	16	11.9	102	76.2	16	11.9		
Post graduate	76	0	0.0	18	23.7	55	72.4	3	3.9		
	13	0	0.0	0	0.0	7	53.8	6	46.2		
Experience/ years											
5 -	188	0	0.0	24	12.8	136	72.3	28	14.9	LR= 41.1	<0.0001
16 -	71	0	0.0	15	21.1	56	78.9	0	0.0		
> 25	41	3	7.3	8	19.5	30	73.2	0	0.0		
Total		300	3	1.0%	47	15.7%	222	74.0%	28	9.3%	

Discussion

Most countries face numerous health challenges including growing elderly population, need for home-care and a lack of nursing staff for direct patient care services at home. In addition to these challenges, rapid technological progress and healthcare spending has led nursing staff to use information and communication technologies (ICT) in their work to respond appropriately to patients (Alsahali, 2021). There is insufficient in nursing awareness and information about the uses of telenursing so, implementation of tele services will require minimal effort. Based on available evidence, ICT can improve healthcare outcomes and reduce associated costs. Healthcare quality has tremendously improved throughout the world by utilizing tele services (Gajarawala & Pelkowski, 2021). Thus, the purpose of the current study was to assess the awareness and perception of nurses regarding telenursing at primary health care setting.

Regarding to technology use among studied nurses; the present study showed that, total number of studied nurses had mobile. These findings came on the same line with Abd Ellatif et al., (2023) who studied "Knowledge and Attitude of Faculty of Nursing Students regarding Telenursing" in

Egypt. They reported that, most of studied sample had mobile phone. This consistency might be due to that the modern era require to use new technologies as mobile.

Regarding to using internet, the current study showed that, most of studied nurses using internet and more than three quarters of studied nurses used internet through phone This finding agreed with Khraisat et al., (2023) who studied "Telenursing implications for future education and practice: Nursing students' perspectives and knowledge from a course on child health" in Jordan. They found that, most of studied sample had access to the internet. These similarities could be explained by the widespread of internet connection that needed to discover the world.

Regarding to the way of connection to the internet; the current study showed that, majority of studied nurses used internet through phone This finding supported by Terkes et al., (2019) who studied "Determination of nursing students' attitudes towards the use of technology" in Japan. They reported that, more than three quarters of studied sample connected to the internet through phone. These similarities clarified that phone is easier to use than the computer device.

The current study showed that, nearly half of studied nurses spent one hour/day on internet. This finding contradicted with Khraisat et al., (2023). They reported that, more than half of participants use internet more than three hours each day. This can be attributed to the difference of needs to use internet according to each person. Also, the daily preoccupation of nurses may affect the time allowed to spend on internet per day.

Regarding to the concept of telenursing, the present study showed that majority of the studied nurses demonstrated correct incomplete response. This finding disagreed with Poreddi et al., (2021) who studied "Nursing Interns 'Perceptions of Telenursing: Implications for Nursing Education" in Bangalore India. They illustrated that about two thirds of the studied nurses had correct response. These disparities could be due to differences in the both samples.

The current study result showed that, the majority of studied nurses had correct incomplete response about the goal of telenursing. This finding was supported by Khraisat et al., (2023) they reported that majority of studied nurses in Jorden had insufficient knowledge about the goal of the telenursing. This might be due insufficient knowledge of nurses about telenursing and most of nurses prefer the traditional way to provide health care

Concerning to the types of telenursing, the present study showed that, about two thirds of studied nurses demonstrated correct incomplete response. This finding agreed with Barbara & Samaria, (2020) who study "Technology use among Indonesian nursing students and perception of telenursing competence" in Indonesia. They found that, more than half of the studied nurses had correct incomplete answer about the types of telenursing. This might be due to the insufficient knowledge of the studied sample regarding telenursing and its types that may be due to lack of training courses

about telenursing in the countries of the two studies.

Regarding to total awareness of nurses about telenursing; the present study stated that, approximately three quarters of the studied nurses demonstrated poor awareness regarding telenursing. This finding was consistent with Mahmoud et al., (2023) who studied "Effect of an educational brochure on nurses' knowledge, perception and attitude regarding telenursing at isolation hospitals" in Egypt. They found that nearly three quarter of studied nurses had poor awareness about telenursing. This might be due to lack of availability of training courses about telenursing in Egypt.

The current study result stated that nearly half of studied nurses demonstrated agree response about the adding of telenursing to the nursing curriculum is necessary. This result supported by Abd-Aleem, (2019), who studied "Telenursing perception among nursing students at Port Said University" in Egypt. They reported that more than three quarter of studied nurses agree that studied telenursing in nursing curriculum would be useful for future healthcare workers. These similarities clarified that, studied nurses want to know about new technology telenursing and its application for providing health care to save time, cost and effort.

The current study result showed that less than half of studied nurses demonstrated agree response about Telenursing can improve the efficiency of the health team. This result similar to the finding of Abdel-Aleem, (2019) they found that about two thirds of

studied sample at Port said University in Egypt agreed that telenursing can improve the efficiency of the medical staff. This might be due to the truth that telenursing enables the medical team to attend video conferences, see new research and articles. Therefore, it improves information, skills, save time and effort.

The current study showed that less than half of studied nurses demonstrated agree response about the patient will trust the nursing service provided through telenursing technology. This result agreed with Ayalew et al., (2019) who studied " Understanding job satisfaction and motivation among nurses in public health facilities" in Ethiopia. They found that half of studied nurses agree that, patient will trust in telenursing technology. This might be due to the benefits of telenursing as financial saving, time saving and less exposure to infections.

Regarding to the total perception of studied nurses about telenursing. The current study showed that, three quarters of the studied nurses demonstrated very good perception level regarding telenursing. This result agreed with Ahmed et al., (2021) who studied "knowledge, attitudes, and perceptions related to telemedicine among young doctors and nursing staff at the king Abdul-Aziz university hospital " in Jeddah, KSA. They found that most of the studied sample had high level of perception for telemedicine. In addition, this outcome was

Regarding to relation between sociodemographic characteristics and awareness levels among studied nurses. The current study stated that,

there were high significant association between sociodemographic characters (age, marital status, education, and experience) and awareness levels among studied nurses. This result agreed with Malhotra et al., (2020), who studied "Assessment of knowledge, perception, and willingness of using telemedicine among medical and allied healthcare students studying in private institutions" in India. This might be indicated that the high level of education and experience improve the awareness level.

The present study revealed that, there was high significant association between education and awareness levels among studied nurses as about half of the studied nurses with post graduate had good awareness in comparison to those with a diploma. This finding supported by the study conducted by Shoman et al., (2020) who carried out "Awareness and attitude of healthcare workers towards telehealth" in Cairo, Egypt. They found that half of health care workers with master's degree were aware of telehealth in comparison to those with a diploma. This harmony might be due nurses with high educational level, may become aware of new technologies in the area of their profession so that education is a predictive factor affect the awareness of nurses regarding telenursing.

Regarding to relation between sociodemographic characteristics and perception levels among studied nurses. The current study stated that, there was high significant difference between sociodemographic characters (age, marital status, education and

experience) and perception levels. This result came in the same line with Talmesany et al., (2023), who studied "Assessing the Awareness and Perception of Telemedicine among the General Population "in Al-Baha Region, Saudi Arabia. They found that, there was statistically significant difference between perception and sociodemographic characters as age, marital status, education, experience, occupational group and residence. This can be attributed that sociodemographic characteristics including predictive factors affect the perception level of nurses about telenursing.

Concerning to relation between age and perception levels among studied nurses. The current study stated that three quarters of studied nurses with age from 20-30 had very good perception. This result came in agreement with Alqarni et al., (2022) who study "Health care professionals' understanding and perceptions of telemedicine" in Saudi Arabia. They stated that, demographic factors, such as age of the healthcare staff had an influence on the perception of the healthcare workers about the usability of telemedicine. This consistency might be due to young nurses have more skills in using the internet and mobile phones more, so perception about telenursing is better.

Conclusion

The findings of this study concluded that the current study revealed that approximately three quarters of the studied nurses had Poor level awareness regarding telenursing. About three quarters of the studied

nurses had very good level of perception regarding telenursing; with significant relation between awareness level and perception level.

Additional, age, marital status, education, and experience had significant relation with both awareness and perception.

Recommendations

Develop and implement educational training programs to increase awareness and perception of nurses about telenursing and its possibilities of application in nursing practice, Enhance telenursing use in nursing practice and prepare nurses with the needed skills to enhance their role in telehealth delivery.

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