

# THE EFFECTIVENESS OF MUSIC AS A NURSING INTERVENTION ON DEPRESSION IN OLDER PEOPLE

A descriptive literature review

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## Abstract

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<b>The effectiveness of music as a nursing intervention on depression in older people</b>		
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Abstract		
<p>Geriatric depression is increasingly an alarming global mental health issue among older people. Alternative non-pharmacological and non-invasive interventions such as music have potential to alleviate depression in the elderly.</p> <p>The purpose of this thesis was to help design effective music interventions for better quality of gerontology nursing care, and to make recommendations for future research. The aim of this thesis was a descriptive literature review, which explored the effectiveness of music intervention on depression in older people and explored the roles of nurses in implementing music intervention for the depressed elderly.</p> <p>The descriptive literature review was conducted using three databases (EBSCO, PubMed and Science Direct) to search for related studies using relevant keywords such as "depression", "music intervention", "older people". The search was limited to studies published from 2009 to 2019. Inclusion and exclusion criteria identified eight studies. The data from selected studies was analyzed based on the principle of inductive content analysis to answer the research questions.</p> <p>Four randomized controlled trials and four experimental studies were examined in the review. Mixed-results were showed. However, six out of nine studies demonstrated the efficacy of music intervention in geriatric depression by considerably reducing depression scores post-intervention. All studies proved important points of nursing roles in implementing music intervention to the depressed elderly.</p> <p>Music intervention can be a viable method of decreasing depression in older people and nurses have crucial roles in implementing music intervention to older people. Further research needs to address the efficacy of different music intervention on depression in the elderly with different health conditions.</p>		
Keywords		
Music intervention, depression, elderly, nursing roles.		

## Tiivistelmä

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<p>Tiivistelmä</p> <p>Vanhusten kliininen masennus on maailmanlaajuinen mielenterveysongelma vanhuksilla. Vaihtoehtoisesti lääkkeettömillä hoitomuodoilla kuten musiikilla on mahdollisuus lievittää vanhusten masennusta.</p> <p>Tämän opinnäytetyön tarkoituksena oli auttaa suunnittelemaan tehokasta musiikkia ja antamaan suosituksia tulevaa tutkimusta varten, jotta gerontologinen hoitotyön laatua voidaan parantaa. Tämän opinnäytetyön tavoitteena oli tehdä kirjallisuuskatsaus, jossa selvittii musiikki-interventioiden tehokkuus masennukseen vanhuksilla ja tutki sairaanhoitajien roolia musiikkituokioiden toteuttamisessa masentuneille vanhuksille.</p> <p>Kuvaileva kirjallisuuskatsaus suoritettiin käyttämällä kolme tietokantoja (EBSCO, PubMed ja Science Direct) etsimään kirjallisuuksia. Sisällyttämistä ja syrjäytymisen kriteerit määrittivät kahdeksan kirjallisuutta. Valittujen kirjallisuuksien tiedot analysoitiin käyttämällä induktiivisen sisällön analyysiperiaatteiden tutkimuskysymysten vastaamiseen.</p> <p>Erilaiset tulokset näyttää. Kuusi yhdeksästä kirjallisuudesta osoitti kuitenkin, että musiikki oli tehokas geriatriassa masennuksessa, jolloin masennustaso oli huomattavasti vähentynyt. Kaikki kirjallisuudet osoittavat, että sairaanhoitajilla on tärkeä rooli musiikkituokioiden toteutuksessa masentuneille vanhuksille.</p> <p>Musiikki voi olla toteuttamiskelpoinen menetelmä masennuksen vähentämisessä vanhuksilla, ja sairaanhoitajilla on ratkaiseva rooli toteuttaessa musiikki-interventio masentuneille vanhuksille. Lisää tutkimuksia tarvitaan erilaisten musiikkituokioiden vaikutuksen selvittämisessä masentuneiden vanhuksien kohdalla, joilla on erilaiset terveystilat.</p>		
Asiasanat Musiikkitoimenpide, masennus, vanhukset, sairaanhoitajien roolit.		

## CONTENTS

GLOSSARY .....	1
1 INTRODUCTION .....	2
2 PURPOSES, AIMS AND RESEARCH QUESTIONS .....	4
3 MUSIC IN HEALTHCARE.....	5
3.1 Definition of music .....	5
3.2 History of music intervention in healthcare .....	5
4 MUSIC INTERVENTION AND OLDER PEOPLE .....	8
4.1 Music therapy .....	8
4.2 Music as a nursing intervention .....	8
4.3 Music intervention for older people .....	10
5 DEPRESSION AND GERIATRIC DEPRESSION .....	12
5.1 Definition of depression .....	12
5.2 Pathology of depression .....	12
5.3 Aging and geriatric depression .....	14
6 METHODOLOGY .....	16
6.1 Descriptive literature review.....	16
6.2 Data search and collection process .....	16
6.3 Data analysis.....	19
6.4 Ethical considerations.....	20
7 RESULTS.....	22
7.1 The effectiveness of music intervention on depression in older people.....	22
7.2 The roles of nurses in implementing music intervention.....	25
8 DISCUSSION .....	28
8.1 Discussions .....	28
8.2 Limitations of the selected literature .....	29
8.3 Conclusions.....	30
REFERENCES .....	32
APPENDICES.....	37
Appendix 1 .....	37
Appendix 2 .....	40

## GLOSSARY

B.C.	Before Christ
BDI	Beck Depression Inventory
CAPE-BRS	Clinton Assessment Procedures for the Elderly Behavior Rating Scale
CD	Compact disc
CSDD	Cornell Scale for Depression in Dementia
DQOL	Dementia Quality of Life
ECG	Electrocardiogram
ECT	Electroconvulsive therapy
GDS	Geriatric Depression Scale
KMC	Kagayashiki music care
MBCT	Mindfulness-based cognitive therapy
MMSE	Mini Mental State Examination
MMSE-K	Mini Mental State Examination for Korea
NSAID(s)	Nonsteroidal anti-inflammatory drug(s)
PSQI	Pittsburgh Sleep Quality Assessment
RCT	Randomized controlled trial
SAD	Seasonal affective disorder
S-KGDS	Korean version of Geriatric Depression Scale
WHO	World Health Organization

## 1 INTRODUCTION

Clinical depression is a common and serious medical illness which has tethered to almost every continent and every stage of human's life. According to World Health Organization (WHO), the estimated percentage of the global population with depression is 4,4%, or 322 million people, in 2015. In ten years from 2005 to 2015, the total estimated number of depressed people increased rapidly by 18,4% worldwide. Depression is ranked as the single largest health problem to non-fatal health loss and is a major factor to suicide globally. (WHO 2017a, 8-13.) For older people, depression is called geriatric or late-life depression. It is a popular health issue which causes great distress for the senior individuals, their families and society. Geriatric depression affected approximately 7% of the older population all over the world in 2015. However, geriatric depression is often undiagnosed, untreated or mistaken with other diseases for various reasons, thence predisposes the elderly to more serious mental health conditions or even lead to suicide.

Nowadays, geriatric depression is increasingly an urgent mental health problem as the world population is aging quickly. Between the years 2015 and 2050, it is forecasted that the proportion of the world population over 60 years of age would nearly double from 12% to 22%. In other words, the globe is expected to have the number of senior citizens surge from 900 million to 2 billion over 35 years. As older people progressively encounter special physical and mental health challenges including geriatric depression, it is important that the disease and its treatment options are studied and understood thoroughly. (WHO 2017a, 8-10; WHO 2017b; Mental Health Foundation 2019; National Alliance on Mental Illness 2009, 1.)

Meanwhile, it is proved over centuries of human society development and decades of health care innovation that music can have positive implications on human's mental and physical conditions. Various studies demonstrated music as a healing art with clear therapeutic effects such as inducing relaxation, altering moods, creating distraction and reducing pain on patients of different ages and health problems. Music is a powerful tool, particularly suitable for gerontology care since it helps them maintaining and restoring health (Kramer 2001, 1). It might also be a helpful non-pharmacological and non-invasive method with long-lasting benefits in reducing geriatric depression and anxiety, helping the elderly relax their minds and bodies (Cromie 2002, as cited in Sorrell 2008, 23). While music therapy is mainly designed and performed by trained professional music therapists, music in general can still be used by all health care staff in order to achieve positive therapeutic outcomes. Nurses as healing professionals can utilize music therapeutically in

practice with older population to help them perform daily activities, relieve pain, and even ease depressive symptoms.

Music as a nursing intervention is mentioned and proved in numerous studies to be effective in reducing geriatric depression in various conditions and geographic regions. Nonetheless, the results of previous studies done on this matter are not fully gathered and properly evaluated. There are not many studies which focus on the influence of music in nursing care for the elderly with depression and especially, there are not many studies focusing on this matter that were done by nurses or professionals in nursing field. The matter is not fully comprehended among nurses. Therefore, the idea of this literature review is to explore and demonstrate the effectiveness of music as a nursing intervention for older people with depression through findings collected from previous studies. As a future nurse with passion for gerontology, the author is motivated to address the impact of music on seniors with depression and the roles of nurses in providing music for seniors with depression.

Music therapy is defined by the American Music Therapy Association as “the clinical and evidence-based use of music interventions to accomplish individualized therapeutic goals”. It is implemented by a credentialed professional who has completed an approved music therapy program. Nevertheless, music interventions include recorded or live music which do not necessitate a presence of a trained music therapist and have broad aims. (American Music Therapy Association 2019.) Music intervention can be used by nurses and other healthcare professionals. In fact, the terms “music therapy” and “music intervention” are often mix-used in nursing articles and books. This might cause some confusion in music practice by nurses and music used by music therapists.

The purpose of this thesis is to outline the essential points to help nurses design effective strategies featuring music intervention for better quality of gerontology nursing care, making recommendations for nurses and for future research in the area. The aim of this thesis is a descriptive literature review gathering and analyzing results from recent scientific studies about the effectiveness of music intervention on depression in older people. It also aims at exploring the roles of nurses in implementing music intervention for the elderly with depression. The descriptive literature review exclusively focuses on the effectiveness of music as a nursing intervention rather than that of music therapy. Hence, the term “music intervention” is used instead of “music therapy” to avoid confusion, and to clearly differentiate the use of therapeutic music from a nursing perspective with the practice of clinical music therapy.

## 2 PURPOSES, AIMS AND RESEARCH QUESTIONS

The purpose of this thesis is to outline essential and helpful points to help design effective strategies featuring music intervention for better quality of gerontology nursing care, making recommendations for nurses and for future research in the area. The aim of this thesis is a descriptive literature review which gathers and analyzes results from recent scientific studies about the effectiveness of music intervention on depression in older people. The literature review also aims at exploring the roles of nurses in implementing music intervention for the depressed elderly.

The literature review will analyze previous information provided in scientific articles and studies to answer the following questions:

- a. How effective is music on depression in older people?
- b. What are the roles of nurses in implementing music intervention for the elderly with depression?



### 3 MUSIC IN HEALTHCARE

#### 3.1 Definition of music

Music is defined as a pattern of sounds made by musical instruments, voices, computers, or a combination of these. It intends to give pleasure to people listening to it. (Cambridge dictionary 2019.) Music is both a science and art with ordering tones to produce expressively organized sounds consisting of five elements: rhythm, melody, pitch, harmony and interval. The five elements of music are equally crucial as they serve as the building bricks of music. Throughout history and across societies and cultures, music is one of the oldest and most accepted models for expressing cultural diversity, eliciting emotional, spiritual responses and stimulating physical movements. (Bunt 1994; Merriam-Webster's Collegiate Dictionary 1994, as cited in Higgins & Murrock 2009, 3-4.)

There are various ways to enjoy music. Listening to music is a passive action that can be easily accomplished by a radio, television, compact disc (CD) player or digital devices such as mobile phone, MP3 player. For patients, listening to music would only be a limitation if the individual has difficulty in hearing. Playing music is another possibility that can be achieved in both professional and recreational ways. It can also be accomplished by people and patients of all ages. For example, playing the piano or violin properly requires fine motor skills and at least several instrumental lessons, but keeping the beat by playing a tambourine or maracas does not require fine motor skills or complicated instrumental lessons. Singing is considered to be an excellent activity for patients who are able to sing. It requires lung volume expansion and can promote gas exchange, which can help with respiratory problems. Singing can be done in conjunction with listening or playing music. It can also be done in a group or individually to provide hours of enjoyment and connection. (Crowley 2013, 16.)

#### 3.2 History of music intervention in healthcare

Music has been used as a treatment modality since ancient times. The power of music to affect health has been noted from the time of the ancient Egyptians (Snyder, Lindquist & Tracy 2014, 99). As early as around 400 B.C., while Aristotle described music as a force that purified the emotions, Hippocrates, Greek father of medicine, played music for his mental patients (Antrim 2006, 409). Archaeological findings also showed that in the sixth century, another Greek philosopher named Pythagoras believed that music greatly contributed to health. Pythagoras restored and maintained the harmony of the body and soul

by prescribing music and a specific diet. He was considered to be the founder of music therapy. (White 2001, as cited in Nilsson 2018, 781.)

In the mid 1800s, Florence Nightingale, the founder of modern nursing, first recognized the power of music on the healing process among wounded soldiers in the Crimean War. While Nightingale noticed the effects of different types of music as she served in hospital wards. For instance, wind instrument pieces with continuous sound or air generally had a beneficial effect on patients, whereas instruments that do not produce continuous sounds had the opposite effect. While Nightingale pointed out that it is important that nurses are quiet at night and do not disturb anyone, she shared that familiar songs like Home Sweet Home or an Italian aria can sensitively soothe the patients and carry the power to restore souls. Nightingale also proposed that it was the responsibility of nurses to control the patient's environment in order for healing to take place. (White 2001; Nightingale 1992, as cited in Nilsson 2018, 781; Elliott 2010.)

From the late 1800s onwards, recorded music could be used in hospital environments thanks to the invention of phonograph. Music started to be used in conjunction with anesthesia and analgesia during the first half of 1900s. Evan O'Neill Kane was the first surgeon to use music as a medical therapy by playing it with a phonograph in the operating theatre prior to anaesthetizing patients. He believed music had a calming effect on patients and was more effective than the method of talking to them. (Kane 1914.) He also provided intraoperative music to distract patients from the "horror of surgery" (Nilsson 2018, 781). Further modern healthcare studies proved that music can have numerous therapeutic effects according to the types of it. For example, music with a consistent and steady rhythm (less than 80 beats per minute), smooth and flowing melody with harmonic, consonant and pleasing structure can induce relaxation. Music from one's own choice can bring individual memories, emotions and feeling of happiness, while music perceived as unfamiliar may cause a response that may undermine goals for intervention. (Snyder et al. 2014, 103-104.)

It is also indicated from research in the twentieth and twenty-first centuries that music can have various therapeutic effects in health care of different patient populations. Music can orient and minimize disruptive behaviors; help in pain management; decrease anxiety and stress; stimulate cognitive recovery; and distract patients for procedures that induce unpleasant symptoms and distress (Snyder et al. 2014, 106-108). It is also beneficial in various areas of health, from stroke recovery to lung condition management. For instance, in 1926, the National Association for Music in Hospitals was established by a nurse named Ilse to advocate for the use of specific musical prescriptions or treatments. Ilse

proposed that rhythm is the basis therapeutic element in music. In 1949, a group of surgeons performed a series of procedures and noted that music had a calming effect on patients who were normally tense and nervous, and patients whose routine medication did not work. Gerdner (1997) described that music is used to alter mood by decreasing agitation in senior patients with Alzheimer's disease and related disorders (Higgins & Murrock 2009, 3). A researcher suggested in 2009 that music listening could have a beneficial effect on people with coronary heart disease by reducing anxiety in myocardial infarction patients and reducing systolic, diastolic blood pressure and heart rate (Bradt 2009, as cited in Nilsson 2010, 73). Music is also proved to lower the heart rates of pediatric recipients of haematopoietic stem cell transplants, hence reduce stress levels and potentially ease the risk of developing post-traumatic stress disorder (Uggla, Bonde, Svahn, Remberger, Wrangsjö & Gustafsson 2016, 1225-1230).

## 4 MUSIC INTERVENTION AND OLDER PEOPLE

### 4.1 Music therapy

As music emerged to be a safe, cost-effective, non-invasive and non-pharmacological intervention in health care throughout centuries, a distinct field of music therapy started to evolve in the 1940s, after the World War I and World War II. Music therapy is a creative arts therapy. It is a clinical and evidence-based use of music interventions in order to achieve individualized therapeutic goals. Moreover, it also provides possibility for communication which can be helpful to those who have difficulty expressing themselves in words. Previous studies in the field demonstrated the effectiveness of music therapy in various areas, such as rehabilitating overall physical state, encouraging patients to engage in their treatment, providing emotional support for clients and their families, facilitating movements, etc. (Kramer 2001, 191-197; American Music Therapy Association 2019.)

Music therapy is therefore an established health profession in which music is used within therapeutic relationships to address physical, emotional, cognitive, and social needs of patients. A credentialed professional who has completed an approved music therapy program is qualified to be a music therapist. Music therapists are musicians with adequate knowledge and special training in psychology, medicine and sociology. They provide indicated clinical music treatment including creating, singing, moving to, and (or) listening to music to patients. They assess patients and clients, design interventions, and evaluate outcomes in relation to therapeutic goals. Music therapists work with a wide range of population. For instance, they work with senior citizens to lessen the effects of dementia; they work with hospitalized patients to reduce pain; they work with children and adults to reduce asthma episodes; and they work with premature infants to improve sleep patterns and increase weight gain. (Crowley 2013, 16; American Music Therapy Association 2019.)

### 4.2 Music as a nursing intervention

Nursing pioneer Florence Nightingale first performed music intervention to aid healing process since around 200 years ago as she believed it was the responsibility of nurses to adjust the environment of patients. Despite the fact that music therapy is not performed by nurses but by music therapists in some countries, the term “music therapy” was mentioned in various modern nursing books, journals and articles as a nursing intervention. It is described as a part of the holistic caring process, in coordinated with other mind-body therapies and activities that can be implemented by nurses, such as cognitive therapy,

imagery therapy, therapeutic humor, and activities like yoga, meditation. (Dossey, Keegan & Guzzetta 2005, 187-196.)

The book “Pocket guide to holistic nursing” demonstrated the way music intervention can be done by nurses to facilitate the healing process through specific interventions (Dossey, Keegan & Guzzetta 2005, 187-196.) Even though music therapists are specifically trained professionals to use music in numerous therapeutic ways, there are various situations in which nurses can implement music therapeutically to enhance care plans of patients (Snyder et al. 2014, 99-116). Ian Noonan, a lecturer from Florence Nightingale School of Nursing and Midwifery at King's College, London, England noted that music is “essential in life” since it has the power of reaching inner depths of people. It is especially beneficial to patients in hospitals, where creativity is often lost and pain, distress and hardship are often abundant. Music, one of the best medicine in the world, is considered to be another dimension to nursing and nurses could pass the benefits of music to their patients. (Elliott 2010.)

The term “music intervention” clearly distinct the use of therapeutic music from a nursing perspective with the practice of clinical music therapy. Music intervention that nurses provide also has specific therapeutic purposes, such as playing music to relax, singing songs to distract, or listening to music to stimulate or even invigorate. However, it does not necessarily require a presence of a trained music therapist and have broad aims, such as promoting a feeling of well-being or achieving relaxation in patients. Music as a nursing intervention can be recorded or live music provided to patients to achieve a couple of simply and specific goals. (Petrovsky, Cacchione & George 2015, 3.) The intervention is provided to patients in consider of the individual patient's music preferences through assessment instruments, such as tool made by Chlan and Heiderscheit. The assessment tools help nurses to discover information on the patient's favorite artists, groups, and genres; the patient's reasons for listening to music; and how frequently the patient listen to music; etc. (Snyder et al. 2014, 99-116.)

Music as a nursing intervention can have many forms. For example, passive listening to selected CDs, individual music downloads from the Internet, or actively singing and playing instruments. Two most commonly used music intervention techniques are individual listening, and group music making. Providing the means for patients to listen to music is the intervention technique most frequently implemented by nurses. Holding music groups can generate powerful integrating force among members as well as the listeners and the music. Nurse can consult with music therapists and other experts as they implement music interventions for group of patients. (Snyder et al. 2014, 99-116.)

### 4.3 Music intervention for older people

Generally, music has social, cognitive, emotional, mental and physical benefits to daily life of seniors. For instance, cognitive benefits include improving concentration and memory, while physical benefits comprise improving mobility and a renewed sense of power and continuance to life (Creech 2013 and Ruokonen & Ruismäki 2011, as cited in Besha 2015, 12). There are two basic benefits of music in the older people's lives. First, music can have an evocative effect on their emotions, memories and past connections. Second, it can be used as a mean for them to enjoy shared interests and activities. (Bright 1997, as cited in Hays 2005, 28.) The elderly can passively listen to music to have a sense of joy, contentment and elation; or they can actively participate in music activities to experience a sense of belonging, acceptance, capability and value. Music also helps the elderly to develop new social networks during times of change in life such as retirement, the loss of a partner or the move to a new residential place. According to Davis (1999), music and music activities may give sensory stimulus which facilitate well-being of seniors. (Hays 2005, 28.)

For those aforementioned roles, music is used in activities in geriatric wards, nursing homes and senior's clubs to enhance and promote health, and to maintain optimal aging for older people. Experts suggested using music in group support to stimulate rhythmic movement for the elderly's certain body areas, especially the elderly in wheelchairs who do not have control of their total body. Music is good for meal times. It is also recommended to provide music with crayons or color pencils, and a large piece of blank paper then ask the participated elderly to draw an image that the music suggests them. This recreational activity can help the elderly to relax, and to be moved by the sound and image which the music creates. (Portnoy 1999, 95.)

Music is not only a simple and helpful art for the seniors in their daily lives but also a geriatric preventive medicine and a healing facilitator (Hays 2005, 28). Music is therapeutic to older people, and various studies have shown that. One research done in Australia by the method of focus group interview described that music was central in helping various older participants maintain a sense of well-being and health. While some seniors felt music was the key to well-being, regardless of their medical conditions, some seniors believed that the loss of music in their lives would be "personally devastating and detrimental to their well-being." Some seniors also said that music distract them from their medical condition, help them feeling uplifted physically and psychologically while reducing anxiety and stress levels. (Hays 2005, 30.)

Another randomized controlled study done in Taiwan came to the result that blood pressure and depression scores of the seniors who are given exposure to music are significantly lower. Music can help nurses and other health care professionals build therapeutic relationships with older people. (Chan, Chan, Mok & Tse 2009, 285-294.) Positive therapeutic effects of music on the elderly are also reported among the elderly with sleep disturbances, dementia, anxiety, intellectual disabilities, etc. Given these advantages of music and nursing practice's tradition of using non-invasive and holistic methods to contribute to health, it is proposed that geriatric nurses should understand, advocate for, and use music for health and healing. (Krammer 2001, 191-195; Sorrell 2008, 22-23; Staab & Dvorak 2018.)

## 5 DEPRESSION AND GERIATRIC DEPRESSION

### 5.1 Definition of depression

Depression comes from the Latin word “depression”, meaning “pressure”, a disheartened mood of the soul accompanied by a lack of vigor, and a pessimistic evaluation of events (Avdeev 2005, as cited in Runcan 2013, 3). Depression is a multifarious concept which comprises a broad range of human experiences.

In daily discussions, the terms “depressed” or “depression” can refer to an emotion, or to the kinds of momentary and negative reactions that are related to human’s experience of particular stressors, disappointments, life events or short-lived periods of malaise and unhappiness. Stressors that trigger depression can be death of a loved one, job problems, ending of relationships or other major life changes. People tend to recover to a more positive mood state after the “depressed state of mind”, which usually last for a few days or even months. Depression as a temporary emotional state does not involve other symptoms which would make life more difficult. Therefore, it is not a mental disorder and is not treated as an illness. For instance, there is no needed to handle temporary bad feelings due to a disappointment in career or love life by medical treatment as it tends to ease within days, weeks or a couple months. (Durbin 2014, 1-3; Singh 2015, 3-4; The Finnish Association for Mental Health 2019.)

Nevertheless, depression can refer to a medical condition if it is much more elaborate with complex manifestations in length, severity, the lack of clear connection to environmental factors, the imperviousness to mood repair techniques, and the impact on one’s ability to function in daily life (Durbin 2014, 2). This type of depression is considered to be a mental disorder and is called as “clinical depression”, “depressive disorder” or “major depression” accompanied by symptoms of fatigue, sadness, neglect, disability, self-limiting attitude, guilt, etc. Clinical depression is different from a depressed state of mind or grief feeling in various aspects, albeit involve intense sadness or withdrawal from usual activities. (Singh 2015, 3-4; American Psychiatric Association 2019.)

### 5.2 Pathology of depression

Major depression is not only triggered by certain major life changes but also triggered by medical treatments given for other ailments. It can as well appear as a symptom of other illnesses or medical conditions such as stroke, chronic pain, cancer, hypothyroidism, or multiple sclerosis. Clinical depression can be endogenous or exogenous, and needed to



be treated as an illness. (Singh 2015, 3-4.) Depressive symptoms can vary from mild to severe, and can include:

- Depressive mood, persistent sad, anxious, or “empty” feelings.
- Loss of interest or pleasure in activities once enjoyed.
- Fatigue and inertia.
- Changes in appetite (overeating or appetite loss) and body weight (weight loss or gain unrelated to dieting).
- Aches, pains, headaches, or cramps that does not ease with treatment.
- Sleep disorders: Insomnia, hypersomnia, early-morning wakefulness, or interrupted sleep.
- Loss of energy or increased fatigue.
- Restlessness: Increase in purposeless physical activity or slowed movements and speech (actions observable by others).
- Irritability.
- Feeling of worthlessness, guilt, and helplessness.
- Pessimism and hopelessness.
- Difficulty in thinking, concentrating, remembering details or making decisions.
- Thoughts or attempts of death and suicide.

Symptoms must at least last two weeks for a diagnosis of depression. (American Psychiatric Association 2019; The Finnish Association for Mental Health 2019.) In this literature review, the term “depression” is short-written word for the illness of clinical depression, or major depression.

There are two main types of depression: Endogenous depression (with symptoms appear out of nowhere, primarily biological and genetic in nature) and exogenous depression (caused by highly stressful situations or external factors). Specifically, there are various sub-types of depression, such as persistent depressive disorder, somatogenic depression, seasonal affective disorder (SAD), peripartum (postpartum depression) and psychotic depression. For example, if depression persists for two years or longer, it is called persistent depressive disorder. Psychotic depression is depression with psychotic symptoms such as hallucinations (seeing or hearing things that are not there), delusions (false beliefs) and paranoia (wrong belief that others are trying to harm). (Singh 2015, 8.) Depression has different possible causes including faulty mood regulation by the brain, genetic susceptibility, stressful life events or changes, medication and medical conditions. These causes can be grouped into biochemical causes (endogenous), psychosocial causes (exogenous), and secondary causes. Psychosocial causes can be personal problems, exter-

nal conflicts, economic problems and reactive depression by unexpected problems such as disappointments, diseases, etc. Medication and medical conditions are considered to be the secondary causes of depression. These causes are varied from diseases such as anemia, viral infections and hypothyroidism to drugs and toxic such as steroids, diuretics, nonsteroidal anti-inflammatory drugs (NSAIDs), alcohol, cocaine and nicotine. (Singh 2015, 9.)

There are various methods of treatment for depression. The ultimate goal of treating depression is mood improvement, daily functions development and relapse prevention. Medication (tricyclic antidepressants, serotonin–norepinephrine reuptake inhibitors, selective serotonin reuptake inhibitors, etc.), psychotherapy, and electroconvulsive therapy (ECT) are some common methods of treatment. Treatments used in depression depends on the type and severity of the condition. The combination of psychotherapy and medication is generally an ideal treatment. In treating depression, family support and self-help are also crucial factors. (Singh 2015, 10-11; The Finnish Association for Mental Health 2019; Wasserman 2011, 109-116.) However, there is no fully proved way to prevent clinical depression and most experts see depression cannot be prevented. People who had depression can prevent relapse by committing to treatment plan, using mindfulness-based cognitive therapy (MBCT), making lifestyle changes and balancing nutrition. Lifestyle changes can be positive health habits such as exercising regularly, improving self-esteem, sleeping and eating well, avoiding alcohol and recreational drugs and spending time with friends and family, etc. (American Psychiatric Association 2019.)

### 5.3 Aging and geriatric depression

Stuart-Hamilton (2000) defined aging as a process of change occurring with the passage of time. In that process, human body changes and matures by time with dying cells are not replaced in sufficient numbers to maintain young age's levels of functions. (Runcan 2013, 37.) As people age, they encounter numerous changes biologically, psychologically and socially. Changes in health and life situations accompany with aging may leave a burden on seniors' mental health. While plenty older people find happiness in new ways of life, enjoy having more time to devote to activities they neglected during their working ages, numerous elderly people find new ways of life lonely, monotonous and exhausted. The increased need for assistance, dependency on other people, and coping with grief and loss are real challenges to many. Seniors who live alone or in nursing homes, retirement homes, or geriatric wards show signs of depression on a much larger scale since they may lack of stimulation, interest, and attention. (Wasserman 2011, 43-48; Runcan 2013, 43; The Finnish Association for Mental Health 2019.)

On one hand, while WHO set 55 as the beginning of old age, most developed Western countries consider the age of 60 to 65 is old. People around that age and above are qualified for retirement and senior social programs. (Barry 2016.) On the other hand, late-life depression or geriatric depression is defined as depression after age 65. It is frequently associated with cognitive changes and memory impairments (Ebdel-Rahman 2012, 1-2). For seniors all over the world, geriatric depression is considered to be the second greatest cause of disability, and one of the most serious public health issues. It is projected to be the second cause of disability after heart diseases by 2020. (Runcan 2013, 5.)

Depression in old people often goes unnoticed as its symptoms tend to be overshadowed by physical ailments coming with old age. Hence, it is difficult to diagnose depression in older people. However, classic symptoms of depression are still found. The functional capacity of geriatric depressed people collapses more easily than the functional capacity of younger depressed people. (Wasserman 2011, 45-46; Skhole 2018.) Geriatric depression is treated by medication, psychotherapy, physiotherapy, occupational therapy, and ECT both in hospitals and at home. Continuous and loving care is one of the most important factors in treatment of geriatric depression. Relatives of the elderly can provide support, care and stimulation in coordination with home-help services, day health-care facilities, or nursing homes in the process of treatment and rehabilitation for the elderly. Walks, physiotherapy, massage, hot baths, excursions, senior clubs or such pursuits that the elderly person enjoys can stimulate and cheer the seniors. During and after the treatment period, the elderly should also eat properly prepared and nutritious meals rich in fiber, protein, vitamins and minerals. (Wasserman 2011, 46-47; Skhole 2018.)

## 6 METHODOLOGY

### 6.1 Descriptive literature review

A literature review is an examination of research-based information of what is known, suspected or assumed on a specific topic. The goal is to create a comprehensive study and critical interpretation of relevant available research and non-research literature that relates to the particular topic. Insights that the author of literature review has are only possible when all the literature, both qualitative and quantitative type, is reviewed and analyzed together. In other words, literature review is like a whole summarized and completed jigsaw comprises of various related parts. According to Arksey and O'Malley (2005), there are several types literature review, including systematic review, rapid review, critical review, narrative review, structured review, and scoping studies review. (Cronin 2008, 38-39; Dawidowicz 2010, 5; Aveyard 2014, 2-3.)

This literature review is a descriptive literature review. A descriptive literature review can also be named a narrative, traditional or qualitative literature review (Kangasniemi 2013, 293-297). This type of literature review summarizes, synthesizes and critiques relevant literature before the conclusions about a specific topic are drawn. The materials used and analyzed in a descriptive literature review are selective. The main purpose of a descriptive literature review is to provide a comprehensive background for understanding current knowledge and highlighting the important of new research in the selected topic. This type of literature review can also help the author to determine research questions and inspire new research ideas. (Cronin 2008, 38.) Due to the aforementioned characters of a descriptive literature review and the author's main aims, purposes and research questions on the selected topic, a descriptive literature review is a suitable research method for this study.

### 6.2 Data search and collection process

The data search process for this literature review were conducted on electronic (online) scientific database sources. The databases used to collect data including academic search elite EBSCO, PubMed (National Center for Biotechnology Information – NCBI Search Database) and Science Direct. The data search ended on 24 March 2019. The literature was obtained from search results for search terms related to the topic and research questions. Several search terms used are: "music", "effect of music", "depression in elderly", "geriatric depression", "interventions", "nursing roles", etc. The search terms were mixed up and combined to ensure a broad search with various possible relevant

results. The first search was done using keywords “music” AND “depression in elderly”. Due to the fact that various studies done by nursing professionals use the term “music therapy” instead of “music intervention”, this term was also included in data search and collection process. Below is the Table 1 of data search results. The table only shows the combinations of search terms that yielded meaningful results.

Table 1: Results from data search process

SEARCH TERMS	DATABASE	SEARCH RESULTS	RETRIEVED LITERATURE	SELECTED LITERATURE
“Music” AND “elderly” AND “depression”	EBSCO	140	74	2
	PubMed	341	127	1
	Science Direct	2.773	112	2
“Effect of music” AND “geriatric depression”	EBSCO	17	14	1
	PubMed	21	9	0
	Science Direct	1.014	105	0
“Music” AND “nursing interventions” AND “geriatric depression”	EBSCO	1	1	1
	PubMed	1	1	0
	Science Direct	782	96	0
“Nursing roles” AND “music” AND “depression in elderly”	EBSCO	0	0	0
	PubMed	7	5	1
	Science Direct	1.038	58	0

The data gained from search results were subsequently gathered and selected to choose the most related, useful and informative literature. Irrelevant and duplicated literature would be eliminated using the below inclusion and exclusion criteria. The inclusion criteria are:

- Recent literature (published between the year 2009 and 2019).
- Literature in English and available in full-text.
- Literature that focus on the elderly of age 60 and above.
- Literature about music intervention and music therapy.
- Literature about depression in elderly.
- Literature done by professionals in nursing field, or group of authors that contain at least one professional in nursing field.
- Literature published on nursing journals.

The exclusion criteria are:

- Duplicated literature.
- Literature about clients other than the elderly group.
- Literature about other interventions rather than music.
- Literature about other health condition rather than depression in older people.
- Literature with limited content access.
- Literature done by professionals other than nursing professionals.
- Literature published before the year 2009.
- Irrelevant literature to the research topic.

From 609 retrieved literature, the author chose eight literature for this literature review based on the aforementioned inclusion and exclusion criteria. The criterion of “literature done by professionals in nursing field, or group of authors that contain at least one professional in nursing field” narrowed significantly the number of qualified literature since there are numerous studies exploring the effectiveness of music intervention on the elderly with depression but were done by professionals other than nurses, such as physicians, music therapists, neurologists, etc. All the selected literature in this study are scientifically written in English, peer-reviewed and available in full text. The full text versions of literature are obtained through school’s library and direct purchase from the sources of database.

Among these selected literature, there are four literature have randomized controlled trial (RCT) as study design, two literature use quasi-experimental research method as study design, and two literature have experimental research (one group pre-test, post-test) as study design. The literature were all done by registered nurses, nurse practitioners, experts from nursing departments, nursing colleges, or groups of authors that contain at least one co-author work in nursing field. Some of the selected literature (or studies) were published in scientific journals or publications related to nursing such as International Journal of Nursing Education, Journal of Clinical Nursing and Issues in Mental Health Nursing with published time between the year 2010 and 2018. Authors of the literature done the work in Australia, the United States of America, Taiwan, South Korea, India, Singapore, Hong Kong and China. For that reason, findings and conclusion from this literature review can be used on an international level. A summarized table of the selected literature is identified as “Summary of selected literature” in the Appendix 1.

### 6.3 Data analysis

Data analysis or content analysis is a method of analysing written, verbal or visual communication messages with first usage recorded in the nineteenth century. It may be used with either quantitative or qualitative data and in either an inductive or deductive way. Nowadays, a content analysis is used in a wide range of academic fields such as communication, journalism, business, psychology and sociology. In nursing, it is mostly used in gerontology, psychiatry and public health studies. In term of research method, content analysis is a systematic and objective means of describing and quantifying phenomena, and a method of analysing documents. Through content analysis, researchers can test theoretical issues and enhance the understanding of data. (Elo & Kyngäs 2008, 107-108.)

There are various approaches for analysing data or content of a study. This literature review uses the inductive content analysis. The approach of inductive content analysis is moving from the specific to the general. The particular data are collected, observed, interpreted and combined to create general and larger whole statements. The inductive content analysis approach have four main phases, which are preparation, organising, reporting and resulting. Preparation phase includes the selecting units of analysis and acquiring meaning of the data and whole. Organising phase include the acts of open coding, grouping, creating categorization or abstraction. Main headings are extracted after the author read through the selected literature in this phase. Afterwards, these headings are collected, interpreted and grouped into the coding sheet. Categories, with sub-categories and generic categories, materialize from there. The aim of the last phase is to make data more organized, group similar findings together, and point the main categories into the answers of research questions.

In the data analysis process of this literature review, the author followed the phases of preparation, organising, reporting and resulting as aforementioned description. The author started to conduct data analysis by preparing the materials, reading through eight literature, defining and collecting the results from them. Afterwards, important and related information in the articles are noted and organized into Appendix 1 and Appendix 2 with main titles such as author and year of study, study title, study design, study purposes, study method, used intervention and study results. Similiar aspects among the articles then found to group articles into two main categories (RCT and experimental research) according to study method for easier subsequent analysis. For RCT studies, the method of meta-analysis was not possible because of the differences in participant population and the tools of measure levels of depression. In the reporting and resulting phase, all results

gathered from selected articles were analyzed and evaluated to be grouped into main headings shown in the Results part below. Main headings in the Results part also focus on answering the two research questions. The content of the efficacy of music in the Results part were also divided into two groups, which are articles showed the effectiveness of music intervention on depression in older people, and articles did not show the effectiveness of music intervention on depression in older people.

#### 6.4 Ethical considerations

According to the Center for Innovation in Research and Teaching, ethics are the standards for conduct and ethical considerations are crucial in research. While ethics help people to determine the acceptable and unacceptable behaviors in daily life, ethical considerations help authors distinguish the acceptable and unacceptable approaches, ensure the quality of research results in the process of doing research. Research ethics prevent against the fabrication or falsifying of data, promote the pursuit of knowledge, integrity and truth, encourage the environment of trust, accountability and mutual respects among authors of research. (Fouka & Mantzourou 2011, 4; Center for Innovation in Research and Teaching 2019.) Uniform Requirements for Manuscripts Submitted to Biomedical Journals produced by the International Committee of Medical Journal Editors and Cochrane Handbook are considered to be two of the best known ethical guidelines and instructions for authors of research in general. (Polonsky & Waller 2010, 53; Wager & Wiffen 2011, 130; Center for Innovation in Research and Teaching 2019.)

This literature review is required to have rigor and is expected to comply with various ethical considerations. The author recognizes this matter. Overall, the author strictly adheres to the research ethics in Finland, to the objectives in Guidelines on graduation theses of Lahti University of Applied Sciences and to the principles of the Open science and research initiative when conducts the literature review. This is in order to ensure and promote the quality, trustworthiness, validity and reliability of science and research in general, and of this literature review in particular. The major ethical issues discussed further below are: transparency, accuracy, non-plagiarism and objectivity. These ethical considerations are the most critical and are required to be respected in the process of conducting literature review.

Transparency means that the author fully discloses information about the method of conducting literature review, self-position and the possible funding or competing interests (Wager & Wiffen 2011, 133). In this case, the literature review is done as a thesis by an undergraduated nursing student. The author does not take any financial support or have



interests which may cause conflict of interests. The methodology of literature review and the sources of literature are clearly presented in the content to ensure the transparent approach. Accuracy means that the data extraction must be done accurately and that the authors have not attempted to interfere in the results for any particular direction (Wager & Wiffen 2011, 133). In this case, the author takes full responsibility to plan for a proper data extraction by ensuring that data is extracted independently and precisely. All information used in the literature was extracted from reliable electronic databases. However, since the work of ensuring the accuracy is done by a single author without another author to double-check or discuss discrepancies in data, limitations in the matter of accuracy may present in the literature review.

Plagiarism means using words, images, data, ideas or other original creations of somebody else without acknowledgement or permission, and claiming them as your own original creations. It is believed to be a serious form of misconduct. (Wager & Wiffen 2011, 132.) The author is fully aware of this ethical issue and always describe other researchers' words or ideas in own words with appropriate citations. Direct quotes are not often used. Nonetheless, everytime they are used, the words and phases are put in quotation marks with citations. Objectivity means being unbiased, free from subjectivity or value-free. Nowadays, it is the characteristic that all authors of studies thrive to achieve to ensure the studies are reliable and trustworthy (Jukola 2015, 11-18). In this case, the author has tried to maintain the unbiased approach throughout the searching and selecting for literature to review, reviewing selected data, synthesizing and interpreting research results using evidence-based and scientific approach. However, since the literature review is done by a single author without another author to double-check data or discuss discrepancies in opinions, limitations in the matter of objectivity is inevitable. Moderate subjective and biased ideas or conclusions can present in the literature review.

## 7 RESULTS

### 7.1 The effectiveness of music intervention on depression in older people

This section shows the findings from the selected literature to answer the research questions and to achieve the aforementioned aims and purpose. A summarized table of the used music interventions and outcomes of interventions in the selected studies is identified as “Brief intervention and outcome description of selected literature” in the Appendix 2. The table shows studies in an alphabetical order of the main author’s name. It also shows studies which have experimental study design first.

There were several measurement instruments used in the studies such as Geriatric Depression Scale (GDS), Mini Mental Status Examination (MMSE), Dementia Quality of Life (DQOL) and Pittsburgh Sleep Quality Assessment (PSQI) to assess a variety of characteristics, such as depression level, sleep quality and cognitive functions. However, relevant measurement instruments assessing the level of depression included only four tools: GDS, Beck Depression Inventory (BDI), Clinton Assessment Procedures for the Elderly Behavior Rating Scale (CAPE-BRS) and Cornell Scale for Depression in Dementia (CSDD). Results of studies were drawn from scores of these assessment tools. Senior participants in these studies are widely different in terms of demographic, health and age variables. For instance, while Dev et al. (2014) experimental research on elderly people above 60 years old with different levels of depression but no cognitive impairment and/or chronic diseases, Cooke et al. (2010) had participants of elderly people with dementia and depressive symptoms, but no specific information on age range.

Overall, the selected literature reported mixed effects of music intervention on depression in older people. However, there are more studies concluded that music intervention was effective in reducing depressive symptoms than studies concluded otherwise. Six studies demonstrated a decrease in depression scores after music intervention are: Chan et al. (2010), Chan et al. (2011), Dev et al. (2014), Im & Lee (2014), Gopi & Preetha (2016) and Liao et al. (2018). Two studies found no difference in depression scores after music intervention are Cooke et al. (2010) and Wang et al. (2015). No study reported an increase in depression scores after music intervention. Three out of four experimental studies, and three out of four RCT studies showed that the use of music intervention alleviate symptoms of depression. The studies concluded that music intervention is effective in easing geriatric depression only when there were significant reductions in depression scores after music intervention, or there were remarkable differences in depression scores between the music intervention group and the comparison group.

On one hand, Im & Lee (2014) is one of the studies which draw to conclusion that music intervention is effective in alleviating depression in the elderly. The study explored the efficacy of music by research method of one group pre-test, post-test in Korea. The intervention was passive listening to music of therapist's choice for 60 minutes per time, once a week for 12 weeks. The results showed a significant difference between pre-test and post-test of GDS scores. While mean score of GDS was 9,76 before intervention, it dropped to 7,66 after intervention.

Meanwhile in Hong Kong, Chan et al. (2010) conducted randomized controlled trial and found out the same result after four weeks of music intervention. An overall decrease in depression scores was also reported in Gopi & Preetha (2016), however, over a shorter period of music intervention. Gopi & Preetha (2016) played music to 30 Indian seniors for 30 minutes per day, and for 15 continuous days. The post-test GDS mean score was 8,67, much less than pre-test GDS mean score of 19. Another study reported the same positive impact of music in less than a month of intervention is Dev et al. (2014). This study used BDI scale instead of GDS for pre-test and post-test evaluation. However, results also proved a statistically difference with BDI mean score dropped from 15,1 pre-test to 9,82 post-test.

The studies reporting positive affect of music intervention on geriatric depression also demonstrated the dose-effect of it. For instance, Chan et al. (2011) conducted a randomized controlled trial on 50 elderly people of age 55 and above, who were able to hear and communicate verbally. The music intervention was implemented at homes of 24 of all participants for eight weeks. The other 26 participants were in comparison group and received only relaxation sessions. GDS test was done after music session in each week. The results showed that depression scores of music group decreased remarkably over eight weeks. Moreover, depression score differences between the music group and comparison group were the most considerable from the fourth week onwards. In the music group, clear effect of music on depression appeared after the sixth week and the authors suggested that music has "a dose-response relationship in GDS".

Another research by Gold et al. (2009), cited by Chan et al. (2011), demonstrated the dose-response of music on psychiatry patients, and suggested there was a significant dose-effect relationship in music intervention for depression levels on psychiatric patients. Findings from Liao et al. (2018) also demonstrated a dose-dependent response of music and soft physical exercise. The benefits observing from participants increased over the time of intervention.

There were specific information in studies whose results supported the efficacy of music intervention. Firstly, while music intervention was reported to have a clear impact on depressed seniors in general, it was not demonstrated to have a clear efficacy on depressed seniors with different levels of severity. Dev et al. (2014) noted that while the overall GDS mean score recorded a noticeably fall after 21 days of music intervention, GDS mean score of participants with severe depression showed no change. Nevertheless, GDS mean scores of participants with mild and moderate depressive symptoms were lower after intervention. The percentage of participants with mild and moderate depressive symptoms also reduced after intervention. In Gopi & Preetha (2016), participants were only seniors with mild and moderate depressive symptoms. The other four studies concluding that music is effective in reducing geriatric depression did not clarify the depression levels of participants.

Secondly, there was one study combining music with physical exercise. Liao et al. (2018) implemented randomized controlled trial on 107 older people with mild and moderate depressive symptoms. Participants were divided into two groups, and 55 participants were given a session combining Tai Chi and soft Chinese folk music for 50 minutes per day, and three days per week. Intervention lasted for 12 weeks. Tai Chi is a traditional Chinese material art, which is believed by some researchers to increase physical activity and decrease depression in the elderly. The conclusion that music intervention is effective in reducing geriatric depression in this study was not clear and may be supported by Tai Chi.

On the other hand, Cooke et al. (2010) and Wang et al. (2015) are two studies reported no clear evidence that music intervention significantly reduced depression in seniors. In Cooke et al. (2010), participants are Australian seniors with depressive symptoms and early to mild stage dementia, probable dementia (cognitive impairment level 12-24 on the MMSE), or features consistent with dementia of Alzheimer's type. Music session was live group music program which lasted for 40 minutes, three morning per week for eight weeks. Especially, participants not only listened to music but also were encouraged to actively participate by singing, playing instruments and moving if appropriate. GDS mean scores collected at baseline (when intervention started), mid-point and post-intervention were not much different. While recorded specifically that participants with scores that were suggestive of increased depressive symptoms had fewer depressive symptoms over eight weeks of trial, the authors concluded in general that music did not significantly affect levels of depression. Nonetheless, some participants improved their sense of belonging and self-esteem. These are the two important factors to depression of all ages.

Wang et al. (2015) was the quasi-experimental and longitudinal study with the longest time of music intervention (24 weeks) of eight chosen literature. Selected intervention was structured music care program of KMC. 90 participants were in music intervention group and 59 participants were in comparison group. Measurement tools for depression levels were CSDD and CAPE-BRS with testing time before intervention and after week eighth, sixteenth and twentieth-forth. CSDD and CAPE-BRS mean scores were not significantly lower over time. In the beginning, CSDD and CAPE-BRS scores were 3,09 and 10,61 respectively. After all intervention sessions, scores of the two measurement tools were 2,47 and 10,49 respectively. The effectiveness of music care could not be obviously observed in the study, the authors inferred. This may be because of the lower cognitive function and more behavioral and psychological symptoms at the baseline of the two groups. However, using other variables such as salivary cortisol levels, MMSE scores and other studies' results, Wang et al. (2015) suggested that KMC and music intervention could still be introduced and applied in long-term care facilities for elderly people with dementia to prevent cognitive decline, anxiety, behavioral problems and depression.

## 7.2 The roles of nurses in implementing music intervention

Overall, the eight selected studies gave some insights on the roles of nurses in aiding, implementing and evaluating music intervention for older people with depression. Despite the fact that music therapists are professionals who mainly design and provide music intervention to patients in various countries, nurses as care providers still hold considerable roles and responsibilities. All eight studies reviewed in this literature review was chosen with a condition that they were done by nurses or professionals in nursing field. The authors of the eight studies acted as research nurses who performed music intervention and evaluated the results. This point demonstrated clearer the roles of nurses in distant to the roles of music therapists.

Nurses can plan and implement basic music intervention. While all eight studies had nurses or nursing-related professionals acted as researchers, who gave music to participants, there were three studies demonstrated clearest the roles of nurses in planning and implementing music intervention. For example, in Chan et al. (2010), research nurses not only built criteria to select participants but also chose music. Music collection was selected based on several local studies and included meditative, Chinese classical, western classical and western modern jazz. All music was instrumental, slow and flowing with approximately 60-80 beats per minute. In Chan et al. (2011), the research nurse was the one who introduced the four different selections of music (Chinese, Indian, Malaysian and Western slow rhythmic) to participants. Like in Chan et

al. (2010), music collection was not structurely gathered by music therapists but by all research nurses based on several simple principles such as music with 60-80 beats per minute without accented beats. Research nurse was the one who play music to participants. During the individual music listening sessions, nurse left the participants alone and stayed a short distance away. This was, according to the authors, to ensure that nurse was able to react to any unexpected responses of participants to the music. Another example is Liao et al. (2018). The main author and another author of study were from Department of Nursing Science. They were professionals in nursing field to plan, implement research and evaluate results. While the authors did not act as instructors of Tai Chi, they still chose the length, intensity of the exercises and types of Chinese folk music to play during intervention sessions.

It is suggested from studies that nurses can evaluate the health of older people pre-intervention, mid-intervention and post-intervention by providing measurement instruments and guiding seniors to fill in. For instance, Dev et al. (2014) had all research authors as educators in nursing field. Hence, potential participants were assessed the level of depressive symptoms pre-intervention and post-intervention by nursing-related professionals. The authors chose participants using measurement scales (MMSE, GDS and BDI), followed participants' responses to music intervention and evaluate the end-results collected from GDS. Wang et al. (2015) had authors in nursing-related field. Despite the fact that the authors did not plan music collection but used KMC, a music care program developed in Japan, they still assessed health condition of participants through various instruments such as MMSE, CAPE-BRS, CSDD. Research also collected salivary cortisol samples to measure depressive mood status among participants. Moreover, in Chan et al. (2010), research nurses measured also physiological signals of participants such as systolic blood pressure, diastolic blood pressure and heart rate both pre-intervention and post-intervention to have a clearer picture of music impact on depression in senior participants.

Last but not least, nurses can act as sideline supporters to the elderly with depression before, during and after music intervention. In Liao et al. (2018), community nurse helped with aiding in the process of music intervention. During the randomized controlled trial, a community nurse was presented to both participants of the intervention group and comparison group to deliver monthly routine health education. In Cooke et al. (2010), while live group music was delivered by two musicians, nurses were present and encouraged participants to actively engage in the intervention sessions through singing, playing instruments and making movements. Furthermore, while provided music developed by therapist to participants, the authors of Im & Lee (2014), who were both

from Department of Nursing in Korea, still concluded that it is necessary for nurses and other healthcare providers to help in the development of diverse range of programs in order to promote good health and prevent cognitive impairment in the elderly. Chan et al. (2011) suggested that nursing professionals can encourage older people to listen to music. The authors considered music as a self-care therapy which may enable seniors to reduce depression levels and develop healing process. Dev et al. (2014) stated that psychiatric nurses should recommend or practice music as an adjunct therapy to the routine intervention for the elderly. These suggestions suited the role of nurses as healing and caring professionals, and suits the principles of nursing profession that Florence Nightingale stated in 1800s.

## 8 DISCUSSION

### 8.1 Discussions

This section discusses further aspects related to the chosen topic in order to highlight some insights and make suggestions to nurses who need to implement music intervention to older people with depression. In general, six out of eight selected studies demonstrated positive results of music intervention with significant reductions in depressive symptoms. However, there were two studies which could not prove a remarkable efficacy of music.

The fact that research methods, participants and music interventions were considerably varied in the studies might be reasons why the results were mixed. For instance, there were four randomized studies and four non-randomized studies. Featured participants in all selected studies were different in health condition, demography and levels of depression. While some studies examined and chose only participants with no cognitive impairment, other studies purposely chose participants with memory disorders or did not have clear criteria for cognitive functions or other health issues like chronic disease. Featured music interventions used in all studies also varied greatly in types of music activity, length of intervention and structure of implementation. While some studies used passively and individually music listening as intervention for days, several others used live interactive music listening in a group as intervention for weeks. There was a wide range in types of music used in studies, such as instrumental music, reminiscence music (music related to childhood or memories of the listeners) and regional music (Chinese, Malaysia, Western, etc).

Despite the fact that the selected studies varied greatly in those aforementioned points, they still share several aspects, such as the type of chosen music. Proper music to be in intervention had some familiar characteristics like slow and calm in rhythm, close to participants' memories, childhood and culture, and enjoyable for group activity. For instance, in Im & Lee (2014), selected music included Korean small drum play along with rhythmic instruments, tone chime playing and ching-ching song. Chan et al. (2011) conducted in Singapore used regional music that closed to lives of participants, which are Chinese, Malaysia, Indian and Western slow rhythm music. Cooke et al. (2010) had live music which included song singing by musicians and pre-recorded instrumental music. This type of music encourage the group of audiences to actively engage besides helping them to passively relax. In India, Dev et al. (2014) provided film songs, classical music and instrumental music in the 1960s and 1990s. All used music were suitable for seniors audiences and have features of proper music used to ease depressive symptoms.



Chosen music and the way of implementing music intervention by authors of the selected studies were in line with the suggestions from experts. For instance, it is recommended that healthcare providers should respect culture differences, consider music for reminiscence, consider group musical activities and be aware of environmental factors when choosing music to play to the depressed elderly. It is also suggested that nurses and other healthcare providers should informally evaluate the value of music intervention in the individuals and make appropriate adjustments if needed. Selected music should be calmed, relaxed and peaceful. (Kramer 2001, 194.) Findings from most of the selected studies also proved that music does have cognitive, emotional, and mental benefits to the daily life of seniors as demonstrated in various books and studies (Creech 2013 and Ruokonen & Ruismäki 2011, as cited in Besha 2015, 12). Music can have an evocative effect on emotions, memories and past connections of older people. It can be used as a mean for older people to enjoy shared interests and activities, develop new social networks during times of change in life or during depression. Most importantly, it can be a geriatric medicine and a healing facilitator. (Hays 2005, 28.)

In practice, nurses can consider assessing their patients for music preferences and utilizing music as an intervention to alleviate health problems such as depression and promote healthful environment. By implementing music intervention, modern nurses also follow what nursing pioneer Florence Nightingale did and believed. Nightingale first performed music to aid healing process since around 1800s and she believed it was the responsibility of nurses to adjust the environment of patients. To properly develop music collection for patients, nurses can gain more knowledge in specialized music for medical purposes or consult with other professionals such as music therapists and psychologists. Individualized and scheduled music programs according to patients' needs and preferences is a good option. Nevertheless, spontaneous music such as random songs on radio or television, or simple rhythmic noises made by handheld instruments such as hand bells and tambourines are also suitable and fun choices. Music is appropriate to be used in hospitals, long-term care facilities, nursing homes and at private homes. However, nurses should notice some emotional side-effects affecting the elderly during and after music intervention. As music can recall childhood memories or past events in life, some seniors may feel overwhelmed or get too emotional listening to music. This point should be considered and handled by both nurses and healthcare professionals.

## 8.2 Limitations of the selected literature

Several limitations were found in the studies review. The most common limitation across most of the studies was small size samples. Six out of eight chosen studies consisted of

50 participants or fewer. This prevented the study results from being generalizable. For most studies, the difficulty of achieving large sample sizes was because of the limited number of participants available at chosen locations where the study was conducted. Therefore, results of the studies were less generalizable and may not apply to the overall population. Another common limitation of the studies was that the authors did not control the number of times their participants can listen to music outside intervention session. Differences in the frequency of music exposure in individual participants may affect the study results. For some studies, participants were encouraged to listen to music after intervention sessions while other studies did not mention this information. Moreover, the studies that encouraged further music listening did not provide any methods to measure the frequency of music exposure and this might affect the end-results.

One noticeable limitation was the short duration of music intervention. Five out of eight selected studies had intervention lasted for eight weeks or shorter. There were two studies implemented intervention in less than a month. The limit in intervention period restrained the study results from demonstrating more angles in the effectiveness of music. Another limitation was that most of selected studies excluded older adults with hearing impairment in spite of the prevalence of hearing impairment in the elderly, especially the ones in nursing homes, maybe as high as 98% (Adams-Wendling et al. 2008). Hearing impairment surely affects the ability of the seniors in fully participating in music interventions. However, researchers should identify the seniors with hearing issues and work with their healthcare providers or families to improve or enhance their hearing before including them to music intervention. This may help study results to be more inclusive.

### 8.3 Conclusions

The purpose of this thesis was to outline helpful points to help design effective strategies featuring music intervention for better quality of gerontology nursing care, and to make recommendations for geriatric nurses and for future research in the area. The aim of this thesis was a descriptive literature review gathering and analyzing results from recent scientific studies about the effectiveness of music intervention on depression in older people. The literature review also aims at exploring the roles of nurses in implementing music intervention for the depressed elderly. In summary, the reviewed studies supported the use of music and its effectiveness on depression in older people. Music intervention can be a viable method of decreasing depressive symptoms in seniors. However, the selected studies did not outline in depth specific health conditions and the sicknesses of the participating elderly individuals. Hence, the results cannot be generalized and may not be applied to the overall population. Further research needed to address the efficacy of

different music intervention on depression in older people with different health conditions, such as older people with dementia, mental health problems or chronic diseases.

Nurses as healthcare providers have a crucial role in implementing music intervention to older people with depression. Nurses, especially gerontology nurses, should gain more knowledge on non-invasive and non-pharmacological interventions such as music to comprehend the effectiveness of the intervention and use it in practice. These interventions may aid to usual pharmacological treatments or aid to the process of healing. Nurses should also try to implement simple music intervention based on suggestions by music therapists and other experts. To put it simply, they can just play music spontaneously in daily care for the elderly. Nurses as healing professional should always follow, support the elderly and adjust their surroundings to ensure it is suitable for music intervention to take place. Last but not least, nurses should keep up with changes in depression levels of individual seniors. Different depression measurement instruments such as GDS, BDI can be used to evaluate the efficacy of music both pre-intervention and post-intervention. Changes in results of depression scores can help nurses make appropriate adjustment in next intervention sessions if needed.

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## APPENDICES

### Appendix 1

Table 1: Summary of selected literature

Author, year	Title	Study design	Study setting	Study purposes	Study results / Conclusion
Chan et al. 2010	Effects of music on depression and sleep quality in elderly people: A randomized controlled trial	Randomized controlled trial.	One elderly community center in Hong Kong.	Determining the effect of music on depression levels, vital signs and sleep quality in elderly people.	Statistically significant reductions in geriatric depression scores and sleep quality in the experimental group. Some, not all, indications show that music yields higher improvement on some parameters of depression levels, blood pressure, heart rate and sleep quality.
Cooke et al. 2010	A randomized controlled trial exploring the effect of music on quality of life and depression in older people with dementia	Randomized controlled trial.	Two aged care facilities located north of Brisbane, Queensland, Australia	Investigating the effect of live music on quality of life and depression in elderly with dementia.	Findings suggest music can improve self-esteem, sense of belonging and depressive symptoms in some older people with dementia. No evidence of adverse ef-

					fects of music intervention.
Chan et al. 2011	Effects of music on depression in older people: A randomized controlled trial	Randomized controlled trial.	Community-dwelling older people in Singapore.	Determining the effect of music on depression levels in older adults.	Depression levels reduce weekly in the music group of elderly compared to the non-music group of elderly. Listening to music can help older people to reduce their depression levels.
Dev et al. 2014	Music therapy for institutionalised older persons with depression	Experimental research; one group pre-test post-test	Elderly from two old-age homes in Kerala, India.	Evaluating the effect of music therapy on depressive symptoms in the institutionalised elderly.	Significant reduction in the mean of depression score before and after music intervention is recorded though there was no change in the level of depression among the respondents who have severe depressive symptoms.
Im & Lee 2014	Effects of art and music therapy on depression and cognitive function of the elderly	Experimental research; one group pre-test, post-test.	Volunteered elderly in metropolitan area of South Korea.	Examining effects of art and music therapy on depression and cognitive function of the elderly.	Depression scores among the studied elderly are statistically significantly lower after music and art therapy. Art and music programs are effective in reducing the degree of depression.
Wang et al.	Effect of music care on	Experimental	Two long-term	Examining the effectiveness	Kagayashiki music care (KMC) is

2015	depression and behavioral problems in elderly people with dementia in Taiwan: A quasi-experimental, longitudinal study	research; quasi-experimental, longitudinal.	care facilities in southern Taiwan.	of music care on depression, cognitive function and behavioral problems among the elderly with dementia.	effective in easing depression, behavioral problems, cognitive function decline and psychological symptoms associated in the elderly with dementia.
Gopi & Preetha 2016	Effectiveness of music therapy on depressive symptoms among elderly in selected geriatric homes	Experimental research; quasi-experimental.	Three geriatric homes in Kannur city of India.	Assessing the level of depressive symptoms, effectiveness of music therapy, association between the level of depressive symptoms of elderly with selected demographic variables.	Music is effective in reducing the depressive symptoms among elderly and there was no significant association with the level of depressive symptoms and selected demographic variables.
Liao et al. 2018	The impact of combined music and Tai Chi on depressive symptoms among community-dwelling older persons: A cluster randomized controlled trial	Randomized controlled trial	The elderly with mild to moderate depressive symptoms in Ya'an city, Sichuan province of China.	Evaluating the possible synergistic effect of combined music and Tai Chi on depressive symptoms in older people.	The combination of music and Tai Chi reduces depressive symptoms among community-dwelling older persons. The combination represents an economically viable solution to manage geriatric depression in highly populous developing nations.

## Appendix 2

Table 2: Brief intervention and outcome description of selected literature

Author, year, country	Study design	N	Participants' characteristics	Music intervention	Duration of intervention	Instruments and frequency of measurement	Outcomes by relevant instrument, (+) effective, (-) not effective
Dev et al. 2014, India	Experimental; one group pre-test, post-test.	40	Elderly people above 60 years old with different levels of depression, no cognitive impairment and/or chronic diseases.	Film, classical or instrumental music listening individually, 30 minutes/day.	21 days.	MMSE, GDS and BDI pre-test.  BDI pre-test and post-test.	BDI (+)  Different results in the elderly with severe depressive symptoms.
Gopi & Preetha 2016, India	Quasi-experimental.	30	Elderly people of 65 to 75 years old with different levels of depression.	Music listening in group of 30 people, 30 minutes/day.	15 days.	GDS pre-test and post-test.	GDS (+)
Im & Lee	Experimental;	29	Eldery people above	Reminiscence music	12 weeks.	MMSE-K, S-KGDS	S-KGDS (+)

2014, Korea	one group pre-test, post- test.		60 years old, being able to participate in leisure programs	listening in group, 60 mins/day, 1 day/week.		pre-test and post- test.	
Wang et al. 2015, Taiwan	Quasi- experimental, longitudinal.	149	Elderly people above 60 years old; 90 in experimental group, 59 in comparison group (no intervention received).	KMC program in group, 30 minutes/day, 2 days/week.	24 weeks.	Saliva cortisol level, CSDD, CAPE-BRS, MMSE pre-test and after 8, 16 and 24 weeks, both in experimental and comparison group.	CSDD (-)  CAPE-BRS (-)
Chan et al. 2010, Hong Kong	Randomized controlled trial.	42	Elderly people above 60 years old; 21 in intervention group, 21 in comparison group.	Personal-selected music listening individually, 30 mins/week.	4 weeks.	Blood pressure, heart rate, PSQI, GDS from week 1 to week 4.	GDS (+)
Chan et al. 2011, Singapore	Randomized controlled trial.	50	Elderly people above 55 years old; 24 in intervention group, 26 in comparison group.	Chinese, Malaysian, Indian or Western slow rhythmic music listening individually, 30 mins/day, 1 day/week.	8 weeks.	GDS from week 1 to week 8.	GDS (+)
Cooke et	Randomized	47	Elderly people with	Live music listening	8 weeks.	MMSE baseline and	GDS (-)

al. 2010, Australia	controlled trial.		dementia.	and actively engaging in group, 40 minutes/day, 3 days/week.		post-intervention.  DQOL and GDS baseline, mid-point and post-intervention.	
Liao et al. 2018, China	Randomized controlled trial.	107	Elderly people above 60 years old with mild and moderate depressive symptoms.  55 people in intervention group, 52 in comparison group.	Chinese folk music listening and practicing Tai Chi in group, 50 mins/day, 3 days/week.	12 weeks.	GDS baseline, after 1 month, 2 months and 3 months, both in intervention and comparison group.	GDS (+)

Abbreviations: BDI = Beck Depression Inventory, CAPE-BRS = Clinton Assessment Procedures for the Elderly Behavior Rating Scale, CSDD = Cornell Scale for Depression in Dementia, DQOL = Dementia Quality of Life, GDS = Geriatric Depression Scale, S-KGDS = Korean version of Geriatric Depression Scale, MMSE = Mini Mental State Examination, MMSE-K = Mini Mental State Examination for Korea, PSQI = Pittsburgh Sleep Quality Assessment.