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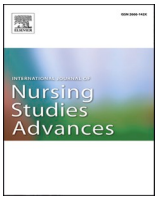

Delirium in a surgical context from a nursing perspective: A hybrid concept analysis

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ABSTRACT

Background: The term delirium has been defined in medical diagnosis criteria as a multidimensional disorder, and the term acute confusion is included in nursing classifications. Delirium can be a serious complication assessed in a patient after a surgical procedure. Still, the patient's delirium frequently remains unrecognised. Care of patients with delirium after surgical procedure is complex, and it challenges nursing expertise. From the nurses' viewpoint, delirium is associated with ambiguity of concepts and lack of knowledge. Therefore, reseach on how nurses perceive patients with delirium in a surgical context is needed.
Objective: The aim of this study was to describe the concepts of delirium and acute confusion, as well as the associated dimensions, in adult patients in a surgical context from the nursing perspective.
Design: The study used Schwartz and Barcott's hybrid concept analysis with theoretical, fieldwork, and final analytical phases.
Settings: Surgical wards, surgical intensive care units, and post-anaesthesia care units.
Data sources: A systematic literature search was performed through Pubmed (Medline), Cinahl, PsycInfo, and Embase.
Participants: Registered nurses and licensed practical nurses (n = 105) participated in the fieldwork phase.
Methods: In the theoretical phase, the concepts' working definitions were formulated based on a systematic literature search with the year limitations from 2000 until February 2021. At the fieldwork phase, the nurses' descriptions of patients with delirium were analysed using the deductive content analysis method. At the final analytical phase, findings were combined and reported.
Results: The concepts of delirium, subsyndromal delirium, and acute confusion are well defined in the literature. From the perspective of the nurses in the study, concepts were seen as a continuum not as individual diagnoses. Nurses described the continuum of delirium as a process with acute onset, duration, and recovery with the associated dimensions of symptoms, symptom severity, risk factors, and early signs. The acute phase of delirium was emphasised, and preoperative or prolonged disturbance did not seem to be relevant in the surgical care context. Patients'

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compliance with care may be decreased with the continuum of delirium, which might challenge both patients' recovery from surgery and the quality of nursing care.
Conclusions: In clinical practice the nurses used term confusion inaccurately. The term acute confusion might be used when illustrating an early stage of delirium. Nurses could benefit from further education where the theoretical knowledge is combined with the clinical practice. The discussion about the delirium, which covers the time both before surgery and after the acute phase should be increased.

Abbreviations

DSM, the Diagnostic and Statistical Manual of Mental Disorders
ICD, the International Classification of Diseases
ICU, Intensive Care Unit
LPN, Licensed Practical Nurse
PACU, Post-anaesthesia Care Unit
RN, Registered nurse
WHO, World Health Organisation

1. Introduction

Delirium is a frequent clinical condition with a prevalence of 15–25% among inpatients of age 65 and older in acute care (Bellelli et al., 2016; Geriatric Medicine Research Collaborative, 2019). Among adult patients who have undergone surgery, the amount is approximately 15–40% and as much as 80% among patients with cognitive impairment and with critical care (Malik et al., 2019; Pioli et al., 2019; Schubert et al., 2018). More than one out of ten patients with non-elective surgery suffers from preoperative delirium (Agrawal et al., 2020; Olofsson et al., 2018).

Patients with delirium experience difficulties in self-expression, and negative emotions, such as fear, shame, loneliness, and a sense of being neglect (Van Rompaey et al., 2016). Family members of patients with delirium may face negative emotions during the care episode, such as uncertainty, distress, and anxiety, and fear for the future (Boehm et al., 2021; Shrestha and Fick, 2020). Delirium is related to patients' immediate adverse events such as falls, self-removal of invasive implements, and inappropriate use of medical and physical restraints (Martínez et al., 2017; Morandi et al., 2019; Pan et al., 2018).

Patients with delirium are at risk of a prolonged length of stay in the intensive care unit (ICU) or the hospital, as well as readmission, non-home discharge, and new diagnoses of cognitive disorders or dementia. (Fiest et al., 2021; Lee, et al., 2022; Ha et al., 2018; Jaatinen et al., 2021; Malik et al., 2019;Mohanty et al., 2022, Lindroth, et al., 2020). Delirium may increase the risk of in-hospital and long-term mortality in elderly patients after surgery (Ha et al., 2018; Mohanty et al., 2022; Oberai, et al., 2022). Patients with delirium require more healthcare interventions, time, and personnel compared to those without (Öztürk and Bedük, 2018; Schubert et al., 2018). Overall, research has shown the economic outcomes of delirium after surgery to be substantial (Gou et al., 2021; Ha et al., 2018).

2. Background

The concept of delirium has a long and multidimensional history going back to the times of Hippocrates in the 5th century BC, and Celsus, the Roman medical writer in the 1st century AD (Adamis et al., 2007; Deksnytė et al., 2012; Lipowski, 1991).

The development of modern psychiatry and mental disorder conceptualisation has affected the delirium concept during the last two centuries. The number of studies increased, and the definitions of symptom-based psychoses were either narrowed or expanded (Lipowski, 1991). In the 20th century, the term *confusion* described as disturbed cognition became a synonym for delirium. In specialties such as neurology, the term delirium was seen too psychiatric and too closely related to withdrawal symptoms, such as psychomotor agitation, and therefore, the term *acute confusional state* was associated with retardation and reduced attention (Deksnytė et al., 2012 Engel and Romano, 2004; Lipowski, 1991). Delirium's clinical complexity may partly explain the number and variety of names and definitions (Bugiani, 2021).

The delirium concept was clarified by the inclusion of its medical diagnostic criteria into the third edition of the Diagnostic and Statistical Manual of Mental Disorders in 1980 (DSM-III; American Psychiatric Association, 2013) and the International Classification of Diseases, 10th revision in 1990 (ICD-10; World Health Organisation, WHO, 2019). In the late 2010s, a consensus on the concept was reached. The concept of delirium refers to a clinical state characterised by a combination of features defined by diagnostic criteria such as the fifth edition of the DSM (Sloote et al., 2020).

The nursing diagnosis differentiates from the medical one because of different goals. A medical diagnosis identifies the disease, medical condition, or pathophysiological state, whereas the nursing diagnosis judges the potential existence to enhance self-care (Chiffi and Zanotti, 2015). The NANDA International Inc (NANDA-I) defines a nursing diagnosis as "a clinical judgment concerning a human response to health conditions/life processes, or a vulnerability for that response, by an individual, family, group, or community. A nursing diagnosis provides the basis for selection of nursing interventions to achieve outcomes for which the nurse has

accountability" (Carpenito, 2013, 8; NANDA International International Council of Nurses, ICN, 2021). In the NANDA-I classification and in the International Classification for Nursing Practice, both delirium and *acute confusion* are included, but only the latter term is a nursing diagnosis (Guthrie et al., 2018; International Council of Nurses, ICN, 2021).

Along with the development of a definition, studies into the epidemiology, pathophysiology, recognition, prevention, and treatment of delirium have been utilised. A few best practice guidelines have been published in various clinical contexts such as the ICU (Devlin et al., 2018) or postoperative care (Aldecoa et al., 2017). Recent evidence on interventions indicates that the effectiveness of pharmacological interventions in the prevention and treatment of delirium is scarce (Burry et al., 2021; Devlin et al., 2018). In turn, multidisciplinary, multicomponent non-pharmacological interventions are the most effective in reducing the incidence of delirium (Devlin et al., 2018; Eckstein and Burkhardt, 2019; Ludolph et al., 2020). However, many countries lack best practice guidelines, or if the guidelines exist, they are not generally followed (Bush et al., 2017; Kotfis et al., 2017).

In the surgical context, nurses provide care to patients preparing for or recovering from a surgical procedure in various surgical wards, including post-anaesthesia care units (PACUs) and surgical ICUs (The Academy of Medical-Surgical Nurses, 2019). Nursing in a surgical context has been described as fast-paced and task-oriented with a focus on a patient's recovery from surgery and the prevention of complications (Jangland et al., 2018). The recovery process after surgical procedure also challenges a patient's compliance with care and participation in decision-making. Patients with delirium have impaired communication and diminished or no ability to take part in the care (Kuusisto-Gussmann et al., 2021; Leonard et al., 2014). Therefore, the focus in nursing should be on the patients' fundamental care needs, including physical, psychosocial, and relationship elements (Feo et al., 2018), and on respectful and dignified care, instead of pure risk avoidance, surveillance, and containment (Schofield et al., 2012).

The fundamental role of nurses is to work with and for the patient who might suffer from symptoms of delirium. Nursing influences on the management, coping, and well-being of patients and their families, as well as on how other professionals approach the patients' care (Kristiansen et al., 2019). At best, quality, empathic, and compassioned nursing care promotes patients' comfort by preventing pain, distress, and delirium, as well as family members' well-being, participation in care, and knowledge about delirium (Boehm, et al., 2021). At worst, severe complications or even death might be unintentionally promoted if nurses do not properly address the consequences of delirium, such as restraints, falls, and aspiration pneumonia (Dharmarajan et al., 2017).

Despite the central role of nurses, concept ambiguity and lack of knowledge regarding delirium still exist (Thomas et al., 2021), so the patient's delirium can frequently remain unrecognised (Lee et al., 2022). Several barriers to caring for delirium in the surgical population have been identified such as discomfort in delirium assessments (Selim and Ely, 2017), patient safety (Jangland et al., 2018), and multiprofessional collaboration (Palacios-Cena et al., 2016; Trogrlić et al., 2017). Difficulties may exist because patients with the condition are not capable of self-reporting their features or experiences, and delirium disturbs their interactions with others (Kuusisto-Gussmann et al., 2021). Thus, someone else evaluates and interprets a patient's vague expressions (Johansson et al., 2018). As such patients do not necessarily receive the care they require. Basic research on how nurses perceive the care of patients with delirium in a surgical context is needed to explore potential bias towards them, and nurses' perceptions must be assessed to minimise barriers and improve care.

The aim of this study was to describe concepts of delirium and acute confusion as well as their associated dimensions in a surgical context from the nursing perspective. Therefore, the hybrid concept analysis method, which combines theoretical and fieldwork phases, was chosen. The research question for the theoretical phase focused on how the delirium and acute confusion concepts, as well as their associated dimensions, in adult patients have been defined in the literature. Research questions for the fieldwork phase included how the concepts of delirium and acute confusion, as well as the associated dimensions, manifested in patients in a surgical context from the nursing perspective and what other elements are significant to nursing care for patients with delirium in a surgical context.

3. Methods

3.1. Study design

This concept analysis was carried out using Schwartz-Barcott's and Kim's (2000) hybrid model, including theoretical, fieldwork, and final analytical phases. The theoretical phase included a systematic literature search that consisted of searching, screening, and comparing existing knowledge of delirium and acute confusion, and it ended with a working definition for the next phases. The fieldwork phase included data on nurses' descriptions of patients with delirium in a surgical context. The final analytical phase integrated the working definition with the empirical data from nurses to provide a definition of delirium and acute confusion, as well as associated dimensions from a nursing perspective in a surgical context (Schwartz-Barcott and Kim, 2000; Schwartz-Barcott et al., 2002).

3.2. Ethics

A descriptive nursing data collection was performed in accordance with the Helsinki Declaration. It received approval from the ethical committee of the University of Turku (12.12.2016, 65/2016) and study permission from the Helsinki University Hospital (7.2.2017, HUS71/2017). In the data collection, a response to the questionnaire was interpreted as consent to participate.

3.3. Theoretical phase

3.3.1. Data sources

In the theoretical phase, a systematic literature search was made with the terms [(Delirium (TI) OR "Acute confusion*" (TI)] combined with [concept* (AB) OR defin* (AB)] from the following databases: Pubmed (Medline), Cinahl, PsycInfo and Embase, with year limitations from 2000 until February 2021. Additional sources included reference lists and related articles, as well as classifications, guidelines, and societies' statements. Inclusion criteria were as follows: an article in a peer-review journal or a guideline, English language, full-text availability, and responses to the search questions (definitions or related dimension of delirium or acute confusion). Fig. 1 presents exclusion criteria and the flow of information in searches and the selection.

3.3.2. Analysis

In the analysis, two researchers (SP and SR) evaluated the references and independently screened and reviewed the articles. Articles' feasibility was evaluated by comparing the content of the articles to this study's research questions. Various definitions of the concepts, descriptions of the phenomena's features, and associated dimensions were considered. After reading the full text, five guidelines and 34 peer-reviewed articles were reread, and the definitions and dimensions of the concepts of delirium or acute confusion were investigated. The Supplementary file S1 presents the selected articles.

Several related disorders, such as altered mental status, alcohol withdrawal syndrome, catatonia, (mild) cognitive decline, delirious mania, dementia, dementia related delirium, depression, frailty, and postoperative cognitive decline or dysfunction, were excluded from the final analysis. These disorders had similar attributes to delirium, the attributes overlap with delirium, the state is a

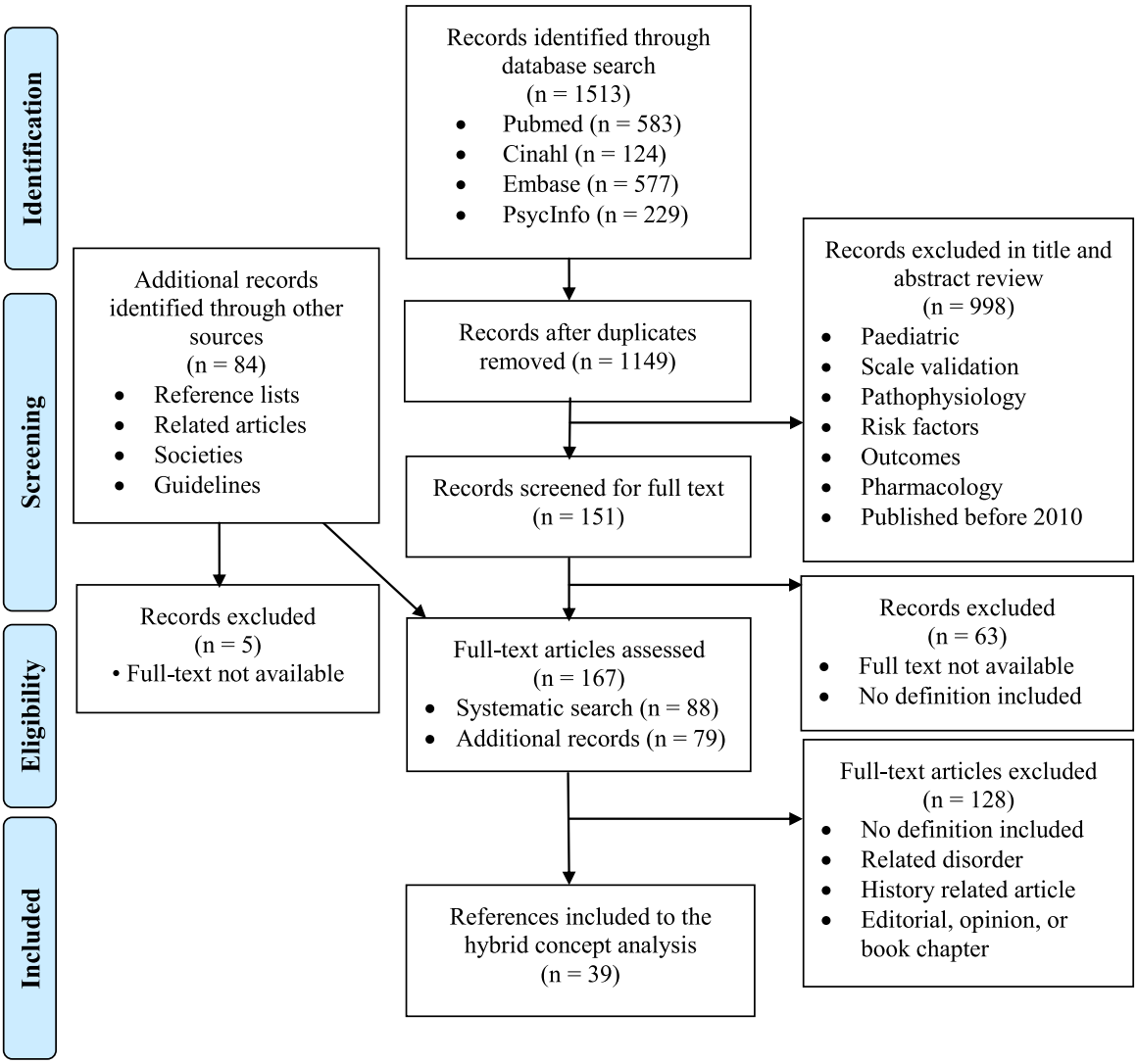

Fig. 1. Flow of information in the systematic literature search.

predisposing factor to delirium or could promote delirium, or delirium could promote such a state. These states could have different pathophysiology and even their own diagnosis codes (Bond et al., 2019).

3.4. Fieldwork phase

3.4.1. Data collection

The purpose of the fieldwork phase was to test the working definition presented in Fig. 2 and to explore if more dimensions could be added to the final definition (Graneheim et al., 2017). Therefore, the fieldwork phase was organized to explore clinical nurses' descriptions of patients with delirium to gain a deeper understanding of how nurses perceive patients and the care of such patients. The data were collected from registered nurses (RNs, a bachelor-level education from a university of applied sciences) and licensed

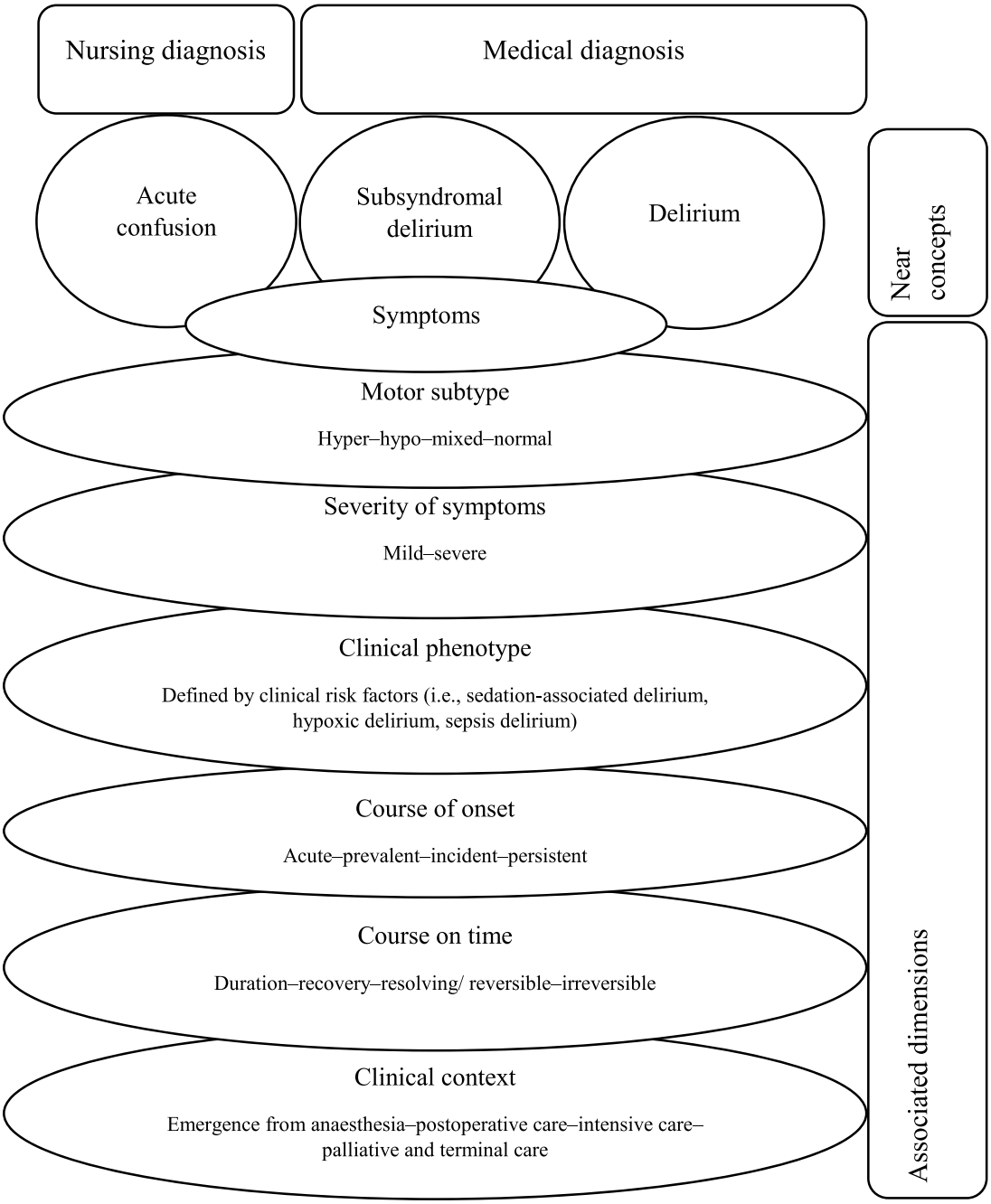

Fig. 2. The working definition of concepts and associated dimensions based on the systematic literature search.

Table 1
Descriptions of the dimensions in the working definition.

Dimension	Subclass	Definition	Refs.
Symptoms	-	Disturbances of attention and awareness, as well as perception, thinking, memory, fluctuation, acute onset, as well as psychomotor behaviour, emotion, and the sleep-wake schedule. Delirium has diagnosis criteria at the DSM-5 (American Psychiatric Association, 2013) and the ICD-10 (WHO, 2019).	Aldecoa et al., 2017; Kerr et al., 2013; Kim et al., 2018; Rajlakshmi et al, 2013.
Severity of symptoms	Mild to severe	Overall severity of delirium, and severity of core and noncore symptoms (cognitive and noncognitive symptoms) may help to examine total both scores and patterns of symptoms. Distinguishes full syndromal delirium from subsyndromal delirium. Distinguishes delirium from other conditions.	Lindroth et al., 2020; Meagher et al., 2012b; Shim et al., 2020; Trzepacz et al., 2018.
Motor subtype	Hyperactive	increased activity levels, increased speed of actions or speech, restlessness, wandering, abnormal content of verbal output, hyper alertness, irritability, agitation, and combativeness	Albrecht et al., 2015; FitzGerald, 2018; Hayhurst et al., 2020; NICE, 2021).
	Hypoactive	reduced activity, apathy, decreased amount or speed of speech, decreased alertness, unawareness, or hypersomnolence.	Albrecht et al., 2015; FitzGerald, 2018; Hayhurst et al., 2020; NICE, 2021.
	Mixed	alternate between intensities of activity levels within a short time frame	Albrecht et al., 2015; FitzGerald, 2018; NICE, 2021.
	Normal	normal psychomotor features	Albrecht et al., 2015.
Clinical phenotype		defined by clinical risk factors; all potential risk factors that may impact on cognitive impairment, especially those that are iatrogenic and potentially modifiable e.g., sedation-associated delirium, hypoxic, and sepsis associated delirium	Girard et al., 2018; Kenes et al., 2017.
Clinical context	Emergence delirium	immediately after emergence of anaesthesia or sedation, without symptomatic fluctuation or lucid intervals. Hyperactive form: short-term impairment of consciousness, where the patient is awake, but with altered mental status, which may manifest as disorientation, hallucinations, confusion, restlessness and hyperactive physical behaviour that may be even violent and/or harmful. It is short duration (appr. 30 min, usually 5–15 min). Hypoactive emergence is characterized by lethargy, depression of motor activity, and hypo vigilance. There are no clear diagnostic criteria for the two entities, and it is unclear whether hypoactive emergence represents a form of emergence delirium.	Card et al., 2015; Greiner and Kremer, 2019; Munk et al., 2016; Oh and Park, 2019; Xará et al., 2013.
	Postoperative delirium	delirium that usually happens in the recovery room continued beyond the PACU or occurred in the hospital ward or the ICU up to 24 h or even up to 5 days after surgery.	Card et al., 2015; Greiner and Kremer, 2019; Oh and Park, 2019; Shim et al., 2015.
	ICU-delirium	inclusion of patient staying at intensive care unit or critically ill patients	Devlin et al., 2018; Boettger et al., 2018; Hayhurst et al., 2020; Kenes et al., 2017.
	Palliative care, terminal delirium	as irreversible delirium that occurs during the last days of life and continues until death.	Hui et al., 2014; Irwin et al., 2013.
Course of onset		The Diagnostic and Statistical Manual of Mental Disorders (DSM-5) lists onset as hours to several days. The speed of onset of delirium was defined as the interval in days between the last normal cognitive day and symptom/sign onset, or symptom and sign onset to diagnosis.	Regal, 2017.
	Prevalent	Delirium is detected at admission or time of enrolment (for study purposes)	Ciampi et al., 2017; Mistraletti et al., 2012.
	Incident	Delirium newly occurs during the course of a stay in a clinical setting, during hospital stay, or participants without delirium at the time of enrolment who met the criteria for probable delirium at any assessment during study period (for study purposes)	Ciampi et al., 2017; Mistraletti et al., 2012; Morandi et al., 2012.
	Persistent	Delirium symptoms persist over the course of time. Is characterised by increasing dominance of cognitive and thinking impairments. Delirium has long been considered a transient syndrome, in recent years 'persistent' delirium has attracted widespread interest. For study purposes the definition of persistent delirium differed.	Goto et al., 2021; Kenes et al., 2017; Leonard et al., 2014; Meagher et al., 2012a; Mistraletti et al., 2012; Morandi et al., 2012.
Course of time	Duration	could be categorized as: Rapid Recovers: severe delirium and symptoms quickly resolved within 60 h; Slow Recovers: gradually declined over the 7-day period; Non recovers: persisted over the 7-day assessment period	Lindroth et al., 2020.
	Recovery	An agreed terminology to define recovery in delirium is required. A distinction should also be made between symptomatic and overall recovery; proposed that cognitive recovery should be central to defining recovery in delirium. The rate of recovery was defined by the days between onset/diagnosis for incident delirium or hospital admission for prevalent delirium, and recovery by either assessment scale or by global assessment. (For study purposes)	Adamis et al., 2015. Regal, 2017.
	Resolving	resolving delirium (initially full syndromal delirium becoming subsyndromal delirium over time)	Leonard et al., 2014; Meagher et al., 2012a.
	Reversible	rapidly reversible delirium defined as delirium always resolving within 4 h of stopping sedatives (for study purposes)	Kenes et al., 2017.
	Irreversible	1) a time-limited diagnostic and adequate therapeutic trial to reverse the delirium *is inconsistent with patient and family goals of care, or *fails to discover underlying aetiologies of the delirium, or *fails to reverse the delirium, even with the help of expert consultants, or 2) the underlying physiological processes are irreversible, e.g., end-stage organ failure; imminent death (prognosis of hours to days).	Irwin et al., 2013.

practical nurses (LPNs, a two-year upper secondary vocational education), who were working in surgical wards, surgical ICUs, and PACUs in various surgical subspecialities in one university hospital area. Nurses from PACUs were included because in the recovery room can occur both anaesthesia related emergence delirium as well as postoperative delirium that is longer lasting, starting in the PACU, and continuing at the ward as presented in Table 1. The neurosurgical department was not included in the study to avoid mixing neurological symptoms with features of delirium. Participants from both professions (referred to as nurses) were invited because they have an equal role in clinically evaluating patients' state in specialized care. However, LPNs have a limited license to medicate patients (Finnish Union of Practical Nurses, 2020).

An open-ended inquiry with a cover letter about the study was distributed to 1500 nurses via nurse directors and managers. Nurses received the answer link to their workplace email in February 2017. One reminder was sent after two weeks, and it was possible to answer after a total of 4 weeks. A secure socket layer connection platform was used. In the introduction of the inquiry, the respondents were advised as follows: "Please tell us in your own words how delirium, aka acute confusion, has manifested in one or several of your patients. You may, for example, [describe] what kind of patient you took care of. What kind of symptoms did they have? What specific symptom, behaviour, or expression made you think that the patient was confused? How did the confused behaviour differ from the patient's normal situation?" Additional questions included respondents' profession, unit type, and duration of work experience.

Overall, 109 stories were received. One story was blank, and two respondents only answered the background questions. One respondent self-identified as a medical doctor. These four responses were excluded from the analysis leaving 105 stories in the analysis. The combined length of the stories was 28 double-paced pages.

3.4.2. Analysis

In the fieldwork phase, a deductive content analysis method was used as recommended when subjective descriptions are being studied (Elo and Kyngäs, 2008). The deductive method moves from the general or abstract to more specific or concrete (Elo and Kyngäs, 2008; Graneheim et al., 2017). Participants' free text stories were analysed with a deductive content analysis method guided by the working definition of the concepts and associated dimensions formed at the theoretical phase. Furthermore, all the meaningful data were included in the analysis, and new categories were formed (Graneheim et al., 2017). To clarify the analysis and categorization process, Supplementary File S2 presents the categories.

At first, the corresponding author (SP) and one co-author (SR) read the stories to make sense of the data (Elo and Kyngäs, 2008). A word or phrase with the same meaning was decided to be a unit for coding. Secondly, stories were deductively coded according to a categorization matrix which was created based on the working definition formed in the theoretical phase of this hybrid concept analysis.

The categorization matrix included the following predetermined categories based on the work definition: (1) symptoms, (2) motor subtype, (3) clinical phenotype, (4) clinical context, (5) severity of symptoms, (6) course of onset, and (7) course on time. For a more precise categorization of the delirium symptoms, a list of symptoms was formed through an iterative process through consensus of the first author and two nurses with clinical and scientific experience as well as two domain experts in information and language technology.

The following delirium symptoms were included in the categorization matrix: confusion, with its own heading; disorientation; memory disorder; psychomotor excitement (divided into a hyperactive altered level of attention and awareness, hyperactive altered level of consciousness, hyperactive motoric behaviour, and hyperactive emotions); psychomotor retardation (hypoactive altered level of attention and awareness, hypoactive altered level of consciousness, hypoactive motoric behaviour, and slower speech or silence); inappropriate communication; unorganized thinking; altered perceptions; fluctuation; sleep–wake cycle disturbance; and other emotional disturbances. The list included a combination of diagnosis criteria for DSM-5 and ICD-10 as well as assessment scales of the Confusion Assessment Method, the Intensive Care Delirium Screening Scale, and the Nursing Delirium Screening Scale. These scales were selected based on their validity in the clinical contexts in question and feasibility in nurses' use (American Psychiatric Association, 2013; Bergeron et al., 2001; Gaudreau et al., 2005; Inouye et al., 1990; WHO, 2019).

Thirdly, after the deductive content analysis, the leftover data (extracts such as words or phrases that did not fit under any of the matrix categories) were coded under as many headings as necessary (Graneheim et al., 2017). Coding was performed with NVivo 12 Plus software. Finally, the coded data units were reviewed, and similar characteristics were clustered into subcategories, and the specifics of each subcategory were recategorized into generic categories and abstracted into main categories.

The categorization process was reviewed by exploring the tables with coded units, classes, categories, and concerns expressed regarding interpretations that were discussed and solved cooperatively. The original data were in the native language. The examples of the sub-, generic, and main categories were translated into English and approved by all authors for international reporting purposes and are presented in Supplementary File 2.

4. Results

4.1. Theoretical phase

Based on the literature, three near concepts (delirium, *subsyndromal delirium*, and acute confusion) with seven associated dimensions—symptoms, motor subtype, clinical phenotype, clinical context, severity of symptoms, course of onset, and course on time—were identified, and a working definition for the fieldwork phase was formed and is presented in Fig. 2. The near concepts are described in the text below. In turn, Table 1 presents the definitions of dimensions.

In respect to the three near concepts, (i.e., delirium, subsyndromal delirium, and acute confusion), the DSM-5 criteria defines

delirium as an etiologically nonspecific organic cerebral syndrome characterized by concurrent disturbances of attention and awareness, as well as additional disturbances in perception, thinking, and memory. It has an acute onset, and symptoms usually fluctuate during the day. The symptoms are not explained by a neurocognitive disorder, and do not occur because of a severe lowered level of arousal. There is evidence that the disturbance is a direct physiologic consequence of another medical condition, substance intoxication or withdrawal or exposure to a toxin, or is a result of multiple aetiologies. To justify a delirium diagnosis, all criteria must be present at the same time (American Psychiatric Association, 2013). In the ICD classification, the definition has expanded to also include disturbances in psychomotor behaviour, emotion, and the sleep–wake schedule. The duration is variable and the degree of severity ranges from mild to very severe (ICD-10, WHO, 2019; ICD-11, WHO, 2021).

The term subsyndromal delirium has been defined in the text version of the DSM-5 criteria (DSM-5-TR) as "an intermediate condition that phenomenologically looks like full delirium, but its symptoms are at a lesser level of severity" (American Psychiatric Association, 2022). It has been defined as the presence of one or more symptoms of delirium not meeting the criteria for delirium. It can be defined as another subtype of delirium or as a sub form of delirium, or it can be a signal of undiagnosed underlying general medical condition. (American Psychiatric Association, 1994, 127; Boettger et al., 2018; Cole et al., 2014; Devlin et al., 2018) In the ICD-11 criteria, search for the term subsyndromal delirium leads vaguely to the term *clouding of consciousness* (WHO, 2021).

Acute confusion is a nursing diagnosis, which may be in use before the medical diagnostic criteria of delirium are met (Guthrie et al., 2018). It has been defined as reversible disturbances of consciousness, attention, cognition, and perception with rapid onset, a fluctuating nature, and development over a short period of time. Therefore, acute confusion has somewhat overlapping symptoms with delirium (Carpenito, 2013, 134). Nurses have used the term confusion in documenting the presence of both acute confusion and *disorientation* among hospital inpatients diagnosed with delirium (Guthrie et al., 2018; Zalon et al., 2017). This is in line with the ICD-10 criteria, where confusion is coded as unspecified disorientation; in the ICD-11 criteria, a matching term for disorientation is *mental confusion* (WHO, 2019, 2021).

In summary, the near concepts of delirium and subsyndromal delirium have been defined in the medical diagnosis criteria. The term acute confusion has been defined in the nursing diagnosis criteria and has overlapping symptoms with delirium. The seven associated dimensions, which were all related to the three near concepts, included the following: symptoms, motor subtype, clinical phenotype, clinical context, severity of symptoms, course of onset, and course on time. Fig. 2 presents the working definition of the concepts and associated dimensions.

4.2. Fieldwork phase

The fieldwork phase data consisted of 105 stories with 1109 coded units. One hundred respondents were RNs, and four were LPNs. One responder did not provide their profession. Sixty-three respondents worked in a surgical ward, 18 in a PACU, and 28 in a surgical ICU. The average length of nursing experience was 18.4 years. One-fifth of respondents had nursing experience of less than 10 years, and 40 responders had more than 20 years of experience; of those 40, 11 had more than 30 years of experience.

As a result of the content analysis, the dimensions were slightly modified from those in the theoretical phase. Based on the analysis of the leftover data, two new dimensions—early signs and altered compliance with care—were formulated. While delirium symptom severity was one of the dimensions found in the theoretical phase, it was not possible to evaluate from the stories. As such, it is not presented in the fieldwork phase results but is included in the final analytical phase.

Table 2 presents the summative data of stories and data units sorted by categories. The summative results of the content analysis can be used to provide brief insights into what contents were categorized by measuring the frequency of different categories, and, consequently, a proxy for significance could be perceived (Hsieh and Shannon, 2005; Vaismoradi et al., 2013). In this study, the

Table 2
Summative data of stories and data units.

Categories	Stories (n = 105)	Data units (n = 1109)
Symptoms (in alphabetical order)		
Altered perceptions	50	84
Confusion	34	41
Disorientation	40	52
Emotional disturbance	32	49
Fluctuation	22	28
Inappropriate behaviour	20	32
Memory disorder	19	23
Other abnormal or diverse sensation	4	4
Psychomotor excitement	95	329
Psychomotor retardation	18	29
Sleep-wake cycle disturbance	15	19
Unorganised thinking	52	88
Clinical phenotype	53	130
Early signs	5	7
Course of onset	52	90
Course on time	11	26
Altered compliance with care	31	53
Clinical context	20	25

empirical data consisted of manifestations of the concepts, and, as such, the findings are presented close to the original descriptions (Graneheim et al., 2017). The Supplementary File S2 presents the findings from the subcategories to the dimensions. Next, the results are organized in the text by dimension with examples from the original stories.

4.2.1. Symptoms

In the nurses' descriptions, a wide scale of symptoms for delirium, subsyndromal delirium, and acute confusion appeared as shown in Table 2. Overall, symptoms were described similarly to the theoretical phase definitions. In the analysis of stories, the diagnosis criteria of the delirium were not meant to be fulfilled.

The term confusion was used either as a synonym for the term delirium or as a description of confused speech, confused memories, confused motoric behaviour, or confused reality. Moreover, the term confusion was used to describe any unspecified confusion.

The dimension of motor subtype manifested in the descriptions as psychomotor excitement or psychomotor retardation. Patients' hyperactive manifestation was described in 95 stories and hypoactive manifestation was accounted in 18 stories. Some nurses mentioned motor activity which fluctuates between hyper- and hypoactive subtypes. Psychomotor excitement included hyperactive manifestations of delirium in the levels of attention and awareness, consciousness, and behaviour and speech. Consequently, psychomotor retardation included hypoactive manifestations of delirium. An RN working in the ICU described patients with delirium as follows:

> "Patients are short-tempered, they cannot focus on the continent of the speech, requests, or calming. They are unable to focus their glances. Patients do not believe what they have heard. They are disoriented to time and space. They talk confusingly… Patients are suspicious, resistible, defensive, fearful, weepy, or aggressive when cared for. They usually have perceptions, motoric restlessness, anxiety, and fear. They shout for help and swear a lot. Patients with delirium do not sleep or sleep only short periods." (Story 26, S26)

Based on the analysis, a few quotations did not fit within any of the preconceived categories. Quotations were interpreted as other abnormal or diverse sensations, and they were described as malaise and, for example "a lack of pain when such could be assumed" (Ward RN, S73).

4.2.2. Clinical phenotype

Nurses described the risk factors of delirium applicable to patient demographics and the clinical state of their health or other diseases. The predisposing factors mentioned most often included alcohol abuse in 26 stories and old age—that is, elderly patients in 24 stories. Other risk factors were also mentioned, and a ward LPN wrote the following:

> "Patients often underwent heart operations and became confused due to perfusion or strong medications." (S11)

A PACU RN also wrote:

> "According to my experiences, patients with alcohol abuse and elderly patients suffer from delirium. Anaesthesia increases patients' confusion." (S23)

4.2.3. Early signs

Nurses described the early signs of delirium based on what patients had told them, or what they had noticed in a patient's behaviour. As a ward RN wrote, "Patients mentioned that they felt confused and nervous." (S52) In addition, an RN from ICU described delirium as follows:

> "At first, the delirium manifested as inappropriate or unrealistic speech… In other patients, the first signs have been confused behaviour like packing things, speaking by themselves, intending to leave in the middle of the night, or other motoric restlessness… In a few situations, the first signs [of patients' delirium] have been sudden aggressiveness and suspiciousness." (S58)

4.2.4. Course of onset

Descriptions of the course of onset focused on acute delirium. It was presented as a previous behaviour detected at home or one detected by relatives before the period of care, from medical records or based on nurses' earlier contact with the patient, or as descriptions of the timing of acute change. As two ward nurses wrote,

> "It happened after the operation" (Ward RN, S38), and "within three days after hospitalization" (ICU RN, S40).

4.2.5. Course on time

A course on time was mentioned in nurses' stories as descriptions of the duration of a delirium period and recovery from the state. Duration was described as "the worst phases of delirium take one to three days" (Ward RN, S46), and "The patient oriented after a number of days." (Ward RN, S80) Accordingly, the recovery process from delirium was described as follows:

> "The patient's state improved, and confusion yielded as the care period proceeded." (Ward RN, S100)

After the delirium period, as part of the recovery process, the patient did not remember the state, had flashbacks, or even wanted to apologize for their behaviour.

4.2.6. Altered compliance with care

In nurses' descriptions, altered compliance with care manifested in speech or physical actions as inability to recognize the illness, such as denial, or as expressed negativity towards the care, which manifested itself in speech or behaviour. Further, altered compliance with care was described as care resistance or as refusal of procedures and other adverse behaviours. One ICU RN wrote,

> "Patients with delirium are (often) against care procedures and do not understand what the reason or purpose of the care is. Because of a lack of understanding or fear, they are suspicious, resistant." (S26)

4.2.7. Clinical context

Nurses mentioned the clinical context in 20 stories, for example, "[The care] is difficult to manage at the ward" (Ward RN, S9), and "The patient is in a PACU." (PACU RN, S16)

If the clinical context was not mentioned, the respondent's working unit was interpreted as the clinical environment of the patient under description. It was detected that the nurses' descriptions varied according to the unit type. Ward nurses described altered perceptions and inappropriate behaviour more often than others. Nurses from PACUs did not describe categories of slowed speech, hypoactive motoric behaviour, or sleep-wake cycle disturbance; they wrote only a few descriptions of the inappropriate behaviour and emotional disturbance. Hyperactive motoric behaviour was also mentioned less frequently than by ward and ICU nurses. Instead, PACU nurses more often used wording such as "confusion." Compared to others, ICU nurses mentioned hyperactive behaviour most often.

4.3. Final analytical phase

From a nursing perspective, the concepts of delirium, subsyndromal delirium, and acute confusion were not described as different disorders contrary to the results of the theoretical phase. Nurses commonly used the term confusion. In some cases, it seemed obvious that they used the terms confusion and delirium interchangeably as synonyms. On the other hand, the term confusion was used to describe any unspecified delirium. Therefore, the concepts were interpreted as a continuum from acute confusion to subsyndromal delirium and delirium, thus inheriting the continuum of delirium title. Moreover, a wide range of symptoms of the continuum of delirium, as well as motor subtypes, were described similarly to diagnosis criteria. The interpretation was that nurses generally recognized the symptoms well. However, the purpose of the study was not to evaluate the knowledge of individual nurses.

Similar to the theoretical phase, nurses were aware of the risk factors of delirium related to patients in different surgical contexts. Alcohol abuse was mentioned as a risk factor in one-fourth of the stories. It is remarkable to notice because "delirium due to alcohol withdrawal" has a diagnosis code of its own and different medical treatment protocols (Wolf et al., 2020). Generally, risk factors were in line with the working definition, but the heading of the dimension has been changed from clinical phenotype to risk factors. It was noted that nurses spontaneously described the patients' early signs, which manifested as confused behaviour and speech, as well as restlessness. Thus, early signs formed a dimension of their own. In the theoretical phase, the course of onset and course on time were concluded to be separately associated dimensions. Unlike in the theoretical phase, the interpretation of the fieldwork phase demonstrated, that in a surgical context, nurses comprehended delirium as a process with beginning and ending stages: acute onset, duration, and recovery. The irreversibility or persistency of delirium had not manifested in the stories, contrary to the theoretical phase. In addition, there were no mentions of the patient's preoperative delirium.

A new dimension found in the fieldwork phase was the patient's altered compliance with care. This dimension was not considered in the theoretical phase. In this study, nurses described altered compliance with care as the inability to recognize illness, resistance to care, or refusal of care procedures. It must be noted that, during the study, it was impossible to ask deeper questions concerning, for example, the patient's participation, compliance, or involvement. In this study, the interpretation was that nurses described patients' participation in a paternalistic way (Ahmed and Aslani, 2014).

A compact description of the continuum of delirium, as well as associated dimensions in adult patients in a surgical context from the perspective of the nurses of the study, was formulated. The core of the description was the continuum of delirium with the variation of symptoms and symptom severity. The recognition of risk factors and early signs is important in the assessment of delirium. Timely manifestation of the continuum was comprehended as a process with acute onset, duration, and recovery. The acute phase was emphasised, and a preoperative nor a prolonged state did not appear to be relevant. The perspectives of the patient and the nurse were described as their own dimensions because they are in constant interaction with each other. Moreover, patients' compliance with care is decreased by a continuum of delirium. It challenges patients' recovery from surgery and quality nursing care. The clinical context—the care environment—affects all other dimensions (symptoms, symptom severity, risk factors, early signs, the continuum of delirium as a process, patients, their compliance with care, nurses, and nursing care).

5. Discussion

Based on the concept analysis, delirium, subsyndromal delirium, and acute confusion are considered a continuum rather than separate diagnoses or states from a nursing perspective. The term acute confusion might be used when illustrating an early stage of the continuum of delirium. According to the NANDA-I criteria, the term acute confusion could be used before medical diagnostic criteria are met (Guthrie et al., 2018).

Occasionally, acute confusion and delirium are considered unavoidable conditions in elderly patients or results of surgery (Guthrie et al., 2018; Yevchak et al., 2012). It is also possible for other acute medical conditions to cause some symptoms similar to delirium

(Aldecoa et al., 2017). This underlines the importance of recognising risk factors and early signs. Kerr et al. (2013) studied family caregivers' observations about the early signs of delirium during home care. They concluded that the earliest signs were sleep–wake disturbance, incoherent speech, and restlessness. In this study, early signs included confused speech, behaviour, and restlessness. Sleep disturbance was not mentioned as an early sign. Instead, the environment disturbs the patient's sleep and daily routine. Therefore, nurses might not regard sleep disturbance as an early sign.

Notably, there was no mention about preoperative or prolonged delirium in the nurses' descriptions. This confirms the view that a narrow approach to patient care may regretfully dominate in the surgical context. Possibly, nurses misjudge patients' delirium for dementia and, therefore, do not invest in delirium treatment. Moreover, nurses may not understand and recognise the long-term consequences of delirium. Thus, they may act detrimentally and unintentionally contribute to negative outcomes. The European Society of Anaesthesiology postoperative delirium guideline states recommendations for the identification and prevention of delirium in the preoperative phase (Aldecoa et al., 2017). The term postoperative relates to the period after anaesthesia and surgery, as Evered et al. (2018) recommended. Is it possible that the use of the term postoperative delirium leads nurses to focus only on the period after a procedure? Therefore, the discussion of delirium, covering the period before surgery and after the acute phase, should be increased in clinical care and education.

Early recognition and assessment of the continuum of delirium with continual interaction between a patient and a family member with a nurse or other healthcare professionals are the key elements of the quality care for patients with delirium. Shrestha and Fick (2020) stated that family members recognise the symptoms better than patients or healthcare professionals do. In addition, there is evidence that the presence or a participation of a family member in the care of patients with delirium could improve patients' outcomes (McKenzie and Joy, 2020). Thus, improving family members' ability to take part in the patients' care is necessary in the surgical care context.

Patients' compliance with care was an important finding for the fieldwork phase. Nursing encompasses autonomous and collaborative care of individuals in all settings (ICN, 2002). Kitson (2020) highlighted how person-centredness can be achieved and, at the same time, how care can be provided in a systematic way. From the standpoint of this study, a surgical procedure's success and recovery require patient's involvement and an active role in care. The continuum of delirium disturbs patients' participation in care and decision-making abilities, and it modifies the patients' care needs, the nursing practice, and the care environment. Nurses are in constant contact with the patient and perceive the patient's care somewhat differently than do other healthcare professionals who spend less time beside the patient. It is essential to recall that patients with delirium and their family members value kindness and empathy, as well as patient- and family-centred communication and education regarding care and delirium (Boehm et al., 2021).

Based on the study results, nurses should be trained further in the following issues: recognition of delirium and subsyndromal delirium in the pre-, intra-, and postoperative phase; use of formal concepts in describing patients' symptoms; identification and response to immediate and long-term patient and hospital risk factors to minimise negative outcomes; and implementation of best practice care in a surgical context. Training methods could include simulation training when learning how to assess a patient's delirium or how to communicate with such patients. E-learning methods could be used when practicing recognition of delirium symptoms and risk factors. In addition, case-based learning methods directed towards the associated dimensions could be used multiprofessionally in units and organisations when implementing treatment protocols.

Even though the delirium phenomenon is well-studied, there is a gap between research and clinical practice. Prevention and care of patients' delirium requires multiprofessional teamwork, in which all professionals have committed to the best practice guidelines. As Jordan et al. (2019) stated, the feasibility, appropriateness, and meaningfulness are improved when guidelines integrate the results of systematic reviews, clinical expertise, and patient experiences. Thus, to promote implementation of the best practice guidelines, a multidisciplinary organisational implementation plan should be developed in collaboration with the intended users and in the particular practice context (Graham et al., 2011, 12).

Consequently, guidelines provided by experts and societies do not automatically transform into best practices in clinical contexts. The study findings can be used in implementing guidelines. Nurses' enthusiasm to adopt guidelines in practice might be improved, and barriers preventing the adaptation of guidelines could be minimised by considering the associated dimensions in education and by highlighting their impacts on patients' compliance with care and nurse–patient interaction. When the caregivers' mindsets are thoroughly understood, it is easier to motivate them. Along with guideline training and the implementation, it is important that the organisational structures promote professionals' commitments to the continuous performance of the recommendations. Pun et al. (2019) showed that the treatment protocol's performance associated with significantly and clinically meaningful improvements in outcomes, including a reduction in delirium.

5.1. Strengths and limitations

In the theoretical phase, the study's strength was that two independent authors systematically searched and evaluated the data. The research questions guided the article selection. There is a possibility that some high-quality references have not been included in the results, but it is likely that all relevant concepts and dimensions have been contained in the working definition of delirium.

In the fieldwork phase, the strength was that the data was collected from the nurses who worked with patients with delirium in a surgical context. The aim was not to redefine delirium or acute confusion or to assess whether a patient in a story fulfilled the delirium criteria. Consequently, free text stories were applicable data collection methods because they were meaningful to nurses and, thus, adequate for utilisation in this concept analysis. The content analysis was made based on the working definition, and the findings are presented close to the original texts, as Graneheim et al. (2017) recommended. The content was classified according to previous classifications, or by a list of risk factors recommended to present at a low level of interpretation. In addition, the final definition of the

continuum of delirium, as well as its associated dimensions, has been demonstrated at a pragmatic level, which improves the implications for practice.

The study limitations related to the sample, data collection, and analysis, which could decrease the credibility, conformability, and transferability. The number of invited respondents was substantial, with approximately 1500 nurses from several departments and units. The number of invited respondents was this high because the number of nurses who would receive and read the emailed link was unknown. Research has shown that response rates to electronic surveys are substantially low (Korstjens and Moser, 2018). Thus, the aim of this study was to ensure there were enough responses to analyse the data adequately.

Written stories were selected as a data collection method because of their timely benefits. They also served as an appropriate method for receiving descriptions from nurses working in busy units. However, it is unknown what kinds of descriptions the nurses who did not participate in the study would have presented. It is also debatable whether another data collection method, such as interviews or observations, would have been a preferable way to collect answers to the research questions. Via an online survey, it was impossible to ask confirming questions.

The study results are not transferable to all surgical contexts. It demonstrates insight into how nurses from a single large organisation perceived delirium and its associated factors. There were also differences between the units of the organisation in practices and in the use of guidelines and assessment scales. Therefore, nurses' knowledge of the phenomenon of delirium or its consequences and interventions was deliberately not studied.

5.2. Suggestions for further research

More research is necessary to determine and examine the findings of this concept analysis—that is, the continuum of delirium and its role as a process. It would also be crucial to define how nurses perceive the compliance with care or commitment to care among patients with delirium in a surgical context, or how patients' delirium disturbs patients' compliance with care. Additionally, further research is needed in to explore how the fundamental care of patients with delirium is actualized, what factors promote or prevent it, and how the commitment to care in patients with delirium could be enhanced in the surgical context. Going further, it would be exciting to explore how nurses execute interventions in prevention of delirium, how delirium symptoms manifest in patients, and how nurses recognize patients' symptoms in various care environments (e.g., PACU, ICU, or surgical ward). Likewise, it would be interesting to determine how the information regarding patients' suffering from the continuum of delirium is passed on from specialized care to the rehabilitation centre or even to home care.

6. Conclusions

This hybrid concept analysis found that, from a nursing perspective in a surgical context, the three near concepts—delirium, subsyndromal delirium, and acute confusion—manifested as the continuum not as individual diagnoses. The nurses in the study used term confusion inaccurately. The term acute confusion might be used when illustrating an early stage of delirium. According to nurses' descriptions, the continuum of delirium manifests as a process with a beginning, duration, and recovery, in which the early signs are prominent enough to be detected. Patients' compliance with care may be decreased by the continuum of delirium, which might challenge both patients' recovery from surgery and quality nursing care. Nurses could benefit from further education where the theoretical knowledge is combined with the clinical practice. Furthermore, the acute phase of delirium was emphasised and preoperative or prolonged delirium did not seem to be relevant in the nursing care of patients who have undergone surgery. The discussion about the delirium, which covers the time both before surgery and after the acute phase should be increased.

What is already known

- Delirium is a common and multidimensional disorder in patients who have undergone surgery.
- Delirium is defined as medical diagnosis, and acute confusion is used as a nursing diagnosis.
- The care of patients with delirium after a surgical procedure is complex and challenges nursing expertise. While clinical practice guidelines exist, they are not systematically used.

What this paper adds

- This hybrid concept analysis revealed that from the nursing perspective, concepts of delirium, subsyndromal delirium, and acute confusion manifested in patients in a surgical context as a continuum not as individual diagnoses.
- According to the study findings, discussion of delirium, covering the periods before surgery and after the acute phase, should be emphasised in education of delirium and in clinical care.

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Declaration of Competing Interest

None

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Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.ijnsa.2022.100103.

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