Halima Hamod, Damaris Rop and Summaia Sheerzad,

Recognizing and Predicting Depression in Post- ICU Patients

A Descriptive Literature Review

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Abstract

Authors	Halima Hamod, Damaris Rop and Summaia Sheerzad
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Instructors	Tiina Varamäki Senior Lecturer in Nursing

Depression is a common condition that critically ill survivors experience. The symptoms of depression occur in about 29% of survivors within three to six and twelve months after intensive care unit discharge. Symptoms such as psychological distress, anxiety, stress, and anger are associated with post-ICU depression. This study aim was to first acknowledge the risk factor of depression in intensive care unit survivors and then investigate what kind of nursing practice can assist health care providers to prevent depression when taking care of post-ICU patients.

A descriptive literature review was conducted utilizing ten articles from the databases, CINAHL and PubMed. The selected articles were examined using the principle of the inductive content analysis method. The findings of these descriptive literature review provided reliable answers to the study questions.

The general risk factors related to post-ICU depression were found to be trauma, history of major depression, acute stress, history of psychiatric conditions, length of hospital stay, and length of ICU stay. The nursing practices considered useful in preventing depression in post intensive care unit patients were ICU diaries, psychological treatments, brief screening instruments, psychological interventions, good social support and patient-centred care.

The conclusion obtained from the study reveal that can be utilized to develop a patient-centered and holistic perspective of a patient in critical care, enabling health care practitioners to pay more attention to caring, interaction and communication.

Key Words	depression, post critical care, major depression, depressive disorder, post-ICU Patients, post-intensive care patients, prevention, recognizing

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Masennus on yksi yleisimmistä kriittisesti sairaiden eloonjääneiden sairauksista. Masennusoireita esiintyy noin 29 %:lla eloonjääneistä 3–6 ja 12 kuukauden sisällä teho-osastolta kotiutuksen jälkeen. Oireet, kuten psyykkinen oireilu, ahdistus, stressi ja viha liittyvät teho-osaston jälkeiseen masennukseen. Tämän tutkimuksen tavoitteena oli ensin tunnistaa teho-osastopotilaiden masennuksen riskitekijä ja sitten selvittää, millainen hoitotyö voi auttaa terveydenhuollon ammattilaisia ehkäisemään masennusta hoidettaessa potilaita tehohoidon jälkeen.

Kuvaileva kirjallisuuskatsaus suoritettiin käyttäen kymmenen artikkelia, joka valittiin CINAL ja PubMed tietokannoista. Valitut artikkelit tarkasteltiin käyttäen induktiivisen sisällön analysoinnin periaatteita. Tämän kuvailevan kirjallisuuskatsauksen tulokset antoivat luotettavan vastauksen tutkimus kysymyksiin.

Yleisimmiksi tehohoidon jälkeiseen masennukseen liittyviksi riskitekijöiksi todettiin trauma, vakavan masennuksen historia, akuutti stressi, psykiatriset sairaudet, sairaalahoidon pituus ja tehohoitojakson pituus. Hoitokäytännöt, joita pidettiin hyödyllisinä masennuksen ehkäisyssä tehohoidon jälkeisillä potilailla, olivat; teho-osaston potilaspäiväkirja, psykologiset hoidot, lyhytseulontainstrumentti, psykologiset interventiot, hyvää sosiaalinen tuki, ja potilas keskeistä hoitoa.
Näiden johtopäätösten avulla voidaan kehittää potilaskeskeistä ja kokonaisvaltaista näkökulmaa tehohoidossa olevaan potilaaseen, jolloin terveydenhuollon ammattilaiset voivat kiinnittää enemmän huomiota hoitoon, vuorovaikutukseen ja viestintään.

Avainsanat	Masennus, jälkeinen tehohoito, vakava masennus, masennushäiriö, tehohoitopotilaat, tehohoidon jälkeiset potilaat, ehkäisy, tunnistaminen

Contents

1 Introduction

Depressive symptoms are major problem in critical illnesses that often result in patients having mental illness disorders, if not diagnosed and treated properly. These mental illness symptoms are sometimes difficult to diagnose in a post-intensive care unit (ICU) patient because of their critical conditions after being discharged from the ICU. As a result of the diagnosis difficulties, unrecognized depression symptoms may have a detrimental effect on survivors' quality of life. The symptoms might make it difficult for survivors to deal with physical limits while recovering, resume work, or participate in social activities. (Rabies et al.2016: 44.)

Depression is a very common illness in Finland, with about 5-7% of Finns suffering from depression. The major depressive disorder causes significant harm to the depressed person and their loved ones. Depressive disorder is an ailment that can rapidly lead to some other chronic illnesses if not diagnosed early. Undiagnosed or prolonged depression can reduce the functional ability and quality of life of patients, which makes recovery more difficult over a prolonged period of time. To prevent the rapid spread of these illnesses, it is important to recognize it early so that possible treatment can be started with practical means, such as therapy and, if necessary, medication. (Current Care Guidelines: Valid treatment recommendation 2022.)

According to Hatch et al. (2020), post-ICU patients are at risk of long-term mental and psychological impairment, while 33% report depressive symptoms and approximately 19% are diagnosed by a clinician with PTSD disorder. ((Hatch, Young, Barber, Griffiths, Harrison, & Watkinson. 2020: 24.) The studies published on this topic have increased over the years, indicating an increase in the recognition of depression symptoms in post-ICU patients. In order to recognize these symptoms, the following criteria is essential to follow: first, evaluate the prevalence of depressive symptoms after the critical illness. second, describe the gradual emergence of depression symptoms after critical illness. and third, assess the cause and risk factors of depression following the critical illness. (Rabies et al. 2016: 44.)

The purpose of this study is to describe how nurses can recognize, predict and prevent depression in post-ICU patients. The aim is to use the knowledge gathered from the evidence-based research to raise awareness on how to prevent depression by early recognition of the risk factor or symptoms of depression in post-intensive care.

2 Background

2.1 Clinical depression

Depression is defined as a depressive state, but in everyday language, it refers to depression as a general concept. Depressive symptoms often refer to a natural and transient emotional state related to various disappointments, failures, or losses. Such a transient depressed mood does not require treatment and is a normal emotional state that is part of life. A depressive disorder is a mood disorder that results in persistently depressed feelings for an extended period and can interfere with many aspects of life. This mood disorder affects how you think, feel and behave, which could lead to different kinds of physical and emotional problems. Having this disorder could negatively affect well-being and cause serious medical illnesses for people. (Huttunen 2015.)

According to Baumeister, Bengel, Kampling & Mittag (2021), major depressive disorders are portrayed by signs such as mood swings, low enthusiasm, tiredness, low level of concentration, poor appetite, and insomnia. Depression is also known to be most common in people with long-term illness which is attributed to poor prognosis and decreased quality of life. Depression is caused by different medical, psychological and social factors. Chronic pain and illness are the risk factors of depression, and they are also associated with many somatic diseases. For instance, thyroid disorders, neurological diseases and long-term inflammatory diseases are some of the diseases associated with risk factors for depression. Depression can also have a negative impact on recovery from somatic disease. (Huttunen 2015.)

The utilization of screening and monitoring methods that are reliable can help nurses to recognize and monitor patients with depression. However, using these tools as an addition to the clinical interview but not to replace it. Documenting the criteria used for the screening is important irrespective of the tools used. Reliable measures are set of tools validated based on the assessment of the patient. Before patient can be diagnosed with depression, five symptoms of depressive mood are needed to be present for a minimum of two weeks. These symptoms include loss of interest, or pleasure and depressive mood. (Institute for clinical system improvement 2016.) The recognition of depression is based on doctor’s examination and interviews, questionnaire result is often insufficient for the recognizing of depression. The diagnosis criteria often require a minimum of 4 to 10 of the initial symptoms of depression to be present for two weeks

consecutively before patient could be diagnosed with depression. (Tarnanen, Isometsä &Tuunainen 2020.)

Globally,4.4 % of the population get depressive disorder and this differs regionally, for instance western pacific have 3.6 % whereas Africa is 5.4%. Low and middle-income countries have highest rates of above 80 %. (Barbui 2020.) WHO (2021) states that 5% of adults get depression worldwide. Major depressive disorder is known to majorly cause disability such that it affects somebody's way of operating and prevents them from living a fulfilled life.

Critical care can be described as a required care when a patient requires special monitoring, treatment, and care. This care could be as a result a completed complex surgery, routine surgery, a life-threatening illness, or an injury. (NICE 2022.) Post-ICU patients are at high risk of developing psychological, and cognitive and problems after critical care. The common psychological problems are anxiety and depression developed during the care. (Hatch et al. 2018: 310.) Approximately 29% of survivors experience depressive symptoms between three and six months and one year of post care. Psychological distress, anxiety, stress, and anger are symptoms associated with post-ICU depression. Consequently, there is higher risk of death with patients having several health diseases or condition associated with depression. (Hatch et al. 2018: 310.)

2.2 Post-ICU patients

Post- ICU patients are individuals who get out of the critical care unit following an admission (Menzies & Proffitt 2019). These kinds of patients are known to have experienced and recovered from life threatening illnesses that required intensive care with the support of machines. Studies show that after ICU discharge, these patients undergo a transitioning phase that is less intense, and this could present a lot of challenges in terms of care. During the transitioning phase, these patients go through psychological instability which is usually referred to as anxiety transfer and at this stage, they present with depression and other symptoms such as insecurity and dependency. (Castro et al. 2021.) Previous studies indicate that ICU survivors take a longer time to recover after an episode of their illness and this subjects them to issues that are physical, cognitive, and psychological which eventually impacts their quality of life (Jones 2014: 239). Earlier research studies have shown that survivors of critical illness experience trauma and other psychological disorders which usually manifest as anxiety, disturbance of sleep, trauma related memories and depression. Most often physical, cognitive and

psychological issues occur in 50% to 70% of the post ICU survivors and in addition, the occurrence of these disorders increase 3 months after ICU discharge and could last for one year. Following the experiences they go through after their critical illness, most of the time, their lives are compromised, and they may not go back to their pre-critical illness state. (Castro et al. 2021.)

The reason as to why this happens is because the intensive care units are usually stressful for the patients and this kind of environment subject them to pain, nausea, fatigue, disorientation linked to illness, medically invasive procedures, and drugs side effects. It is also stated from the studies that post ICU patients get flashbacks of terrifying intensive care unit experiences after hospital discharge. (Als et al. 2017.)

2.3 Depression in post ICU phase

According to Urden et al., (2018), 20 to 40 % of patients in critical care unit such as ICU often suffer from major depression before being transferred to outpatient care. Depressive symptoms are often intense and persistent for continuous period of two weeks and the symptoms include significant weight loss or gain, mood swing, loss of appetite, insomnia or lack of sleep, feeling of restlessness. It also includes daily fatigue or lack of energy, guilty feeling or finding it difficult to concentrate and the worst-case scenario could be the thought of harming oneself or committing suicide. (Urden et al., 2018.) ICU patients are usually prone to psychological symptoms such as anxiety, stress, fear and depression and this is attributed to the stressors such as pain, physical impairment, tube insertions, loneliness and lack of communication. This study stated that the depression prevalence is at 28 % whereas also 30% of them still had depression a year after discharge. (Shdaifat & Al Qadire 2020: 27.)

The patients can have satisfaction with care, comfort, healing, and perceived improvement in quality of life when their characteristics are met by the core abilities of the nurses (competencies of the nurses). From the studies conducted by Grossback, Stanberg, and Chlan (2011: 46) patients need help communicating from their nurses whether the patient is unconscious or looks to be unresponsive. Communication allows the patient's “basic needs to be conveyed and decisions, wishes and desires about plan of care and end of life decision making to be expressed.” (Grossback, Stanberg, and Chlan. 2011: 46.) Approximately 29% of post ICU patients develop major depressive disorders between 3-month, 6 month and one year after getting out of intensive care unit. The depressive symptoms are usually known to be caused by anger, stress and anxiety.

(Barber et al. 2018.) Potential contributors to depression for patients that are critically ill include unpleasant feeling from their monitoring equipment e.g., having tubes, being thirsty, not being able to control themselves, routine nursing care, chemical changes in the brain due to the medicines, and major life changes which prevent survivors of critical illness from doing many things they used to do.

Most of the post critical care patients go through a lot of difficulties in their phase of recovery. This is attributed to the physical and psychological stressors they experience in the ICU which eventually impact on their psychological conditions eventually leading to post-traumatic stress and depression. (Aitken et al. 2015.) Almost 25 % of post-ICU patients develop depressive symptoms during and after critical care. Depressive disorders negatively affect the way they live their normal life and how they interact with their relatives and friends. (Walker 2012.) Most of the post critical care patients have shown to have a reduction in their quality of life which are associated with depression and other psychological disorders. These psychological problems are also linked to their social and economic situations. (Jones 2014: 240.)

Post ICU patients tend to develop several long-term complications which includes post-traumatic stress disorder (PTSD), depression, anxiety and at times become physically and socially impaired. The mortality rate of post ICU survivors' range from 26% to 63 % within a year and 40% to 58% 5 years after discharge. Additionally, their scores in reference to their quality of life are mostly lower compared to other general populations. (Alderson, Lewis, Mcpeake, Schofield-Robinson & Smith 2018.) Studies also show that, although their quality of life might improve over time, they never fully go back to their pre-ICU condition (Alderson et al. 2018). In addition,19 % to 22 % of post intensive care unit patients develop PTSD which last up to 10 years and these figures are usually higher among patients with acute respiratory distress syndrome. The study also shows that 8 % to 57 % of the ICU population group tend to develop depression 14 months after discharge. (Alderson et al. 2018.)

Critically ill survivors go through physical, cognitive, and psychological problems following discharge. This phase they go through is usually called the post-ICU syndrome and this happens to up to a 3rd of the post-ICU survivors. Depression is one of the most prevalent mental illnesses post intensive care unit patients experience.

3 Purpose, aim and study questions

The purpose of this study is to describe how nurses can recognize and prevent depression in post-ICU patients. The aim is to use the knowledge gathered from the evidence-based research to raise awareness on how to prevent depression by early recognition of the risk factor or symptoms of depression in post-intensive care.

The study aims to answer the following questions.

1. How can nurses recognize and predict depression in post ICU patients?

2. How could depression be prevented after critical illness?

4 Methodology and methods

The methodology used for this thesis is qualitative research and it is descriptive literature review. Qualitative research is often about gaining insight, understanding and learning about the characteristics of processes through different types of data collection and analysis. These principles are based on a natural environment in which researchers study things as they are and become familiar with them in terms of their meaning. (Cypress 2015: 34)

Qualitative research gathers information about the meanings of things, people and the environment. With thorough, well-planned and conducted qualitative research, information can be obtained that contributes to the understanding of surrounding phenomena, nature and related relationships. Qualitative research can be conducted in many ways and with a variety of data collection techniques, such as interviews, observations, and documentation. In qualitative research, data collection methods focus on the subject, the quality and analysis of the research sample the research subjects selected according to the purpose of the research. (Cypress 2015: 34.)

A qualitative research approach can be used to evaluate all forms of textual content and provide solutions to many research questions that cannot be resolved by just coordinating physical development. In qualitative research, the information that is currently accessible or an overview of people's opinions and experiences are being reviewed. Qualitative research is utilized when writer has limited or no knowledge

regarding a phenomenon. The objective of using qualitative research is to avoid concluding allegations and considering the portability of research conclusions is not the same as the abstraction. The methods of gathering data in qualitative research are open-ended and flexible. The study questions in qualitative research are determined by initial focus of the research and does not include any reassumptions. Additionally, quantitative research can be modified when new research is conducted. (Kyngäs 2020:5-6.)

The qualitative, expository, or realistic research model determines approaches and methods most appropriate for gathering and studying data. Qualitative investigation, which emphasis on meaning in context, requires a data gathering instrument that is delicate to underlying meaning when collecting interpreting information. Humans are perfectly appropriate for this task, particularly because interrogating, observing and evaluating are activities central to qualitative study. (Sharan 2015: 2.)

Regarding this thesis, the qualitative method employed would aid in the development of knowledge of patient experiences in critical care condition. Consequently, A person-cantered and holistic perspective of patient in critical care would be developed, allowing health practitioners to place strong emphasis on caring, interactions, and communication. Following through these perspectives would become easier for health care professionals to recognise depression in post critical care patients.

4.1 Data collection method

A literature review is beneficial when the purpose is to engage in theory development, produce an overview of a certain topic or a research problem. This type of literature review can be performed on a particular topic to assess the extent of knowledge. It can be utilized, for example in discussing a specific issue, creating research agendas, or analyzing gaps in research. (Snyder 2019: 333-334.) Example of literature reviews includes systematic review, traditional or narrative, meta-analysis and meta-synthesis. Systematic review uses accurate and rigorous criteria to analyse, incorporate and critically assess all the literature on a specific issue. It can be utilized to answer questions or topics about clinical practice. Traditional or narrative literature reviews evaluate and compile the body of literature in order to determine the conclusion of the research. The purpose of this type of review is to give reader a comprehensive basis of understanding current knowledge and to highlight the relevance of new research. Meta-analysis

analyses and combines results from several similar studies using standardized statistical procedures. (Patricia, Frances & Coughlan, 2008.)

In qualitative research, descriptive literature review is a term used extensively to explain qualitative research related to healthcare, which provide necessary documentation for planning of future research in the field of nursing. (Kim, Sefcik, Bradway & Christine 2017: 23-42.) Descriptive literature review is done with the help of pre-selected descriptions based on the reference framework of the study and questions that clarify them. The interpretations of the subjects and the meanings they give to things are highlighted in the descriptive phenomenon. The aim of the questions is to find appropriate answers in relation to the study problems. (Willis, Sullivan-Bolyai, Knafl & Cohen 2016: 38.) In qualitative research, the term ‘’description literature review’’ is used for studies that are descriptive in nature especially when the research is done in the fields of health care and nursing. (Matua & Van Der Wal 2015: 22-27).

Qualitative research procedures enable us to create a vigorous understanding of a subject, opening the significances people attribute to their lives, to activities, conditions, individuals and objects. Methodologically, these methods rely on inductive designs intended at producing meaning and creating rich, descriptive information. Qualitative techniques are most employed in exploratory and descriptive literature (despite they can be applied in research with other aims). (Patricia 2017:124.)

One of the aims of the literature review is to develop research questions for a new study. It shows how the research question was founded in the earlier analysis. It presents theoretical perspectives, empirical data and methodological experiences from previous investigations that are crucial for formulating, improving and justifying the most interesting and most accurate research problem for the new examination. The second goal of literature review is to discuss the conclusions from a new study. In all types of research, conclusions should be interpreted in relation to literature from earlier study. The third purpose is to employ literature review to answer research questions. A new study question is analysed and discussed by concluding new ways by summarizing, interpreting, combining and integrating existing research from previous study. Consequently, new understanding and new perceptions can be extracted and created by combining and reinterpreting earlier study outcomes. (Gørnmo 2020: 93,94)

4.2 Data Search and Selection

In this study electronic database used were Cumulated Index to Nursing and Allied Health Literature (CINAHL) and PubMed. The primary chosen sources were peer reviewed. The search words used were depression, post critical care, major depression, depressive disorder, post ICU patients, post intensive care patients, prevention, and recognition. The search words were used to expand and understand the meaning of clinical depression, and it was used in identifying similar key words. These search words were used in the database search to obtain relevant information, research articles. As a result of the keywords input in the database search, terminologies associated with depression were also obtained to further the extensive search on the related journals and articles. The Listed below is a list of both inclusion and exclusion criteria.

Table 1 Inclusion and exclusion list

Inclusion criteria	**Exclusion criteria**
The research articles are published year 2012-2022	The research articles published before 2012
The research articles are peer reviewed	The articles are not peer reviewed
The research articles used answer research question	The articles that are not related to the research question
The study is published in English language	The study is in other language than English

For the database search, the above inclusion criteria were used. However, a five-year period, from 2017 to 2022, was initially proposed but the research publications have to be published between the years 2012 and 2022. Due to limited study articles, this was extended to a 10-year period. Each research article had undergone peer review, relates to the thesis's subject, and provides a response to the study questions. Only studies involving the target patients' group were selected for the inclusions which were research articles published year 2012–2022, the research articles were peer reviewed, research articles used answer study questions, the studies were published in English and abstract available. In addition, the research articles were available in full text and published in English so that all authors could read them.

The inclusion and exclusion criteria were formulated using facet analysis based on PCC framework. Population(P)-Nurses; Concept (C-depression; Context(C)-critically ill patients. The search strategy involved combination of search term of depression OR depressive disorder OR depressive symptoms or major depressive disorder AND post-intensive care OR post ICU OR post critical illness AND recognizing AND prevention. The database search table, including the search term and figures can be found in the attached appendix 1.

Following the use of the search term and key word combinations mentioned above, a total number of 364 articles were found in the database. Subsequently, 1024 articles were discovered using another searching term “depression prevention AND recognizing post-intensive care syndrome or post intensive care or post ICU or critical illness”, bringing the total number of the hit articles to 1388. Based on the titles, 96 articles out of 1388 were chosen. Another 31 research articles were excluded after reviewing the abstracts of the 96 articles. After thoroughly reviewing the remaining 65 articles that included full text, another 45 articles were excluded. The excluded ones did not answer the study questions and some of the publications were not graded by publication forum (JUFO). Therefore, 10 articles were chosen to be included in this thesis.

Consequently, three out of the ten articles utilized in this thesis were found in the CINAHL full database. The CINAHL which is the Cumulative Index to Nursing and Allied Health Literature is considered as a reliable resource to search for publications when conducting literature review research. Using CINAHL is essential for reviews of qualitative studies addressing issues in the nursing area, according to studies. (Wright, Golder, & Lewis-Light 2015:104). The remaining seven research articles are found in PubMed. A free resource that facilitates the search and retrieval of biomedical and life sciences literature PubMed. The PubMed database contains more than 35 million references to and summaries of biological literature. Although it doesn't contain full-text journal, but it frequently provides links to them available elsewhere, including on the publisher's website or in PubMed Central (PMC). (National Library of Medicine).

To ensure the quality of this thesis, the writers used Publication Forum (JUFO), a body formed by the Finnish scientific community, to ensure the quality of the research journals chosen. There are four classification levels for various publication channels in JUFO. Zero covers articles that have not yet reached level one, while levels one, two, and three are categorized as basic, leading, and top levels, respectively. The Publication Forum classification was developed to address the demand for a qualitative as well as quantitative evaluation of academic institutions' research output. The 10 articles that

were chosen were all published in level one, and two of JUFO-rated research journals. (Publication Forum 2020).

Additionally, we utilised the ‘’Critical Appraisal Skills Programme (CASP) check list tool to also evaluate the quality of these articles’’. All article was critically appraised with the use of the CASP tool. The CASP tool is a universal tool for appraising strengths and limitations of any qualitative research. There are ten questions total in the tool, each of which focuses on a different methodological aspect of a qualitative research. The tool challenges the researcher to consider whether the research methods were appropriate and whether the findings are meaningfully and clearly conveyed. The CASP tool was created with educational and pedagogy tool. (Critical Appraisal Skills Programme 2018).

A PRISMA Flow Diagram below (Figure1) shows database search process.

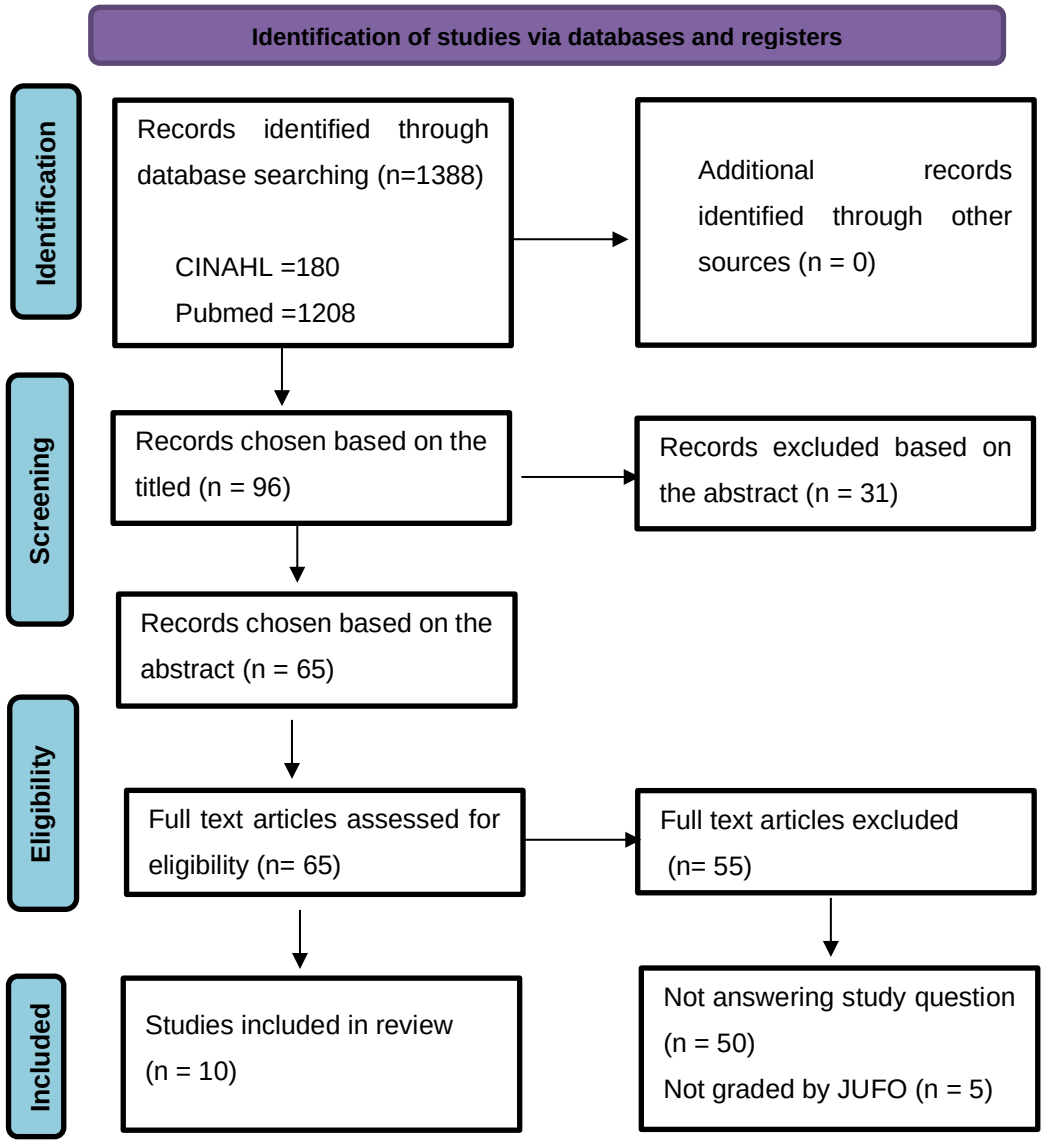

Figure 1 PRISMA Flow Diagram below (Figure1) shows the database search process

The final 10 articles for the inductive content analysis were chosen, and they were arranged into a table for selected research articles. (Appendix 2). The following details were recorded on the table after a closer examination of the articles, the writers, the article's title, the year it was published, the country of the study, the research's methodology, the size sample, and the outcomes.

4.3 Data analysis method

This thesis used inductive content analysis. It is a method for subjective interpretation of text and data through systematic classification process of coding and identifying patterns. The analysis follows logical rules and step-by-step model where the empirical, methodology and controlled analysis of the themes are followed thoroughly within the interpretation context. (Leavy 2022:161.) It is also referred as qualitative content analysis or Inductive content analysis (Vears & Gillam 2022: 111).

Inductive content analysis is unique in qualitative research because of the inflexibility of the approach in data analysis. The analysis is applicable when previous knowledge regarding the phenomenon under the study is limited. As a result, allowing researcher to understand collective validity in a subjective yet scientific manner by exploring the meaning of underlying message in the study context. (Gerrish 2015: 471–472.) This is developed from the data so as form themes, concepts and categories and understand the meaning and the content of the data, as well as the interpretation that could be drawn from the data. This application allows researchers to theoretically, systemically and objectively explain the phenomena of the study. (Leavy 2022: 162–163; Vears & Gillam 2022: 127.) By doing so, researchers can illustrate range of meaning, describe the characteristics of message content and identify themes or categories within the body of the text to better explain the concept. (Gerrish 2015: 473–474.)

Qualitative analysis guidelines recommend the investigator to examine closely the gathering of the evidence so that they can have the probability to alter their study question(s). In actual research, qualitative approaches are generally engaged to examine direction. The primary advantage of the content analysis is that they are sensitive and malleable which means that it can be practiced to many different methods of examinations. In qualitative studies the abstract framework or literature review provide the data crucial for an analyst to arrange the data gathering method. Research that consists of an open investigation plan, but no review of literature still requires some assumptions of the research topics if not otherwise it will be absurd for the analyst to start their analysis. Qualitative study is a method of understanding social and human issues and, when carried out accordingly, can provide deep understanding of individuals experiences and prospects in the background of their private life settings. The qualitative research method is inductive; therefore, the data collection processes utilized in this type of research are unstructured and cannot provide numerical data that will be examined through statistical approaches. There is a current discussion about whether deductive

qualitative research can comply with the criteria of qualitative research. Sadly, there is no precise definition of the boundary that divides inductive and deductive research. (Kyngäs 2020:7-9.)

Inductive accesses, which are ordinary are qualitative study, are utilized when no previous study describes a specific phenomenon. The field of nursing science utilizes various search systems because of varied subjects under study. (Kyngäs 2020: 9-10.) Content analysis was initially applied to religious hymn, journal, media articles, commercial, and political debates in the 19th century for examination is an approach that is commonly employed in qualitative research. This research procedure enables researcher to consistently explain academic phenomena of the study.

Content analysis can be applied to different types of records (speeches, interview transcripts, even images) and is utilized to produce ideas, categories, and topics, which can be prolonged to produce models, conceptual frameworks and maps that explain the subject under study. It is crucial to note that the conceptual maps produced based on the content analysis findings can explain a phenomenon, but not describe it, as it does not develop concepts. Researchers usually employ content analysis to explain individual experiences and views. While nursing science, health records, articles, meeting minutes and books are all appropriate for content analysis; the only requirement is the information are unstructured or partially structured. (Kyngäs 2020:13.)

The study questions give a direction on whether inductive or deductive content analysis should be used. Inductive content analysis is executed to produce ideas, themes and categories from information whereas deductive analysis will either apply organized or unorganized (unconstrained) matrix analysis relying on the research purpose. Inductive content analysis is applied when a qualitative study has an inductive starting point, or simply put, when the data gathering method is open and follows loosely defined topics. This kind of content analysis is appropriate when the phenomena under study has not covered in earlier investigations or when previous knowledge is fragmented. A basic inductive content analysis is executed in accordance with the following stages: data reduction, data grouping, and the creation of ideas that can be utilized to answer study questions. Investigator may experience difficulties when performing their first content analysis as there are no systematic, precise rules for how to examine qualitative information. Alternatively content analysis can be considered a discussion between the analyst and their data. Throughout the analytical method the researcher compares the coded data differences and similarities. The final objective is to create summaries of the

primary data that sum up the main categories, ideas and topics, and provide signs of potential academic relationships. (Kyngäs 2020:14.)

The summary table of the articles selected for this literature review thesis was created to highlight the crucial aspects and relevance of each study research. The data collected from the 10 chosen articles were presented on a summary table according to article name followed by the meaning unit which represented the actual results from the articles. The third column in the table was the coding of the meaning unit chosen from specific articles. The coded information was further translated into 30 subcategories. The fifth column formed the 10 generic categories derived from the previous column. The last column formed the main category which focused on the study questions. The table 2 below is the short obtain from the inductive analysis table created during the study analysis.

Table 2 Content analysis table

Meaning unit	**Coding**	**Sub-category**	**Generic category**	**Main category**
"A high burden of post-ICU psychopathological issues was reported with over half of respondents meeting caseness thresholds for anxiety, depression or PTSD. A high degree of symptom concurrency between these three conditions was observed."	Over 50% of participants had anxiety, depressive and PTSD symptoms all occurring at the same time.	Depression Anxiety PSTD	Psychological factors Mental illness	Prediction and recognition of depression
The incidence of psychiatric symptoms at the 3-month follow-up point was significantly lower in the early mobilization (EM) group than in the non-EM group	Early mobilization drastically reduces symptoms of post-traumatic stress after critical illness	Physical rehabilitation Mobilizations Exercises	Intervention	Prevention of depression

Through the analysis procedure the data was categorized into three main unit based on our study questions. Which the study questions are how can nurses recognize depression in post ICU patients? And how could depression be prevented after critical illness? Tables 3 and 4 below presented the risk factor and preventive care of post-ICU depression.

Table 3 The categories are presented below for recognition of depression

Sub-category	**Generic Category**	**Main Category**
Length of hospital stay Length of ICU stay	Environmental factors	Predicting and recognition of depression
History of major depression Acute stress Anxiety PTSD	Psychological factors	Predicting and recognition of depression

Table 4 The categories are presented in the table below for preventive interventions

Sub-category	**Generic Category**	**Main Category**
Nurse consultations Routine screening and monitoring Good social support Patient centred care with multidisciplinary follow-up Training of nurses Developing therapeutic environment Improving communication Decreasing triggers of depression	Interventions	Preventing depression

5 Results

5.1 Summary of the data

The result of these descriptive literature reviews gave reliable answers to the research questions. It corresponded very well to the main question of these thesis, which the purpose is to find out how can nurses recognize and predict depression in post ICU patients? And how could depression be prevented after critical illness? The results are separated into two paragraphs for easier reading. How can nurses recognize depression in post ICU patients? The answer to this question is presented in section 5.2. The findings for how depression could be prevented after critical illness are presented in section 5.3.

This descriptive literature review comprises of 10 research articles from eight different countries. Two studies were from United States of America (USA) and another two were conducted in the United Kingdom (UK). While other six were spread among six different countries, which are Australia, Denmark, Hong Kong, India, Netherlands and Switzerland. There were 10 articles altogether. 5 were qualitative studies, four were quantitative study, one article that incorporated both qualitative and quantitative research.

5.2 Recognizing and predicting depression early in post-ICU patient

One of the identifying factors to predict depression in post ICU patient, is for the nurses to use the knowledge of the risk factors of depression to predict the likelihood of a patient getting major depressive disorder following ICU discharge. The findings from this study show that nurses identified the general symptoms of depression in the patients by utilizing the screening tools at the point of follow-up after ICU discharge. However, the result differs widely depending on the country and the screening tools used. In one of the studies by Castillo et al (2016: 100–110), cognitive functioning such as emotional distress was presented as one of the identifiable symptoms to recognize depression in Post ICU patients within 3 - 6 month. In addition, the nurses can easily predict the chances of depression occurring in a patient after being discharged from the ICU by assessing some of the risk factors such as length of hospital and ICU stay, psychological factors such as anxiety, stress, trauma and PTS. These risk factors are discussed further below.

Environmental factors such as longer stays in hospital and ICU contributed to likelihood of a patients getting depressed after being discharged from the ICU. Findings according to Castillo et al (2016: 100–110) stated that patients who did not go home within four months after post-ICU discharge, experienced deteriorating symptoms of depression. On the other hand, the length of ICU stays also contributed to depression and the risk of depression was higher amongst patients who stayed longer in the ICU. The study shows that long stays in the ICU triggered ICU syndrome such as anxiety, trauma and stress after the patient is discharged and this led to depression. The ICU environment is usually psychologically challenging to the patients and according to the results found, it showed that mood disturbance was the most indicator among patients and it recorded the highest score, therefore leading to patients developing ICU mood. This was attributed to factors such as mechanical ventilation, sedatives administered, hallucinations, lack of sleep, lack of communication, pain. The ICU patients usually react to the environment by being nervous, angry, or having low moods and they get confused due to hypoxia or sedation, these are all considered risk factors of depression and when they are subjected to this especially for longer periods in ICU, as they are likely to develop depression after discharge. (Wade et al.2022.)

According to the research findings, post ICU patients develop psychological distress that present in form of PTSD, anxiety, stress and trauma. The findings from this study stated that 27% and 44% of patients developed PTSD and anxiety respectively after being discharged from ICU. In addition, majority of them also had scored highly in terms of mood fluctuations and stress, this was attributed to the lack of sleep, hallucinations and nightmares. Post ICU patients who had the existence of comorbidities such as anxiety, stress, trauma and PTSD had a high prevalence of depression 3-4 months after being discharged from ICU. PTSD symptoms such as flashbacks, nightmares caused alterations of sleep, outbursts, and startled reactions and these subsequently led to depression. On the other hand, the results also revealed that patients who had anxiety before being admitted to ICU are likely to stay longer in the ICU since anxiety disorders slow the recovery process and therefore increased length of ICU stays and this predisposed them to depression. The absence of factual memories after ICU discharge also cause anxiety and this predisposes them to depressive disorders. (Wade et al.2012.)

5.3 Preventive Intervention of depression after critical illness

The outcomes of the studies comprise of nurses' knowledge of the risk factors and symptoms of depression, which is supported by the early detection of depression to prevent depression. The findings indicate prevention of depression by routine screening, promoting patients psychological, social well-being and nurse consultations. The details of the intervention are further described in the following section.

It is crucial to always consider the patient's psychological, physical, and social health when providing care because these aspects are strongly connected to each other and have an impact on the others. Often in nursing practice, one may simply concentrate on supporting the patient's physical well-being through treatment methods, forgetting to also consider the patient's psychological well-being. Since the patient's mood has a significant impact on the physical sickness and rehabilitation, as well as the course and prognosis of the post-ICU patients. Therefore, paying attention to the patient's mental health is very vital for critically ill patients. The patient's physical well-being is influenced by the support provided for their psychological and social well-being. For nursing work to be of high quality and effectiveness, the patient must receive comprehensive care (Van Sleeuwen et al. 2022: 12; Wade et al 2012: 16).

According to research by Hatch et al. (2020), post-ICU survivors have increased of suffering from long-term psychological and mental impairment, with approximately 33% displaying symptoms of depression. Hence, prevention of depression is very crucial.

The results indicated that nurse's pattern of assistive method used during treatment and the support given to the patients could aid how they deal with their anxiety, panic, hallucinations, delusions, and flashbacks to prevent depression. For instance, it is important for nurses to acknowledge the patients desired to be heard and feel comfortable for them to learn more about side effects of any possible medications received in ICU that could cause hallucinations.

The research articles by Wade et al (2012:16) caring for anxious, delirious patients was challenging but nursing capacity to interact with terrified or delirious patients always varies. The studies indicated that empowering nurses to enhance communication and equip nurses to provide one-on-one psychological assistance. This will give and enhance individual nurses' responsibility to support depression prevention. Consequently, the empowerment will allow nurses to help patients to alleviate any stressful thoughts or

feelings, fears or concerns, as well as processing traumatic memories to increase recovery. This will also encourage nurses to offer knowledge and assist post-ICU patients in the creation of an individual plan for future well-being. An example of the creation plan and empowerment would be teaching patients' relaxation, coping techniques and normalize emotional reactions.

According to the findings by Van Sleeuwen et al. (2022:12) patient centred care with multidisciplinary follow-up treatment for patients that are high risk of post-ICU depression are treated with an emphasis on physical rehabilitation and, if necessary early psychosocial or cognitive support. In the situation of post ICU follow-up, team of professionals will create a customised long-term recovery plan in close collaboration with other specialists or expert such as a pulmonologist, rehabilitation physician, psychologist or dietician to address the physical, mental, and cognitive problems as well as using prefilled health related quality of life (HRQoL) scores questionnaires to respond to the the patient treatment.

The Studies show that preventing depression in individuals who have already been hospitalised has advantages for their recovery. The intensive care unit nurse's supportive guidance significantly lowers risk of anxiety and depressive symptoms. According to Watanabe et al. 2022: 2587 study, a critically ill patient's prognosis is greatly improved by the assistance offered by nurses. Physical therapy-centred to post-ICU and ICU patients was also linked to prevention of depression symptoms. The physical therapy in the intensive care units such as physical activities and early mobilization promote quality of life and reduces the risk deterioration of health after ICU. However, patient abilities to participate in mobilization is decide by the physician or physiotherapy. In accordance with the patient's abilities could be able to do physical exercises such as muscular strengthening, balancing, walking, and stair exercises, while encouraging the patient to create hope and motivation for speedy recovery. Nurses' encouragement, support, and information about the disease help the patient feel emotionally supported. The patient's sense of survival is weakened when the nursing team performs routine care without providing emotional support. (Watanabe et al. 2022: 2587).

Additionally, the study done by Jensen et al. 2016: 1733-1743 using healthcare services both while in the hospital and after discharge significantly reduces the risk of post-ICU depression, for instance healthcare services that includes airways control, smoking cessation and nurse or physician care are important factor of sustaining healthy lifestyle. For the patient's pharmacological treatment and self-care to be successful as well as to

achieve treatment objectives, prevention and early recognizing of depression is a prerequisite to successful treatment.

6 Discussion

The purpose for this research was to demonstrate how nurses could recognize, predict and prevent depression in post-ICU patients. The study gave two main categories which included recognition of depression and preventive measures. The main risk factors that led to identifying depression in post-ICU patients is when patients are presented with trauma, history of major depressive disorder, acute stress, long hospital and ICU stay, history of psychiatric conditions, anxiety and PTSD. The preventive measures on the other hand included routine screening and monitoring, good social support, patient centred with multidisciplinary follow up approach, nurse empowerment, improving communication, creating therapeutic environment.

This study showed that one third of the patients admitted to the ward after ICU discharge presented with depressive symptoms and with a fifth of this still showing similar symptoms at 3-6 months post hospital discharge (Castillo et al. 2016). It is noted that these symptoms of depression were attributed to environmental and psychological risk factors. Pre-existing anxiety, acute stress, depression, and PTSD were symptomatically correlated to the post-ICU depression and over 50% of the patients had all these psychopathological conditions occurring at the same time. The findings from this study also showed that patients who had history of trauma scored highly in the patient health depression test questionnaire while on the other hand, those with history of anxiety and stress were susceptible to post-ICU depression. (Choi et al. 2016.) Nurses involved in the follow up and assessment of post ICU patients should always be aware of coexistence of psychological conditions.

The study also revealed the association between the length of stay in ICU and hospital and how they both increased the chances of patients developing depression when they stayed longer in both environments. According to Choi et al. (2016) post ICU patients who never went home immediately were reported to have had higher rates of depression that lasted up to 4 months. In addition, the results revealed the link between depressive symptoms following longer stays in the ICU. The association between these was due to the prolonged exposure to some depressive triggering factors while in the ICU such as pain, sedation, lack of communication and sleep. All these consequently led to low mood, anxiety and trauma thus eventually leading to depression.

The findings from this study also emphasized interventional measures such as routine screening, patient centred care approach with multidisciplinary follow up and good social support. Nurses can utilize the understanding of factors leading to depression to predict the probability of a patient getting severe depression after being discharged from ICU and on the other hand help patients reduce stressful feelings, fear and traumatic memories which eventually enhance the psychological recovery of the patients. (Wade et al. 2012). Screening tools were also utilized by the nurses in detecting the common symptoms of depression after patients were discharged from ICU. The outcomes differed considerably depending on the screening tools utilized and the country. The employment of these tools guided the nurses on the necessary assistance needed by the patients to cope with their depressive symptoms. (Hatch et al. 2020).

6.1 Ethics and validity

Ethics refers to the adoption of integrity and honesty when doing research to ensure that research is being conducted responsibly (TENK 2012). For literature review to be trustworthy and reliable, it is important to always consider the ethical principles and ensure that they are adhered to. This helps in making sure that the research is of high quality and that the integrity of the study is preserved and free from any kind of violations. (ALLEA 2017.) According to TENK., (2021) researchers have to practice integrity and accuracy in data analysis, evaluation and reporting and that all their studies should conform to dignity, autonomy and the set standards of scientific knowledge. Researchers should also be accountable for their work by acknowledging the authors work through proper citing and referencing.

In addition, it is essential that researchers adhere to research ethics to preserve the research credibility and not cause unnecessary harm. Research misconduct and violations involves fabricating results, manipulation of materials used in the research and utilizing other researchers' work without acknowledging or referencing them. (ALLEA 2017.) This thesis has been guided by the Finnish National Board on Research Integrity guidelines (TENK) and that the authors work is cited and referenced according to metropolia's guidelines. Validity refers to the use of proper tools, methodology and data analysis to get accurate and measurable results that are relatable to the study question. (Leung 2015). This study will derive articles from reliable databases such as CINAHL, PubMed and Medline which will enhance reliability by making sure that the research is

shown in the design, methodology and analysis. Peer reviewed articles will also be utilized thus contributing to the validity of this thesis.

In qualitative practice, validity speaks to the reliability and integrity of the project and any affirmations or conclusions. Irrespective of the term utilized, validity or credibility speaks to the quality of the project, the severity of the methodology, and whether the reader of the study results feels you have established credibility. Validation of a specific project would require that study approaches were employed adequately for a particular study aim and that the information collected and the conclusions from the study findings are also resolute to be relevant. (Patricia 2017:155.) A qualitative ethics statement provides a negotiation of the ethical foundation of your project, addressing your values system, ethical practice and reflexivity. (Patricia 2017:157.) Assuring validity and credibility in qualitative study includes performing the examination in an ethical manner. Qualitative research has procedures for creating the accuracy and reliability of a study. (Sharan 2015:238)

A responsible researcher is required to take ethical principles into consideration and to plan research activities consequently so that the potential harm to participants is reduced. Hence the health investigator must employ substantial ingenuity in scheming authentic research, while maintaining ethical values. One of the concerns of ethics committees is to guide researchers on difficult issues and to assure that study is carried out in accordance with approved community principles. (Polgar 2020: 39.) In qualitative analyses, investigators are the data-collecting instruments as well as producers of the analytical approach, so their qualifications, reflexivity and experience are appropriate in establishing confidence in the evidence. (Polit 2022:283.) The authenticity and believability of the study findings are enhanced. If studies based on different information and techniques provide comparable results, we can have high confidence that the approaches are appropriate and sufficient, and that the outcomes are trustworthy and authentic. (Grønmo 2020:52.)

Research ethics applies to the investigator's rights and responsibilities with respect to individuals, groups and society at large. Scientific ethics are established on general ethical norms. The ethical basis for social study includes norms regarding communalism, universalism, disinterestedness, originality, humility and honesty: Communalism. All investigators should have common ownership of the study. Investigation should be transparent and carried out in complete openness. Reports on the context, methods and findings of the study should be issued and made accessible for all. Universalism.

Academic activity should be assessed in respect of completely intellectual criteria. Disinterestedness. Investigation should be performed for the advantage of a common academic organization. It must not be affected by special interests or sectors of society or by personal or unscientific motives among the investigators. Originality refers to the responsibility of contributing recent and innovative understanding, insights and knowledge. Primarily, researchers need to avoid piracy. Humility means investigators should be mindful of restrictions concerning their capability and analyses. Such boundaries should be explicitly clarified and examined on the basis to the presentation of results. Honesty is a common ethical commitment, which is connected to the principles of truth in sociology. In case regarding immoral research conduct, it is frequently referred to dishonesty in some respects. (Grønmo 2020:56,57,66.)

The research guidelines by the Finnish advisory board on research integrity (TENK) (2012) was applied. The thesis was a literature review, so it did not demand research permit nor participants, consequently no one's identity or privacy was subject to ill-treatment. Other investigators' accomplishments and effort were respected and referred to adequately and their attainments were not discounted in any form of way. Relevant references were made in the text and in the reference list. Ethical considerations were considered throughout the thesis procedure. The thesis was precisely conducted thoroughly giving prominence to integrity and honesty. The principle of specific scientific standards that is approved and recognized in the field of research were conformed to during the process of gathering, analyzing and reporting information. Guidelines for the responsible conduct of research (RCR) were utilized. The main aim of these RCR-guidelines is to promote trustworthy, believable and ethically accepted research. A plagiarism database program Turnitin will be employed at different stages throughout the work.

6.2 Conclusion and recommendation

Often, in nursing work, one may only focus on supporting the patient's physical well-being through treatment measures, and at the same time one may forget to consider the patient's psychological well-being in the treatment. Paying attention to mental well-being is especially important in post-ICU patients, as the patient's mood has a great influence on the wellbeing and rehabilitation, and prognosis of their illnesses. The outcomes of this study indicate that empowering nurses can enable them to assist patients to alleviate fears or concerns, stressful thoughts or feelings, along with processing of distressing memories to enhance recovery. This will also allow nurses to provide awareness and

assist post critically ill patients in the creation of individual plans for future prosperity. The research indicated that intensive care unit nurses encouraging guidance considerably lowers risk of anxiety and depressive symptoms.

The interest in the topic arose from the desire to combine a topic that combines the consideration of the patient's physical and psychological well-being in treatment. It is crucial to provide comprehensive care to patients. When treating a patient, the patient's psychological, physical and social well-being must constantly be considered, because these components interact closely with each other, and each component influences each other.

In the process of the thesis, it is satisfying that the findings provided possible numbers of results that would improve working conditions of nurses on how to predict, recognize and prevent depression in post-ICU patients. The thesis provided nurses with a lot of awareness and relevant information that is useful in caring for post-ICU patients. Nurses need to be more pro-active in recognizing and preventing post- ICU depression to promote the well-being of the patients. The knowledge gained from this thesis can benefit nurses to further improve on the recognition, predicting and prevention of post-ICU depression. There is a need to do further research on this topic.

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Database search table

Database	Search term	Limitations	Hits	Chosen by title	Chosen by abstract	Chosen by full text
CINAHL	Depression or depressive disorder or depressive symptoms or major depression disorder AND post-intensive care syndrome or post intensive care or post-ICU or post critical illness	2012- 2022 English language	86	30	29	2
PubMed	Post intensive care syndrome or post icu or post critical illness AND depression or depressive disorder or depressive symptoms or major depressive disorder	2017- 2022 English language	278	22	14	4
CINAHL	Depression prevention AND recognizing post intensive care syndrome or post intensive care or post ICU or critical care	2012-2022	94	13	13	1
PubMed	Depression prevention AND recognizing post-intensive care syndrome or post intensive care or post ICU or critical illness	2017-2022	930	32	23	3

Table of the studies selected for the literature review

Author(s), year, country	Title/topic	Methodology	Participant	Main outcome
1. Castillo et al. 2016 Queensland, Australia	Trait anxiety but not state anxiety during critical illness was associated with anxiety and depression over 6 months after ICU	Phone interview Surveys Demographic data	797	The Hospital Anxiety and Depression Scale was used to evaluate the outcomes of symptoms of anxiety and depression six months following ICU discharge. Additionally evaluated using standardized measures were perceived social support, cognitive functioning, and post-traumatic stress symptoms. Patients' medical records and patient data were used to gather clinical and demographic information. Participants were tracked in hospital wards and three and six months after being released from the intensive care unit.
2. Choi et al. 2016 USA	Depressive symptoms and anxiety in intensive care unit (ICU) survivors after ICU discharge		39	Prior to post ICU, nurses can monitor for psychiatric problems using brief screening instruments and recommendations which include suggestions in the patients discharge planning before moving to other care environments. Periodic monitoring by utilizing a quick screening tool can be a quick and affordable technique to find psychiatric aftereffects.

3.Davydow et al. 2013 USA	A longitudinal investigation of posttraumatic stress and depressive symptoms over the course of the year following medical–surgical intensive care unit admission	longitudinal investigation In-person interview	150	The 1-year post-ICU prevalences of substantial PTSD and depressive symptoms in our cohort were considerably higher than the 1-year prevalences of PTSD and major depression found in the National Comorbidity Survey Replication. Also, to our knowledge, this study is the first investigation of noninjured ICU survivors to include assessment of prior traumatic event exposure, which represents a potent risk factor for PTSD following an acute stressor and a possible moderator of stress-response gene polymorphisms associated with risk of major depression
4. Hatch et al. 2018 London UK	Anxiety, depression and post-traumatic stress disorder after critical illness: A UK-wide prospective Cohort Study	Cohort Study Observational study Quantitative variables Descriptive data Postal questionnaires	13,155	The result shows that at 3months, there were 45.7%, 41.0%, and 22.0% cases of anxiety, depression, and PTSD, respectively. Using the hospital anxiety and depression score (HADS) tool, and Post-Traumatic Stress Disorder Check List – Civilian (PCL-C). However, 10% of respondents who had not exceeded the criterion for substantial symptoms consistent with anxiety or depression when they responded at 3 months met it after 12 months, despite the population prevalence remaining basically stable across all three instruments.

5. Jensen et al. 2016 Denmark	A recovery program to improve quality of life, sense of coherence and psychological health in ICU survivors:	A pragmatic Non blinded Multicenter Parallel-group RCT Qualitative study	386	The outcomes shows that the intervention may have reduced anxiety by assisting the patients in creating a narrative about their sickness. ICU diaries were tested in a study that decreased the incidence of anxiety and depression. ICU diaries decreased the occurrence of recently developed PTSD and the study's survivors had a high mental component summary score (MCS), a strong sense of coherence (SOC), decreased anxiety and depression, and PTSD that was comparable to other research' findings. These results may be partially explained by the availability of tax-funded rehabilitation treatments; studies have revealed that Danish patients typically feel knowledgeable and confident about the tailored service provided. The study illustrated the potential advantages of follow-up initiatives that support patients in mapping out a coherent illness trajectory.
6. Wu et al. 2018 Hong Kong	Posttraumatic Stress after Treatment in an Intensive Care Unit	Cohort study Self-report questionnaire Face-to-face interview	136	Risk factors for PTSD were identified in order to facilitate early diagnosis and effective treatment. The importance of psychological treatment is emphasized in this study, which also reveals risk factors that must be watched for during recovery.

7. Tripathy et al. 2020 India	Post-traumatic stress symptoms, anxiety, and depression in patients after intensive care unit discharge – a longitudinal cohort study from a LMIC tertiary care Centre	Quantitative A longitudinal cohort Telephone Face to face interview	527	The findings imply that after being discharged from the ICU, about one-third of patients experience depression. However, the rates rapidly drop to 2.7% within the first few weeks. A smaller proportion may be caused by a reduced perception of stress, more reliable support gotten during ICU admission and a population that is more resilient. It is important to emphasize that these psychiatric morbidities, which may be hindering the healing process, are frequently not recognized. For patients after ICU discharge, a simple measure of screening, such as the quality of life (QOL) following ICU discharge, may be used.
8. Van Sleeuwen et al. 2022 Netherlands	MiCare study, an evaluation of structured, multidisciplinary and personalised post-ICU care on physical and psychological functioning, and quality of life of former ICU patients: a study protocol of a stepped-wedge cluster randomised controlled trial	Randomized controlled trial Questionnaires Online questionnaire Phone interview	440	A year following ICU discharged, the hospital anxiety and depression scale (HADS) is used to measure anxiety and depression as well as health-related quality of life using the EuroQol instrument (EQ-5D-5L). The EQ-5D-5L is a validated instrument that may be used in a variety of settings and languages to calculate quality-adjusted survival, a crucial indicator of the effects on health for cost-effectiveness analyses. The HADS is the most used questionnaire for assessing depressive and anxiety symptoms in ICU survivors.
9.Wade et al. 2018 London, UK	Providing psychological support to people in intensive care: development and feasibility study of	A mixed method intervention	Patients Psychology Nursing	The outcome pointed out that psychological intervention that included music, relaxation, visualization, and psychotherapeutic approaches shows promises.

	a nurse-led intervention to prevent acute stress and long-term morbidity	development study	Educational experts Staff	The research suggests in other for the patients to cope with their unpleasant surroundings in the critical care unit, patients' needs understanding and support to deal with anxiety, panic, hallucinations, delusions and flashbacks. They desired nurses they could trust, a sense of security, to feel heard, and to learn more. The research proposed that training may enhance interaction and equip nurses to provide one-on-one psychological assistance.
10. Watanabe et al. 2022 Switzerland.	Association between Early Mobilization in the ICU and Psychiatric Symptoms after Surviving a Critical Illness: A Multi-Center Prospective Cohort Study	multicenter cohort study	192	The outcome was the incidence of psychiatric symptoms at 3 months after hospital discharge, which was defined as the presence of at least one of three symptoms: depression, anxiety, or PTSD. Depression and anxiety were assessed using the HADS that contains 14 items, seven for anxiety assessment and seven for depression, with a score of 0–3 for each item. Within a maximum score of 21 for each subset for depression or anxiety assessment, the presence of depression or anxiety was defined as a score of 8 or more