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4Ms Framework for Aging Healthcare

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ABSTRACT

Background: At the beginning of the pandemic, primary care clinics in North Dakota (ND) had just a trickle of daily telehealth encounters. Over time, these encounters increased, primarily for the youngest seniors (55 – 70 years old). Due to increased COVID-19 cases among the elderly population in ND, the Geriatric Workforce Enhancement Program (GWEP) allocated a grant to the University of North Dakota (UND) to promote telehealth use in the elderly residing in rural ND and receiving home care through the desired home care agency. This project aims to promote telehealth to reduce exposure to COVID-19 among the geriatric populations in rural ND. The project was implemented as Doctor of Nursing Practice (DNP) students used video monitoring technologies to complete a geriatric modified assessment with focus on the 4Ms. The 4Ms consists of medication, mobility, mentation, and what matters most (4Ms).

Methods: Mixed-method of qualitative and quantitative study approach was utilized. Participants were given a pre-survey focusing on previous telehealth experience. The modified geriatric assessment was conducted, followed by a post-survey questionnaire asking about their experience.

Results: Pre/post-survey answers were compared and analyzed by a statistician

Conclusions: The findings suggest that the utilization of telehealth in conducting modified wellness assessments is beneficial and more convenient in reducing the risk of COVID-19 exposure compared to going to the provider's office.

Background and Significance

The Novel Coronavirus Disease (COVID-19) a current pandemic crisis has led the world to face a health crisis. In December 2019, the first case of unknown origin pneumonia was identified in Wuhan, the capital city of Hubei Province. The novel virus belongs to the coronaviruses family and is classified as a type of RNA virus discovered by Chinese scientists on January 7, 2020.

The outbreak started primarily from zoonotic virus transmission in a massive seafood market. Person-to-person transmission then began and has led to a pandemic. The clinical outcomes of this infection include, asymptomatic infection, mild upper respiratory tract illness, severe viral pneumonia, and death. The patients present with various clinical manifestations including but not limited to: fever, dyspnea, and cough (Hasani et al., 2020). COVID-19 is a severe condition that compromises the health condition of people in all countries worldwide.

Although many people have been vaccinated and more are yet to be vaccinated, the best way to prevent infection is to avoid being exposed to this virus by covering the mouth and nose with a mask when around others, hand washing often, and maintaining social distance of six feet (Centers for Disease Control and Prevention, 2020). The Centers for Disease Control and Prevention recommend social distance to maintain infection control standards, thus, the need to follow prevention guidelines is vital. Telehealth is one of the excellent ways of preserving social space's infection control standards (Crawford, 2020).

Telehealth refers to the utilization of medical or clinical information that can be shared through audio-video platforms and telecommunication technologies such as remote monitoring and mobile communication equipment to offer health services. The objectives of telehealth include, to enhance health care access, increase options for health care delivery, and support

better outcomes for patients. Implementation of telehealth needs a shift in healthcare organizations' operations regarding how they deliver care (Murray, 2015). Telehealth, therefore, helps distribute information and services related to health care through electronic methods that ensure long-distance contact, advice, care, education, reminders, intervention, remote admissions, and monitoring between clinicians and patients. Telehealth is also described to as telemedicine that renders remote clinical services for patients. It is pointed out that telehealth can bridge the gap in the accessibility to health care services, especially in rural areas where there are challenges with transportation, mobility, funding, or staffing. In addition, it helps integrate health care systems through better management of health data and health care systems, improves access to online information, enhances coordination between practitioners, and supports distance learning, long-distance supervision, and meetings between health care professionals (Krishna et al., 2017).

According to the World Health Organization (WHO), 50% of its member countries have national telehealth policies within the eHealth policy. Seventy-five percent of the member countries have teleradiology services. In addition, 50% of countries have telepathology, teledermatology programs for remote patient monitoring, while 33% of countries have telepsychiatry programs. A majority of telehealth programs are operated and implemented at national or state levels, but only a few are implemented at international levels. In 25% of the nations, there are approaches to evaluate government sponsors for telehealth programs. In this evaluation, acceptance of telehealth programs by clients and providers, cost-effectiveness, accessibility, and quality of telehealth services are used as the primary criteria (WHO. int, 2021).

The main advantage of telehealth is its ability to improve health care accessibility by enhancing the speed of access or reducing health care costs. Additionally, telehealth can improve

uniformity in health care practice at a higher care quality and provide better support for health care workers working in remote and rural areas. The quick access to specialist and appropriate expertise and the ease of not traveling is highly advantageous for healthcare providers and patients. In places where resources are inadequate, telehealth can improve healthcare access regardless of the patient's location. Therefore, telehealth can act as an essential component towards universal health care coverage.

Significance to Health Care and Nursing

The key regulations that are relevant to telehealth policies focus on various elements. These policies ensure adequate ownership, accessibility, and security to clinical data, better confidentiality and privacy, and support informed consent for data usage. The policies guide data ownership and access rights to the data of patients. It helps to maintain data integrity and thereby support better patient safety. It focuses on preventing data theft or inappropriate access through secure transmission and ensuring physical and electronic security. This can help improve the reliability of portable electronic devices in telehealth and the reliability and accuracy of electronic patient data. Better safety and accessibility allow improved accuracy and sustainability in integrating electronic medical records and allow reliability and validity for support systems in clinical decisions. Thus, telehealth policies aim to improve the quality of care through telehealth services, support the availability of effective and efficient communication for transmission, and increase the dependability and reliability of telemonitoring and telemedicine (who. int, 2021).

In recent years, feelings of loneliness among older adults is a growing concern for public health. Studies have shown that almost 50% of the elderly population would experience loneliness for regular periods at later periods of their lives, with about 5% having this feeling perpetually. In addition, the elderly who detach themselves from others have higher risks of

physical health problems, aggravation of depression, and increased cognitive decline risk (Berg-Weger & Morley, 2020).

In the United States, a shift towards the development of age-friendly health systems is evident. The objective is to develop health systems that can ensure optimal care for all elderly people, prevent any harm, intended or unintended, and ensure their satisfaction with the care. Due to continuation of the Covid-19 pandemic, mainly affecting the elderly population, many programs have been introduced to improve the delivery of health services with the use of telehealth, adjustments of telehealth reimbursements. The 4Ms framework focuses on four factors, namely what matters, mentation, medication, and mobility. What matters focuses on the needs and expectations of the elderly and their preferences and goals for care which guides health care delivery. The medication factor highlights how ageing can increase risks of medication side effects and therefore evaluate the necessity of certain medications. Mentation implies to the importance of memory and thinking processes and suggests the importance of regular screening to monitor signs of delirium, depression, and dementia. Finally, mobility represents the need of the elderly to stay active and daily movement to maintain their daily functions and activities (AHA.org, 2021).

Literature Gap

In recent years, a lot of research has been done on telehealth or both elderly health care and addressing pandemic situations like Covid-19. However, there is a lack of research on the effectiveness of telehealth technology while conducting assessments for the elderly population who have a high level of vulnerability. The use of telehealth to receive medical treatment from home instead of the providers' office can prevent the possibility of transmittal of various infectious diseases. Due to the COVID-19 increase, creating an urgent need for telehealth for

patients and health care systems to be prepared. The elderly report challenges to communicate and access telehealth technology. The pandemic reveals significant gaps in older adults' ability and willingness to utilize telehealth. The use of telehealth strives to fill essential gaps in Geriatric telehealth that better prepare, prevent and treat older adults during the pandemic and beyond. The Dakota Geriatric Workforce Enhancement Program (GWEP) recognizes gaps in rural and tribal access to Geriatric services through telehealth. For this reason, the Dakota GWEP plan is to conduct the research needed to meet the immediate and long-term needs of the elderly in a rural area in North Dakota.

The Dakota GWEP trained telehealth ambassadors on home-based Geriatrics telehealth and created a team-based Geriatrics telehealth through GWEP academic partners. The assessments were conducted in the elder's home. The Annual Wellness Exam through telehealth was modified as a shared visit for patients who enter separate, secure chat rooms with different providers from the Geriatrics team to achieve the objective. The team created was an interdisciplinary team including Physical Therapy, Occupational Therapy, Pharmacy, Nursing and Physician. The team is involved with the implementation of the telehealth project at a rural ND reservation and a home health agency in Fargo and Grand Forks ND are the University of North Dakota nursing students enrolled at the College of Nursing and Professional Disciplines. Three students are Adult-Gerontology Nurse Practitioners and one Family Nurse Practitioner who is in the Doctor of Nursing Program (DNP). A graduate nursing student who was in the Master of Nursing Education program trained the caregivers of a Quality Service Providers (QSP) agency and caregivers from a home health agency on the use of an electronic device used to deliver the assessment through telehealth.

The ambassadors on the reservation are Quality Service Providers (QSPs) who are employed at a QSP agency that cares for Native American Elders in the home. The ambassadors at the home health agency are home health care aides.

The training for the QSPs consists of how to utilize the electronic tablet used to deliver the telehealth assessment. The DNP students will be on the opposite end of the electronic device to perform the assessment. The DNP students and the rest of the team developed a Geriatric Telehealth assessment tool with the 4Ms are Mobility, Mentation, Medication, and What Matters. As one of the DNP students, my focus is one of the 4Ms (What Matters).

Definition of Terminology

- GWEP: Geriatric Workforce Enhancement Program

- IHS: Indian Health Services

- QSPs: Quality Service Providers

- IRB: Institutional Review Board

- 4Ms- what matters the most, mentation, mobility, and medications

Theoretical Framework

Orem's Theory

Orem's Theory of Self-care Deficit is helping others towards the management and provision of self-care and sustaining or enhancing human functioning within the home's effectiveness level. The theory provides importance on individuals' ability to engage in self-care to support their health and well-being. This creates validation in need for nursing care for an adult when they cannot maintain their activities and qualities of safe care, supporting

recovery from injury or disease or coping with the effects of health conditions. The theory assumes that there is a necessity to remain functional and maintain engagement through constant connection and communication with themselves and their environment to improve life's longevity. It also assumes the importance of deliberate actions, privacy, human agency, and structures relationships (Xu et al., 2020).

Literature Review

Description of Search Strategies: Peer-reviewed sources from different reliable databases for medical health care information; this includes PubMed, Medicine Net, PubMed Central (PMC), Medicine. The study involved the peer reviewed articles from accredited sources. Essential terminologies include telehealth, evidence-based practice in nursing, E-health in elderly care Telehealth, HIPAA, patient-centered health services Elderly Care, E-health in elderly care, and at least ten peers reviewed sources were used.

Summary of Search/Literature Synthesis

A web-based national survey of Veterans Health Administration (VHA) Occupational therapy (OT) practitioners was done between September and October 2019 using closed questions with some open-text options. The questions have aimed at the extent to which VHA OT practitioners used video telehealth with older veterans. Information whether veterans are comfortable with video telehealth to receive specific OT services, the barriers, facilitators of change, and perceived benefits of video telehealth was examined. There were 305 participants involved, of which less than half had used video telehealth with older veterans, and users and nonusers of video telehealth were demographically similar. The study concluded that using video telehealth expressed high comfort (JMIR Rehabil Assist Technol, 2021).

A survey was generated, employing experts in geriatrics and telehealth in a veteran organization, piloted with five occupational therapy practitioners. Questions were generated to explore current and planned utilization of video telehealth and implementation barriers among facilitators. In this study, fewer than half of the survey of the occupational therapy practitioners utilized video telehealth on the geriatric population, the rest of the providers reported wanting to use telehealth services. Organizational factors were barriers seen. The practitioner attitudes were a facilitator; institutional factors were an implementation barrier. Veterans organizations are on the frontline in telehealth. Organizational barriers were identified. One of the barriers were the attitudes of the facilitators. Other barriers to implementation were institutional and facilitators implementing telehealth services (Gately et al.,2020).

A clinical trial study was carried out to investigate the effectiveness of social communication skills training for people with traumatic brain injury (TBI). Methods of communication involved, delivered in-person or via telehealth. There were two groups during the project implementation, one included an in-person intervention group and the other a telehealth intervention group. Participants were adults with moderate to severe TBI with social communication skills deficits. The results demonstrated similar outcomes in comparisons between the two groups (Rietdijk et al., 2020).

According to Poppas et al. (2020), many older adults experience memory loss and dementia in aging. This diminishes the skills of the elderly and increases clinical problems due to a natural decline in physical processes. The National Home Telehealth Program called Care Coordination Home Telehealth (CCHD) was introduced by the Veterans Health Administration. This program's objective was to support better coordination of care among elderly veterans in the long-term suffering from chronic diseases and prevention of avoidable hospitalizations. This

program was found to be cost-effective and, thereby, likely to be covered by insurance companies. The significant technological advances in communication, mobile applications, and the internet have created new opportunities to access and use information as well as support knowledge on diseases and health conditions much faster (Poppas et al., 2020).

A study was conducted on rural populations facing health disparities to prevent women from accessing reproductive health care services. Telehealth was utilized to increase access to contraceptives. Telehealth interventions' success improved access to contraceptive methods in rural locations (Sundstrom et al., 2019). Lastly, utilizing videoconferencing service is less likely to put patients and providers at risk (Fonssagrives, 2013).

Claes et al. (2015) conducted an explorative study of 245 participants examined attitudes and perceptions of elderly aged 60 years and older regarding contactless monitoring of daily living activities. The study found that the older population find contactless monitoring useful in multiple areas, such as remaining living at home longer, safely, and independently. Besides, contactless monitoring was crucial for timely detection of emergencies and gradually emerging health problems. Further, the elderly was comfortable sharing the collected data with professional caregivers and were willing to participate in the technology's decisions (Claes et al., 2015).

Another retrospective observational study for older adults undergoing elective surgery assessed the most important activities for the elderly to perform at home after surgery. Participants identified the most critical activities and content analysis was based on postoperative questionnaires and medical records to determine the participants ability to perform activities six months after surgery. Out of 154 participants who had surgery, 27.3% could not perform one of their valued activities at six months, including 90.8% of daily living activity. An assessment of

valued life activities was encouraged to be incorporated into older adults' perioperative management (Kata et al., 2019).

Hirpa et al. (2020), conducted a survey study based on patients' matters, used questions to rank various importance choices related to five health services. Then select the percentage of respondents' top three choices. The study identified what matters most to patients is useful in providing patient-centred and Value-Based Care Models. Patients have individual priorities on health service qualities and should be cooperative (Hirpa et al., 2020).

PICOT Question

In clinical research, the question is essential to include patient, intervention, comparison, outcome, and time (PICOT). The question for this research project is, "Will the promotion of Telehealth in conducting assessments for the elderly in their home versus going to the provider's office reduce the risk of COVID-19 exposure?".

Purpose of the DNP Project

The increasing number of COVID-19 cases continue to rise in North Dakota (ND) rural areas. The Geriatric Workforce Enhancement Program (GWEP) in ND has provided a grant opportunity in an attempt to promote telehealth in the elderly on a reservation in rural ND and a home care agency in urban ND. The project aims to promote the use of telehealth to reduce the risk of exposure to Covid-19. Using Mobility, Mentation, Medication, and What Matters (4Ms) for annual checkups from their homes.

Project Goal

The goal of the project is to promote the use of telehealth technologies to reduce the risk of COVID-19 through increased use of telehealth modes.

Objectives

The objective of the project is to create a Geriatrics-based telehealth team via Geriatrics Workforce Enhancement Program (GWEP) academic partners. This goal was completed at the end of September 2020. A second goal was to implement the assessment tool created by the DNP students. The creation of the assessment tool was started in January 2021. The implementation of the projects is anticipated to be completed by August 2021. Objectives for the grant include:

- Educate community stakeholders on how to use telehealth

- Educate older adults on the use of telehealth

- Deliver the annual wellness exam by telehealth teams with pandemic– enhanced education.

- Reveal telehealth assessment findings with primary care providers

Design and Methods

Two Home Care Agencies in North Dakota participate in the program. The study will take in the elder's homes on the reservation in a rural area of ND and in the elders' homes in an urban area of North Dakota. The research will take place on two separate visits. An electronic device will be utilized in the elder's home to connect via hotspot to Zoom for the telehealth visit. The first visit will take 30 – 60 minutes. The four DNP students will ask the participants to answer the Modified Geriatric Wellness Assessment questions. The assessment will include demographic, past medical history, what matters the most, psychosocial, mentation, mobility, and medications. What matters the most, mentation, mobility, and medications are considered as the (4Ms). A PHQ-2 and PHQ 9 will assess mentation depending on the initial score. The PHQ will assess depression. The Mini-Cog will be used to assess cognitive impairment, and mobility will be assessed using the TUG (Timed Get Up and Go); it measures the elder's functional

mobility. The alternative assessment for mobility is the Elder Mobility Scale (EMS). The EMS is used for an elder who has difficulty with mobility. Medication review will be done on the elderly; any identified specific side effects and contraindications of medications will be assess using BEERS criteria. The Qualified Service Providers (QSPs) or home health aides will obtain vital signs during the wellness visit. After completing the initial visit, the interdisciplinary team will evaluate the video to determine individual recommendations to be discussed with the participants on the follow-up visit. The follow-up visit will be approximately 30 – 45 minutes, depending on the recommendations.

Training

The caregivers who will be educated on the electronic device are employed at either the QSP or home care agency and have agreed to participate in the telehealth visit. The training will be conducted online through a web-based platform. In addition, the nurse educator student will conduct the education on the electronic device. Regarding the caregivers receiving the electronic device training, no identifiable information will be obtained from the participants. All participants are employees at the agencies and are voluntarily participating in the education.

Population

Clients that are 55 years or older from the Home Care Agency or QSP agency. An appointment was made with the participants. A Home Health Aide (HHA) or Qualified Service Provider (QSP) assisted the elders in navigating an electronic device during a Modified Geriatric Wellness Assessment. The electronic device was provided by the researcher and used only during visits to participants' homes. A pre and post-survey was administered regarding attitudes about telehealth and technology perception and usage. The pre-survey took approximately 10 minutes before the assessment started. The post-survey took approximately 10 minutes. There

was no identifying information on the pre/post-survey. The surveys are kept in a locked file in

the PIs office.

Sampling technique and recruitment process

The estimated sample size was approximately 60 elders at the beginning of the project;

however, that number was decreased to 15. Comparative data analysis was completed between

the pre and post-survey responses. The participants were 55 years and older and were clients of

the Home Care Agency or the QSP agency. The participants were recruited based on medical

records' information containing protected records by the QSP home health care agency manager.

The agency manager identified potential participants who were currently receiving services from

the agency. The telehealth introduction for the participants was delivered to the potential

participant by a QSP or home health caregiver prior to the initial visit to allow the elder to decide

whether they wish to be involved, and it provided information on the project. The elders who

may be potential participants received services from the QSP agency, and the elders are familiar

with what a QSP is. The students did not have access to the participants' medical records, and the

medical information obtained was self-reported from the participant. The participants needed to

be clients of the Home Care Agency or QSP agency. Non-clients of the listed agencies, clients

under 55 years of age, and clients who cannot verbally give their consent due to a dementing

illness were excluded from the study.

Informed consent procedure

Verbal consent was obtained before beginning the initial assessmet, including the consent

to record the assessment for educational purposes. There was no identifying information on the

pre/post-survey. The surveys are kept in a locked file in the PIs office. De-identified data is

stored on a password protected secured device. Any paper documents were shredded after

uploading any de-identified information. The assessment was recorded on a password-protected secured device. The participants were assigned a number, and the data was de-identified.

The recording will be used for educational purposes only; and deleted after the required six-year period. At any time during the assessment, the participant could have declined to answer questions and/or ask to have the recording stopped. The information will be maintained until the required six-year time frame to allow a review of the video recording to develop a care plan and give the researchers time to analyze the data. An alphabet system was used to identify the participants. For example, the first participant was identified as Mr./Mrs./Miss A; and so on. The identifying information will be stored in a locked file in the PIs office at the University of North Dakota. The identifying information used by the alphabet system will be maintained until the project end, which is anticipated by August 2021. At which time, all identifying information will be shredded. The video will be maintained for the required six years on a secure electronic device maintained in the researchers' office.

Data Analysis and Interpretation

The purpose of this DNP project was to promote the use of telehealth in conducting assessments among the elderly in their home versus going to the provider's office, in order to reduce the risk of COVID-19 exposure. A geriatrics-based telehealth team was formed through the GWEP grant that created an assessment tool template based on the 4Ms. The assessment tool was used to deliver the modified annual wellness exam via telehealth to elderly participants at a home care agency in North Dakota. Before carrying out the modified wellness exam, educating the community stakeholders who were the home aides on how to use telehealth and educating older adults on the use of telehealth was necessary. Increasing knowledge on the use of technology, in this case using an iPad in conducting assessments in elderly participants

and implementing theoretical Orem's theory of self-care was crucial. A pre-intervention survey followed by the modified annual wellness exam via telehealth and post-intervention survey was utilized. A mixed of qualitative and quantitative research approaches was used.

The data that was collected for this project was done via zoom. Five elderly patients completed the pre-intervention surveys that included five questions and four post-survey questions. The results indicated that 40% of the participants were comfortable using technology with 40% having used telehealth previously. In addition, the results found that 80% of the participants would use telehealth again of which 80% felt they received same or higher level of care.

The barriers identified included telehealth policy, coverage, and implementation. There is a lack of reimbursement with the use of telehealth services. There are different rules and regulations about the types of services that can be reimbursed by Medicaid in each state. Another barrier is limited access to high-speed internet. These barriers affect the ability of the patients to participate in the video consultations from the comfort or their home settings. Thirdly, there is limited access to smartphones in rural elderly populations, most of patients do not own a smartphone which will require to allocate additional funds to purchase equipment for participants.

Implications and sustainability of telehealth programs face challenges with sustaining services. Having exceptional telehealth licenses that enable providers to provide telehealth services in other states is necessary. Also, in-cooperating programs that maintain frequently used telehealth equipment and connectivity fees increases the ability to promote ongoing use of telehealth in conducting assessments for the elderly in their home.

Strengths identified with this project include, cost effectiveness, collaboration, and convenience. Reduced cost to access the specialists. The cost of the use of telehealth is less than traditional visits, additionally, the costs of travel and parking end up accumulating. With telehealth, information is readily available during a telehealth consultation, and specialist providers can gather medical history and ask questions directly. Besides, there is no visit time constraint with provider. During the visits, the patients felt less rushed during telehealth assessment.

Limitations faced with this project, involved the delay of the IRB approval, it took months to be approved, this led to adjustment of the dates, and having less time to recruit more participants for the study. Limited access to high-speed internet contributed to a delay in conducting the assessment as scheduled, although it was on few occasions and participants had patience. Obtaining elderly clients who were willing to participate was a challenge, in addition, participants had little technology literacy which required the home care aid to assist with iPad set up to conduct assessment.

Conclusion

The goal of this project was to promote the use of telehealth technologies to reduce the risk of COVID-19 exposure to vulnerable elderly population. This goal was met. Elderly participants were at first reluctant to participant when the word telehealth was used. However, they were willing to participant when the process was explained to them that the assessment would be conducted using a computer or a telephone, or an iPad. The post test showed the need for telehealth promotion. The participants stated that they were willing to use telehealth in the future. For example, during the modified wellness exam visit one participant was asking where everyone went, participant felt that the team conducting the assessment was in the room with

them. The study identified that there is need to continue to promote the use of telehealth to help

reduce exposure risk COVID-19 and other communicable diseases. Using the 4M's approach

was successful in providing a modified geriatric assessment as supported with the post-survey

results.

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