

Effect of Telenursing on Continue Care for Elderly Patients during Covid-19 Pandemic

Effect of telenursing on elderly care during COVID-19

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Abstract: Telenursing is a type of telemedicine that involves using technology to provide continuous care to patients with chronic illnesses. Aims: to assess and determine the impact of telenursing services to enhance continuous monitoring of elderly patients' care during a covid-19 pandemic. Design: Semi-experimental research design were used by the researchers on 60 discharged elderly patients, and their caregivers. Setting: The respondents in the study are elderly patients of both gender from King Fahad Special Hospital in the Kingdom of Saudi Arabia. Subjects: Patients select according to readmission rate over one time during the last two months, elderly patients how's have a chronic disease and agree to participate (N=60). Tools: Three tools were used in the study; structured questionnaire to assess of patients' caregivers' knowledge and practice regarding diseases, Zarit Burden Inventory (ZBI), to assess the personal stress among caregivers, and self-efficacy scale for chronic disease management. Results: There were significant differences between pre and post application of telenursing in terms of the caregiver's overall amount of knowledge and practice in the care of the older people. Conclusion: telenursing is an effective caring technique for ensuring continuity of care for elderly patients with chronic diseases during discharge during COVID-19.

Keywords: Caregivers, Continuity of Care, Covid-19, Elderly, Telenursing, Pandemic.

1. INTRODUCTION

During COVID-19 pandemic emergency, healthcare shifted immediately from mortar and brick care. Healthcare agencies, companies, and clinics closed transitioned to work remotely. Healthcare professionals had to dramatically and quickly shift how they day-to-day function. Digital health exploded. (1)

Telenursing is an information and communication technology (ICT) that can offer nursing care through a range of applications, including monitoring systems, the Internet, video, telephone, e-mail, and video pictures. (2)

Telenursing is basic form of electronic healthcare communication is used to establish a discharge plan and continue care for elderly patients during the Covid-19 Pandemic. The telephone is a simple mechanism easily accessible to most people and is broadly applied. (3)

Available technologies are used by nurses like computers, mobile phones and existing applications of communication like WhatsApp, Instagram and telegram in order to continue provide and care ongoing services. It is also possible to provide and manage services care through using pre-created programs of e-learning like, creating programs of training or Medscape, which can be installed on devices. (4)

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COVID-19 has demonstrated the telehealth value in providing the geriatric care during the pandemic. Depending on the telehealth to provide geriatric care continuity and avoid the contagion risk by decreasing the visiting health care need has been shown to be feasible during COVID-19 pandemic. (5)

In countries that have high income, access to and use telehealth for older patient has enhanced during the pandemic. This occurred because of the relaxation of legal restrictions for health care providing and telehealth inclusions as a reimbursable service by company's insurance in countries like Australia. The same can't be said about countries of low-and low-middle income from which the literature telehealth is sparse. (6)

Services of nursing performed in telenursing include management of symptom, patient triage, education and control of using tools of care like, masks and capsules through telephone or at home. Education, counselling, record and diagnosis of information of patient are also possible through technology of telenursing. (7)

Telenursing is effective also for using technology and telecommunications for inaccessible regions like villages. Using of technology and telenursing are developing increasingly in remote nursing care. (8)

So the aim of the current study is to assess and determine the impact of telenursing services to enhance continuous monitoring of elderly patients' care during a covid-19 pandemic.

The goal of the study is to evaluate and determine the impact of telenursing services on improving continuous monitoring of elderly patients' care during a covid-19 pandemic by increasing the level of knowledge and practice to provide essential care and improve self-efficacy for chronic disease management, improving caregiver knowledge and skill to reduce the burden and reduce the chance of hospital readmission among elderly patients.

2. METHADODOLOGY

Study design: In the design of the study, the researcher used (semi-experimental) on a group (before and after) in proportion to the subject of the study, where the researcher used the experimental group with the aim of "Effect of Telenursing on Continue Care for Elderly Patients During Covid-19 Pandemic".

Sampling: The study's participants will be senior patients who have been released, and it will look into the group's pretest and posttest in a Saudi Arabian medical institution's hospital, as well as caretakers who have cellphones. The study's participants are elderly patients and their caregivers of both genders from chosen Saudi Arabian hospitals. Elderly individuals with a chronic condition who agree to participate will be chosen based on their readmission rate during the previous two months.

Research Instrument: The instrument is composed of three tolls. Tool (I): Structured questionnaires composed of three parts: Part I deals with the prorespondents' profiles, including gender, marital status, educational level, residence, and occupation. Part II Concerns the understanding of patients' caretakers regarding diseases. Definitions, causes, diagnosis, treatment, complications, needed home care for the condition, and a healthy lifestyle are all included in measuring disease knowledge. Each item will be graded on a scale of one to ten. Three points were awarded for a correct and complete answer, two points for an accurate but partial answer, and one point for an incorrect answer. All questions received a 100 percent score, which was broken into three categories: poor (less than 50 percent), fair (50 to 74 percent), and good (more than 75 percent) (more than 74 percent). Part III, the practice of careers is evaluated. The following criteria will be used to score the monitoring of care: Practice that is competent earns 3 points, acceptable earns 2 points, and poor earns one point. For all questions, the total rating will be 100 percent, including incompetence (less than 60 percent) and competence (greater than 60 percent) (more than 60 percent). Tool (II): Zarit Burden Inventory (ZBI) w, to assess the personal stress among elderly patients' caregivers. It consists of 22 items; each item scored zero for never, one for rarely, two for sometimes, three for quite frequently, and four for nearly always. The overall score was calculated and divided into four parts: (0–21) no burden, (21–40) mild to medium duty, (41–60) average to severe disadvantage, and (61–88) unbearable burden. Tool (III): Self-efficacy scale for chronic disease management: Six questions would be used to assess how confident chronic disease patients are in executing specific activities.

The validity and reliability of the study tool (the questionnaire): The validity and reliability of the study tool are two methods for measuring the validity of the study tool (the questionnaire), and honesty can be defined as the extent of the scale's ability to describe or estimate what it was designed to measure, and the presence of a high degree of validity indicates

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the absence of systematic errors in the study tool, and reflects the assumed and real concept of the scal , while stability means the degree to which the study tool can be relied upon to ensure the same results upon repeated application of the study tool. Stability, as the researcher verified the criteria for honesty through (the arbitrators, internal consistency).

Content Validity: The validity of the arbitrators is considered one of the most important forms of honesty criteria in order to know the extent of the validity of the questionnaire for what it was designed to measure by linking it to the theoretical frameworks of the subject of the study in addition to measuring the controls of scientific research in the design of performance. 10) From various Saudi universities and Appendix No. (2), and all expert observations were taken into account in amending the questionnaire in its final form, and Appendix No. (3) Illustrates this.

Study Methodology: In order to achieve the objectives of the study, the researcher relied on the two approaches, the semi-experimental approach and the analytical descriptive approach when applying the study tool. As they are in reality without controlling the variables, while the descriptive-analytical method is intended as it includes procedures related to the cognitive aspect of the research. The researcher used this method to study" Effect of Telenursing on Continue Care for Elderly Patients During Covid-19 Pandemic".

This study includes three phases; the phase one, the researcher formulated the online questionnaires to evaluate and determine the level of knowledge and practice, burden level among caregivers, and the patient's self-efficacy. It consists of 24 interview questions for knowledge, the practice of patients and their caregivers developed by the researcher after reviewing relevant literature then modified according to expert comment, 22 questions for assessing burden level, and six questions to determine confidence level.

Phase two, prepare the content of telenursing education in two-dimension: 1) the information on chronic diseases (such as diabetes, hypertension, and heart failure), their causes, diagnosis, treatment, and complications, advice on a healthy lifestyle, and information on necessary homecare strategies.2) appropriate training clips for measuring vital signs like how to measure the random blood sugar, blood pressure, respiratory rate, and other necessary care for elderly caregivers to utilize in digital practice sessions; this content arranges after a review of the literature. In phase two, the researcher gets official approval from Tabuk institutional review board, then referred to the king Fahad special hospital, Tabuk, and obtained permission from the hospital to collect a list of all caregivers and patients available and accepted to participate in the study according to inclusion criteria. After that, the researcher visited the outpatient clinics, primary health clinics, and diabetic centers to meet the patients and their caregivers to introduce himself and explain the aim of the study to encourage them to participate in the research. In addition, the information is recorded for future communication by the researcher.

In phase three, a telephone survey conducts among the older adults aged 50 to 60 and above and their caregivers who lived in Tabuk city. First, the participants have to fill out a survey questions pre-test to assess their knowledge, skills, Caregiver Burden level, and confidence level. Second, the researcher trained patients and their caregivers in the following process:

- 1) Caregivers' telenursing education consists of health education about elderly patients' diseases, stress management strategies, and skill training focusing on disease-specific caregiving strategies and problem-solving skills.
- 2) Elderly patient telenursing education was the researchers contact the elderly patients daily by phone to provide comfort and psychological assistance and educate patients about a healthy lifestyle, the necessity of medication adherence, and how to prevent stressors in two 5-minute sessions per week.

The researcher arranged the caregivers into three groups for online meetings on (WhatsApp) to send the educational material to patients and their caregivers depending on their selected schedules. First, the content was provided as simple, understandable, and loaded information for the participants every other day. Then they were instructed to study the material at least once. Finally, the researcher sent each participant a reminder text message shortly after loading the content to ensure content observation.

The researchers held two weekly online meetings with the caregivers. Each patient took around 10-20 minutes, and each caregiver took over 20-30 minutes. In the end, the researcher reminded the participants to answer the post-test questions at a convenient time.

Ethical considerations:

The Tabuk institutional review board approved this study with the IRB Protocol No: TU-077\022\121. Every participant signed a written agreement form, and the results would be kept private.

Statistical analysis:

This study relied mainly on the use of the Statistical Package for Social Sciences-SPSS V.25 in processing and analyzing the data obtained through the study tool (the questionnaire), and the following are the most important descriptive and inferential statistical treatments that were used in Data processing for this study:

- The validity of the peripheral comparison through two independent samples t-test. Pearson's correlation coefficient to measure the validity of the internal consistency.
- Cronbach's alpha coefficient to measure the stability of the data.
- The arithmetic means (Mean) in order to know the extent to which the responses of the study vocabulary to the paragraphs and questions of the questionnaire are high or low.
- Standard Deviation: To identify the extent of the deviation of the study vocabulary responses for each of the paragraphs from their arithmetic mean, the closer its value is to zero, the more focused the responses and the lower their disperse.

3. RESULTS

Table I presents that more than half of the elderly patient (58.3) and more than one thirds of caregivers are male. The age of 55% of the elderly patient is more than 66. Moreover, 48.3 of the elderly patients are illiterates and 38.3 enter the hospital once in the last two months.

Table 2 shows that the total level of knowledge 23.3% of caregivers regarding chronic diseases is good before telenursing application in comparison with 50 % after telenursing application. In addition, 33.3% of caregivers are Competent in their care for elderly patient with chronic disease before telenursing versus 58.3 % after telenursing application. There are statically significant differences (P value 0.000).

Table 3 demonstrates that the mean of caregivers' burden is 1.5 before telenursing application in comparison to 1.4 after telenursing application. Regards caregivers' self –efficacy, the mean is 4.45 before telenursing application versus 6.51 after telenursing application. There are statically significant differences (P value 0.000).

Table (1): Socio-demographic characteristics of the caregivers and the elderly (N=60).

Variables	Answer	caregivers for the elderly		Elderly	
		Frequencies	%	Frequencies	%
Gender	Male	23	38.3	35	58.3
	Female	12	20.0	25	41.7
	didn't respond	25	41.7	0	0.0
Age	less than 30	10	16.7	0	0.0
	30_ 50year	25	41.7	0	0.0
	50_ 65year	0	0.0	27	45.0
	More than 66	0	0.0	33	55.0
	didn't respond	25	41.7	0	0.0
Educational level	Illiterate	3	5.0	29	48.3
	Primary	2	3.3	4	6.7
	high education	12	20.0	6	10.0
	Secondary	18	30.0	21	35.0
	didn't respond	25	41.7	0	0.0
Marital status	Single	11	18.3		
	Married	15	25.0		
	Divorced	9	15.0		
	didn't respond	25	41.7		
Number of hospitalization times in the last two months	three times			1	1.7
	Once			23	38.3
	Twice			13	21.7
	None			23	38.3

Table No (2): The total level of knowledge and practice of caregivers regarding chronic diseases pre and post telenursing application (n = 60).

The total level knowledge and practice	Pre		Post		T-test
	Frequencies	%	Frequencies	%	Sig
Total level of knowledge					
Good	14	23.3	30	50.0	-15.706 0.000
Fair	16	26.6	20	33.3	
Poor	30	50.0	10	16.6	
Total level of practice					
Competent	20	33.3	35	58.3	-17.706 0.000
Incompetent	40	66.6	25	41.6	

Table No (3): burden level and Self-Efficacy for Managing Chronic Disease among elderly patient pre and post telenursing application.

Burden level and Self-Efficacy	Pre			Post			T-test
	Mean	RII	R	Mean	RII	R	Sig
Total burden level	1.50	37.5%	Low	1.44	35.9%	Low	0.000
Total Self-Efficacy	4.45	44.5%		6.51	65.1%		0.000

4. DISCUSSION

COVID-19 outbreak was a powerful catalyst for the broad adoption of telenursing in healthcare systems around the globe. Furthermore, the elderly have been a popular target for telenursing initiatives since these technologies may link, supervise, and help elders with health practitioners, emergency responders, and family members over lengthy ranges without in-person, face-to-face contact. Elderly persons, in particular, are less acclimated to technology and may ignore it altogether. A capable caretaker would be critical in this case.

Gately et al. (2021) state that without sufficient assistance and support, even those with mild chronic conditions may have considerable difficulty using telenursing services, which will deteriorate as the disease develops. Gately et al. (2021) also mentioned caregiver help as a mediator for their telenursing intervention's effectiveness and youthful healthcare workers should help with telemedicine techniques.

The present study has found various challenges to telenursing techniques for the elderly community, notably the elderly with chronic conditions, including the failure to engage with technology challenges, connectivity concerns, and data loss owing to the inability to evaluate the patient thoroughly.

Nonetheless, there is agreement that telenursing has the potential to benefit patients and their access to medical care. This implies that, despite the challenges that elderly persons with chronic conditions such as heart failure and hypertension may encounter, there is still a positive side to using technology to provide services.

Lai et al. (2020) say that their telenursing intervention (through video conferencing) helped their elder participants establish a rising standard of living to COVID-19-related isolation. (10) There were statistical significant differences in caregiver's overall amount of knowledge and practice in the care of the older people before and after telenursing. Shohani et al. (2018), showed that telenursing exercise helped enhance the understanding and quality of care delivered by family caregiver of hypertension patients, backed up the current research findings.

Similarly, Chi and Demiris (2015) found that instructional telephone, online, and video technologies are helpful methods for improving caregiver knowledge and abilities.

Quinn and Brien (2018) claimed that telehealth is an excellent technique for providing families and caregivers with the competencies to offer the most outstanding quality of care feasible for their patients, hence avoiding wasteful health care consumption and early institutionalization.

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On the other hand, Shohani et al. (2018) found that telenursing had no profound impact on the performance of care delivered by the family's caregivers. They also said that the short trial duration and the type of the sickness were factors that reduced the impact of telenursing instruction. The present study found that telenursing learning reduced caregiver burden significantly. Only a small fraction of the caregiver who received telenursing methods reported extreme distress, compared to the vast majority of before telenursing.

Bakas et al. (2015), observed a significant decrease in caregiver load and depression symptoms following telenursing (14). Similarly, Graven et al. (2021) found that telemedicine is an excellent strategy for reducing caregiver load considerably. (15) According to the findings of the current study, patients who received telenursing techniques had more self-efficacy in managing their conditions. Similarly, Maresca et al. (2019) discovered telemedicine could be a valuable technique for more effectively caring for older persons by encouraging depression and anxiety symptoms resolution and boosting self-efficacy toward their conditions.

The findings mentioned above also in line with with Javanmardifard et al. (2017), who discovered that telenursing might increase self-efficacy, dietary habits, and physical exercise in hypertension patients.

In a similar vein, Najafi et al. (2016), concluded that telenursing can improve patients' wellbeing while also working to enhance self-efficacy. (18) The present study revealed that unplanned hospital readmissions in pre telenursing were considerably lower than in post telenursing. The result of the study in agreement with O'Connor et al. (2016), who found that the tele-health initiative reduced the clinic's 30-day hospitalization rates from 19.3 percent to 5.2 percent, a drop of 14 percentage points, backed up the current research findings. (19) Also, Spinsante (2014) stated that the tele-health technology might change and provide' wellbeing after dismissal, boost independence, and decrease readmission rates.

5. CONCLUSION

According to the current study's findings, telenursing is an effective caring technique for ensuring continuity of care for elderly persons during discharge and supporting informal caregiver's. The total level of knowledge and practice of caregivers regarding chronic diseases increased after telenursing application. Moreover, after telenursing instruction, the burden of elderly patient caregiver's was lowered. Furthermore, after receiving telenursing instruction, the risk of unexpected admission to the hospital was lower. **One limitation** of the present study that it did not look at pre-pandemic telenursing activities. Future research might look at how telenursing has evolved and changed since COVID-19 arrived and assess people's experiences throughout time. Another limitation is that the study not measure elderly psychological health measures.

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