

Relevance of Telenursing as A New Dimension in Nursing Practice

AUTHOR(S): IBITOLA Amoke, Oladeji (MPH, RN, RM), BEATRICE Magboro Ohaeri (PhD, FWACN, MSc, RN), IYANUOLUWA Orofe Ojo (PhD, MSc, RN), BABARIMISA Oluwatoyin Modupeore (MSc, RN),

Abstract

Introduction: Telenursing is a means where nurses meet the health need of client through information, communication and web based systems in delivery; managing and coordinating of care and services provided through information and telecommunication technology. Nurses engage in telenursing through the use of nursing process to access plan, implement, evaluate and document nursing care. They are also involved in provision of information referrals, education and support.

Aims: This essay aims to review telenursing as a new dimension in community nursing health care practice, through delivery of nursing care over a long distance; using telecommunication and various computer technologies to reach people at the comfort of their home.

Conclusion: Therefore, there it is very important for the audience to understand and appreciate how telenursing services has brought a tremendous change in clinical practice especially during the period of pandemic and maintenance of social distancing. At the end of the review, the following points were recommended; 1. Development in bio-information and advancements has enhanced nursing with cutting edge technology. Therefore, adoption of Nursing informatics to develop and make improvement on technology is pertinent to the nursing profession in this twenty-second century. 2. Research and application of clinical best practices: nursing services with telenursing could prove long distance service, time efficiency and allocation of funds. Hence, a solution to answer the aforementioned challenges. 3. Training of other nurses on telenursing and the use of

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About Author

Author(s):

1. IBITOLA Amoke, Oladeji (MPH, RN, RM)

Department of Nursing, College of Medicine, University of Ibadan, Nigeria.

Email: ibitolaoladeji@gmail.com (corresponding author)

2. BEATRICE Magboro Ohaeri (PhD, FWACN, MSc, RN)

Department of Nursing, College of Medicine, University of Ibadan, Nigeria.

Email: bmkoheri@yahoo.co.uk

3. IYANUOLUWA Orofe Ojo (PhD, MSc, RN)

Department of Nursing, College of Medicine, University of Ibadan, Nigeria.

Email: adubiiyanu@gmail.com

And

4. BABARIMISA Oluwatoyin Modupeore (MSc, RN)

Department of Nursing, College of Medicine, University of Ibadan, Nigeria.

Email: toyinbabarimisa2017@gmail.com

INTRODUCTION

The current trends in nursing care are multifactorial which include: increase in the ageing population, a translation to informatics, a nursing shortage and an overacting emphasis on specific frameworks for the guiding of nursing practice, plus integration of evidence based practice.

Telenursing allows patients to connect with their nurses through mobile devices, computers, mobile applications, video technology, and remote patient monitoring. Variety of tools are in use when providing care through telenursing; Information can be sent to patients through mobile devices, computers, video technology and remote patient monitoring. Also, Telenursing blends audio, video and text based information. (Al Afik, Moses Glorino Pandin, 2021).

Telehealth nursing is essentially what patients have known in the past as counselling over the phone. Nowadays, technology has made it possible to reach patients, monitoring their conditions and interacting with them using computers, audio, visual accessories and telephones. It is also the use of telemedicine and technology to conduct nursing and deliver care in remote location. Telenursing is a subset of telehealth that focuses on the delivery and management of services using telecommunication technology within the domain of nursing (Wojciech, Glinkowski, Katarzyna Pawlwka, Kozłowska. 2013)

Telenursing is a subsection of telehealth that it expressed when the health needs of patients is met using information, communication and web-based systems by nurses. It is also the delivery, management and coordination of care, and services provided through information and telecommunication technologies (Barbosa IdeA. Silva MJPda. IdA B. 2017)

Although, the method in which professional nursing services are delivered is changed through telenursing neither does it alter the nature of nursing practice. The nursing process steps is used by registered nurses who engaged in telenursing to assess, plan, implement, evaluate and document nursing care (Rehab Mohamed, Rashad Ibrahim, Karima Ahmed Wlsayed, 2018). Their involvement in telenursing relationships are formed through the use of telephones, computers, the internet, or other communication technologies; instead of establishing therapeutic nurse-patient relationships in-person in the provision of information, referrals, education, and support. While support for the concept of telenursing continues to increase, the reality is that technology will continue to change the ways in which registered nurses practice (Purabdollah M., Ghasempour M., 2020).

Telenursing is the use of technology to deliver nursing care and carry on nursing practice. However, the use of technology alters the delivery system of nursing care and may necessitate competencies related to its delivery of nursing care. The nursing process and scope of practice does not differ with telenursing. Meanwhile, Nurses who engages in telenursing use technologies such as the internet, computers, telephones, digital assessment tools, and tele monitoring equipment to assess, plan, intervene, and evaluate the outcomes of nursing care (Santana R.F., Pereira S.K., do Carmo T.G. 2018).

Effective communications are important in the establishment of nurse-patient relationships, this is particularly essential when using information and telecommunication technologies. For nurses to be able to establish and maintain therapeutic relationships in telenursing, nurses they should recognize and understand that a nurse-patient relationship and a duty to provide care is established from the moment the registered nurse engages with the client through communication (Wojciech, Glinkowski, Katarzyna Pawlwka, Kozłowska. 2013).

According to Rehab (2018), Telenursing and medical care is beneficial to patients; amongst the advantage is that of medical facility accessibility. Patients can have immediate, rapid and instant access to the Medicare; Patients get educated about their illnesses which assist them in being involved in the decision-making process related to their treatments. In addition, it may facilitate self-care responsibility for people with chronic illness such as diabetes and asthma, as they are aware that help is just a call away. Also, money and time is being saved during telenursing because they do not need to travel to see the doctors or nurses. The inequitable distribution of health facilities and services has contributed to the background preventable maternal and neonatal and infant mortality (Bartz, C.C. 2020). This has led to various form of poor health habit by the community people opting for traditional or native medicine and some spiritual means all seeking alternative care to bridge the gap of the shortage in health care provision.

Telenursing is thereby seen as a good method of care delivery that aims at overcoming the challenges of poor healthcare facilities distribution, inadequate professional nurses, and poor accessibility to health facilities. Poor transportation system and distance location hampers quality nursing care and services. Practice and acceptance of telenursing solely depends on the nurse's application of the knowledge of sound communication and information technology to health educate, deliver management and regulation of care and services; whenever there is barrier of distancing between health care provider and health care consumers (Kalia R., Saggi M. 2019). The practice of telenursing is centered on nursing protocols attentive listening, critical thinking, updated scientific knowledge and absolute trust between the nurse and callers (Sunday, 2017). With the era of advanced mass media, where almost every community member owns a phone gives quality assurance and evident based practice.

Emerging Trends in Health Care for 2021: The new normal

- i. More strategic and agile supply chains through increasing storage and self-distribution, and deeper relationship. Also, new supply chain model for new care settings, health care futurists believe that by 2040, most care will be delivered at home, in outpatient settings or virtually. (Fredrick, 2022).
- ii. Cooperative competition or cooptation is a key trend in health care. The strategy is to leverage the capabilities of power players to lower the cost of care, increase downstream market capture and focus on care specialty series while remaining highly connected to the patient (Dorsey E.R. Topol E.J. 2016). By offloading financially draining services, expand the market while improving community health e.g. women aged 40 to have access to mammogram service.

- iii. Patient Consumerization, Projected appointment and results which leads to consumer dissatisfaction is being attended to through high level efficiency and transparency from health care providers. Most organizations are now assessing their barriers to consumer's satisfaction which leads to deployment of analytics and patient-centered technologies to improve the convenience, speed and transparency of care.
- iv. Personalization of care 'ideal', health care experience requires a personal touch, whether that encounter occurs virtually or in person. Patients expects clinicians to take time to listen, shows they care and communicate clearly, thereby experiencing measurable outcome.
- v. Workforce diversity and safety, Inclusion of diversity e.g. culture-oriented care, flexibility, physical and mental health.
- vi. Virtual, care – both providers and patients adopt new virtual mindset through needs changing, growth and evolving painful models. Reference to 2019 COVID Pandemic that makes it global. It will serve as a natural progression to support providers and patients in a more meaningful way.
- vii. Artificial Intelligence and Automation, Quality and efficiency in radiology, Real-time analytics to expedite care, Productivity in non-clinical areas e.g. supply chain, revenue cycle and customer service.

Organization of Telemedicine in Healthcare System

Telemedicine is organized at two levels namely telenursing within a healthcare system and between healthcare systems according to telehealth resource center (Dorothy, 2022). In an organization within single healthcare system, the consultation services are offered internally especially by making better use of health care provider's time through the means of reducing the travel time to see the patients at different clinics and hospital locations physically within the organization (Dorothy, 2022). They may be further subdivided into inpatient services provided to other hospitals in the system and outpatient services that typically are directed to clinics within the system. Whereas, organization between healthcare systems, telemedicine consultation services are organized with a focus of medical specialists to offer their services to other healthcare facilities or organizations that may not have the same access to specialists (Dorothy, 2022).

Telenursing Enhancing Health Promotion

Telenursing through health education, monitoring and effective therapeutic communication with feedback from client would promote healthy community and easy accessibility of seeking health care (Hogan et al., 2011). Nurses with critical role as an educator through telenursing by engaging and empowering individuals and communities has helped in choosing healthy behaviors, and make changes that can reduce the risk of developing chronic diseases and other morbidities. Nurses engages and empowers individuals and communities in choosing healthy behaviors through monitoring of health status to identify and solve community health problems, diagnosing and investigating health problems and hazards (Rambur B. Palumbo M.V. NurKanovic M. 2019).

Benefits of Telenursing

Among many advantages of telenursing in nursing care are the improved accessibility to health care, faster services development, an increase in the prestige of the profession, data security, better information flow, convenience, facilitated communication between nursing staff and hospitals, available for both personal and patients, and improvement of time and resource allocation (Rehab, 2021).

According to Zawn 2020 highlighted some benefits of Telemedicine for patients;

- a) **Lowers Cost:** Telemedicine services can go a long way in solving patient transportation logistics, problems with care quality and coverage shortage and eliminate time to deliver with message.
- b) **Improved access to care:** Telemedicine makes it easier for people with disabilities to access care. It also improves accessibility of care for other populations such as the older adults, people who are isolated geographically and those who are incarcerated.
- c) **Preventive Care:** Telemedicine may make it easier for people to access preventive care that improves their long-term health especially for people with financial or geographic barriers to quality care. For instance, a study done by (Ajalli A. Fallahi-Khoshknan M. 2015) found that preventive telemedicine improved health outcomes of people with coronary artery disease.
- d) **Convenience:** Telemedicine allows people to access care in the comfort and privacy of their own home. This may mean that a person does not have to take time off of work or arrange childcare as they can still receive care without been absent from work or home. People have choices and control over the way their health care is planned and delivered, as a shift in focus on the individual consumer.
- e) **Slowing the spread of infection:** Telemedicine help keep immuno-compromised patient safe and eliminates the risk of been infected. A visit to the hospital means being around people who may be sick, often in close quarters. This is risky for people with underlying conditions or weak immune systems.

Benefits for Healthcare Providers

Health care providers who renders telemedicine may have lot of benefits such as;

- A. **Reduced overhead expenses:** Providers who render telemedicine services may incur lesser overhead cost. For instance, they may spend less money for front desk support or invest in a fewer exam room in an office space.
- B. **Additional revenue stream:** Health providers may find out that telemedicine supplements their income because it creates room to provide care to more patients.
- C. **Less exposure to illness and infections:** There is lower exposure to patients when seen remotely and lesser worry on exposure to any pathogens the patient may carry.
- D. **Patient satisfaction:** When a patient does not have to travel to the office or wait for care, they may be happier with their provider (Zawn, 2020).

DISADVANTAGES

There are few disadvantages as telenurses may not be able to handle the emergency care from a distance. Also, some patients may be unable to describe their situations on calls and

telenursing might not be able to see the scars and wounds properly when it's not through physical contact (Rehab, 2018). In as much telemedicine has lot of benefits, it also come with some disadvantages such as;

- A. **Expensive to set up;** It can be costly to set up and maintain though a great and worthy service but may be too expensive for a smaller healthcare facility (Brian, 2016).
- B. **Inability to examine patients:** Some illness needs a physical assessment and cannot be diagnosed through telemedicine (Brian, 2016). During telemedicine sessions providers rely on patient self-reports; to ensure a comprehensive health history it may require the providers to ask more questions. Health care or treatment can be compromised if a vital information such as symptoms is being left out whereas it could have been noticeable during an in person care (Zawn, 2020).
- C. **Protection of medical data:** patient's medical data may be accessible to hackers and other cyber criminals especially if the site is being accessed on a on a public network or via an unencrypted channel (Zawn, 2020).
- D. **Care delays:** During emergency, accessing telemedicine first may delay treatment, especially since a lifesaving care or laboratory tests digitally cannot be provided.
- E. **Technological concerns:** It can be challenging in finding the right digital platform to use. A strong internet connection is required to offer quality care. Providers must also ensure that the telemedicine program they use is secure and fully compliant with privacy laws.

PRINCIPLES OF TELENURSING

There are several principles that guide the administrators to plan and offer such service of telenursing. According to (CRNNS 2008) principles outlined are:

- i. Augment existing healthcare services
- ii. Enhance optimum access and where appropriate provide immediate access to healthcare services
- iii. Follow position descriptions that clearly define comprehensive yet flexible roles and responsibilities
- iv. Improve and enhance quality of care
- v. Reduce the delivery of unnecessary health services
- vi. Protect the confidentiality and security of information related to nurse-client interactions

FRAMEWORK OF GUIDELINES AND STANDARDS

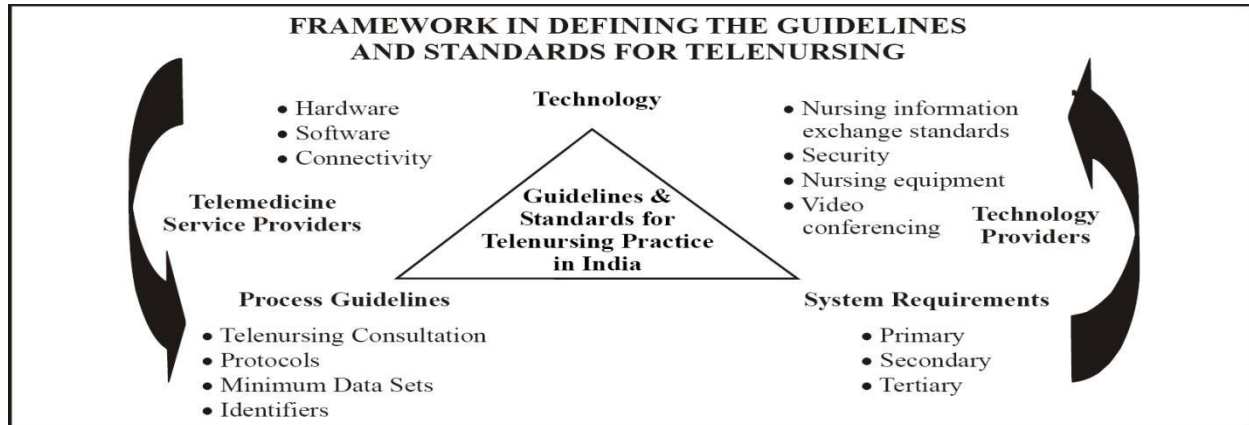


Figure 1. Framework of guidelines and standards applicable to telenursing (Dorothy 2022)

Infrastructure consists of a telenursing session room and a specialty center. While the telenursing session room is the place where consultants/specialist speak with the peripheral centers. The telenursing specialty center is linked to peripheral center, situated in the suburban and rural areas from the place the affected person or healthcare employee can consult. Equipment and science required for telenursing are excessive decision video camera, internet camera, report camera, microscope, private computer, microphone, telephone, fax machine, faxes and modem to supply provider to the patients. In addition, technologies used in telemedicine are internet, digital imagery, trans telephonic electrocardiogram monitoring (Dorothy 2022).

TELENURSING IMPLEMENTATION

According to CRNSS (2008), Telenursing can be highlighted four phases in Figure 2 below

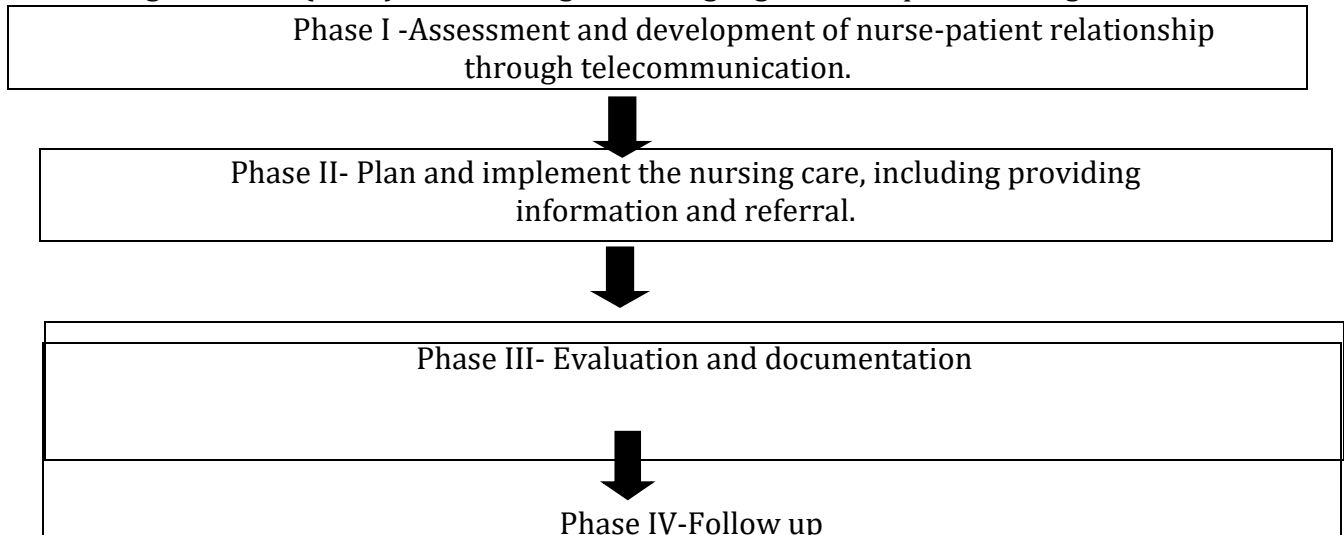


Figure 2. Telenursing implementing format as recommended by CRNSS

CHALLENGES OF TELENURSING

There are various challenges which include ethical and legal issues (Amudha R., Nalini R. Alamelu R. 2017). highlighted challenges in the implementation of telenursing. They are:

- i. Absence of direct “hands on” assessment and face to face interaction
- ii. Inter professional conflicts
- iii. Increase in liability risks
- iv. Financial investments (Startup costs, training, internet connectivity, equipment maintenance)
- v. Likelihood of technology failures, poor quality transmission
- vi. Likelihood for misdiagnosis due to inability to physically examine patients
- vii. Risk for problems related to confidentiality and security
- viii. Inability to provide adequate information to the client to make an informed consent and
- ix. Lack of license if the client is from another province which is beyond the scope of practice for the registered nurse

Others include;

- x. Erratic supply of electricity and dysfunctional communication
- xi. Lack of institutional framework policies and legislation to regulate the standards and practice telemedicine
- xii. Lack of continuity of policy when government changes hand pecuniary interest of approving authorities
- xiii. Lack of locally trained experts, training facilities and high cost of foreign trained expert salaries, coupled with inadequate knowledge of billing for services rendered by healthcare practitioners on telemedicine platform
- xiv. Lack of education and skills to understand telemedicine by rural inhabitants and their low purchasing power

How to Improve Patients Engagement in Telenursing

- 1) Identify patients, then implement patient segmentation
- 2) Provide Education when receiving services, they may not always follow their medical regimen.
- 3) Engage in shared decision making
- 4) Deliver continuous care.
- 5) Minimize barriers to care in order to drive a better outcome.

To get patient engaged in health care, this can be done by engaging patients and collecting patient- reported outcomes (PROS), by treating patients like consumers, recognizing the role of technology and delivering a tailored experience and being creative and compelling.

For nurses engaging with patients, nursing interventions that foster engagement would include teach - back methods to ensure a patient's level of knowledge, attitude or skills in managing medications, treatments or self-care protocols and advocating for patients and families to be included in rounding and discharge planning.

Factors that can Influence Patient's Engagement are;

- a) Patients related which entails patient's demographic characteristics
- b) Illness related which explains the severity of the illness
- c) Health care professional related which explains the health care professional's knowledge and beliefs
- d) Health care setting related e.g. primary or secondary care task related whether the required patient safety behavior challenges clinician's clinical ability.

How or ways to increase patient engagement

1. Give patients access to their medical records online. It facilitates client's participation
2. Cultivate an email list
3. Recommend mHealth apps
4. Offer virtual doctor visits
5. Get mobile compatible
6. Build your online presence
7. Use tech to get seniors engaged too

Role of Nurses in Telehealth

Taking up the new responsibilities of providing nursing services in home setting through the use of information technology. Telehealth nursing focuses on patients' long-term wellness, self-management and health. This information technology would provide nursing care across a distance, empowering care providers with the ability to monitor, educate, follow-up, collect data and provide multidisciplinary care including remote interventions, pain management and family support in an innovative fashion (Kotsani K., Autonopoylou V. Koumtouri A., 2018).

Many times, patients in rural areas do not receive timely health care intervention because of the lack of specialist services focusing on home setting, this gap will be filled up through intervention by multidisciplinary care. This eventually provides convenience and sense of safety in the patient, allowing timely nursing intervention under physician care (Zawn Villines 2020).

Integration of clinical support and remote diagnostic tools as means of inspiring uses of telehealth has enabled nurses to leverage and deliver care and education; monitor clients remotely and support medical consultations. Telenursing goes beyond clinical support and has the potential to exponentially expand telehealth services, normalizing telehealth as a care modality (Amudha R., Nalini R. Alamelu R. 2017).

Scope of Telenursing

Telenursing can be effected in nursing education, service, administration, and research. As cited by Dorothy 2022, the scope of telenursing as outlined by WHO 2007 are;

- a) Emergency response system
- b) Disease surveillance and control
- c) Human resource coordination, management, and supervision
- d) Telenursing diagnostic and decision support at point of care

- e) Remote patient monitoring
- f) Health promotion and community mobilization
- g) Health related learning/health education
- h) Training and development of health personnel

A. Nursing education

In remote areas, Nurses can be trained on how to use telenursing and may be used in continuing nursing education.

B. Nursing service

Telenursing can be practice in diverse situations. (Kotsani K., Autonopoylou V. Koumtouri A., 2018) broadly classified them as;

Teletriage: With the use of information technology and the principle of triage management emergency conditions from a distance can be handled. For example, during an emergency like accidents, in far off locations teletriage technique.

Telecare: this involves scheduling an audio and video conferencing consultations with healthcare providers or between healthcare providers and clients are facilitated

Teleconsultation: This is similar to that mentioned above. Answers can be provided to questions asked through remote web conference consultations. For example, nursing care can be provided via teleconsultation for soldiers at the battle field.

Electronic discharge planning: This involves monitoring the status of clients in their homes specially those who have taken an early discharge with the use of telecommunication techniques. **Telenursing in therapeutic nurse-patient relationship (TNPR) development:**

By the use of telecommunication techniques and technology the TNPR is developed.

Telenursing for health education: Self-care is promoted via health education using telecommunication technology. Primarily, telenursing brings about promotion of health and prevention of diseases and tertiary care in terms of home management of the residual effects of the disease. Also, home management of minor illnesses can be discussed.

Telenursing help-lines: Disease specific information, counseling and guidance through the use of technology can be provided and it is operated by the nurses.

C. Nursing administration

Through the use of advanced technology, Nurses can collaborate and mentor other nurses round the globe, they can share their experiences, and bring down the cost of healthcare services.

D. Nursing research

Sharing of information with other professional colleagues (national and international), promotion of evidence based practice, and consultation with experts in the specific field can be enhanced through telenursing.

Conclusion

Although several factors have contributed to the growing nature of telenursing globally and in Nigeria such as high demand for the easy access and convenience health treatment, high media literacy, access to internet and other ICTs tools only possible with urban dweller and literate patient. However, nurses engage in commercially available protocols in their own ambulatory care organization to assess the client over the telephone and to recommend approved interventions.

Majority of Nigerian rural dweller are communicating on phone and minority via Smartphone with the aid of various application and software such as social media (Youtube, WhatsApp, special health apps), email, blog, skype and other live streaming tools. Telenursing can be done anywhere, provided the technology that will be used to conduct telehealth session is available in the homes, clinics and hospitals. Due to poor internet access in Nigeria and inadequate ICTs knowledge of advancement communication gadgets among the nurses and most people in the society especially the rural dwellers, telenursing is poorly practiced.

Therefore, emergence of telenursing aids monitoring health status to identify and solve community health problems; in diagnosing and investigating health problems and health hazards hence informing, educating and empowering people about health issue through electronic media or modern technology. It will also increase access to information such as online medical records which can improve self-monitoring and patient convenience.

Recommendations

The following recommendations were made following this review;

1. Adoption of Nursing informatics to develop and improve on technology, development in bio-information and advancements as enhanced nursing with cutting edge technology. Hence, technology would positively impact patients care due to improvement in nurses' efficiency and effective communication.
2. Research and application of clinical best practices: nursing services with telenursing could prove long distance service, time efficiency and allocation of funds. Therefore, a solution to answer the aforementioned challenges.
3. Training of other nurses on telenursing and use of Electronic Medical Records. Electronic health record serve as a standard form of documentation to be shared by health care team thereby enhancing patient safety, evaluate care quality, maximize efficiency and measure the need of staff.
4. Maintenance of electronic patient records. Health information management is the practice of acquiring, analyzing and protecting digital and traditional medical information, which is very vital in providing quality patient care. By complying with medical, legal and ethical standards and entering and maintenance of information in the electronic medical record.

DECLARATIONS**Ethics approval and consent to participate:** "Not applicable"**Consent for publication:** "Not applicable"**Availability of data and materials:** The authors declare that [the/all other] data supporting the findings of this study are available within the article [and its supplementary information files]**Competing interests:** "The authors declare that they have no competing interests" in this section.**Funding:** Fund was not solicited from any person or organization**Authors' contributions:** OI carried out the review and edited the study, OB, OI and BO are lecturers in charge of the course, and they approved the work for publication.**Acknowledgements:** Authors acknowledged to the all contributors and concerns involved during this research work.**REFERENCES**

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