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BS ritgerð
í hjúkrunarfræði

Byltur hjá eldra fólki

Hjúkrunargreiningum og -meðferð varpað yfir í ICNP

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HJÚKRUNAR- OG LJÓSMÓÐURFRÆÐIDEILD

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Falls among old people

Nursing diagnoses and interventions mapped in ICNP

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Thesis for the degree of Bachelor of Science

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Byltur hjá eldra fólki: Hjúkrunargreiningum og -meðferð varpað yfir í ICNP

Ritgerð þessi er 10 eininga lokaverkefni til BS prófs í hjúkrunarfræði við Hjúkrunar- og ljósmóðurfræðideild á Heilbrigðisvísindasviði Háskóla Íslands

Ágrip

Bakgrunnur: Byltur eru stórt lýðheilsuvandamál sem við stöndum frammi fyrir á alþjóðavísu og þær eru önnur helsta orsök dauðsfalla af völdum slysa á eftir umferðarslysum (WHO, 2021). Byltur hjá sjúklingum eru algengasta atvikið sem tilkynnt er á Landspítalanum og oftar hjá eldri sjúklingum. WHO skilgreinir byltur sem atburð sem leiðir til þess að einstaklingur lendir óviljandi á jörðinni, byltur geta valdið einstaklingum alvarlegum meiðslum og kostað heilbrigðiskerfið eða stofnanir mikla peninga. Bylta hjá sjúklingi á sjúkrahúsi getur leitt til lengri legutíma, hærri dánartíðni og skertra lífsgæða. Byltuvarnir og meðferð bæði í klínískum og samfélagslegum aðstæðum eru mikilvægt alþjóðlegt verkefni sem þarf að taka á.

Markmið: Að greina áhættuþætti og fyrirbyggjandi aðgerðir vegna byltna sérstaklega meðal eldri einstaklinga. Auk þess að greina hugtök sem skipta máli, sérstaklega hjúkrunargreiningar og hjúkrunarmeðferðir sem og klínískar leiðbeiningar um byltuvarnir, og greina hvort þau hugtök eru til staðar í ICNP.

Aðferðir: Leitað var í gagnreyndum heimildum að mikilvægum hugtökum varðandi hjúkrunarmat, greiningar og meðferðir sem tengjast byltum meðal eldra fólks, bæði í bráðaþjónustu og í samfélagsaðstæðum og var þeim varpað yfir í ICNP flokkunarkerfið. Notuð voru 4 stig við vörpun með það í huga að komast að því hvort valin hugtök fundust eða fundust ekki í ICNP hugtökum.

Niðurstöður: Valdar voru 60 hjúkrunargreiningar (n) og 73 mögulegar hjúkrunarmeðferðir (n) í byltuvörnum og meðferð fyrir eldra fólk eftir að heimildir höfðu verið rýndar. Af 60 hjúkrunargreiningum sem varpað var yfir í ICNP 2022 útgáfu, voru alls 60% (n=36) sem vörpuðust fullkomlega, 30% (n=18) vörpuðust merkingarlega, 1,67% (n= 1) vörpuðust að hluta og 8,33 % (n=5) pössuðu ekki inn í ICNP hugtökin. Af 73 mögulegum hjúkrunarmeðferðum vörpuðust 47,95% (n=35) að fullu eða fullkomlega í ICNP hugtökin, 19,18% (n=14) vörpuðust merkingarlega og 13,70% (n=10) vörpuðust að hluta. Fjórtán hjúkrunaraðgerðir (19,18%) pössuðu ekki við ICNP 2022 útgáfuna.

Ályktun: Fjölmargar gagnreyndar klínískar leiðbeiningar hafa verið þróaðar í byltumati, forvörnum og meðferð. Hjúkrunarfræðingar gegna mikilvægu hlutverki í byltuvörnum og meðferð fyrir eldra fólk bæði í klínískum og samfélagslegum aðstæðum. Verulegur hluti af völdum hjúkrunargreiningum og gagnreyndum hjúkrunarmeðferðum höfðu fullkomna eða mekingarlega vörpun í ICNP.

Lykilorð: Byltur, byltuvarnir, eldra fólk, ICNP, vörpun, hjúkrunargreiningar, hjúkrunarviðfangsefni, hjúkrunarmeðferðir, hjúkrunarskráning.

Abstract

Background: Internationally, falls are a major public health problem that we are facing, and it is the second leading cause of unintentional injury death, after road traffic injuries (WHO, 2021). Patient falls is the most common incident reported in Landspítali and it mostly affects older patients. WHO defines fall as an event that results in a person coming to rest on the ground or other lower level unintentionally, it can cause serious injury to the patient and can cost a lot of money to the health care sectors or institutions. Injurious falls in hospitalized patients are associated with increased hospital stays and mortality rate, and diminished quality of life. Fall prevention and interventions, in both clinical and community settings, are very critical global issues that need to be addressed.

Objective: To identify the risk factors and preventive measures of falls specially among older patients, as well as to identify fall relevant concepts particularly nursing diagnoses and interventions as well as standard fall prevention guidelines and identify whether ICNP has the concepts needed.

Methods: Significant terms or concepts regarding nursing assessment, diagnosis and intervention related to falls among older people in both acute care and community settings were thoroughly selected from evidence-based literature and mapped to the ICNP classification system. Four stages were used in mapping with the intention to find out if the selected terms or concepts match in the ICNP terminology.

Results: A total of 60 selected nursing diagnoses (n) and 73 possible nursing interventions (n) in fall prevention and intervention among older people were established from reviewed literature. Out of 60 nursing diagnoses that were individually mapped into ICNP 2022 version, a total of 60% (n=36) completely fit, 30% (n=18) semantically fit, 1,67% (n=1) partially fit and 8,33% (n=5) did not fit in the ICNP terminology. Out of 73 possible nursing interventions, a percentage of 47,95% (n=35) completely or perfectly mapped in the ICNP terminology, 19,18% (n=14) mapped semantically, and 13,70% (n=10) mapped partially. Fourteen nursing interventions (n=14) with a percentage of 19,18% did not match in the ICNP 2022 version.

Conclusion: Numerous evidence-based guidelines have been developed in fall assessment, prevention, and interventions. Nurses play an important role in fall prevention and intervention among older people in both clinical and community settings. A significant proportion of our selected nursing diagnoses and evidence-based nursing interventions have the same meaning or were completely compatible with ICNP terminology.

Keywords: Falls, fall prevention, old people, ICNP, mapping, nursing diagnoses, nursing interventions, nursing documentation.

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List of acronyms

FRID	Fall risk increasing drugs
ICN	International Council of Nursing: Alþjóðaráð hjúkrunarfræðinga
ICNP	International Classification for Nursing Practice: Hjúkrunarhugtakaskrá Alþjóðaráðs hjúkrunarfræðinga
WHO	World Health Organization: Alþjóðaheilbrigðismálastofnunin

1 Introduction

According to WHO (World Health Organization), 2021, the second predominant reason for accidental fatalities around the globe is falls. One-third of older people experience a fall at least once each year (Stevens, 2005). Falls and the fear of falling cause people to limit their activities to lower the perceived danger of more falls (Denkinger et al., 2015). The cost of care for older people increases due to fall-related injuries such as hip fractures and head injuries (Centers for Disease Control and Prevention, 2014). Every year, older persons suffer about 40,000 fatal falls in the European Union (EuroSafe, 2016). In the United States, it was predicted that direct fall-related expenses exceeded $31 billion in 2015 (Burns et al., 2016). In Western countries, there has been an alarming rise in the number of fall-related injuries (Nelson & Camilleri, 2016). The primary cause of injury-related mortality among the older people globally is falls, which are second only to traffic accidents (Kramarow, 2015) and they are a significant contributor to injury and death in adults over the age of 65 (Gillespie & Robertson, 2012).

Inactivity-related deconditioning decreased sensory acuity, impaired musculoskeletal, neuromuscular, and/or cardiovascular systems, depression, and low self-efficacy for maintaining balance, polypharmacy, and a variety of environmental factors all contribute to increased fall risk. Identification of people who are most at risk is difficult due to the complex nature of fall risk (Lusardi et al., 2017). Geriatric falls occur when environmental factors unfavorable to elderly safety interact with physical, perceptual, and mental changes brought on by aging (Gillespie & Robertson, 2012). Falls have serious negative effects on older people, such as death and fractures, and they also cause self-doubt, discomfort, restricted mobility, and reliance (Choi & Hector, 2012). Accidental falls among older individuals are common, and they have a negative impact on morbidity and death, making them a global public health concern. Each year, 28-35% of those over the age of 65 fall and this number rises to 32-42% for those over the age of 70 (WHO, 2007). These incidents account for 18% to 40% of visits to emergency rooms and more than 80% of all hospital admissions for injuries among people of the same age. Hip fracture and traumatic brain damage are two of the most severe injuries brought on by falls; the latter is responsible for 46% of fatal falls in older persons (Peel, 2011). The WHO has cautioned that if a fall prevention strategy does not have an immediate effect, the number of injuries brought on by falls will double by 2030 (Kannus et al., 2007).

For the following reasons, the nursing team is particularly crucial in reducing medical incidents:

1.) According to the WHO, the services provided by nurses and midwives are one of the pillars of the system for delivering healthcare; 2.) Most of the patient's treatment orders are given through the nurse; 3.) Nursing professional work is always performed before and after treatment and ensures safe treatment (Chu, 2017). One good vital indicator of a high quality nursing care is a satisfactory nursing documentation (Wilson et al., 2012). The nurses must uphold the topmost quality of documentation to secure that effective and efficient care is always provided (Noureldin et al., 2014). To maintain the continuation of efficient patient care is regarded as a fundamental nursing duty (Asamani et al., 2014) and to enhance the outcomes for patients (Stevenson & Nilsson, 2012). A classification system will be used in the nursing documentation in the Icelandic health care system which was determined by the

Directorate of Health of Iceland and in the year 2010, the office published that the classification system International Classification for Nursing Practice (ICNP) should be used (Embætti landlæknis, 2020). Aiming to improve health status and the provision of healthcare, ICNP categorizes patient data and clinical activity in the nursing area. This classification can be utilized for policy creation and decision-making. Across all health services, ICNP can enhance communication and statistics reporting procedures.

The goal of this thesis is to identify the risk factors and preventive measures of falls especially among older patients, as well as to identify fall relevant concepts particularly nursing diagnoses and interventions as well as standard fall prevention guidelines and identify whether ICNP has the concepts needed.

The following research questions will be answered:

1. What are the most common factors which likely lead to the risk of fall?
2. What are the current nursing diagnoses and interventions which are based on evidence-based practice and are being utilized in the clinical wards and community settings for the prevention of fall?
3. How does the ICNP nursing documentation cover the nursing diagnoses and interventions of patients who are at high risk to fall?

2 Background

A reliable fall risk assessment tool must be relevant to the setting and is able to recognize between the fallers and non-fallers. It must also uphold a high standard and is able to identify the risk factors of falls. A fall risk assessment tool's predictive validity needs to be properly evaluated before implementation (Scott et al., 2007).

Evidence suggests that various multifactorial fall prevention strategies, such as a fall risk assessment tool, have decreased the number of falls in hospitals and long-term care facilities. Though it is challenging to determine the fall risk assessment tool's unique contribution to the fall rate reduction in these multifactorial therapies. Additionally, fall risk assessment tool's that have been created and tested in a specific clinical environment are typically not adaptable to other environments. Researchers advise that fall risk assessment tools be designed and tested within each distinct clinical environment because, for instance, a fall risk assessment tool created for use in a hospital setting typically does not have strong predictive value in long term care (Nunan et al., 2018).

Landspítali is using Morse Fall scale in risk assessment and fall prevention. The Morse Fall Scale (MFS) is a simple and quick method for evaluating a patient's risk of falling. It has predictive validity and is widely used in acute care and long-term care settings. It consists of six quick and easy to score variables. The six variables are as follows: 1.) history of falling within the last 3 months, 2.) secondary diagnosis, 3.) ambulatory aid, 4.) intravenous therapy, 5.) gait, and 6.) mental status (Morse et al., 1989).

2.1 Fall risk assessment

The assessment's goals are to determine the cause of the fall, its outcomes (such as injury, functional limitations, and psychological effects like fears about falling), and any probable fall risk factors that may have contributed to it. A comprehensive geriatric assessment serves as an example of the broad approach needed for an evaluation with the goal of jointly creating an intervention with the older adult. The World Falls Guidelines suggestion outline the evaluations required to pinpoint the most important modifiable risk factors for falls (Montero-Odasso et al., 2022).

Falls in older people, especially those who are vulnerable, should be viewed as a potential warning indication of undiscovered underlying diseases. Acute medical illnesses like pneumonia, especially if they are accompanied by delirium, may occur with a fall as a presenting symptom (Sillner et al., 2019) or myocardial infarction without chest pain (Nazarko, 2009).

2.1.1 Assessment of gait and balance

One good indicator of the risk of fall is impaired walking and balancing (Ganz et al., 2007). In order to select activities that prevent fall, specify the degree of intensity and duration, and track their improvement, the gait and balance assessment tools can be utilized. Factors that may influence in the selection of an assessment of tool will rest on the instruments, materials, area and length of time which is feasible (Montero- Odasso et al., 2022).

The Short Physical Performance Battery comprises deliberate assessments for standing from a sitting position, balance while walking, and change sensitivity in intervention trials (Kwon et al., 2009). Another well-liked option is the TUG, which evaluates standing up from a seated position, marching, and rotating (Shumway-Cook et al., 2000). The non-timed Get Up and Go test yields comparable qualitative data (Mathias et al., 1986). The Floor Transfer Test is a solid and accurate tool in evaluating bodily incapacity, fragility, or physical function (Ardali et al., 2019). Tools like the DEMMI, which incorporate more basic tasks, will be more beneficial for populations with greater impairments (de Morton et al., 2008), it incorporates bed mobility as well. Tools with more harder goals, like the Berg Balancing Scale, can be employed with more able populations (Berg et al., 1992), this also includes twisting, standing on one leg, and getting onto a stool. Evaluations of performance in dual task activities and getting up from the floor may also be helpful. The Chair Stand Test is one of the other assessments used to evaluate gait and balance (Nevitt et al., 1989), such as One Leg Stand (Bohannon, 2006), Functional Reach (Weiner et al., 1992), Dual Task tests (Bandinelli et al., 2006), the Tinetti test/POMA (Tinetti, 1986), the MiniBEST Test (Horak et al., 2009) and the Physiological Profile Assessment Performance test (Lord et al., 2016).

2.1.2 Assessment of medication

Around 40% of older people use five or more prescription drugs (Wilson et al., 2007). Drug toxicity can result from polypharmacy which has the potential to change pharmacokinetics.

The use of numerous medications may raise the risk of falling due to comorbidities brought on by polypharmacy, a higher tendency to utilize fall-risk-increasing drugs, or a higher likelihood of drug-drug interactions. According to Ziere et al. (2006), polypharmacy was only linked to falls in individuals over 55 when at least one of the drugs was a fall-risk-increasing drug. There is compelling evidence that specific drugs used by older persons increase their risk of falling. An organized method that enhances fall risk increasing drugs (FRID) identification, drug assessment, and discontinuing of FRIDs can considerably lower the risk of fall (De Vries et al., 2018).

Because it is necessary to treat multiple aging-related illness conditions, polypharmacy is more common among older adults (Federal Interagency Forum on Aging-Related Statistics, 2012).
Medication interactions, adverse drug events, and administration mistakes can all be brought on by polypharmacy (Salazar et al., 2007).

In a systematic review and meta-analysis done by Seppala et al. (2018), they aimed to examine the relation between the risk of fall and nonpsychotropic and noncardiovascular medications. In the recent years, studies that were published demonstrated a high correlation between opioid usage and the risk of falling and its results. Opioids may make you feel drowsy, lightheaded, or impaired cognitively, all of

which increase your risk of falling. Ask about falls before giving prospective FRIDs to older people and weigh the advantages and disadvantages of starting treatment (Montero- Odasso et al., 2022).

To effectively recognize drug-associated fall hazards in older people, as well as to optimize discontinuation of drugs, drug-review methods like the STOPP/START (O'Mahony et al., 2014), STOPPFall (Seppala et al., 2021), STOPPFrail (Lavan et al., 2017), Beers Criteria (American Geriatrics Society 2019), and FORTA (Pazan & Wehling, 2017) are applicable. A screening method called STOPPFall is designed to find medications that make older people more likely to fall (Seppala et al., 2021).

2.1.3 Assessment of cognition

The chance of falling and suffering injuries from falls, such as hip fractures, arm fractures, and head injuries, doubles in those with dementia and mild cognitive impairment (Tinetti et al., 1988). Even in the absence of a formal diagnosis of dementia or known cognitive impairment, poor executive function in older persons is linked to an increased risk of falling, which justifies the inclusion of cognitive testing in a thorough assessment of all older adults' fall risk (Muir et al., 2012).

For evaluating mental deterioration in medical, investigation and public settings, the Mini Mental State Examination (MMSE) is an extremely well-known and frequently used evaluation method. The MMSE is a 30-point cognitive function assessment that assesses attention and orientation, memory, registration, recall, calculation, language, and the ability to draw a complex polygon. It has a maximum score of 30 and lower scores indicate more severe cognitive issues. The MMSE cut point, which is usually set at 24, defines 'normal' cognitive function (Arevalo-Rodriguez et al., 2021).

Montreal Cognitive Assessment (MoCa) is a screening tool used in assessing cognitive impairment and it is a 30-point test that is given in 10 minutes. It assesses short-term memory, visuospatial abilities, executive functions, attention, concentration, and working memory, language, and orientation to time and place (MoCa Cognition, 2023).

The Mini Mental State Examination (MMSE) and the Montreal Cognitive Assessment (MoCA) are the most widely used methods for detecting cognitive impairment in clinical and research settings. According to the study of Jia et al. (2021), MoCA is a better measure of cognitive function because it does not have a limitation and detects cognitive heterogeneity as well. MoCA has a higher prevalence than MMSE. Both tools identify modifiable mild cognitive impairment factors, which provide critical evidence for developing intervention strategies.

The Montreal Cognitive Assessment (MoCA) and the Trail Making Test (TMT) could be employed as global cognitive screening tests because executive dysfunction is significantly linked to falls (Montero-Odasso et al., 2019). To improve execution, it is advised that the employee who administers the cognitive test should be trained.

2.1.3.1 Delirium

Confusion, mental deterioration, and memory loss are separate warning signs for falls in older people in the clinical environment, aged-care institutions, or in the community settings (Cameron et al., 2018). Delivering evidence-based, person-centered care to older persons with these diseases is crucial to preventing falls. Falls are less common when delirium, dementia, and cognitive impairment are properly controlled (Damoiseaux-Volman et al., 2021). For older people with delirium, modifying the surroundings to enhance safety and training carers in safe mobility techniques can also be helpful. Some studies show that training hospital workers will aid in preventing falls among older patients suffering from delirium (Toye et al., 2017; Morris et al., 2022). Mental exercises, constant familiarization, mobilization, ocular and auditory stimulation, nutrition, water balance, bowel movement control, rest, and involvement of loved ones are examples of multi-domain methods that have been demonstrated to lower the risk of delirium (Siddiqi et al., 2016; Ludolph et al., 2020). These approaches should be taken into consideration as part of a complete care plan for older patients in hospitals as there is current evidence that they may reduce falls (Hshieh et al., 2018). While retaining independence and encouraging mobility is crucial, there's a conflict which should be addressed among encouraging of movement and avoiding falls in older people who are very frail (Growdon et al., 2017).

2.1.4 Assessment of cardiovascular status

According to Cronin & Kenny (2010), bradyarrhythmias, carotid sinus hypersensitivity, orthostatic hypotension, vasovagal syndrome, atrial and ventricular tachyarrhythmias, and vasovagal syndrome are the most prevalent cardiovascular causes of falls. Following clinical evaluation, if arrhythmias are suspected, heart monitoring must be considered deliberately (Bhangu et al., 2016; Brignole et al., 2018).

The most frequent explanation of orthostatic hypotension are water loss, drug interactions, dysfunction of the autonomic nervous system, and alpha synucleopathy illnesses like systemic atrophy, Parkinson or dementia. In older people with high blood pressure, it´s also prevalent (Mattace-Raso et al., 2007; Cronin et al., 2010).

When a person experiences vasovagal syncope, but the diagnosis is still questionable, he or she must be referred for a head up tilt examination (Brignole et al., 2018). To assess orthostatic hypotension, a person must lay down for five minutes before a standard blood pressure should be measured. While the person is standing, measure the blood pressure within 40 to 60 seconds. This should be done at a one-minute up to three-minute interval or up to five-minute interval if evidence suggests slowed orthostatic hypotension reaction (Brignole et al., 2018; Juraschek et al., 2022).

2.1.5 Assessment of dizziness and vestibular disorders

Dizziness among older patients who fall is a complaint with varied explanations and frequently has no single identifiable reason. Presyncope and palpable ataxia or unsteadiness may be present thus, a thorough history is very crucial. Moreover, the vestibular system is crucial for maintaining proper posture and gait, and data suggests that individuals who fall, also have a huge percentage of having a vestibular impairment and might suffer from benign paroxysmal vertigo (Hawke et al., 2021). A perceived sensation of dizziness with positional induced cause in younger adults can frequently be used to diagnose these conditions in the medical history. Due to the more diverse symptoms in older persons, diagnosing cases of vestibular dysfunction might be more difficult (Montero- Odasso et al., 2022).

2.1.6 Assessment of vision and hearing

For older people who reside in the community, visual impairment is a major and distinct cause for falls. Around twenty percent of those who aged seventy and above who have visual acuity below 6/12, making visual impairment the third prevailing long-term illness among older people (Bourne et al., 2017). It would be beneficial for older people to wear new eyeglasses with the right prescription rather than the outdated prescription glasses or no glasses at all. This demonstrates the value of routine eye exams for preventing visual impairment and enhancing quality of life. Vision screening should also include contrast sensitivity and depth perception in addition to visual acuity.

Another major and distinct cause for falls in older pople is hearing impairment (Deandrea et al., 2010). Existing vestibular pathology which raises the risk of falls and a decrease in cognitive ability to maintain equilibrium resulting in decreased awareness of space are all potential reasons for the connection of auditory impairment and falls (Jiam et al., 2016). Amplification is a simple and effective treatment for hearing loss, which affects older people more frequently than other conditions (Montero-Odasso et al., 2022).

2.1.7 Assessment of urinary symptoms and incontinence

According to a thorough systematic analysis conducted by Moon et al. (2021), urinary incontinence was strongly related with falls in older people, including both men and women, according to group examinations grounded by participants‘ age and gender.

In older people who have stress urinary incontinence and as well as urgency incontinence, subgroup study revealed a substantial correlation among falls and urinary incontinence (Moon et al., 2021). Moreover, nocturia has been linked to a significant increase in the risk of fractures and risk of falls, in accordance with a current systematic analysis (Pesonen et al., 2020). Anxiety, compulsion, and combined forms of incontinence can be distinguished using the 3IQ questionnaire for incontinence of the urinary tract (Brown et al., 2006).

2.1.8 Assessment of pain

To measure the intensity of pain, it is recommended to use the Visual Analogue Scale (VAS), Verbal Rating Scale (VRS) or Numerical Rating Scale (NRS). The verbal rating scale is a categorical scale that is ordered and provide appropriate option consisting of adjectives. "No pain," "mild pain," "moderate pain," "severe pain," "extreme pain," and the "most intense pain imaginable" form a six-category VRS scale for different levels of pain intensity (Hjermstad et al., 2011). Numeric Rating Scale (NRS) uses numbers to rate pain. It utilizes a predetermined scale and asks patients to verbally assign a number to their pain, label the number with a mark indicating their pain, or even point to the number. The scale ranges from 0 to 10 or 0-100. Zero represents no pain, while 10 or 100 represents the worst possible pain. The visual analog scale (also called visual pain scale) or VAS for short, it instructs the patient to mark a point on a predefined scale to indicate the intensity of their pain. While the VAS is simple to use, it is not as practical as the NRS because it requires good vision, ability, paper, and a pen (European Pain Federation, 2023). A study of Hjermstad et al. (2011) presents that when compared to VAS and NRS, NRS had higher levels of compliance and was the recommended tool in assessing pain intensity due to its higher rates of application, better responsiveness and easy to use.

An identified cause for falling is pain (Deandrea et al., 2010; Stubbs et al., 2014). Older people frequently experience pain symptoms, with more than 60% of them experiencing pain in several areas (Lehti et al., 2021). Arthritis is the prevailing condition which induces pain and a distinct cause for falling (Deandrea et al., 2010). Diabetes complexity, pain related to cancer and post-stroke are some of the chronic illnesses that cause pain in older people (Schwan et al., 2019).

For proper intervention to be determined, a thorough pain assessment is required. Using a pain rating scale intended for older persons, this entails determining its origin, kind (nociceptive, neuropathic), and intensity (Herr, 2011). Due to their inability to communicate properly, older people with mental deterioration has a high risk for inadequate pain assessment and management. The assessment of pain in older people with mental deterioration frequently rely on nurses' perceptions of patients' suffering. Inadequate pain assessment of nurses may be the result of insufficient information and attitudes regarding pain in this population (Ng et al., 2014). The study of Malara et al. (2016) shows that self-report tools alone are insufficient for assessing pain in older people with dementia or cognitive impairment. A multidimensional assessment of pain such as surveillance methods for pain must be utilized in collaboration with self-report instruments.

The Pain Assessment in Advanced Dementia (PAINAD) scale is a tool that is commonly recommended to be utilized when assessing pain in older people with mental deterioration. It is suitable for verbal or nonverbal patients. It evaluates five behavioral indicators of pain: respiration, negative expression, body language, facial expression and the ability to be comforted. Established on a thorough assessment, each of these 5 signs is scored on a scale from zero (doesn´t exist) to two (totally existing), granting a total point ranging from zero to ten (0 = no observable pain to 10 = highest observable pain). The PAINAD scale should be used at least every 4 hours for patients experiencing acute and chronic pain. The PAINAD scale can contribute to lowering the probability of experiencing unrecognized or undiagnosed pain in older adults with dementia when used as part of an integrated technique to pain management (Paulson et al., 2014).

2.1.9 Assessment of the environment

Many falls are influenced by environmental variables. The environmental dangers are affected by the association of an individual's vulnerability to environmental risk factors of falling and their functional strength (Pighills & Clemson, 2021).

An occupational therapist or other clinician with the necessary training can conduct the assessment and consider the person's capacities, attitudes, and as well as the environment's impact on function. Utilizing a tool that has been accepted by wide scope of fall risk assessment, as well as considering the person's functional capacity in connection to their sorroundings, are other essential factors (Gillespie et al., 2012; Clemson et al., 2008). Examine the appropriateness and correct use of any necessary walking aids, making sure that nothing is broken or hazardous.

2.1.10 Assessment of depression

About 10-15% of older people who live in communities have depression, making it a prevalent and significant source of mortality and morbidity. Symptoms may last for years if untreated. Fall risk is influenced by usage of antidepressant medications and depression which is not treated (Deandrea et al., 2010; Van Poelgeest et al., 2021). A meta-analysis revealed a 37% increase in risk that untreated depression has on one's risk of falling (Deandrea et al., 2010).

The relationship between depression and falling is accompanied by a number of complex pathophysiologic mechanisms. Psychomotor delays, deconditioning, irregularities in gait and balance, poor sleep, and attention deficits are major contributing factors. A single person can experience several conditions which often interact and can co-exist at the same time. Moreover, an excessive fear of falling raises the chance of falling in depressed older persons. It has a poor effect on balance and gait, which makes falling more likely. The following are unwanted reactions of fall risk increasing drugs such as antidepressants: cardiac arrhythmias, drowsiness, altered equilibrium, orthostatic low blood pressure, low sodium level in the blood, and Parkinsonism caused by drugs which can lead to falling (Van Poelgeest et al., 2021).

It has long been known that taking antidepressants increases the chance of falling. systematic reviews carried out in 2007 by Hartikainen and colleagues demonstrated a link between antidepressants, such as selective serotonin reuptake inhibitors (SSRIs) and tricyclic antidepressants (TCAs), and falls, yet there was no information on serotonin norepinephrine reuptake inhibitors (SNRIs). Furthermore, there was lack of a comprehensive review of new medicinal drugs, including drugs that are about benzodiazepines and angiotensin-converting enzyme (ACE) inhibitors was limited.

2.1.11 Assessment of nutrition including vitamin D

The multifactorial falls risk assessment includes nutritional factors such as adequate vitamin D intake, serum 25 OH vitamin D levels, substance misuse, and excessive alcohol consumption. Nutritional assessment is a key component of this examination. In older people who live in the community, a recent systematic analysis found a relationship between nutritional health and body mass index (BMI) and the risk of falling. In instance, being undernourished or at danger of malnutrition may make it more likely that you may fall. BMI and the risk of falling exhibited a U-shaped relationship, with the lowest risk of falling being related with BMI values between 24.5 and 30.0. Low nutritional status can cause pathological aging and higher death rates as well as being a complication of underlying morbid illnesses. Those who are underweight or undernourished may both have a higher risk of falling because of sarcopenia, as well as lower functional and clinical status, reduced mobility, and unstable walking. On the other hand, obesity may have a detrimental effect on postural stability, self-sufficiency, and physical activity, all of which may be related to falls (Trevisan et al., 2019). Using established methods, such as the Mini Nutritional Assessment (MNA), one can assess malnutrition (Guigoz, 2006).

2.1.12 Assessment of fracture risk

High morbidity, mortality, and societal costs from the use of medical and social services are all linked to osteoporotic fractures. The likelihood of a fracture can be significantly influenced by both bone fragility and fall risk. In order to prevent fractures in people 65 and older, the European Union Geriatric Medicine Society (EUGMS) recommends the following: 1.) quality education of older people and healthcare providers about lifestyle habits and medical actions to improve bone health and avoid falls; 2.) increased expertise in screening and improving management of older people with fracture risk or high risk of falling in primary and community care as well as institutional settings and 3.) effective coordination across the departments of geriatric medicine (Blain, et al., 2016).

A falls risk assessment should be performed on adults with osteoporosis and low trauma fractures. In many regions, fracture liaison services are now in place to identify persons who have recently fractured, and their mandate should extend to identifying those who are at high risk of falling as well as checking for osteoporosis (Li et al., 2021).

On the other hand, persons identified as having a moderate to high fall risk need to have their bone health evaluated according to regional guidelines. In this context, osteoporosis can be confirmed using bone densitometry, and older persons who are at high risk of fracture can be identified using fracture risk assessment systems like FRAX, Garvan, and QFracture (Masud et al., 2019).

2.2 Fall Prevention

Hospital patient falls are a recurring issue. Nurse managers can help staff members to adopt and put into practice the workable fall prevention strategies based on the best evidence-based research. By involving patients and their family in the fall prevention process, falls can be avoided. Patient participation in fall risk assessment ensures that patients are aware of their fall risks and feel that if they don't follow their fall prevention plan, those risks could lead to a fall. Patients who participate in the creation of the prevention plan are more likely to comprehend what they should and shouldn't do and to work together with the nurse and other members of the care team to implement their plan accurately and consistently. It is possible for nurses to implement a successful and long-lasting fall prevention program with the use of evidence-based tools (Dykes & Hurley, 2021).

Majority of the health care institutional´s attempts to mitigate falls were based on the following: 1.) medication assessment and modification if needed 2.) utilization of the most up-to-date modern medical technology that are relevant in fall prevention 3.) Innovation of health care institutional´s protocols which are guided by evidence based practice 4.) modification of client´s environment and 5.) conducting client´s health education particularly with regards to strategies in fall prevention and intervention. Client´s health education regarding strategies in fall prevention has a significant effects in decreasing the incidence of falls and the number of accidents associated with it. In order to accomplish the desired results in client´s education, it must be incorporated with well designed educational structure and effective instructional methods that will facilitate learning efficiently. Taking advantage of effective and well designed instructional methods in health education will going to contribute to client´s better understanding regarding strategies in fall prevention, thus lowering their own risk of falling during the time of hospitalization (Heng et al., 2020).

Geriatric studies have long ignored the significance of core strength/stability for adequate balance and functional performance in the prevention of falls. Granacher et al. (2013) studies show that maintaining core stability and strength is essential for completing daily tasks successfully as we age. More specifically, a strong and stable core may support greater balance and functional performance in older people as well as more effective use of the lower and upper extremities. Core strength training (CST) and Pilates exercise training (PET) are simple to administer in a group environment or in individual fall-prevention or rehabilitative intervention programs since they require little equipment and space and can be utilized as an alternative or a replacement to typical balance and/or resistance training programs for old people.

2.2.1 Guidelines for fall prevention

There are three major aspects in world guidelines for fall prevention and management. 1.) The identification of fall risk is a conventional method being utilized for assessing an individual's projected likelihood of experiencing falls, thereby enabling the implementation of a comprehensive evaluation and intervention strategy that is commensurate with the level of risk in falling. 2.) Assessment refers to the systematic procedure of pointing out the risk factors associated with falls across various aspects.
3.) The present study focuses on management and interventions, encompassing a diverse range of strategies aimed at preventing falls. These may include recommended treatments or actions that can effectively mitigate the risk of falls and may be implemented either as one intervention or in conjunction with other measures (Montero-Odasso et al., 2022).

Eight recommendations for fall prevention guideline implementation were made based on the studies conducted: The succeding actions must be considered before implementing the guideline: 1.) analyze the present condition with regard to the incidence of falls, persons who are at high risk of falls, and fall preventive interventions; 2.) let the helathcare personnels be familiar with the new guidelines;
3.) determine the objectives and the criterias for measuring the success of the goals; 4.) during the implementation period, include other healthcare workers; and 5.) use various implementation techniques; 6.) use local resources like team meetings or the electronic patient record system; 7.) reflect frequently on the implementation process; 8.) staff should be receptive to new ideas; and 9.) the team should be encouraged to offer suggestions and criticism (Schoberer et al., 2022).

2.2.2 Four P’s in fall prevention and management

One solution proposed to reduce and prevent in-hospital patient falls is hourly rounding of the ward by nursing staff, with the 4P principle applied during these rounds. Pain, Potty, Position, and Periphery are the four Ps. In hospitals, strict codes of procedure for 4Ps rounds have been established. The four P items deal with proper toileting behavior management, pain management of various types and intensities, positioning in the bed or elsewhere in the ward to facilitate risk-free movement and keeping personal items within the patient's reach in an orderly manner (Althobaiti, 2019).

Studies show that to prevent patients from falling, the patient environment could be improved (Kiyoshi-Teo et al., 2017). To address these issues, more proactive rounding should be performed to address the four P's (positioning, personal needs, pain, and placement) and ensure that all call lights are operational and within reach. Additional educational opportunities to promote staff knowledge and awareness of fall prevention protocols, as well as empowering nurses to choose interventions that best meet patients' specific needs and support an interprofessional approach to fall prevention, may be beneficial.

2.3 Management and interventions

2.3.1 Exercise and physical activity interventions

According to studies of Falck et al. (2019), training exercises help improve both physical and cognitive function. Physical training routines must be long enough and intense enough and must be administered in a manner that assures patient safety and takes functional capacities into account.

Professionals with the necessary training who can modify workouts to account for co-morbidities and functional status should be delivering exercise programs. These experts can include physical therapists, kinesiologists, certified physical trainors, or members of other allied medical department. Although it was agreed that this will be challenging in some environments, it should be pointed out that most programs that were successful in studies employed personnel with training. Opportunity to caary on with suitable activities after the program ends is crucial because the profit of the exercise are gone when they are not continued. The programs must be changed to make sure that the intensity of the exercises are suitable if people withdraw because of unrelated health conditions or caring responsibilities. To reach an effective dose, exercise programs might be given in groups, or a personal-based training focused on the individual, or perhaps a combination of the two. It is advised that people who are more vulnerable to falling, such as the older people, be under closer supervision or in smaller groups (Sherrington et al., 2020).

Progressive exercise is required at first, followed by maintenance once a plateau is established. Exercise programs may be more faithfully followed whether done in groups, individually at home, or as a combination of the two. More individual or small-group monitoring may be required for those with more severe cognitive impairment (Di Lorito et al., 2020; Izquierdo et al., 2021).

2.3.2 Concerns about falling and falls interventions

Several therapies, such as exercise interventions (Kendrick et al., 2022), cognitive behavioural therapy (Liu et al., 2018) and occupational therapy (De Coninck et al., 2017) can be successful in lowering fears of falling with small to moderate effects. Recent systematic evaluations showed that, when compared to other interventions, comprehensive exercise interventions in the community had the biggest impact in decreasing fears about falls (Kruisbrink et al., 2022).

Exercise programs are one example of an existing fall prevention strategy that can ease older people's fears about falling. Where possible, interventions from occupational therapy and cognitive behavioral therapy must be acknowledged as a part of a comprehensive fall preventive strategy since they can help people feel less anxious about falling.

2.3.3 Telehealth and technology interventions

Research findings suggest that the utilization of wearable technology, which refers to devices put on the body, for the purpose of monitoring and preventing falls, may prove to be a beneficial approach (Casilari et al., 2021).

A recent systematic review and meta-analysis, which involved 31 studies and 2,500 older people from 17 countries, demonstrated that the combination of physical exercise training and tele-health (phone-based instruction) has resulted in a 16% reduction in the occurrence of falls. Significantly, the meta-analysis revealed that telehealth alone resulted in a reduction of fall risk among older people by 20%, although this outcome did not attain statistical significance (Chan et al., 2021).

According to a recent study, participants who used a wearable device for physical activity monitoring while participating in an exercise program that included resistance or aerobic training fell less frequently than those who did not, indicating higher adherence to the intervention (Harris et al., 2017).

2.3.4 Appropriate use of mobility assistive devices

Mobility devices, such as walkers, canes or wheelchairs, are often utilized by older people to counterbalance for impairments in coordination, equilibrium, physical stamina and sensitivity, as well as an increased risk of falling. Although these devices are sometimes prescribed by a physician and distributed under the supervision of a physical therapist, they are also readily available for purchase by the public (Gell et al., 2015). Research have shown a higher incidence of falls among older people who uses ambulatory-assistive devices, particularly among those who do not use it appropriately without any professional guidance. According to the study of West et al. (2015), it is common for older people to decline in their capacity to walk safely, which increases their risk of falling. As a result, some individuals utilize assistive equipment such as canes or walkers; however, users of such devices do have decreased mobility and a higher risk for fall-related injuries in compared to non-users. In contrast, the study of Gell et al. (2015) shows that the use of mobility devices is not related to an increased risk of falling compared to non-device users.

During activities of daily living, elderly individuals who are not utilizing the walk aid have a greater tendency of falling. Thus, educational techniques must be created to promote the usage of assistive devices by older people who have been evaluated by physiotherapists and found to need such aids. The incidence of falling might be lessened if older users of ambulatory-assistive equipments utilized them during their activities of daily living (Cruz et al., 2020).

Assistive devices and orthoses are beneficial in the multidimensional care of the older people, especially those with osteoporosis. Assistive devices could avoid fragility fractures and enhance independent mobility in patients with or without osteoporotic fractures, while also minimizing the burden on caregivers. However, improper use of assistive devices may increase the likelihood of falls and fall-related injuries; therefore, they must be used correctly to optimize their good effects and limit the chance of adverse outcomes (Iolascon et al., 2021).

The use of bathroom aids, such as bath grab bars, can compensate for age-related physical impairments such as impaired balance, poor coordination, limited range of motion, and diminished muscular strength, allowing older people to bathe safely and independently, and reducing their risk of

falling. To ensure fall prevention among old people, it is recommended that grab bars should be made universally accessible to old people aged 65 years old and above, irrespective of the condition of their health, socioeconomic background, or previous experience with falls (Sveistrup et al., 2006).

2.3.5 Medication interventions

Medication assessment with the aim of not prescribing drugs that increase the risk of falls is a prevalent component of multidomain interventions for fall prevention, which have demonstrated efficacy in reducing the incidence of falls (WHO, 2021).

When implementing a drug review, the following aspects must be considered: older people´s frailty status, underlying health conditions, life expectancy and polypharmacy (Seppala et al., 2021). Health education of older persons, significant others, and health care workers, as well as regular monitoring and documenting, are necessary for the successful implementation of deprescribing treatments to lower the risk of falls in older persons (Seppala et al., 2021; Parekh et al., 2019). Well-educated older individuals who make deprescribing decisions more frequently are the result of shared decision-making. In addition, joint decision-making enhances compliance.

2.3.6 Cardiovascular interventions

There is no single intervention study for orthostatic hypotension in preventing fall, even though several comprehensive fall preventive programs include meausres to cure orthostatic hypotension, such as changing potentially responsible medications, rehydrating, wearing compression clothing, and taking medications (such as fludrocortisone and midodrine). With cautious usage of antihypertensive drugs, adjusted slowly and under close supervision after adjusting the dosage, symptoms of hypertension in older people may be lessened (Montero-Odasso et al., 2022).

In the treatment of syncope, Montero-Odasso et al., 2022 suggest referring to a local syncope guideline e.g. European Cardiac Society Task force on Syncope. Reducing orthostatic low blood pressure has been a part of several multifactorial fall prevention programs that have been beneficial for the prevention of falls (Brignole et al., 2018).

Several cardiovascular risk factors for falls are frequently present. The modifiable cardiovascular risk factors must be cured because it may be challenging to establish clear cause for a single risk factor (Montero-Odasso et al., 2022).

2.3.7 Environmental interventions

The rate of falls and the number of people having a fall can be decreased using interventions to lessen fall risks in and around the house (Clemson et al., 2008).

When the intervention is provided to people who are most at risk of falling, the reductions are the largest. The opportunity for an environmental assessment should be made available to older people who have been identified as having a high fall risk, such as those with severe vision impairment, a history of recent falls, a limitation on activities of daily living, or recent hospitalization due to a fall (Gillespie et al., 2012; Clemson et al., 2008; Chu et al., 2017).

According to Clemson et al. (2008), data from randomized studies also shows that the intervention is more successful when it is highly targeted to falls, the outcome of interest, throughout the home visit, during the assessment process, and during the intervention itself. Also, when provided by an occupational therapist, it is more likely to be successful. Falls can be significantly reduced with the use of home assessment interventions that are thorough, well-focused, have an environmental-fit perspective, and have adequate follow-up.

A strong approach to managing fall hazards in residential settings involves the implementation of a problem-solving methodology that engages participants in identifying and prioritizing potential hazards, as well as education on fall prevention, functional limitations, and associated risk factors. Additionally, an action plan should be developed to address and modify hazardous conditions and behaviors, followed by adequate support and follow-up to ensure successful implementation of alternative changes and improvements (Clemson et al., 2008; Keglovits et al., 2020).

2.3.8 Vestibular interventions

Benign paroxysmal position and vertigo can be effectively treated with particle repositioning (Hilton & Pinder, 2014) and could lower fall rates (Ganança et al., 2010; Jumani & Powell, 2017) yet there is little supporting data. In cases of vestibular impairment, vestibular rehabilitation therapy enhances postural and gait stability (McDonnell & Hillier, 2015) yet the best strategy and its impact on fall rates are still unknown. When vestibular impairment are present, therapeutic measures should always be sought out because the risks of damage are low and the potential for gains in the quality of life are considerable. Although these treatments are inexpensive and may be used in areas with limited resources, they still require trained professionals.

2.3.9 Pain interventions

The risk of falling while exercising is expected to decrease with adequate pain treatment. To reduce the likelihood of adverse events, a customized approach that takes both non-pharmacological and pharmacological choices into account is required (Gloth, 2011). Cognitive behavioral treatment and physical therapy are examples of non-pharmacological methods.

Older people are at risk of both falls and cognitive impairment, and pain assessment in this patient group can be difficult because cognitive impairment reduces their ability to self-report pain. There is still a problem with underutilization of appropriate tools for pain evaluation in this patient group in the emergency department setting, which leads to suboptimal use of analgesics and poorer pain control. Health professionals, including pharmacists, can play a role in encouraging their patients to use standardized pain assessment tools on a regular basis to ensure that analgesics are used appropriately and effectively (Jones et al., 2017).

Certain analgesics, particularly opioids, increase the risk of falling (Virnes et al., 2022). Sedation, orthostatic hypotension, and hyponatremia are three processes through which opioid use in older persons increases the risk of falling. As a result, even while the STOPP/START criteria recommend using opioids in cases of extreme pain or when paracetamol and NSAIDs fail to provide relief (O'Mahony et al., 2014), these potentially harmful impacts need to be foreseen, recognized, and managed. It is best to stay away from weak opioids because the danger of unwanted events may outweigh the benefit. First-line treatments for neuropathic pain include transdermal lidocaine or capsaicin, gabapentinoids, and selective serotonin norepinephrine reuptake inhibitors (Pickering et al., 2016). It is advised to start slowly, progress slowly, and keep an eye on efficacy and side effects when using any pain medication.

Optimizing pain treatment with suitable hydromorphone treatment (starting with a low dose and gradually increasing it) continued to improve mobility, function, and sleep. This demonstrates that even weak older people can benefit significantly from opioid use. Risk of fall was further reduced by the reduction in sedative use (Farrell et al., 2013).

Otago Exercise Programme (OEP) is a program that is established from individualized and comprehensive client´s needs approach which consist of exercises that could be executed at home under the guidance of a licensed physical therapist. This program is established from evidence-based practice that is highly beneficial in management of pain, fall prevention and interventions among older people in community setting. Older people are the target population since they are more likely to experience pain and they are at high risk of falling. A well designed approach that was intended to assist in pain management as an essential component in fall prevention and intervention among older people has been identified in the study conducted by Cederbom & Arkkukangas (2019).

2.3.10 Vision interventions

Falls and injuries are more likely when one's vision is impaired especially in older people. All vision intervention measures, such as ophthalmologic examinations, prescription glasses, and cataract surgery, can be included in fall prevention and management. In preventing falls in the elderly, vision intervention combined with various risk factor assessment and interventions is more effective than other vision combination interventions. In network meta-analysis shows that a single-vision intervention seems to be less effective (Zhang et al., 2015).

Prospective research and randomized controlled trials have found that cataract surgery for the first eye (Harwood et al., 2005) and both eyes (Keay et al., 2022) and encouraging active older folks to forgo using multifocal glasses outside to get optimal safe functional vision (Haran et al., 2010) are successful fall prevention methods. In older people with significant vision impairments, occupational therapy, incorporating home hazard reductions are also successful in preventing falls (Campbell et al., 2005).

Even if therapies including vision testing and new glasses are unquestionably better at helping community-dwelling older persons do better on visual exams, they have not yet been proved to lower the risk of falling (Cumming et al., 2007). In fact, while issuing new prescription glasses, it is advised that optometrists advise their patients of the potential short-term increased fall risk.

2.3.11 Vitamin D and calcium supplement

According to national nutrition recommendations, daily vitamin D supplementation for older people who are thought to be at risk of deficiency should be advised; nevertheless, the data at this time does not support vitamin D supplementation as a general fall prevention strategy.

Compared to older community-dwelling persons with mean 25 (OH) vitamin D levels below 30 ng/ml, vitamin D supplementation of up to 1,000 IU per day had no effect on reducing falls (Michos et al., 2022). The goal is to use it strategically in ways that will be advantageous. The absence of data on 25 (OH) vitamin D levels limits the ability to draw firm conclusions regarding the benefits of vitamin D supplementation in many studies on the topic. Since vitamin D deficiency is more prevalent among the older people and those residing in nursing homes, supplementation is most likely to be beneficial for these groups of people. Given that resident levels are so low, there is evidence that vitamin D can help avoid falls in residential care (Cameron et al., 2018).

It is advisable to take 800-1,000 IU of vitamin D daily for elderly adults who are more susceptible to vitamin D deficiency, in accordance with accepted international recommendations (Cosman et al., 2014). But according to a recent data from the VITAL experiment, taking 2,000 or 4,000 IU per day is not dangerous (LeBoff et al., 2020).

The use of vitamin D supplements by patients, particularly vitamin D3, was shown to reduce the incidence of falls. To prevent falls, a daily vitamin D3 supplement of at least 800 IU per day should be combined with calcium. Furthermore, a daily vitamin D supplement of more than 800 IU per day, co-administered only with calcium, was recommended for fracture prevention (Thanapluetiwong et al., 2020). Studies show that vitamin D alone may not reduce the risk of falls in older people but combining it with calcium does. Vitamin D combined with calcium is an effective and low-cost strategy for reducing falls in older adults, potentially lowering hospitalization, and mortality rates due to falls (Ling et al., 2021).

2.3.12 Avoid the use of physical restraints

Physical restraints are defined as mechanical devices, materials, or equipment that limit the ability to move freely or normal access to one's body. Wrist and ankle restraints, bed rails, lap belts, and chairs with table trays that prevent patients from rising are all examples of physical restraints (Lachance & Wright, 2019). Despite the controversy concerning their use, fall prevention interventions involving physical restraints are still common and considered a basic preventative measure. Bed rails are one of the most used restraint intervention strategies (Marques et al., 2017).

The use of bedrails for fall prevention in older people (those over the age of 65) is controversial. Bed rails are believed to prevent the occurrence of falls by some health care professionals, but many others believe that they are inefficient and dangerous. Bedrails and alternative fall prevention strategies are either effective, dangerous, or have no effect on falls. Patients who climb over bed rails may face a potential safety hazard, as the added height could result in more severe injuries in the event of a fall (Huynh et al., 2021). The study of Lachance & Wright (2019) shows some evidence that implementing a program to reduce restraint use among older patients could reduce average length of stay, improve mobility and activity of daily life outcomes, and decrease the incidence of falls.

Delirium and agitation are the most common conditions that could lead to the demands of the use of physical restraints among older people in acute care settings. Older people who are suffering from delirium and agitation and the use of physical restraints as an intervention are found to be significantly associated with unfavorable hospital outcomes. This may demonstrate the correlation between the use of physical restraints and negative hospital outcomes. The adverse consequences of imposing physical limitations have the tendency to hinder the effectiveness of the therapeutic process and could lead to negative outcomes. Evidence based interventions in dealing with agitation and delirium among older people that does not involve physical restraints may have a better desirable hospital outcomes im comparison to those interventions that involve physical restraints. The factors that are associated with the utilization of physical restraints as an intervention are the following: 1.) it was found to be correlated with older patients; 2.) the tendency was higher towards male patients; 3.) patients with lower educational attainment are more prone to the use of physical restraints; 4.) it is higher among unmarried patients compared to those who are married or in cohabitation; 5.) patients who are suffering from visiual and auditory impairment; 6.) patients who have diminished capacity to perform activities of daily living by their own; 7.) patients with pressure ulcers; 8.) patient suffering from alteration in their level of consciousness; 9.) malnutrition or lack of proper nourishment among patients; 10.) patients who are experiencing pain or discomfort; and 11.) patient with a prior history of fall. The most common reasons for using physical restraints are to prevent therapy innteruptions, problem concerning cognitive functioning, symptoms of behavioral disturbances and as an intervention in fall prevention and management. It is advisable to explore alternative approaches before using physical restraints as a strategy in fall prevention in order to avoid negative hospital outcomes. One study shows that when compared to older people who did not had physical restraints, those who had it exhibited undesirable hospital outcomes. It was characterized by an increased likelihood of experiencing functional impairment during hospitalization, an extended hospital stay and a significant higher overall mortality rate (Chou et al., 2020).

2.3.13 Nursing Interventions

In hospitals and nursing homes, fall prevention is an important nursing task. To provide optimal care, nurses must have access to evidence that has been thoroughly prepared and clearly analyzed. Using guidelines that provide up-to-date, evidence-based knowledge combined with useful clues on fall prevention should help to improve the care of patients who are at risk of falling (Schoberer et al. 2022).

The Fall Tailoring Interventions for Patient Safety (TIPS) tool kit is a nurse-led, evidence-based fall-prevention interventions that uses bedside instruments for conveying patient-specific risk factors for falls and a customized prevention plan. The tool kit equips care team members with the knowledge they need to engage in fall prevention on a regular basis (Dykes et al., 2020).

Implementation of a nurse-led, patient-centered fall-prevention tool kit was associated with lower rates of falls and injurious falls in a nonrandomized controlled trial. The fall-prevention tool kit aided in the identification of patient-specific risk factors and the interventions most likely to prevent a fall. The tool kit's various modalities enable integration into existing clinical workflows in a variety of hospital settings. This tool kit appears to bridge the gap between nursing fall risk assessment, tailored fall prevention interventions, and patient engagement throughout the effective fall prevention procedure (Dykes et al., 2020).

Nurses may consider using a wristband of a specific color which indicates a high risk of falling. The color-coded indication of the patient's fall risk on the wrist band, particularly the use of yellow wrist bands for patients with a grade 3 risk of falling, is critical. Furthermore, the display of precautionary measures in the electronic medical record was standardized, and these measures must also be shown on a bedside label to highlight the danger of a fall (Kobayashi et al., 2017).

Nurses and assistant nurses must answer the call light as soon as possible. One of the patients' major safety concerns during their hospital stay was a lack of nurses available to assist them when necessary. Lower fall rates were associated with faster call light response time. Units with lower total fall rates were associated with a higher percentage of effective nursing hours given by registered nurses. Hospital and nursing managers should consider strategizing fall and injurious fall prevention efforts by aiming for a decrease in staff response time to call lights for practical relevance. Regularly monitoring call light response time is advised and could be incorporated into evidence-based practice guidelines for fall prevention (Tzeng et al., 2012).

Patients in inpatient medical-surgical care settings benefit from hourly rounding by nurses. The percentage of patient falls decreases as the rate of hourly nursing staff rounding increases. Patients express greater satisfaction with their service care, nursing care quality improves, and falls related to independent activity of daily living performance decrease. Providing incentive programs for rounding helps to improve nurse compliance. Hourly rounding induces additional costs for nursing care on medical surgical units, but it saves the hospital money on inpatient injury recovery. Hourly rounding is a successful intervention for lowering patient fall rates in acute care settings (Manges et al., 2020). In Landspítali, nurses are encouraging patients who are at high risk of falling to use orange non-slip socks. One of the primary risk factors for falling is a lack of grip or friction between the footwear or foot and the underlying surface, footwear provision has been included as a point of good practice and as a common component of successful multifactorial interventions. In the study conducted by Hübscher et al. (2011),

they found out that non-slip socks can provide adequate slip resistance during ambulation. Providing adequate footwear is currently considered best practice treatment, hospital inpatients should be encouraged to ambulate in appropriate shoes where possible and otherwise wear non-slip socks instead of conventional socks or slippers.

Nurses' role in patient education is one of the important strategies in fall prevention programs. The objective of patient education is to raise a person's awareness of his or her personal falls risk and to give them appropriate techniques for avoiding falls during their stay in the hospital. It must include patient health education about fall risks and prevention; and patient-centered learning materials such brochures or pamphlets. The study of Heng et al. (2020), suggests that hospital-based intervention in fall prevention and management which incorporate health education to increase patient awareness and knowledge in fall prevention can lead to potential capacity in mitigating the incidence of falls and its accompanying complications. The acquisition of positive outcomes in health education can be influenced by various factors such as: 1.) well designed instructional strategies; 2.) method of teaching that is in accordance to client´s strengths and weaknesses; and 3.) taking advantage in the advancement in technology that will facilitate greater accessibility to client´s educational materials. Well-designed education programs may enhance patients' understanding and risk perception, allowing them to reduce their likelihood of falling during their stay in the hospital.

It is very important for nurses to document fall incident reports to improve patient safety by taking action to prevent similar future incidents. Incident documentation is the most common method for collecting datas on falls due to accidents in the hospital for research and quality measurement purposes. Educating hospital employees with knowledge regarding the objective of incident reporting and its benefits in reducing future falls may enhance incident reporting processes (Haines et al., 2008).

For residents in the nursing homes who have cognitive impairment or suffering from delirium, nursing staff may secure bed and chair alarms when they get up without any help or assistance. Mileski et al. (2019) conducted research on alarming and/or alerting devices and their potential effectiveness in reducing falls in long term care facilities. The long-term care industry adopted this innovation in the hope that it would improve resident care and reduce costs associated with falls. Overall, it appears that the use of alarms can help with the care of nursing facility residents could be very beneficial in ensuring patient safety.

2.4 Nursing documentation

Nursing professionals are responsible for administering direct care to patients, and a significant portion of their workday may be dedicated to documenting the care provided to clients, with estimates suggesting that up to 33% of their time may be spent on this task. It is essential that the client's record encompasses the entirety of the duration of nursing process duration and accurately reflects the client's current and ongoing condition. The nursing documentation ought to include nursing assessment, diagnoses, interventions and outcomes (Berman et al., 2016). A nursing responsibility that guarantees practice accountability is the documentation of care. Within a legal, ethical, and professional context, nursing and midwifery regulating agencies (such as the American Nurses Association (ANA, 2010) and Nursing and Midwifery Council (NMC, 2015) highlight the significance of accuracy and current patient records.

Electronic health records are the digital version of a patient paper chart, and it contains the record of the clinical and administrative interactions between a practitioner and a patient during patient care in an acute or long-term setting (Ambinder, 2005). Electronic Health Records have been introduced in healthcare settings, and nurses must successfully utilize the data stored in these records to support their evidence-based practice and ensure the highest quality of care and patient safety in a fast-paced environment (Luo & Young, 2020). The utilization of standardized classifications of concept and terminology that will define nursing assessment, nursing diagnosis, nursing intervention and nursing outcome which are being used by nurses worldwide can offer several advantages. For nursing profession to receive recognition for its contribution to the well-being of clients worldwide, it is imperative that client improvement is grounded on established high quality standards in the practice of nursing profession. This pertains to the utilization of criteria that are standardized, unified, readily apparent and well established from evidence-based practice in nursing (Berman et al., 2016). The International Council of Nurses created the International Classification for Nursing Practice (ICNP) to provide a standardized vocabulary for recording the assessments and interventions of nurses worldwide. ICNP also provides a platform for the electronic exchange of nursing data and international comparison of nursing practice (International Council of Nurses, 2023).

The International Health Terminology Standards Development Organization created Systematized Nomenclature of Medicine- Clinical Terms (SNOMED CT). Its objective is to facilitate the safe, accurate, and efficient transmission of health information. SNOMED CT is the world's most detailed and precise multilingual health terminology. It has been and will continue to be developed cooperatively to satisfy the different requirements and aspirations of the global medical community. It facilitates the exchange of electronic clinical health information (IHTSDO, 2023). In August 2020, SNOMED International and the International Council of Nurses (ICN) joined forces and SNOMED International will manage, produce, disseminate, and distribute the International Classification for Nursing Practice (ICNP) under a ground-breaking arrangement. SNOMED International has included ICNP data into SNOMED CT and is publishing it as a reference set on behalf of ICN (ICN, 2020).

The World Health Organization accepted ICNP within the WHO-FIC (Family of International Classification) to expand the scope of nursing practice as an integral and complementary component of professional health services. ICNP identifies patient information and clinical activity in the field of nursing

and can be utilized for policy creation and decision-making targeted at enhancing health status and health care delivery systems (WHO, 2023).

ICNP is widely utilized as the terminology element of electronic record systems. Health record systems that are illustrated in ICNP are expected to provide services that enable the entry, storage, and retrieval of ICNP entities. These systems may also be necessary to provide amenities that enable ICNP organizations to communicate with one another (International Council of Nurses, 2020). There are a lot of International Council accredited ICNP research and development centers that help with the development of ICNP all over the world and it includes the ICNP Research & Development Centre in Iceland (ICN, 2023). Its mission is to construct a network of nurses, health care and educational institutions, and other Icelandic stakeholders to establish, translate, promote, and apply the International Classification for Nursing Practice (ICNP) in nursing education, research, and practice (ICNP Research & Development Centre in Iceland, 2023).

3 Methodology

In this research, we did literature review about fall assessment, prevention, and intervention among older people in acute care settings as well in community settings. We used literature review about fall assessment, prevention, and intervention to build a foundation for our studies by seeking and finding information and summarizing the current evidence available that is relevant to our study. We categorized and selected significant terms or concepts from the information that we gathered and mapped it to ICNP terminology. We wanted to identify whether our selected concepts are illustrated or not illustrated in ICNP.

ICNP is based on a systematic foundation that maintains terminology uniformity. The international council of nurses is using ICNP in ensuring that nursing is effectively represented in interdisciplinary terminologies through its collaboration with WHO and SNOMED International. This will assist healthcare professionals and health authorities in identifying health needs, targeting resources, and monitoring results more efficiently. One of the goals of the ICNP is to promote the appropriate transformation of information between terminologies, thus ensuring safety and quality in the nursing profession (ICN, 2018). After thorough deliberation, we ended up selecting the most appropriate and significant nursing assessment, diagnosis, and intervention about falls among older people and independently mapped it into ICNP. We searched in both ICNP 2022 versions which can be found in their website of the international council of nurses (ICN, 2023) and in the Microsoft Excel document from Ásta Thoroddsen, professor and director of ICNP-Research & Development Centre in Iceland. One of the main goals of ICNP-Research & Development Centre in Iceland is to have an accessible Icelandic translation of ICNP and to integrate ICNP in nursing practice in all Icelandic health care institutions, thus incorporating it into the electronic health record (ICNP Research & Development Centre in Iceland, 2023).

Four stages were used for the mapping of nursing diagnoses and nursing interventions in ICNP 2022 version. We used the mapping techniques that were established from the article study by Thoroddsen, Rúnarsdóttir & Örlygsdóttir (2023).

Stage 1: Complete fit: The terms/concepts in the intended terminology and the ICNP were same.

Stage 2: Semantical fit: The terms/concepts that were selected were similar and were considered having the same meaning in the ICNP.

Stage 3: Partial fit: The meaning of the terms/concepts were insufficiently compatible and might have been either broader or more specific.

Stage 4: No fit: No terms/concepts in the selected terminologies match in the ICNP terminology.

4 Results

This study sought to answer three research questions: What are the most common factors which likely lead to the risk of fall? What are the current nursing interventions which are based on evidence-based practice and are being utilized in the clinical wards and community settings for the prevention of fall? How does the ICNP nursing documentation cover the nursing diagnoses and treatment of patients who are at high risk to fall?

1. What are the most common factors which likely lead to the risk of fall?
After gathering numerous informations and summarizing our review of the literature , we found and selected terms and concepts about nursing diagnosis and most common factors which likely lead to the risk of fall. We classified those nursing diagnoses and risk factors into 14 categories as follows:
1.) byltur; 2.) þekking; 3.) virkni og hvíld tengd byltum; 4.) lyfjatengdir þættir og byltur; 5.) andleg líðan tengd byltum; 6.) vitræn geta tengd byltum; 7.) óráð tengd byltum; 8.) hjarta og blóðrás tengd byltum; 9.) skynjun tengd byltum; 10.) truflun á þvagútskilnaði tengd byltum; 11.) líkamleg líðan tengd byltum; 12.) umhverfislegar ógnir tengdar byltum; 13.) næring og vökvajafnvægi tengd byltum; and *14.) fíkn og byltur* (see table 1).

2. What are the current nursing diagnoses and interventions which are based on evidence-based practice and are being utilized in the clinical wards and community settings for the prevention of falls?
Out of this 14 categories we were able to identify the total of 60 nursing diagnoses and common factors which likely lead to the risk of fall. Under *byltur* are a total of five possible nursing diagnoses (8,33%), two under *þekking* (3,33%), eight under *virkni og hvíld tengt byltum* (13,33%), four under *lyfjatengdir þættir og byltur* (6,66%), three under *andleg líðan tengd byltum* (5,00%), six under *vitræn geta tengd byltum* (10,00%), three under *óráð tengt byltum* (5,00%), seven under *hjarta og blóðrás tengt byltum* (11,67%), four under *skynjun tengd byltum* (6,66%), four under *truflun á þvagútskilnaði tengt byltum* (6,66%), two under *líkamleg líðan tengd byltum* (3,33%), four under *umhverfislegar ógnir tengdar byltum* (6,66%), six under *næring og vökvajafnvægi tengd byltum* (10,00%), and two under *fíkn og byltur* (3,33%) (see table 1).

After a reviewing the literature, we found and selected 9 groups of relevant nursing interventions in fall prevention among older people as follows: *1.) varnir gegn byltum; 2.) heilbrigðisfræðsla; 3.) æfingar; 4.) notkun hjálpartækis; 5.) lyfjameðferðir; 6.) meðferð fyrir útfall hjarta/vökvaskortur; 7.) meðferð tengd umhverfi; 8.) verkjastjórnun; 9.) meðferð eftir byltu.* Out of these 9 groups of nursing interventions we were able to identify a total of 73 nursing interventions which are established from evidence-based practice in nursing. Within *varnir gegn byltum* are a total of eighteen possible nursing interventions (24,66%), ten within *heilbrigðisfræðsla* (13,70%), thirteen within *æfingar* (17,81%), six within *notkun hjálpartækis* (8,22%), six within *notkun lyfjameðferðar* (8,22%), five within *meðferð fyrir útfall hjarta/vökvaskortur* (6,85%), four within *meðferð tengd umhverfi* (5,48%), eight within *verkjastjórnun* (10,96%), and three within *meðferð eftir byltu* (4,11%) (see table 2).

3. How does the ICNP nursing documentation cover the nursing diagnoses and interventions of patients who are at high risk to fall?

A total of 60 nursing diagnoses (n) were individually mapped into the ICNP 2022 version. The complete fit was total of 60% (n=36), semantical fit was 30% (n=18), partial fit was 1,67% (n=1) and no fit or terms/concept doesn´t match in ICNP terminology was 8,33% (n=5). Most of the selected terms and concepts about nursing diagnosis among old people who are at high risk to fall have exactly the same meaning in ICNP terminolgy with the highest percentage of 58,33%. A total of 73 nursing interventions (n) were individually mapped into ICNP 2022 version. The complete fit was 47,95% (n=35), semantical fit was 19,18% (n=14), partial fit was 13,70% (n=10) and no fit was 19,18% (n=14). Most of our selected nursing interventions in fall prevention among older people have the same meaning or completely fit in the ICNP terminology (see tables 1, 2, 3 and 4).

The result of the mapping among the selected nursing diagnoses and the result of mapping of the selected possible nursing interventions are roughly similar. The complete fit has the highest percentage in both nursing diagnoses and interventions that were mapped into the ICNP 2022 version. This result shows that the ICNP nursing classification covers most of the relevant terms and concepts regarding nursing diagnoses and interventions in fall prevention among old people in both clinical and community settings.

Tafla 1. Vörpun hjúkrunargreininga yfir í flokkunarkerfið ICNP

Efnisþáttur (Flokkun hjúkrunargreininga)	Hjúkrunargreining	ICNP	Vörpunarþrep
Byltur	Bylta	Bylta- 10029405	1
	Hætta á byltu	Hætta á byltu- 10015122	1
	Hætta á skaða vegna byltu	Hætta á skaða vegna byltu- 10038521	1
	Hætta á áverka	Hætta á Áverka- 10015360	1
	Hætta á beinbrotum	X**	4
Þekking	Ónóg þekking á byltuvörnum	Ónóg þekking á byltuvörnum- 10040230	1
	Ónóg þekking á lyfjameðferð	Ónóg þekking á lyfjameðferð- 10021941	1
Virkni og hvíld tengd byltum	Svefntruflun	Svefntruflun- 10027226	1
	Magnleysi	Magnleysi- 10000695	1
	Skert líkamleg hreyfigeta	Skert Hreyfigeta- 10001219	1
	Skert göngugeta	Skert göngugeta- 10001046	1
	Skert jafnvægi	Skert jafnvægi- 10047170	1
	Svimi	Svimi- 10045584	1
Vörpunarþrep: 1 = Fullkomin vörpun, 2 = Merkingarleg vörpun, 3 = Vörpun að hluta, 4 = Engin samsvörun við ICNP. **Ekki hægt að búa til hjúkrunargreiningu í ICNP			

Efnisþáttur (Flokkun hjúkrunargreininga)	Hjúkrunargreining	ICNP	Vörpunarþrep
Framhald: Virkni og hvíld tengd byltum	Skert geta til að hreyfa sig í rúmi	Skert geta til að hreyfa sig í rúmi- 10001067	1
	Hætta á skertu athafnaþreki	Hætta á Skertu athafnaþreki- 10015011	1
Lyfjatengdir þættir og byltur	Fjöllyfjanotkun	Fjöllyfjanotkun- 10030042	1
	Hætta á fjöllyfjanotkun	Hætta á fjöllyfjanotkun- 10027453	1
	Aukaverkanir lyfja	Hætta á aukaverkun lyfs- 10037604	2
	Milliverkanir lyfja	Hætta á óæskilegum lyfhrifum- 10042737	2
Andleg líðan tengd byltum	Kvíði	Kvíði- 10000477	1
	Ótti	Ótti- 10000703	1
	Þunglyndi	Depurð- 10022402	2
Vitræn geta tengd byltum	Óáttun	Óáttun- 10001235	1
	Léleg einbeiting	Einbeitingarskortur- 10051517	2
	Hegðunarbreytingar	Hegðunarvandi- 10029716	2
	Skert athygli	Skert athygli- 10051501	1
	Truflun á hugsanaferli	Truflun á hugsanaferli- 10000669	1
	Skert minni	Skert minni-10001203	1
Vörpunarþrep: 1 = Fullkomin vörpun, 2 = Merkingarleg vörpun, 3 = Vörpun að hluta, 4 = Engin samsvörun við ICNP. **Ekki hægt að búa til hjúkrunargreiningu í ICNP			

Efnisþáttur (Flokkun hjúkrunargreininga)	Hjúkrunargreining	ICNP	Vörpunarþrep
Óráð tengt byltum	Bráðarugl	Bráðarugl- 10000449	1
	Hætta á bráðarugli	Hætta á bráðarugli- 10023874	1
	Óráð	Hætta á óráði- 10022070	2
Hjarta og blóðrás tengt byltum	Minnkað útfall hjarta	Minnkað útfall hjarta- 10025557	1
	Hjartsláttartruflanir	Skert starfsemi hjarta- 10037305	2
	Hægsláttur	Hægsláttur- 10027274	1
	Hraðsláttur	Hraðsláttur- 10027288	1
	Breyting á blóðþrýstingi	Breyting á blóðþrýstingi- 10022954	1
	Hætta á truflaðri starfsemi hjarta	Hætta á truflaðri starfsemi hjarta- 10037314	1
	Skert meðvitund tengt hjartsláttartruflunum	X**	4
Skynjun tengd byltum	Trufluð skyntilfinning	Skynskerðing- 10022730	2
	Sjónskerðing	Sjónskerðing- 10022748	1
	Heyrnarskerðing	Heyrnarskerðing- 10022544	1
	Erfiðleikar við skynjun umhverfis	Breytt skynjun- 10001242 + Umhverfisöryggisvandi- 10029856	3
Vörpunarþrep: 1 = Fullkomin vörpun, 2 = Merkingarleg vörpun, 3 = Vörpun að hluta, 4 = Engin samsvörun við ICNP. **Ekki hægt að búa til hjúkrunargreiningu í ICNP			

Efnisþáttur (Flokkun hjúkrunargreininga)	Hjúkrunargreining	ICNP	Vörpunarþrep
Truflun á þvagútskilnaði tengt byltum	Truflun á þvagútskilnaði	Truflun á þvaglátum- 10021790	2
	Stöðugur þvagleki	Stöðugur þvagleki- 10026807	1
	Álagsþvagleki	Álagsþvagleki- 10026797	1
	Bráðaþvagleki	Bráðaþvagleki- 10026811	1
Líkamleg líðan tengd byltum	Verkur	Verkur- 10023130	1
	Óþægindi	Óþægindi- 10023066	1
Umhverfislegar ógnir tengdar byltum	Hætta á skaða tengt óöryggi í umhverfinu	Umhverfisöryggisvandi- 10029856	2
	Ófullnægjandi aðstæður á heimili	X**	4
	Ófullnægjandi notkun hjálpartækja	X**	4
	Skortur á heimaþjónustu	Skortur á samfélagsþjónustu- 10046774	2
Næring og vökvajafnvægi tengt byltum	Næring minni en líkamsþörf	Næringarinntekt minni en líkamsþörf- 10025519	2
	Hætta á neyslu næringar umfram líkamsþörf	Næringarinntekt meiri en líkamsþörf- 10025535	2
	Hætta á elektrólýtaójafnvægi	Elektrólýtaójafnvægi- 10033541	2
	Blóðnatríumlækkun	X**	4
Vörpunarþrep: 1 = Fullkomin vörpun, 2 = Merkingarleg vörpun, 3 = Vörpun að hluta, 4 = Engin samsvörun við ICNP. **Ekki hægt að búa til hjúkrunargreiningu í ICNP			

Efnisþáttur (Flokkun hjúkunargreininga)	Hjúkrunargreining	ICNP	Vörpunarþrep
Framhald: Næring og vökvajafnvægi tengt byltum	Offita	Yfir kjörþyngd-10027300	2
	Vessaþurrð	Vefjaþurrkur- 10041882	2
Fíkn og byltur	Of mikil áfengisneysla	Áfengisfíkn- 10041347	2
	Fíkniefnaneysla	Vímuefnanotkun-10022268	2
Vörpunarþrep: 1 = Fullkomin vörpun, 2 = Merkingarleg vörpun, 3 = Vörpun að hluta, 4 = Engin samsvörun við ICNP. **Ekki hægt að búa til hjúkrunargreiningu í ICNP			

Tafla 2. Vörpun gagnreyndra hjúkrunarmeðferða tengdum byltum yfir í flokkunarkerfið ICNP

Efnisþáttur	Hjúkrunarmeðferð	ICNP	Vörpunarþrep
Varnir gegn byltum	Meta hættu á byltum	Meta hættu á byltum-10023520	1
	Meta hættu á byltum við innlögn	Meta hættu á byltum við innlögn- 10037435	1
	Meta þekkingu á byltuvörnum	Meta þekkingu á byltuvörnum- 10039780	1
	Eftirlit með öryggi sjúklings	Framkvæma öryggisáætlun-10036565	2
	Hafa eftirlit með byltuhættu	Hafa eftirlit með byltuhættu- 10037442	1
	Meta ef þarf aðstoð á salerni	Meta þarfir- 10033368 + Aðstoða við salernisferð-10023531	3
	Regluleg aðstoð við salernisferðir	Aðstoða við salernisferð-10023531	2
	Bjóða salernisferð fyrir gjöf á svefnlyfjum	Hvetja- 10012242 + Aðstoða við salernisferð-10023531 + Gefa lyf-10025444	3
	Nota byltuvarnarsokka	X**	4
	Tryggja að hjálpartæki sé við rúm sjúklings	X**	4
	Tryggja að bjalla sé til staðar	X**	4

Vörpunarþrep: 1 = Fullkomin vörpun, 2 = Merkingarleg vörpun, 3 = Vörpun að hluta, 4 = Engin samsvörun við ICNP. **Ekki hægt að búa til hjúkrunarmeðferðir í ICNP

Efnisþáttur	Hjúkrunarmeðferð	ICNP	Vörpunarþrep
Framhald: Varnir gegn byltum	Svara bjöllu eins fljótt og hægt er	X**	4
	Meta þörf á öryggisbúnað	Meta þarfir- 10033368 + Setja öryggisbúnað á- 10002472	3
	Nota öryggisbúnað	Setja öryggisbúnað á- 10002472	2
	Setja upp rápskynjara/ bjöllumottu ef þarf	Viðhalda byltuviðvörun- 10041525	2
	Forðast notkun rúmgrinda báðum megin við sjúkling	X**	4
	Næturljós við rúm sjúklings	X**	4
	Merkja byltuhættu á töflu sjúklings	X**	4
Heilbrigðisfræðsla	Meta vilja til að læra	Meta vilja til að læra- 10002781	1
	Fræða sjúkling um byltu	Fræða sjúkling-10033126 + Sýna byltuvarnir- 10040248	3
	Fræða sjúkling um varnir gegn byltum	Fræða um byltuvarnir- 10040253	1
	Fræða fjölskyldu um byltuvarnir	Fræða fjölskyldu um byltuvarnir- 10040269	1
	Fræða fjölskyldu um skert hugarstarf	Fræða fjölskyldu um skert hugarstarf- 10051059	1
Vörpunarþrep: 1 = Fullkomin vörpun, 2 = Merkingarleg vörpun, 3 = Vörpun að hluta, 4 = Engin samsvörun við ICNP. **Ekki hægt að búa til hjúkrunarmeðferðir í ICNP			

Efnisþáttur	Hjúkrunarmeðferð	ICNP	Vörpunarþrep
Framhald: Heilbrigðisfræðsla	Fræðsla um notkun hjálpartækis	Fræða um notkun hjálpartækis- 10040909	1
	Fræðsla um ráðlagða virkni/þjálfun	Fræða um gönguæfingar- 10037461	2
	Meta viðbrögð við kennslu	Meta viðbrögð við kennslu- 10024279	1
	Fræða um heimilisöryggi	Fræða um heimilisöryggi- 10032960	1
	Meta þörf á öryggisbúnað	Meta þarfir- 10033368 + Setja öryggisbúnað á- 10002472	3
Æfingar	Aðstoða við göngu	Aðstoða við göngu- 10038986	1
	Aðstoða við göngu með hjálpartæki	Aðstoða við göngu með hjálpartæki- 10036520	1
	Aðstoða við hreyfingu	Aðstoða við hreyfingu- 10036508	1
	Eftirlit við göngu	Fylgja sjúklingi- 10042613 + hreyfing- 10012274	3
	Gönguæfingar	Þjálfa sjúkling- 10051305 + hreyfing- 10012274	3
	Efling líkamsþjálfunar	Hvetja til jákvæðrar staðfestingar- 10024377 + Þjálfa sjúkling- 10051305	3
	Jafnvægisæfingar	X**	4
	Styrktarþjálfun	X**	4
Vörpunarþrep: 1 = Fullkomin vörpun, 2 = Merkingarleg vörpun, 3 = Vörpun að hluta, 4 = Engin samsvörun við ICNP. **Ekki hægt að búa til hjúkrunarmeðferðir í ICNP			

Efnisþáttur	Hjúkrunarmeðferð	ICNP	Vörpunarþrep
Framhald: Æfingar	Teygjuæfingar	X**	4
	Stuðla að líkamlegri hreyfingu	Stuðla að líkamlegri hreyfingu- 10037379	1
	Stuðla að því að ráðleggingum um þjálfun sé fylgt	Stuðla að því að ráðleggingum um þjálfun sé fylgt- 10041628	1
	Sjá um þjálfunaráætlun	Sjá um þjálfunaráætlun- 10023890	1
	Vísa í sjúkraþjálfun	Vísa í sjúkraþjálfun- 10024019	1
Notkun hjálpartækis	Meta þörf á hjálpartæki	X**	4
	Meta þörf á gönguhjálpartæki	Meta þarfir- 10033368 + Aðstoða við göngu með hjálpartæki- 10036520	3
	Leiðbeina um notkun hjálpartækni	Fræða um notkun hjálpartækis- 10040909	2
	Meta þörf á heimilisathugun	Meta ástand húsnæðis- 10030625	2
	Vísa í íðjuþjálfun	Vísa í íðjuþjálfun- 10026415	1
	Vísa á hjálpartækjaþjónustu	Vísa á hjálpartækjaþjónustu- 10044554	1
Vörpunarþrep: 1 = Fullkomin vörpun, 2 = Merkingarleg vörpun, 3 = Vörpun að hluta, 4 = Engin samsvörun við ICNP. **Ekki hægt að búa til hjúkrunarmeðferðir í ICNP			

Efnisþáttur	Hjúkrunarmeðferð	ICNP	Vörpunarþrep
Lyfjameðferð	Fræða um lyf	Fræða um lyf- 10019470	1
	Lyfjagjafir	Gefa lyf- 10025444	1
	Lyfjaumsjón	Hafa umsjón með lyfjameðferð- 10023888	1
	Meta aukaverkun lyfja	Hafa eftirlit með aukaverkun lyfja- 10043884	1
	Meta fylgikvilla lyfja	X**	4
	Fræða um aukaverkanir lyfs	Fræða um aukaverkanir lyfs- 10044614	1
Meðferð fyrir minnkað útfall hjarta/ vökvaskortur	Mæla réttstöðublóðþrýsting	Mæla blóðþrýsing- 10031996	2
	Mæla vökvainntekt	Mæla vökvainntekt- 10039245	1
	Umsjón og eftirlit með vökvagjöf	Sjá um vökvameðferð- 10042096	2
	Eftirlit með vökvajafnvægi	Hafa eftirlit með vökvainntekt- 10035303	2
	Notkun teygjusokka	X**	4
Vörpunarþrep: 1 = Fullkomin vörpun, 2 = Merkingarleg vörpun, 3 = Vörpun að hluta, 4 = Engin samsvörun við ICNP. **Ekki hægt að búa til hjúkrunarmeðferðir í ICNP			

Efnisþáttur	Hjúkrunarmeðferð	ICNP	Vörpunarþrep
Meðferð tengd umhverfi	Meta umhverfisöryggi	Meta umhverfisöryggi-10039751	1
	Meta þekkingu á umhverfisöryggi	Meta þekkingu á umhverfisöryggi-10039767	1
	Umhverfisaðstæðum stýrt	Stjórnun umhverfisöryggis-10042507	2
	Fræða um umhverfisöryggi	Fræða um umhverfisöryggi-10044937	1
Verkjastjórnun	Meta verkjastjórnun	Meta verkjastjórnun-10002710	1
	Meta þekkingu á verkjameðferð	Meta þekkingu á verkjameðferð-10039041	1
	Verkjamat	Hafa eftirlit með verkjum-10038929	2
	Meta þörf verkjalyfja	Meta þarfir (10033368) + Gefa verkjalyf- 10023084	3
	Meta virkni verkjalyfja	Meta áhrif verkjameðferðar-10034053	2
	Gefa verkjalyf	Gefa verkjalyf- 10023084	1
Vörpunarþrep: 1 = Fullkomin vörpun, 2 = Merkingarleg vörpun, 3 = Vörpun að hluta, 4 = Engin samsvörun við ICNP. **Ekki hægt að búa til hjúkrunarmeðferðir í ICNP			

Efnisþáttur	Hjúkrunarmeðferð	ICNP	Vörpunarþrep
Framhald: Verkjastjórnun	Fræða um verkjameðferð	Fræða um verkjameðferð- 10019489	1
	Eftirlit með neikvæðum viðbrögðum af hjúkrunarstýrðri verkjameðferð	Hafa eftirlit með neikvæðum viðbrögðum af hjúkrunarstýrðri verkjameðferð- 10039896	1
Meðferð eftir byltu	Meta sjúkling eftir byltu	Mat eftir byltu- 10037540	1
	Mæla lífsmörk	Hafa eftirlit með lífsmörkum- 10032113	2
	Skráir í atvikaskráningu	X**	4
Vörpunarþrep: 1 = Fullkomin vörpun, 2 = Merkingarleg vörpun, 3 = Vörpun að hluta, 4 = Engin samsvörun við ICNP. **Ekki hægt að búa til hjúkrunarmeðferðir í ICNP			

Tafla 3. Niðurstöður vörpunar hjúkrunargreininga yfir í ICNP

Efnisþáttur	Fullkomin vörpun		Merkingarleg vörpun		Vörpun að hluta		Engin samsvörun		Samtals	
1.Byltur	N	Hlutfall	N	Hlutfall	N	Hlutfall	N	Hlutfall	N	Hlutfall
	4	6,66%	0	0%	0	0%	1	1,67%	5	8,33%
2.Þekking	2	3,33%	0	0%	0	0%	0	0%	2	3,33%
3.Virkni og hvíld tengd byltum	8	13,33%	0	0%	0	0%	0	0%	8	13,33%
4.Lyfjatengdir þættir og byltur	2	3,33%	2	3,33%	0	0%	0	0%	4	6,66%
5.Andleg líðan tengd byltum	2	3,33%	1	1,67%	0	0%	0	0%	3	5,00%
6.Vitræn geta tengd byltum	4	6,66%	2	3,33%	0	0%	0	0%	6	10,00%
7.Óráð tengt byltum	2	3,33%	1	1,67%	0	0%	0	0%	3	5,00%
8.Hjarta og blóðrás tengt byltum	5	8,33%	1	1,67%	0	0%	1	1,67%	7	11,67%
9.Skynjun tengd byltum	2	3,33%	1	1,67%	1	1,67%	0	0%	4	6,66%
10.Truflun á þvagútskilnaði tengt byltum	3	5,00%	1	1,67%	0	0%	0	0%	4	6,66%
11.Líkamleg líðan tengd byltum	2	3,33%	0	0%	0	0%	0	0%	2	3,33%
12.Umhverfislegar ógnir tengdar byltum	0	0%	2	3,33%	0	0%	2	3,33%	4	6,66%
13.Næring og vökvajafnvægi tengd byltum	0	0%	5	8,33%	0	0%	1	1,67%	6	10,00%
14.Fíkn og byltur	0	0%	2	3,33%	0	0%	0	0%	2	3,33%
Samtals	36	60%	18	30%	1	1,67%	5	8,33%	60	100%

Tafla 4. Niðurstöður vörpunar hjúkrunarmeðferða yfir í ICNP

Efnisþáttur	Fullkomin vörpun		Merkingarleg vörpun		Vörpun að hluta		Engin samsvörun		Samtals	
1.Varnir gegn byltum	N	Hlutfall	N	Hlutfall	N	Hlutfall	N	Hlutfall	N	Hlutfall
	4	5,48%	4	5,48%	3	4,11%	7	9,59%	18	24,66%
2.Heilbrigðisfræðsla	7	9,59%	1	1,37%	2	2,74%	0	0%	10	13,70%
3.Æfingar	7	9,59%	0	0%	3	4,11%	3	4,11%	13	17,81%
4.Notkun hjálpartækis	2	2,74%	2	2,74%	1	1,37%	1	1,37%	6	8,22%
5.Lyfjameðferð	5	6,85%	0	0%	0	0%	1	1,37%	6	8,22%
6.Meðferð fyrir minnkað útfall hjarta/ Vökvaskortur	1	1,37%	3	4,11%	0	0%	1	1,37%	5	6,85%
7.Meðferð tengd umhverfi	3	4,11%	1	1,37%	0	0%	0	0%	4	5,48%
8.Verkjastjórnun	5	6,85%	2	2,74%	1	1,37%	0	0%	8	10,96%
9.Meðferð eftir byltu	1	1,37%	1	1,37%	0	0%	1	1,37%	3	4,11%
Samtals	35	47,95%	14	19,18%	10	13,70%	14	19,18%	73	100%

5 Discussion

It is our mission to identify the risk factors and preventive measures of falls specially among older people, as well as to identify the availability of fall relevant concepts, particularly nursing diagnoses and interventions as well as standard fall prevention guidelines in the ICNP nursing documentation. Studies and other evidence-based sources on the factors which lead to the risk of fall were reviewed and we were able to identify 60 nursing diagnoses which we categorized into 14 groups. On the other hand, regarding the nursing interventions in the prevention of fall, we were able to identify 73 nursing interventions which we categorized into 9 groups. The result of the mapping among the selected nursing diagnoses and the result of mapping of the selected possible nursing interventions are roughly similar. The complete fit has the highest percentage in both nursing diagnoses and interventions that were mapped into ICNP 2022 version. This result shows that the ICNP nursing classification covers most of the relevant terms and concepts regarding nursing diagnoses and interventions.

Five out of sixty nursing diagnoses (8,33%) and fourteen out of seventy-three nursing interventions (19,18%) in our study did not match the ICNP 2022 version. Nursing diagnoses such as *hætta á beinbrotum, skert meðvitund tengt hjartslárttatruflunum, ófullnægjandi aðstæður á heimili, ófullnægjandi notkun hjálpartækja* and *blóðnatríumlækkun* did not appear in the ICNP. The fourteen evidence-based nursing interventions in fall prevention that are not available in ICNP terminology are as follows: *nota byltuvarnarsokka, tryggja að hjálpartæki sé við rúm sjúklings, tryggja að bjalla sé til staðar, svara bjöllu eins fljótt og hægt er, forðast notkun rúmgrinda báðum megin við sjúkling, næturljós við rúm sjúklings, merkja byltuhættu á töflu sjúklings, jafnvægisæfingar, styrktarþjálfun, teygjuæfingar, meta þörf á hjálpartæki, meta fylgikvilla lyfja, notkun teygjusokka* and *skráir í atvikaskráningu.*

Fall prevention is a collaborative effort that includes physicians, physical and occupational therapists, patients with their families, and most importantly nurses. Registered nurses and licensed practical nurses spend a significant amount of time with patients during direct care and they have a great deal of responsibility to avoid patients from falling. Both, clinical and community settings, fall prevention and interventions are vital responsibilities that concern nurses. To promote patient safety, nurses must have access to clinical guidelines that contain nursing interventions which are up to date and established from evidence-based practice.

Health records are essential in all aspects of patient care and must be well-organized as they contain a summary of the patient's history, condition, diagnosis, interventions, and outcomes, as well as making the information available for clinical decision-making. Nursing terminology is vital for describing and defining nursing concepts and actions. A knowledge-based understanding of nursing's role in the delivery of global health care demands the existence of standards for the representation of nursing practice in health information systems. There are several nursing vocabularies that describe nursing diagnoses, interventions, and outcomes. However, the lack of a standardized unified nursing terminology is regarded as a barrier to the advancement of the nursing profession (Hyun & Park, 2002). To address this problem, the International Classification for Nursing Practice (ICNP) was developed by the International Council of Nurses to provide a standardized vocabulary for recording the assessment, diagnoses, and interventions of nurses worldwide. ICNP also provides a platform for electronic nursing

data exchange and international nursing practice comparison (International Council of Nurses, 2023). In the future, Iceland will be using ICNP as its major classification system in nursing documentation in the Icelandic electronic health records. The Icelandic health ministry ordered the use of ICNP in the documentation of nursing diagnoses and nursing interventions in all health care institutions in Iceland. The ICNP Research and Development Centre in Iceland is actively involved in the development, translation, dissemination, and application of ICNP in education, research, and nursing practice in Iceland as well as internationally. In developing ICNP, ICN aimed to make health information more accessible and useful on a global scale, with the hope of enhancing health care practice and policy to promote patient care all around the world. Like any other research in the field of nursing which emphasizes the importance of continuing education and training, ICNP research and development requires continuous professional growth and lifelong learning. There is a demand for nurses to contribute and participate internationally in the development of ICNP.

The search for articles and evidence-based practices to find common factors which likely lead to the risk of fall and the nursing interventions for the prevention of falls among older people went very well. There are numerous studies which are available and undeniably a lot of research has been made in the prevention of fall among old people. But we would like to highlight the utilization of the world guidelines for falls prevention and interventions for older people: a global initiative in falls risk assessments and identifying evidence-based nursing interventions (Montero-Odasso et al., 2022). We also used the clinical guidelines formulated by the expert professionals of Landspítali- The National University Hospital of Iceland.

The main strength of this study is that many research articles and evidence-based guidelines have been written about the nursing interventions in the prevention of fall which are accessible. Even with numerous interventions available, the factors that influence the occurrence of falls are evidently several and complicated. This study has come across some limitations. For instance, it was a challenge finding the exact translation of some certain words and phrases in English and translate them into Icelandic, but with the help of our research advisers, we managed to find the appropriate terminologies in Icelandic. The mapping was an extremely challenging process to begin with, but as we did it more often, we got the gist of it and it became easier. Before we began writing this study, we did not have adequate ideas regarding ICNP and mapping, nor did we have sufficient knowledge on the subject. We were uncertain of how to get started and were having difficulty deciding which methods to use in mapping. Fortunately, we found the research article of Ásta Thoroddsen et al. (2023) which is the description of COVID-19 patients and mapping nursing data to the ICNP (2021) reference set in SNOMED CT. We use the same 4 stages in mapping for the nursing diagnoses and nursing interventions. We translated all our selected nursing diagnoses and nursing interventions into Icelandic and individually mapped them into ICNP concepts and terminology that was already translated in Icelandic and is available at the main site of ICNP research and development center in Iceland.

Conclusion

Falls are a major public health issue that we are dealing with, and they primarily affect the older people. Numerous evidence-based guidelines have been developed in fall assessment, prevention, and interventions. Nurses play an important role in fall prevention and intervention among older people both in clinical and community settings. Nursing documentation is very significant in the nursing profession as it contains important information such as duration of the nursing process and the client's current condition. The international Classification for Nursing Practice (ICNP) was developed to provide a reference standard of concepts or terminologies that could be utilized by nurses all over the world. In our study we identified relevant nursing diagnoses and interventions in fall prevention and managements which are established from evidence-based practice in nursing and were independently mapped into ICNP terminology. Our study shows that a significant proportion of our selected nursing diagnoses and possible nursing interventions in fall prevention and management have the same meaning or are completely compatible with ICNP terminology.

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