Applying telehealth interventions for depression in nursing care

Literature review

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Degree Thesis

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Abstract:
Depression is a mental illness with disabling functional, social and physical impacts affecting over 300 million people globally. Despite there are known, effective treatments for depression, only about half of those affected receive such treatments. The major barriers to-wards receiving needed care are limited access and underdiagnoses. Telehealth offers numerous benefits that may overcome some of these barriers. One aim of this study was to provide nursing professionals with information about depression and telehealth interventions as a treatment possibility; the second aim is to identify the role of nurse in depression treatment in using the telehealth interventions. The study was performed as a literature re-view with inductive content analysis. Data was acquired from reliable databases such as EBSCO, Medscape and Google scholar. Together, 12 articles were selected for the further analysis. Due to limitation in number of articles available, author have included articles studying several different Telehealth tools for depression treatment. As the foundation for answering the research questions posed in this study Chronic care model was applied. This study answered the question about the effectiveness of Telehealth interventions when treating depression and provided information about the benefits and challenges related to these interventions. According to the findings, Telehealth interventions had effect on depression leading to reduction in depressive symptoms. The findings further provided valuable information about how can be telehealth tools integrated into existing nursing practice with regard to improve outcomes depression care. Nurses' role in encouraging patient engagement, supporting self-management and providing psychoeducation seems to be essential. The results of this study will help nurses working with depressed patients by giving them more tools to treat depression.

Keywords:	depression, mental health, telehealth, mental health apps, cognitive behavioral therapy, telenursing, nurses role, Chronic Care model, self-management support, patient engagement
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FOREWORD

I would like to express my gratitude towards my supervisor Pamela Gray who has been very patient, and guided me thorough the whole writing process. Your understanding and support made it possible for me to make this through.

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1 INTRODUCTION

Depression is now recognized as a leading cause of disability, impacting over 300 million people worldwide. (WHO, 2017) In according to statistics, most of the people will encounter depression at some point of their lifetime or be in a close relationship with a person who does. Beyond the personal suffering, depression is associated with poor physical health, unemployment, impaired social functioning and, in most severe forms, suicide. There are significant economic impacts on society from healthcare costs to decreased functional ability. Thus, depression represents great burden for both, individual and society. The alarming fact is that only minority of people with depression seek professional help and even less receive appropriate treatment.

Despite there are known, effective treatments for depression, only about half of those affected receive such treatments. Obstacles to effective care include a lack of resources, shortage of trained health care providers, and social stigma associated with mental health disorders. Another barrier is inaccurate assessment. Traditional methods of psychiatric assessment are limited, relying on patient's ability to recall and reflect on past thoughts and behaviors, which makes it challenging to detect and diagnose depression. (Aledawood, 2017) As a paradox, nursing professionals within primary care are the ones to most likely see patient present with symptoms of underlying depression that go untreated. Therefore, nurses' role in identifying depression and initiating treatment is extremely important. (WHO, 2017)

There has been increased interest towards using Telehealth solutions and electronic therapies in mental health care and for depression management. What is the role of nurse in this new approach to depression management? Can professional be replaced by a computer program? This paper is discussing the new role of nurse in mental health care and the technologies that are changing the way we look at human health and medicine. The rapid development of medicine, new and better medical devices together with new technologies used in healthcare are promising better future. Today, ordinary patient has access to far more information about the health condition and treatment than pa-

tients 10-20 years ago. This information is powerful and put more responsibility into patient's own hands. In near future, traditional medical appointments will be replaced by online communication and regular health checkups will be managed from comfort of client´s homes. Moreover, individuals will be able to take control of their own health and prevent the disease based on data from the devices used daily. This is a huge step in health prevention and individualized care.

The purpose of this study is to explore Telehealth interventions for depression treatment and prevention. How effective these interventions are and whether nurse using telehealth tools can improve outcomes in depression treatment. The aim is to provide nursing professionals with information about utilizing technologies in depression treatment. The area of focus is primary health care and method used qualitative literature review.

2 BACKGROUND

In this chapter, author will define the concepts relevant to the thesis topic. These include the definition of depression, and concepts relevant to telehealth including telehealth interventions for depression and telenursing.

2.1 Depression

Depression is a mental illness with disabling functional, social and physical impacts. It is associated with poor self-care, adverse medical outcomes, increased mortality, and risk of suicide (Holm and Severinsson, 2012). In according to World health organization (WHO), depression represents one of the major health problems in the 21st century, and it is major cause of disability worldwide. (WHO, 2017) Approximately, one in five individuals may suffer some form of depression during their life, although most will not seek treatment. Depression is more likely to occur for the first time during teenage or early adulthood; however, there are individuals who experience depression later in life. Literature shows that females are twice more likely to develop depression than males regardless of racial, ethnic or financial background. Family background seems to be other factor related to depression. There is evidence that children of depressed parents have two to three times higher risk of developing depression than children of non-depressive parents. The suicide risk in people with severe depression ranges between 15 and 30 percent, with approximately seven suicide attempts for every successful suicide. (Ainsworth, 2000)

2.1.1 Types of depression

The diagnostic manuals used internationally- *the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) and the International Classification of Diseases (ICD-10)* recognize several forms of depressive disorders. Depression can manifest in many forms, and these may be of varying degrees of severity. Depending on its severity, depression

can be classified as mild, moderate and severe depression. The common types of depression include adjustment disorder with depressed mood; dysthymic disorder; major depressive disorder, single episode or recurrent; major depressive episode associated with bipolar disorder; and mood disorder associated with a medical condition. (Ainsworth, 2000)

Major depressive disorder, also known as unipolar depression or clinical depression, is the serious and often disabling form of depression that can occur as a single episode or as a series of depressive episodes over a lifetime. To be diagnosed with *Major depression disorder (MDD),* symptoms (see the Figures 2 and 3) must last for at least two weeks and this depressed mood must represent significant shift from person´s normal mood. (Healthline.org, 2017) Another common type, Dysthymia or Persistent depressive disorder (PDD) refers to a less severe type of depression. Dysthymia persists longer than MDD, at least for two years, therefore it is a chronic disorder. Some individuals suffering from dysthymia may experience symptoms (see Figure 2) for many years before diagnosis or go undiagnosed. (Sansone, 2009)

2.1.2 Causes and risk factors

In according to The National Institute of Mental Health depression is caused by combination of factors. The factors that possibly play role in depression development include genetics, brain chemistry and biology and life events as trauma, an early childhood experience or any stressful situation. (Nimh.nih.org, 2017)

Depression is associated with a wide range of chronic physical disorders, including cancer, cardiovascular disease, diabetes, hypertension and a variety of chronic pain conditions. Depression can be a causal risk factor leading to an increased occurrence of physical disorders or as a consequence of worsening physical disorder (comorbid depression). Depression has been associated with poor health behavior, such as increased smoking and drinking, obesity, low compliance with treatment regimens and impaired immune system that are all risk factors for developing other chronic conditions. (Kessler and Bromet, 2013)

2.1.3 Symptoms

The symptoms of depression vary with the severity and form of the disorder and often with the circumstances of onset. In according to Ainsworth (2000) the symptoms of depression can be divided into four categories: mood, cognitive, behavioral, and physical. Generally, individuals experience persistent sad, anxious or "empty" mood, feelings of hopelessness and pessimism. Additionally, inadequate feelings of guilt, worthlessness and helplessness may be present. Loss of interest or pleasure in hobbies and activities is also common amongst depressed individuals.

Affecting individual on many levels, depression is not only mental illness. It is total body illness, causing changes in the way body functions. Physical symptoms include decreased energy, fatigue, sleeping difficulties, loss of appetite or overeating. Cognitive symptoms such as difficulties concentrating, remembering or making decisions may cause decreased work performance and lead to absenteeism. In its most severe forms, depression can lead to psychosis or even worse- suicide. (Ainsworth, 2000)

2.1.4 Tests and diagnoses

Diagnosing clinical depression is often challenging, because depression can manifest in many different ways. In addition, observable symptoms of depression might be sometimes minimal despite a person experiencing serious inner distress. (Webmed, 2017) As with most psychiatric disorders, common laboratory test for diagnosing depression are not very helpful. Depression diagnosis consist of a careful clinical interview and mental status examination. The diagnostic procedure further includes patient's medical history and physical examination. In addition, it is adequate to consider other psychiatric conditions, general medical conditions, medications, or a substance use to obtain relevant information. (Goldman et al., 1999) Standard tool used for diagnosing depression is the diagnostic manual DSM-5 (Diagnostic and Statistical Manual of Mental Disorders) published by American Psychiatric Association. Goldman (1999) identifies several other screening tools available for identifying depression including the General Health Questionnaire, the Beck Depression Inventory (BDI), the Symptom Checklist and the Inventory of Depressive Symptoms. (Goldman et al., 1999)

2.1.5 Treatments and interventions

Depression is a potentially treatable condition, with a range of available medications and psychological interventions supported by large amount of literature. (Hunsley et al., 2013) The earlier the treatment begins the more effective it is. Depression is usually treated with medications, psychotherapy or the combination of the two. Other treatment options including brain simulation techniques such as Electroconvulsive therapy (ECT) or transcranial magnetic simulation can be used for patients that has not responded to standard treatments. Since depression is affecting different people in different ways, there is no treatment option that suits all. Sometimes it takes trials and errors to find the most suitable treatment. (Nimh.nih.gov, 2017; Healthline, 2017)

The medicines used for treating depression are called *antidepressants.* These drugs work by improving the way brain uses certain chemicals that control mood or stress. There are several types of antidepressants with *Selective serotonin reuptake inhibitors (SSRI´s)* being commonly prescribed for depression treatment. For medicine to work it takes certain time, usually two to four weeks and often, energy levels and appetite improve before mood lifts. Sometimes it is necessary to try several antidepressants before finding the one that improves the symptoms and has manageable side effects. (Nimh.nih.gov, 2017) Common side effects listed by U.S. Food and drug administration (FDA) are nausea and vomiting, weight gain, diarrhea, sleepiness and sexual problems. (Fda.gov, 2017) Other risks related to usage of antidepressants are stopping the medication without consulting a professional (Nimh.nih.gov, 2017) According to the World Health Organizations guidelines, antidepressants are not recommended to treat mild depression. (WHO, 2017)

Psychotherapy or psychological counselling also called "talk-therapy" refers to patient meeting with the trained mental health professional in order to learn new ways to handle challenges and change the way of thinking. There are several types of psychotherapies that can be effective for treating the depression such as *Cognitive-behavioral therapy (CBT), Interpersonal therapy* and *Problem-solving therapy.* (Nimh.nih.gov, 2017) Cognitive–behavioral therapy *(CBT)* is one of the most popular form of psychotherapy used worldwide. (PubMed Health, 2017) This therapy, developed by Aaron T. Beck in the 1970s, teaches the highly effective strategies of behavioral activation and the relapse-

preventing interventions of belief change and cognitive restructuring. (Sudak, 2012) The National Alliance on Mental Illness (NAMI) defines CBT as therapy that focuses on exploring relationships among a person's thoughts, feelings and behaviors. During CBT a therapist will actively work with a person to uncover unhealthy patterns of thought and how they may be causing self-destructive behaviors and beliefs. (Nami.org, 2017)

2.2 Digital healthcare

2.2.1 Telehealth

Telehealth is the use of electronic communications to provide and deliver health-related information and health care services, including physical therapy-related information and services, over distance. Telehealth encompasses a variety of health care and health promotion activities, including education, advice, reminders, interventions, and monitoring. (Shaw, 2009) In other words, telehealth is a discipline focusing on the use of information and communication technologies (ICT) to deliver health services. Several other terms have been associated with this discipline such as telemedicine, health informatics e-health and m-health.

E-health and m-health (see Appendix 1) are other terms used for the delivery of healthcare via the internet using a variety of devices including mobile phones, and remote monitoring devices. These digital technologies can significantly improve access to mental healthcare by enabling healthcare professionals to deliver services more flexibly and with regard on individual patient needs. Recent developments in technology opened opportunities to engage and empower patients and created novel approaches to both assessment and intervention for mental health problems. (Hollis et al., 2015)

2.2.2 Telemedicine

American psychiatric association defines Telemedicine as "the process of providing health care from a distance through technology". (Psychiatry.org, 2017) The subtype of telemedicine- telepsychiatry also referred to as "telemental health" is an alternative method of treating patients with depression or other psychiatric conditions. Telemental health uses computer programs, internet programs, teleconferencing and smartphone applications for the remote delivery of mental health services. Instead of visiting the psychiatrist, therapist, or other mental health professional, the patient connects with them remotely using mobile device or computer. This approach can benefit both patients and health care professionals, creating similar experience to a face-to-face interaction. The technology may overcome many of the barriers that prevent people from seeking and receiving the care. Telehealth tools are useful for providing psychotherapy, patient education, medication management, or used for follow up. (Psychiatry.org, 2017)

2.2.3 Telehealth interventions for depression

Telephone-based interventions

People seeking help for mental health concerns have long used telephones as a form of intervention. Telephone services ranging from call-in radio stations to suicide hotlines have existed since the 1970s. (Dartmouth.edu, 2017)The use of the telephone for psychotherapy dates back to 1980s. Most telephone-administered therapies are using CBT approach. The studies suggest that telephone administered CBT (T-CBT) may be as effective as face-to-face therapy in depression treatment. (Dartmouth.edu, 2017)

Computer and internet based therapies

There are many therapy programs available online or on CDs and DVDs with minimal or no assistance of therapist. Some research shows that internet-based psychotherapy might be as beneficial as traditional face-to-face therapy (Wagner et al., 2014). Many of these therapies are based on already existing psychotherapies such as *Cognitive-behavioral therapy*. The idea behind computer-based CBT (CCBT) is to achieve similar re-

sults as traditional CBT without therapist's involvement. For instance, online-based materials can be used as a support to face-to-face intervention or in combination with video conferencing session. (The National Institute of Mental Health, 2015)

Mobile Applications

There are many mobile applications, or apps, designed to support people with depression and provide treatment and education. Some of these apps allow patients to record their mood, behavior and activities in real time using evidence-based tools such as PHQ-9 depression scale. Using their own mobile device, patients can track their condition over time and share this information with their clinician. Other potential benefits to patients include better engagement in their care process, earlier detection of problems and shared decision-making. (Hollis et al., 2015) Thus, mobile apps provide a modern way of delivering information and tools to manage the depression, in a safe home-environment. (The National Institute of Mental Health, 2015)

2.2.4 Telenursing

Telenursing is generally the use of ICT for delivering healthcare services at distance by nurses. Telenursing is rapidly becoming an essential part of the new role of the nursing professional. Increasingly, telenursing will be used as the primary means of managing remote health care delivery. Telenursing enables interaction of nurse with a client at a remote site to electronically receive the client's health status data, initiate and transmit therapeutic interventions and regimens, and monitor and record the client's response and nursing care outcomes. The value of telenursing to the client is increased access to skilled, empathetic, and effective nursing delivered by means of telecommunications technology. To ensure the quality and adequacy of remotely delivered healthcare, nursing professionals must understand the uses, limitations, and effectiveness of the telecommunications technologies being employed. (Armstrong and Frueh, 2003, p.8)

Telenursing can be facilitated in both healthcare settings and patients' home. Telenursing interventions may include *real-time applications* such as telephone, videoconferencing, email or online applications. In addition to real-time telehealth applications, various sensors and monitoring devices are being used in telenursing. Telenursing interventions enable patients and families to actively participate in care, such as self-management of chronic conditions. Telenursing has been successfully used to deliver remote support for patient with diabetes or wound care management. (Ediripullige, 2009) There is increasing evidence pointing towards effectiveness of telenursing interventions for depression management. (Reynolds et al., 2015)

3 THEORETICAL FRAMEWORK

Nursing theories and models have been used now for many years to guide nursing practice, research and education. The good model needs to be flexible, holistic, practical and sufficiently comprehensive to reflect on the needs of mental health nursing. Even though it is impossible for one model to address every person in every situation, the model used for the purposes of this paper has potential characteristics to guide nursing care with focus on mental health.

The Chronic care model is the main framework applied as a foundation in the answering of the research questions posed in this paper. (See Figure 1) The Chronic care model (CCM) was developed as an organizational framework for improving the care for patients with chronic conditions and in according to Miller (2013) it can be applied for mental health disorders as well. The King's Fund defines long term or *chronic conditions* as those for which there is currently no cure and which are managed with medication or other treatments (TheKing'sFund, 2017). Therefore, depression can be considered a chronic condition for many people experiencing it (Wood et al., 2017) The CCM model is based on the assumption that improvement in care requires an approach that incorporates patient, care provider, and system level interventions. A key factor in CCM is productive interactions between patient and care provider.(Gee et al., 2015) The nursing professionals are ideally suited for intervention through the CCM as they can encourage the continuity of care (Medscape, 2017)

This model consists of 6 essential components of healthcare delivery: organizational support, clinical information systems, delivery system design, decision support, self-management support, and community resources. (See Figure 1) While the first 4 elements in the CCM address practice strategies, the last 2 are patient centered. Management of chronic disease as well as practice improvement can be based on each of the concepts separately or on the model as a whole. (Medscape, 2017)

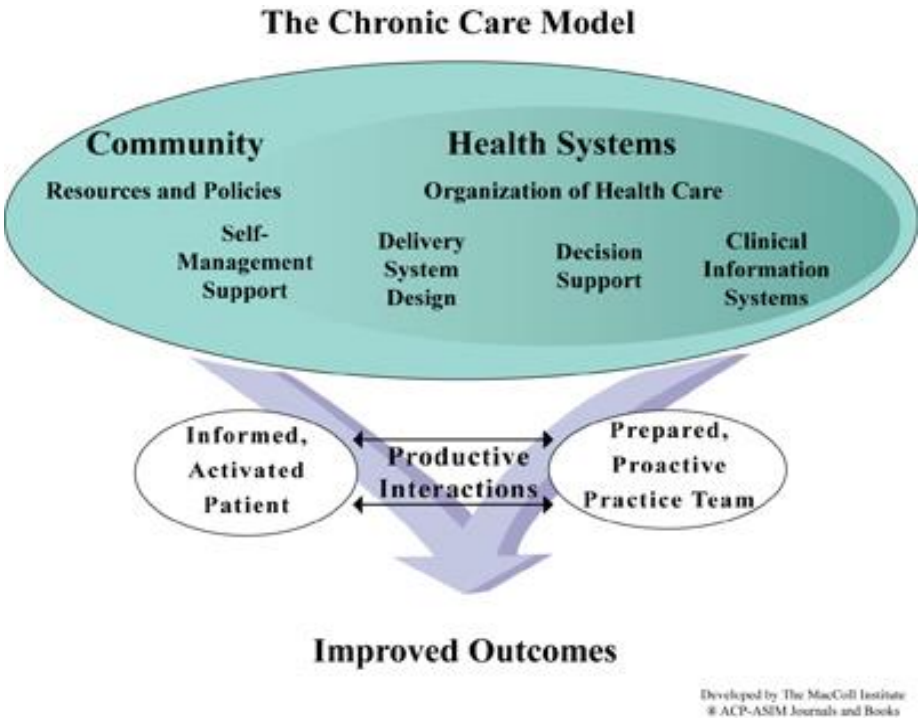

Figure 1. The Chronic care model

3.1 Elements of chronic care model

Organizational support is element of CCM that addresses the culture of the practice as well as system leadership. The core values of ideal practice are the optimal management of chronic illness and practice improvement. Additionally, in the ideal practice, leadership is visibly involved, supports change and quality improvement and follow evidence-base practice. The role of practice leaders is to set the expectations, make quality a priority, and provide the resources to support chronic care and practice improvement programs. (Medscape, 2017) In other words, CCM suggests creating a culture, organization and mechanisms that promote safe and high-quality care. *Clinical Information systems* (CIS) are structured to organize data to describe the health of the population and to facilitate efficient and effective care. Clinical information systems should provide information about individual patients, as well as data regarding populations of patients. In the CCM,

the information system may also include a disease registry that identifies the population and includes information about guidelines. (Medscape, 2017)

Delivery system design refers to the composition and function of the practice team, the organization of visits, and the management of follow-up care. The delivery of effective, efficient clinical care using all team members appropriately, planned patient interactions, regular follow-up, and case management are all important parts of delivery system design. (Medscape, 2017) *Decision support* includes mechanisms for increasing access to evidence-based practice guidelines and the platforms for collaboration between specialists. Evidence-based guidelines provide standards for care and should be ready for use in daily practice, as well as integration of clinical expertise from specialists and generalists. *Self-management support* is critical component of CCM emphasizing the need for patient-centered interventions. The goal of self-management support is to empower and prepare patients to manage their health and healthcare. Another element of CCM is *Community Resources.* The model describes the importance of cooperation with the community for peer support, care coordination, and community-based interventions. (Medscape, 2017) By using community resources, the health care system can enhance care for patients and avoid duplicating effort. Community programs can support a healthcare system in care for chronic diseases. In conclusion, mobilizing community resources to meet the patients' needs is another key principle of the CCM. (improvingchroniccare.org, 2017)

3.1.1 Self-management support for depression

For the purposes of this paper author has chosen *self-management support* as a component of CCM that can be effectively used to support depression treatment. *Self-management support* indicates the need for patient-centered interventions that can include tailored patient education, skills training, psychosocial support, and collaboration between nurse and patient. Nurse can take *active role* in empowering and preparing patients to manage their health and healthcare. (Medscape, 2017) The key component of

the CCM is informed, activated patient. The highly activated patient is therefore engaged, informed and confident in managing their own condition (Gee et al., 2015) Effective self-management support should not be based on telling patients what to do. Instead, nurse should acknowledge the patients' central role in their care, in sense of being responsible for their own health. The effective SMS includes the use of established programs that provide basic information, emotional support, and effective strategies for coping with depression. Good self-management support can be enhanced by using a *collaborative approach,* where nursing professionals and patients work together to define problems, set priorities, establish goals, create treatment plans and solve problems along the way. (improvingchroniccare.org, 2017)

According to Gee (2015), the CCM is useful framework for patient empowerment, self-management support and improving clinical and behavioral outcomes. Research suggests that developing self-management skills can lead to *significantly improved health outcomes* for people with chronic conditions, such as depression. (Musekamp et al., 2017; Medscape, 2017) Therefore, the role of the nurse when it comes to improving patients' self-management ability is extremely important. Successful interventions in depression management are composed of complex sets of actions that address psychological, social and lifestyle needs as well as physical problems. (WHO, 2017) Therefore, multisystem approach of the CCM makes it ideal for working with patients suffering from depression.

4 AIM AND RESEARCH QUESTIONS

One aim of this study is to provide nursing professionals with information about depression and telehealth interventions as a treatment possibility; the second aim is to identify the role of nurse in depression treatment in using the telehealth interventions.

RQ 1: What is depression and what is the role of nurse in depression treatment?

RQ 2: How the telehealth interventions effect depression treatment?

RQ 3: How can nurse using telehealth interventions improve outcomes in depression treatment?

5 METHODOLOGY

5.1 Principles of literature review

The research method that is used for this thesis is a systematic literature review. The systematic literature review is a summary of the research literature that is focused on a single question. It is conducted in a manner that tries to identify, select, appraise and synthesize all high quality research evidence relevant to that question. (Khan et al, 2011) A literature review discusses published information in a particular subject area, and sometimes information in a particular subject area within a certain time period. A literature review has usually an organizational pattern and combines both summary and synthesis. It might give a new interpretation of old material or combine new with old interpretations. (Writingcenterencedu., 2017)

Literature review has been traditionally used in health care literature and has become important because of the increasing need of evidence-based knowledge (Aveyard, 2010). Aveyard (2010) states that literature reviews are useful for health and social care professionals providing a summary and an analysis of the existing literature. It allows the health and social care professionals to continuously educate themselves without need to struggle through the great volume of literature that exists in this field. (Aveyard, 2010). Healthcare decisions for patients and for public policy should be informed by the best available research evidence. Practitioners and decision makers are encouraged to make use of the latest research and information about best practice, and to ensure that decisions are made based on this knowledge (York.ac.uk, 2017)

5.2 Data collection

For this literature review, a qualitative research method was conducted. Explicitly scientific journals were used during the data collection process. Keywords used for this study were depression, mental health, telehealth, telemental health, telenursing, nursing interventions. The words were used in combination in order to retrieve relevant articles. The combination words included: online therapy OR online psychotherapy OR online counseling OR internet based therapy OR etherapy OR e-therapy OR telephone therapy AND depression. The initial search has resulted in total 69 articles from which 16 were selected for further analysis based on their titles. Articles were first selected with the relevance of their titles, and then the final selection was done after reading through the abstracts. In total, 6 articles that were most relevant for the purposes of this study were selected. Additional search was conducted to obtain articles about nurses' role in depression treatment. The search terms depression and telehealth were used individually with terms nurse OR nursing. Together, 3 articles discussing nursing, telehealth and depression care were found. Scientific databases used for this study included Science Direct, CINAHL and PubMed. An additional search of Google scholar was implemented, and reference lists of retrieved articles were checked to identify any further eligible studies. This way, author was able to obtain another 3 articles. A table including the articles reviewed for this thesis can be found on page NUMBER.

5.2.1 Inclusion and exclusion criteria

All information was gathered systematically and by avoiding repetitions and wrong interpretations. Altogether twelve articles were abstracted from reliable databases. The language used for obtaining material for this study was limited to English. Articles published from the year 2004 to 2017 were used in the analysis process. The articles used for this study focused on the effects Telehealth interventions when treating depression. Moreover, articles that address treatment of depression and other comorbid condition were included. Main area of interest was Primary health care. Articles that focused on elderly and children were excluded. A table including the articles reviewed for this thesis can be found below.

Table 1. Inclusion and exclusion criteria

Inclusion	**Exclusion**
Scientific articles addressing use of Telehealth interventions for depression	Interventions that focused on elderly and children
Articles published in English between 2005 and 2017	Articles older than 2004
Fulltext articles	Articles with no references
Literature reviews	Study protocols
Articles that address treatment of depression and other comorbid condition	Articles that focuses on schizophrenia or bipolar disease
Studies conducted in primary care settings	Studies conducted in psychiatric institutions

5.3 Presentation of selected articles

Table 2. List of articles used

	Title	Author, year	Aim
1.	Computer therapy for the anxiety and depressive disorders is effective, acceptable and practical health care: a meta-analysis	Andrews et al.; 2010	To review evidence that computerized CBT for the anxiety and depresive disorders is acceptable to patients and effective in the short and longer term.
2	Delivering interventions for depression by using the internet: randomised controlled trial	Christensen et al.; 2004	
3.	Telemental health: A status update	Abouja-oude et al.; 2015	To provide an up-to-date assessment of telemental health, focusing on four main areas: computerized CBT (cCBT), Internet-based CBT (iCBT), virtual reality exposure therapy (VRET), and mobile therapy (mTherapy).
4.	The efficacy of smartphone-based mental health interventions for depressive symptoms: a meta-analysis of randomized controlled trials	Firth et al.; 2017	To examine the efficacy of delivering mental health interventions via smartphones for reducing depressive symptoms in both clinical and non-clinical populations
5.	Next-generation psychiatric assessment: Using smartphone sensors to monitor behavior and mental health	Ben-Zeev et al.; 2015	To examine whether the information captured with multimodal smartphone sensors can serve as behavioral markers for one's mental health.
6.	Telephone administered psychotherapy for depression	Mohr et al.; 2005	To test the efficacy of a 16-week T-CBT against a strong control for attention and nonspecific therapy effects.
7.	Patients' experiences of a computerised self-help program for treating depression-a qualitative study of Internet mediated cognitive behavioural therapy in primary care	Holst et al.; 2017	To explore primary care patients' experiences of internet mediated cognitive behavioral therapy for depression treatment.

8.	Computerised cognitive behaviour therapy (cCBT) as treatment for depression in primary care (REEACT trial)	Gilbody et al.; 2015	To examine how effective is supported computerised cognitive behaviour therapy (cCBT) as an adjunct to usual primary care for adults with depression.
9.	Improving the role of nursing in the treatment of depression in primary care in Spain	Aragonès et al.; 2008;	To describe a multicomponent program for the systematic evaluation and treatment of depression in primary care.
10.	Clinical Practice Models for the Use of E-Mental Health Resources in Primary Health Care by Health Professionals and Peer Workers: A Conceptual Framework	Reynolds et al.; 2015	To develop a conceptual framework to support the use of e-mental health resources in routine primary health care.
11.	Conceptualizing Telehealth in Nursing Practice	Nagel and Penner, 2016	To present a review of existing conceptual models and frameworks, discuss predominant themes and features of these models, and present comprehensive conceptual model for telehealth nursing practice
12.	Changing Role of Nurses in the Digital Era: Nurses and Telehealth	Edirippulige S. ; 2009	

5.4 Data analysis

The data were analysed using the principles of content analysis. "Qualitative content analysis is one of numerous research methods used to analyze text data. Other methods include ethnography, grounded theory, phenomenology, and historical research. Research using qualitative content analysis focuses on the characteristics of language as communication with attention to the content or contextual meaning of the text." (Hsieh and Shannon, 2005)

According to Elo and Kyngäs (2008), content analysis is used in nursing studies to analyze the data that are complex and phenomena. This approach may be used in an inductive or deductive way, depending on the purpose of the study. Elo and Kyngäs (2008) state that, inductive content analysis is used when there are not enough studies done that deals with topics or when the knowledge is fragmented. Inductive content analysis contains three phases: the preparation phase, the organizing phase and the reporting phase. A deductive approach is useful if the general aim was to test a previous theory in a different situation or to compare categories at different time periods. (Elo and Kyngäs, 2008)
The selected articles were analyzed using inductive approach. In preparation phase, articles were first read through and notes were taken. After this, the specific parts answering directly to the research questions were taken from the material and collected into a table. In the organizing phase, the articles were then re-read and main categories were formed according to similar recurring themes relevant to the research questions and theoretical framework. These categories were titled and organized into three main categories and then divided into several sub-categories as shown in figure 2. In the final phase, the results were reported.

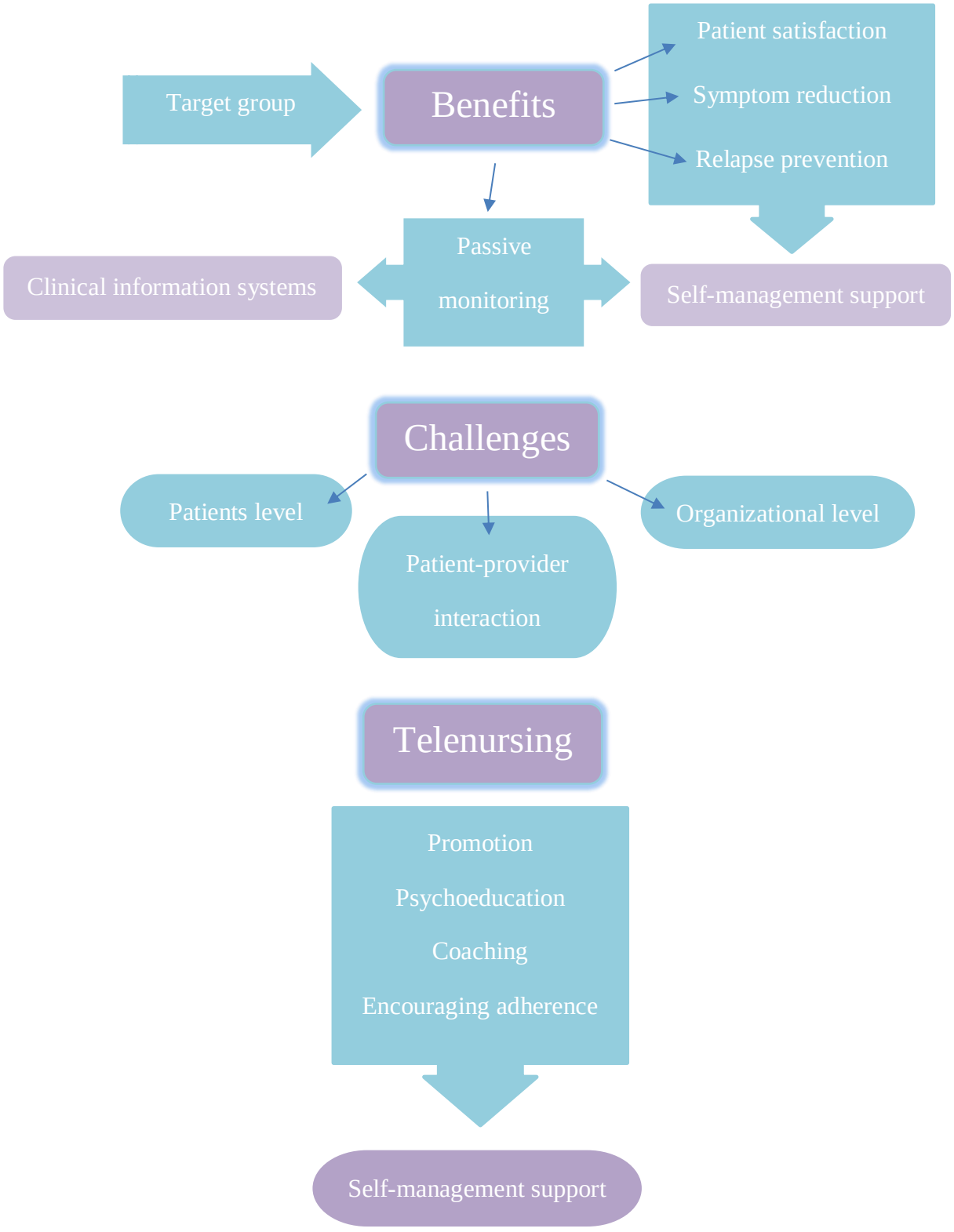
Target group
Benefits
Patient satisfaction
Symptom reduction
Relapse prevention
Passive monitoring
Clinical information systems
Self-management support
Challenges
Patients level
Organizational level
Patient-provider interaction
Telenursing
Promotion
Psychoeducation
Coaching
Encouraging adherence
Self-management support

Figure 2. Data analysis flowchart

5.1 Ethical aspects

Nursing research should be guided by these three value systems; society; nursing and science. The societal values about human rights, the nursing culture based on the ethic of caring and the researcher's values about scientific inquiry. (Fouka and Mantzorou, 2011)

The main goal of clinical research is to produce outcomes and knowledge that helps to develop and approve of new treatments. The nurse in a role of researcher provides opportunities to develop new skills and enhance knowledge. To ensure nursing practice is evidence based, the new ways of delivering care needs to be explored and existing systems needs to be challenged. The process of incorporating research results and best practices into everyday practice needs to be encouraged while promoting continuous learning. Conducting research is competitive and challenging, but this helps researchers to produce credible research that will hopefully shape the future of practice. (Bowrey and Thompson, 2014)

For my thesis work, it is important to observe good scientific practice and follow the principles of Guidelines for Good scientific practice used by Arcada. Below are chosen few principles that are good to adapt:

- Observing integrity, punctuality and accuracy in conducting research, and in recording and reporting results.
- Giving appropriate credits to the work and results of other researchers.
- Applying ethically sustainable data-collection, research and evaluation methods
- Observing ethical code of one´s own professional discipline

(Myarcadafi, 2017)

This thesis is aiming to view the researches and their results in an objective manner without undermining or highlighting any individual research. The goal of this thesis is also to use primary sources as much as possible. The literature used in this thesis will be of high standard, scientific and up to date and all the resources older than thirteen years will be excluded.

6 RESULTS

The first research question is partially answered in the background chapter of this paper. In order to provide complete answer to second research question posed in this paper, author considered as necessary to list both benefits and challenges towards telehealth interventions in depression care. These were later used for creating main themes for this paper. To support main findings, the article analyses resulted in effort to provide information about which populations can benefit from telehealth interventions. The third and the last theme was focused towards role of nurse in depression care. With hope to shed some light into incorporating telehealth interventions for depression in nursing practice the number of scientific articles are presented in following section of this paper.

6.1 Possible benefits of Telehealth

Telehealth resources offers numerous benefits when applied as a tool for depression treatment. The following benefits were identified and classified with regard on elements of Chronic Care model. Factors related to Self-management support were patients' satisfaction, symptom reduction and relapse prevention. Passive monitoring was factor interrelated to Self-management support and Clinical information systems.

6.1.1 Patients satisfaction

Andrews indicates that internet based psychological treatments such as computerized CBT (CCBT) are effective for depression treatment with major advantages being accessibility and convenience for both patient and clinician. (Andrews et al.,

2015) The opportunity of getting treatment in privacy was considered as a beneficial factor of ICBT by patients. Freedom and possibility to choose time and place for the treatment was also seen as positive aspect of ICBT delivered therapy. (Holst et al., 2017) For some patients it may be easier to express their true feelings on the Internet rather than in face-to face interaction. (Holst et al., 2017) Andrews further suggests that computer or internet delivered CBT, with minimal clinician's assistance can work as well as traditional CBT and is acceptable for patients. (Andrews et al., 2015) The results of randomized control trials indicate both short-term and long-term benefits of computerized CBT for mental disorders including depression. Additionally, patients reported adherence to this form of therapy and overall satisfaction, despite reduced time with therapist. (Andrews et al., 2015)

6.1.2 Symptom reduction

Several studies suggested that remotely administered CBT might be effective at reducing symptoms of depression. (Mohr et al., 2006; Aboujaoude et al., 2015; Firth et al., 2017) According to Christensen, both cognitive behavior therapy and psychoeducation delivered via the internet are effective in reducing symptoms of depression. This approach can be used especially for individual not receiving adequate treatment for depression. (Christensen et al., 2004)

Mohr and colleagues reported improved outcomes in telephone administered CBT for depression with treatment gains maintained in 12-months follow-up. (Mohr et al., 2006) In according to Aboujaoude (2015) use of mobile CBT was associated with a greater symptom reduction than the waitlist control group, in addition to an improved overall health and working ability. (Aboujaoude et al., 2015) Firth (2017) has reported similar findings stating that smartphone intervention have positive effect on depressive symptoms. In his study analyzing data from 18 randomized control trials, he indicates that smartphones are promising self-management tools for patients with depression. Depressive symptoms were reduced significantly more in participants using smartphone apps compared to control groups. Smartphone interventions had moderate positive effect compared to inactive control groups but only a small effect compared to active control conditions. Additionally, interventions that provided "in-app feedback" had

greater effect than those without. (Firth et al., 2017) Furthermore, Andrews suggest that treatment delivered over Internet has the capacity to change health status not only reduce specific symptoms. (Andrews et al, 2015)

6.1.3 Relapse prevention

In relapse prevention study, follow-up data demonstrated that traditional therapy was associated with lower relapse rate compared to unassisted ICBT. In contrast, another study showed significantly lower relapse rate in assisted ICBT compared to waitlist group. Furthermore, minimally guided ICBT provided significantly better symptom control as well as increased cost-effectiveness compared to waitlist control group. (Aboujaoude et al., 2015)

6.1.4 Passive monitoring

Different mobile apps are available for monitoring depression and stress levels, providing more accurate data than traditional interventions based on patient's retrospective summaries. The use of mobile apps for self-monitoring was associated with increased self-awareness, decreased depressive symptoms and time savings compared to control group. (Aboujaoude et al., 2015)

Ben-Zeev believes that smartphones can be utilized for passive monitoring of behavioral markers related to changes in mental health and functioning. In his study, Ben-Zeev examined, whether the information collected by smartphone sensors can serve as indicator for individuals' mental health. Study participants were provided with smartphones designed for continuous tracking of their geospatial activity, kinesthetic activity, sleep duration and time spent proximal to human speech. Additionally, participants completed daily ratings of stress, loneliness as well as pre- and post-measurements of depression. The results showed that smartphones can be used for passive collecting of data associated

with daily stress and changes in mental health. The main advantages of these findings is the fact that monitoring can be accomplished passively, with minimal burden to individual. (Ben-Zeev et al., 2015)

6.2 Challenges towards telehealth

Several challenges towards use of telehealth for depression was identified. These are categorized in light of theoretical framework and grouped into three categories: challenges on patient level, challenges in patient-provider interaction and challenges on organizational level.

6.2.1 Challenges on patient level

The major limitation of CCBT and to some level ICBT appears to be patient attrition. High attrition rates and respondent fatigue seems to be serious limitations to mobile-based therapy as well. (Aboujaoude et al., 2015) In according to Holst, (2017) responsibility that these forms of therapy place on patients is perceived as a challenge in maintaining their discipline to carry out the therapy.

Gilbody adds that CCBT programes provide little or no clinical benefit when used in addition to usual primary care for depression. In his large, REACT study involving 691 participants, he examined whether either of two popular CCBT programs-commercially produced "Beating the Blues" or a free to use "MoodGYM" provided any additional benefits compared with standard treatment and antidepressants alone. Patients were randomly allocated one of the three options and their progress was measured after 4, 12 and 24

moths. The results of this study showed that there was no significant benefit for supported CCBT added to usual care for the primary outcome of severity of depression at four months. Author suggests that main reason for negative findings was low adherence and engagement with treatment, rather than lack of efficacy. The participants were generally unwilling to engage with computer programs and wished for more clinical support as an adjunct to the therapy. (Gilbody et al., 2015)

Several meta-analyses revealed that traditional CBT performed better than cCBT in functional improvement and symptom reduction in long term. (Aboujaoude et al., 2015) Lower rates of engagement over time have been further identified by Firth (2017). He suggest that there is negative correlation between effectiveness and length of intervention. (Firth, 2017)

6.2.2 Challenges in patient-provider interaction

According to Nagel and Penner, (2016) good communication skills are necessary in holistic assessment affecting decision making process. For effective communication, both verbal and non-verbal cues are important. Considering that communication via telephone or other remote device is lacking nonverbal cues, it is often difficult to gather enough information from patient. Furthermore, creating a sense of presence for the patient is especially important considering a potential perception of distance in telehealth. (Nagel and Penner, 2016)

Study conducted in primary care in Sweden provided valuable information about patient's insights on remotely delivered psychotherapy. Holst (2017) Results of this study has shown that most participants expressed a need for face-to-face interaction rather than internet delivered therapy. Many patients experienced a need for a human contact, relationship with therapist, dialogue and guidance. Motivation to complete the therapy is closely related to feeling of relatedness, which is enhanced by patient-therapist relationship. (Holst et al., 2017) Holst (2017) also warns that that some patients may not develop a therapeutic alliance online and some may be too ill to fully participate.

6.2.3 Challenges on organizational level

Edirippulige (2009) suggests that lack of the evidence-based information about the cost-effectiveness of telehealth seems to be common barrier preventing integration of telehealth applications into mainstream healthcare. Together with other developments in health care, education and training is key factor for uptake of telehealth. Ongoing education and adequate training are critical for patient safety and for staff to use telehealth tools efficiently and effectively. Unfortunately, very little attention has been paid to education and training in telehealth. Despite the fact that health practitioners are familiar with computers and other electronic devices the practice of telehealth requires systematic education and training.

The lack of knowledge of telehealth, and its application is a result of the absence of systematic education. Unless students are educated about basic concepts, principles and the range of applications available, telehealth is unlikely to become a part of their practice. In addition, integrating telehealth into ongoing professional development is important. Health professionals should be supported to acquire and maintain their knowledge and skills in telehealth through continuing professional development programs. (Edirippulige, 2009)

6.3 Target group

Several studies explored the effectivity of telehealth interventions for certain populations. The results of study conducted by Firth and colleagues (2017) have revealed that smartphone interventions are more relevant to individuals with mild-to moderate depression. There was no significant effect among the groups with major depressive disorder, bipolar disorder or anxiety disorders. He also indicates that these interventions are suitable for delivering low-intensity treatment or as prevention for people affected by subclinical depression. More importantly, study has indicated that smartphone interventions may

be applicable to a broad range of individuals regardless of age or gender. (Firth et al., 2017) Research focusing on ICBT interventions for depression provided evidence that ICBT leads to similar results as traditional CBT when applied to special populations, including children, adolescents and medically ill psychiatric patients. On the top of that, one study revealed that ICBT for patients with depression and other comorbid condition was associated with significant reduction in both. (Aboujaoude et al., 2015)

Remotely administered psychotherapy may be especially useful for patients having disabilities that pose barriers to receiving face-to-face therapy. (Mohr, 2006) The study conducted in California has examined telephone administered psychotherapy for depression in patients with functional impairments resulting from multiple sclerosis (MS). Findings of this study has reported improved outcomes in depression with treatment gains maintained in 12-months follow-up. (Mohr, 2006)

6.4 Integrating telehealth into nursing practice

In according to Reynolds (2015) telehealth resources can be used as main intervention for depression treatment with professional providing varying degrees of support, or integrated into traditional therapy process. Telehealth resources might be used by wide range of health care providers such as general practitioners, nurses, pharmacists, psychologists, social workers counselors and others depending on level of skills.

Increasing number of nurses use wide range of digital technologies as part of regular nursing practice. (Nagel, 2015) Nurses have used telephone to deliver care for decades, and it remains an important tool for providing various healthcare services such as triage, consultation, providing advice, support and care coordination. Several other forms of telehealth are used nowadays including remote patient monitoring, videoconferencing and email communication. (Nagel, 2015) To enable digital face-to face interactions, cellphones and computers have been widely used in delivery of mental health services to

provide clinical assessments, consultations and therapy for patients with mental health problems. (Nagel, 2015)

Research suggests that in many countries, nurses are more actively engaged in delivery of health care services using telehealth. (Nagel, 2015) According to Edirippulige(2009) the nursing professionals have been the first to adapt telehealth which offers an attractive alternative to providing care to patients at home and healthcare settings.

The use of Information and communications technology (ICT) in nursing practice is known as *telenursing* or *nursing informatics*. According to American nursing association, the official definition of nursing informatics is: identifying, collecting processing, analyzing and managing data. In addition to this definition, nursing informatics should also incorporate the aspects of *care delivery*. (S. Edirippulige)

6.4.1 Promotion

On the level of promotion, nurses can take role in providing information to guide patients towards high quality resources. Nurses are well suited to promote credible website portals which direct patients to relevant evidence-based resources. These can be information sites, treatment programs and online sources for emotional support. (Reynolds, 2015) With minimal involvement of specialist, this approach requires little knowledge or change to existing practice. In some countries, different professionals including nurses, physiotherapists and pharmacist are already promoting eHealth resources in mental health care. (Reynolds J, 2015)

6.4.2 Psychoeducation

Education and counselling have shown to have positive effect on the clinical results of depression. By providing information about depression, nurses can help patients to overcome stigma and prejudice often associated with mental health disorders. In addi-

tion, nurses should provide realistic information about treatment and stress the importance of therapeutic compliance. Nurses also play vital role in giving patients practical advice on different self-help strategies, social and family relationships, and healthy lifestyle. (Aragonès et al., 2008)

Most of the information can be delivered in online format and there are studies directed towards evaluating online-based psychoeducation for outcomes in depression treatment. The study conducted in Canberra, Australia has shown that psychoeducation delivered via website leads to increased health literacy while reducing symptoms of depression. To provide depression literacy, authors have chosen the "BluePages" website offering evidence-based information on depression and its treatment. Results have shown not only improved knowledge of depression and its treatments but also reduction in depressive symptoms. (Christensen et al., 2004)

6.4.3 Coaching

Coaching combines the benefits of human support and Internet-delivered content. Nursing coach can use online formats to reliably deliver material, enhance learning and support patients to complete the program. Coaching may be used to reduce clinician's time, improve fidelity and help to deliver basic interventions. Research has indicated that with appropriate training and supervision, wide range of health care professionals including nurses can provide online coaching. There are eHealth programs designed to improve intervention quality and support non-experts such as nurses and social workers to deliver basic psychological interventions. While nurses don't have competence to deliver psychotherapy, they can engage in basic interventions such as monitoring, emotional support, and encouraging adherence. (Reynolds, 2015)

6.4.4 Encouraging the adherence

Nonadherence is common phenomenon that compromises the effectiveness of antidepressant treatment. Nursing interventions may lead to improvement in compliance to the

therapeutic plan. The role of nurse in depression treatment includes evaluating and supporting adherence to the therapeutic plan, evaluating response to treatment, and coordination and communication with doctors and with psychiatrist if necessary. (Aragonès, 2008) Telehealth tools used by patients has shown to be effective and improvements in medication adherence has been demonstrated. Different reminders for medication and telemonitoring solutions can improve medication management and enable nurses to *improve the quality of care* provided. (Edirippulige, 2009)

6.4.5 Promoting self-management

The role of nurse in helping patients to manage their own health is significant. Patients need extensive support to successfully manage their condition upon discharge from hospitals. In this case, routine home care visits can be minimized with using telehealth tools to interact with patients at home. This may lead to improved outcomes in self-care, reduced readmissions while allowing patients to stay in their home. Nurses role include engaging the patient in decision making and establishing good collaboration between person, family and multi-professional team. According to Nagel (2016), including patient in decision-making process leads to better health outcomes.
Increased involvement of patients in their own management provided them better understanding of their condition leading to increased reassurance and reducing the need for doctors' visits. (Edirippulige, 2009)

7 DISCUSSION

This literature review yielded information about various telehealth resources available for depression treatment, the nurses' role and how patients perceive telehealth interventions. Most of the articles (n=6) in this review provided a sufficient evidence of telehealth interventions being successful in depression treatment. Participants' involvement, self-management and co-operation with care givers resulted in the improved outcomes of depression care.

7.1 Overcoming the barriers

The article analyses identified numerous barriers to receiving psychotherapy including lack of financial resources, physical impairments interfering with attending appointments, transportation problems, lack of available services in patient's neighborhood, lack of time and stigma related to visiting mental health institution. (Mohr, 2005) There is a genuine need for something that can be used for unmet needs of people with depression. With persisting over prescription of antidepressants and inadequate provision of psychotherapies, healthcare providers are struggling to meet the demand for treatment. (Murphy,

2015) Integrating telemedicine in mental health care offers a number of benefits that may overcome some of these barriers.

To begin with, telehealth services are available immediately, allowing patients to access the therapy anywhere and anytime. Psychotherapy is often a long-term process involving scheduled appointments. With use of telemedicine, patients can engage with their therapist on more flexible schedule. Avoiding travel time and transportation costs are direct benefits of tele-therapy making it more convenient for patient. Since mental health issues still carry certain level of stigma, some patients are uncomfortable visiting a mental health care clinic. Telemedicine may address this problem allowing patients to receive the therapy in the privacy of their own home. In addition, for some psychiatric patients, it might be easier to disclose sensitive information in the privacy of their own home. Host (2017) supports this argument stating that some individuals feel more able expressing themselves on the Internet than in face-to –face interaction. (Holst, 2017) Telemedicine can also address the issue of limited access and professional shortage, enabling therapists to see more patients in a day and to provide access to care for people from rural areas. .

According to Ben-Zeev (2015) optimal mental health is dependent upon sensitive and *early detection* of mental health problems. Primary healthcare facilities are points where most of the people with depression receive the treatment. Aragonès (2008) points that this is also where the major errors occur when it comes to detection, diagnosis, treatment and monitoring. Many patients suffering from depression goes undetected or do not receive adequate treatment. (Aragonès E, 2008) Traditional methods of psychiatric assessment based on clinical interviews are often inaccurate, relying on patient's retrospective summaries of their experiences over time. Finally, interventions are often initiated after mental health problems already reached the level of severity that requires clinical attention and are more difficult to treat. (Ben-Zeev et al., 2015) Hollis (2015) suggests that technological innovations have the potential to bring more objectivity and reliability to these processes of assessment, diagnosis and monitoring. Using smartphones for monitoring provides valuable data about individuals' mental health changes and functioning that can be used to track the symptoms of depression. Integration of other digital sources of information such as personal media posts may also strengthen the role of assistive technology in mental health care.

7.2 Challenges towards telehealth

It is necessary to consider the challenges towards introducing new technology to mental healthcare. These include patients' engagement in their own care and motivation towards the treatment. Patient dropout rates and low engagement over time seems to be a common issue appearing in several studies (Aboujaoude 2015; Firth 2017) Giving people a piece of software and few supportive calls might not be enough to treat a complex condition like depression. For many people with depression, motivation is the real issue. The more support they get, the better they engage with therapy. According to Gilbody (2015) computer delivered therapy might provide an alternative for patients that are on waiting lists for traditional therapy. However, he thinks the benefits are slight.

Distance between patient and therapist, is another issue that can negatively affect the "therapeutic relationship". According to Holst (2017) many patients expressed a need for relationship with therapist that is often minimized using remote therapy. Nagel (2016) has discussed the importance of relationship between nurse and person receiving care. Establishing and maintaining relationships with patients is viewed as central to nursing practice. Good nurse-patient relationship results in optimal health outcomes. To provide successful intervention, there is need of human depth, sensitivity and compassion when interacting with patient remotely. (Nagel and Penner, 2016)
Other concerns are related to the communication administered through remote devices. (Nagel and Penner, 2016) Vital pieces of information could be missed if professionals cannot observe the patients' nonverbal behaviors and pick up on visual cues. Considering that communication via telephone or other remote device is lacking nonverbal cues,

it is often difficult to gather enough information from patient. Nagel and Penner (2016) propose that professionals can overcome this issue by adapting specific communication skills necessary for telehealth practice such as listening, facilitating conversation, questioning, redirecting and active listening.

Despite of its clear benefits, many metal health specialists remain skeptical towards telephone-delivered psychotherapy. (Mohr et al., 2005) Professionals may believe that ICBT is too impersonal and thus would not meet need of patients. (Holst et al., 2017)

7.3 Nurses role in depression treatment

Despite of challenges, nurses have shown remarkable flexibility and adaptability being the first group to adapt telehealth resources to provide care. (Edirippulige, 2009) Several articles discussed the nurses' role in telehealth practices and the role of nursing in depression care. Nurses play significant role in almost every area of healthcare including mental health care. While doctors are responsible for detecting and diagnosing depression and creating the therapeutic plan, nurses play key role in coordinating the whole healthcare process to ensure continuity of care. (Aragonès et al., 2008) Nurses, regardless of training, treat patients, educate patients and public about various medical conditions, and provide advice and emotional support to patients' family members. Furthermore, nurses are responsible for recording patient's symptoms, help perform diagnostic tests and analyze results, administer treatment and medications, and help with follow up. (Edirippulige, 2009) According to Wilkinson (1992) the main functions for practice nurses treating patients with depression include: assessment of depression; monitoring clinical progress; enhancing treatment compliance; promoting social change and education of the patient and carers. The findings in this paper provided valuable information about how can be telehealth tools integrated into existing nursing practice with regard to improve depression care. Nursing professionals are well suited to guide patients towards evidence-based resources, thus contributing to promotion of telehealth services. Adequately, nurses can participate in providing online psychoeducation for patients and their families, positively affecting treatment outcomes in depression. There is an evidence suggesting that improved depression literacy leads to reduced depressive symptoms. (Aragonès et al., 2008; Christensen et al., 2004.) According to Aragonès (2009) the role

of nurse in depression treatment includes evaluating and supporting adherence to the therapy and evaluating response to treatment. To facilitate this, nurse can choose online formats to reliably deliver material, enhance learning and support patients to complete the program.

Henderson (Henderson, 1991) defines the role of nursing as helping patients perform activities that will contribute to their health and recovery, thus promoting independence and autonomy. For depressed patients, particular attention should be paid to their psychological and social needs in order to improve their health outcomes. According to Aragonès (2009) nurses play vital role in giving patients practical advice on different self-help strategies, social and family relationships, and healthy lifestyle. Thus, the role of nurse in helping patients to manage their own health is significant. Nurses are responsible for engaging the patient in decision making and establishing good collaboration between patient, family and multiprofessional team. According to Nagel and Penner (2016), including patient in decision-making process leads to better health outcomes. However, only nurses who have mental health knowledge, appropriate skills and sufficient familiarity with telehealth programs will be able to provide mental health services.

7.4 Implementing Telehealth tools in Chronic care model

Chronic care model (CCM) has shown to improve health outcomes for people with chronic conditions and can be used in depression treatment as well. Telehealth tools can make important contributions to depression care using the CCM as a framework. More specifically, the various telehealth tools can be used to improve "self-management support" which is the key component of CCM. Providing patients with knowledge, confidence, and sills for self-management of their condition using telehealth tools can significantly improve outcomes in depression care.

This literature review helped to identify the core ideas of patient engagement and the tools and knowledge to impact their own mental health. Research shows that increased health

literacy leads to improved outcomes in depression management. According to Christensen (2004) providing patients with information about their condition and different treatment options leads to reduced depressive symptoms. This can be accomplished using different websites or computer programs. Smartphones are another great tool that can be used for symptom tracking and provide useful information about patient mental and emotional health over time. Patients can share this information with their clinician without delay and this way contribute to their own care.

The important factor contributing to successful depression treatment in consistency. (Gee et al., 2015) To help them stay on track, patients can use their own devices to set different reminders for medication and appointments. Telemedicine also provides tool for patient and healthcare professionals to interact on more flexible schedules and allowing immediate renewal of medical prescriptions.

The key component of CCM model is informed, activated patient. Telehealth tools can be used by various professionals to improve the level of skills, knowledge and confidence person has in managing their own illness. Thus highly activated patient is engaged, informed and confident in their ability to self-manage their own condition. (Gee et al, 2015) The findings of this paper suggest that the use of different telehealth applications can promote an informed, activated patient and enhance the CCM in the areas of self-management and productive interactions.

8 CONCLUSION

Telehealth offers a number of advantages for depression care, with its potential to make care accessible to underserved people and communities. This paper provided sufficient evidence about Telehealth interventions being a powerful tool in delivering services to individuals without access to appropriate treatment. In the context of nursing profession, telehealth offers alternative ways to access nursing care for patients at home. Reduced expenses, travel time and inconveniences for patients are other significant advantages.

The findings in this paper yielded important information about how can nurse improve outcomes in depression treatment using variety of telehealth tools. First of all, nurse can guide patients towards evidence-based resources, thus ensuring the patients will have access to high quality telehealth services. With regards on improving health literacy, nurse can participate in providing online psychoeducation for patients and their families, positively affecting treatment outcomes in depression. The literature review provided evidence that psychoeducation delivered on the web reduces symptoms of depression and increases patients' knowledge about depression and effective treatments available. Fur-

thermore, telehealth tools used by patients has shown to be useful in medication management and improvements in medication adherence has been demonstrated. According to the results, digital reminders for medication and telemonitoring solutions can improve medication management and enable nurses to improve the quality of care provided. Results also shown that engaging patient in their own treatment process leads to improved outcomes in self-management and reduced readmissions.

Results have provided sufficient evidence on telehealth interventions being effective in depression treatment and how they can be incorporated into the routine practice. However it needs to be established for which patient populations and under what circumstances are these beneficial. With regards on internet delivered therapy, ICBT was shown to be effective treatment for some patients with depression, but there are individuals who will not benefit from it. For some patients, reduced amount of therapist support seems to be a barrier in receiving Internet delivered therapy. The results shown that ICBT mixed with to face-to-face therapy is acceptable by patients and relieve overall treatment burden. However, more research towards tailoring of computerized programs to meet the needs of individuals is needed.

8.1 Strengths, limitations and recommendations

Author experienced difficulties in finding articles for this literature review that studied both telehealth interventions for depression and how can nurse use these in depression treatment. Therefore, articles from different areas were selected, to provide most relevant and up to date information with regards to answer research questions.

The research was based on the practice model and though model often serve as useful tool for developing research ideas as well as testing those ideas on new knowledge, the model selected was too extensive to be used as a whole. For the purposes of this study, author has decided to use only certain components of the model that guided the data analysis.

9 TABLES AND FIGURES

Table

Chronic depression: symptoms and course of illness

Category	Symptoms	Course
Major depressive disorder	Low mood Anhedonia Changes in appetite, weight, sleep patterns, and/or psychomotor activity	Symptoms present continuously for 2 weeks Single episodes or recurrent Often without interepisode recovery
Dysthymic disorder	Depressed mood Changes in appetite, weight, sleep patterns Low energy Low self-esteem Cognitive problems Hopelessness	Symptoms present for 2 years Continuous symptoms for > 2 months No major depressive episodes

Figure 1. Chronic depression: symptoms and course of illness (reference)

http://www.psychiatrictimes.com/articles/never-ending-winter-chronic-depression

TABLE 1: Diagnostic Criteria for Major Depressive Disorder (DSM-5)

A. Five or more out of nine symptoms (including symptoms 1 & 2) in the same 2-week period:
   1. A depressed mood or anhedonia (subjective or observed); can be irritable mood in adolescents & children
   2. Loss of interest or pleasure in most daily activities
   3. Change in weight or appetite
   4. Insomnia or hypersomnia
   5. Psychomotor agitation or retardation (observed)
   6. Loss of energy or fatigue
   7. Inappropriate guilt or sense of worthlessness
   8. Impaired concentration or indecisiveness
   9. Thoughts of death, suicidal ideation or suicidal attempt

B. Symptoms cause significant distress or impairment
C. Episode is not attributable to substance or medical condition
D. Episode not better explained by a psychotic disorder
E. E. Patient has not had a previous manic or hypomanic episode

Reference: American Psychiatric Association (2013)

Figure 2.Diagnostic criteria for Major Depressive Disorder (DSM-5)

http://tmedweb.tulane.edu/pharmwiki/lib/exe/detail.php/mdd_mdd.png?id=rx_of_depression

Figure 3.The Chronic care model

http://www.improvingchroniccare.org/index.php?p=the_chronic_caremodel&s=2

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APPENDICES

Definitions in digital healthcare

E-health

The transfer of health resources and healthcare by electronic means. **It encompasses three main areas:**

a. the delivery of health information, for health professionals and health consumers, through the internet and telecommunications;

b. using the power of information technology and e-commerce to improve public health services, for example, through the education and training of health workers;

c. the use of e-commerce and e-business practices in health systems management.

M-health

Medical and public health practice supported by mobile devices, such as mobile phones, patient-monitoring devices, personal digital assistants and other wireless devices. M-health involves the use and capitalisation on a mobile phone's core utility of voice and short messaging service (SMS) as well as more complex functionalities and applications including general packet radio service (GPRS), third-and fourth-generation mobile telecommunications (3G and 4G systems), global positioning system (GPS) and Bluetooth technology.

E-mental health

The use of ICT to support and improve mental health, including the use of online resources, social media and smartphone applications. Two types of e-mental health are commonly referred to: web interventions and mobile applications.

Telemental health

A subset of telehealth that uses video-conferencing technology to provide mental health services from a distance. It includes telepsychology, telepsychiatry, tele-mental health nursing and telebehavioural health.
(Hollis, 2015)

Appendix 1: Definitions in digital healthcare