

Nonpharmacological Interventions Compared to Pharmacological Interventions in Managing Chronic Pain within Patients of Long-term Care Facilities

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Abstract: Long-term care residents frequently experience chronic pain, significantly impairing their quality of life and functional independence. While pharmacological treatments are common, they present substantial challenges such as polypharmacy risks and adverse drug reactions. Consequently, there is a growing imperative to explore alternative and supplementary nonpharmacological methods for effective pain management. This systematic literature review aimed to investigate the effects of pharmacological interventions compared to nonpharmacological interventions in residents of long-term care facilities experiencing chronic pain, focusing on pain intensity, functional capacity, quality of life, and the occurrence of adverse events. A comprehensive search was conducted across MEDLINE and CINAHL academic databases following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines. From an initial pool of 76 articles, 17 peer-reviewed articles published between 2021 and 2025 were rigorously selected and analyzed. Six key themes emerged from the literature: the use of nonpharmacological interventions to treat chronic pain (65% of articles), the use of pharmacological interventions to treat chronic pain (53%), the impact on quality of life with chronic pain (35%), the role of social interaction as a coping mechanism for chronic pain (35%), the impact of interventions on residents' functional capacity (24%), and the occurrence of adverse events associated with pharmacological interventions (24%). The findings suggest that nonpharmacological interventions play a significant role in pain management, often complementing or serving as alternatives to pharmacological approaches, which carry notable risks. These results suggest the need for healthcare administrators to implement holistic, patient-focused pain management strategies that integrate both pharmacological and nonpharmacological methods to enhance residents' quality of life and functional capacity while minimizing adverse events.

Keywords—nonpharmacological; pharmacological; pain; therapy; treatments

1. INTRODUCTION

Long-term care residents face chronic pain, which acts as a pervasive and debilitating barrier that severely impacts their quality of life and ability to function independently. Studies show that often vulnerable population in long-term care suffers from continuous pain due to various co-existing health conditions alongside natural aging processes (Shi and Wu, 2023). Pain is commonly present in long-term care facilities but remains under-recognized and poorly managed, that can negatively affect mobility and emotional and social challenges. Effective management of this multi-layered problem necessitates prioritizing both thorough and patient-focused pain management techniques.

Pharmacological treatments remain the predominant approach to pain management in long-term care facilities, but their extensive application creates substantial difficulties for this vulnerable group. Polypharmacy risks alongside adverse drug reactions and cognitive impairment possibilities represent substantial issues when medication remains the only treatment method (Chen and Safren, 2025). Older adults experience serious side effects from opioids and non-steroidal anti-inflammatory drugs (NSAIDs), which requires healthcare providers to maintain a careful balance between effective pain management and ensuring patient safety (Shi and Wu, 2023). Because current treatments carry significant risks alongside their benefits, it becomes imperative to investigate alternative

or supplementary methods that deliver effective pain management while reducing danger to patients.

Due to the inherent challenges with pharmacological treatments, researchers are increasingly exploring nonpharmacological methods for chronic pain management in long-term care residents. Nonpharmacological treatments including exercise and music therapy along with aromatherapy and cognitive behavioral therapy provide safe pain management alternatives that avoid the systemic side effects associated with medication use (Wang, Aaron, Attal, and Colloca, 2025). Healthcare administrators need to thoroughly understand how well nonpharmacological interventions perform compared to traditional medication-based treatments and their effects on pain relief, functionality, and life quality.

The purpose of this study is to conduct a systematic literature review investigating the effects of pharmacological interventions compared to nonpharmacological interventions in residents of long-term care facilities experiencing chronic pain by focusing on pain intensity, functional capacity, quality of life, and the occurrence of adverse events.

2. METHODS

After the research topic was finalized, articles directly addressing the research question were then selected and used for the review. A systematic review of the literature was

conducted to answer the research question: In residents of long-term care facilities experiencing chronic pain, how do nonpharmacological interventions, compared to pharmacological interventions, affect pain intensity, functional capacity, quality of life, and the occurrence of adverse events? The review followed guidelines from Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (Rethlefsen et al., 2021). Adhering to the PRISMA standards, two academic databases were used to conduct this review, which were MEDLINE and CINAHL.

The methodological approach encompassed five distinct phases: (1) systematically searching for relevant studies across the specified databases, (2) rigorously screening identified articles against predetermined inclusion and exclusion criteria, (3) extracting all pertinent data from the selected studies, (4) synthesizing the extracted data to identify and analyze key themes, and (5) reporting and disseminating the overall findings. The search strategy employed the following keywords, Long-term care facilities or nursing homes, nonpharmacological pain management, and pharmacological pain management.

For an article to be included in this review, it had to meet the following criteria: (a) publication between 2021 and 2025, (b) written in the English language, (c) published in a peer-reviewed journal, (d) available as a full-text article, and (e) findings on nonpharmacological and pharmacological interventions for chronic pain in long-term care residents. CINAHL resulted in 9 articles, and MEDLINE Ultimate resulted in 67 articles (see Figure 1). Articles that did not satisfy these criteria were excluded from the review. The concluding result was 17 articles.

METHODS	
CINAHL	MEDLINE Ultimate
Long-term care facilities or nursing home AND nonpharmacological pain management AND pharmacological pain management	Long-term care facilities or nursing home AND nonpharmacological pain management AND pharmacological pain management

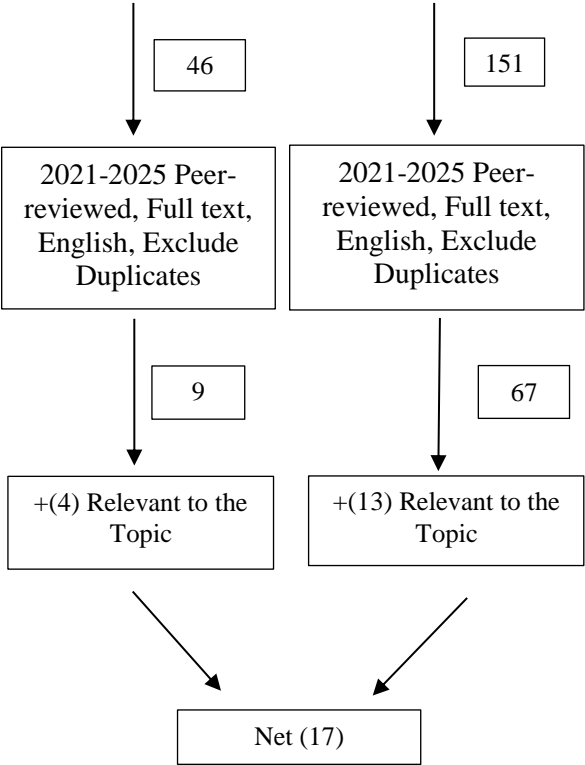


Fig. 1. Flow Diagram

3. RESULTS

The core inquiry investigated the following question, in residents of long-term care facilities experiencing chronic pain, how do nonpharmacological interventions, compared to pharmacological interventions, affect pain intensity, functional capacity, quality of life, and the occurrence of adverse events? In order to address this, an extensive literature review was performed, encompassing searches through academic databases, such as CINAHL and MEDLINE Ultimate. The rigorous methodology adhered to the PRISMA guidelines for systematic reviews (Rethlefsen et al., 2021) during the entire process, from initial search to final analysis, to ensure the inclusion of only high-quality, relevant academic work. From an initial pool of 76 articles, 17 were rigorously selected for further scrutiny based on their direct pertinence to the research question. These 17 articles, along with their titles and salient points, are enumerated in Table 1, with their respective numbering employed for reference in the subsequent presentation of results and discussion.

zed findings of the literature.

Title	Findings	Citation #
[1] The use of nonpharmacological interventions for chronic pain treatment in community-dwelling older adults with a certified need for care (Koios et al., 2024)	Examines the utilization of nonpharmacological interventions (NPIs) for chronic pain management among community-dwelling older adults with a certified need for care in Berlin, Germany. The methodology involved collecting cross-sectional data through standardized face-to-face surveys with 250 older adults (aged 65-104, with a mean age of 81.8, and 68.8% female) using validated instruments. The results indicated that most participants (92%) used NPIs for chronic pain management.	[6]
[2] Development of a set of indicators for the quality of chronic pain management in Chinese community-dwelling older adults: a Delphi study (Li et al., 2024)	This study aimed to create a standardized set of indicators for evaluating chronic pain management in older adults residing in Chinese communities, a population often underserved in pain management due to resource limitations. The study resulted in a preliminary framework of indicators organized into three primary categories: structural quality, process quality, and outcome quality.	[19]
[3] Beyond the numbers: personalizing care for people with long term conditions: How do we balance the requirements of the Quality and Outcomes Framework, to tick the right boxes, with the needs of the individual patient? (Bostock, 2024)	The challenge healthcare professionals face is balancing the demands of the Quality and Outcomes Framework (QOF) with the individualized care needs of patients with long-term conditions (LTCs). The article highlights that QOF, an incentivized system for general practices in the UK, often focuses on achieving numerical targets for specific clinical indicators. While QOF aims to improve care quality, a strict adherence to its metrics can lead to a “tick-box” approach, potentially overlooking the holistic needs and preferences of individual patients.	[12]
[4] Occupational Therapy-Led Delirium Management in Long-Term Acute Care: A Pilot (Sheard et al., 2022)	Investigates the feasibility of occupational therapy-led multidisciplinary interventions for delirium management in a long-term acute care hospital (LTAC). The interventions included a range of approaches, such as mobility exercises, functional cognition activities, sensory deficit correction (e.g., providing eyeglasses or hearing aids), self-care training, and sleep interventions.	[4]
[5] Interventions to optimize nutrition in older people in hospitals and long-term care: Umbrella review (Brunner et al, 2022)	The background section highlights that protein-energy undernutrition is a common and serious problem among inpatients, especially older adults, due to increased physical stress metabolism from illnesses. This undernutrition elevates the risk of complications and worsening ongoing illnesses. The umbrella review identified several effective interventions. Nutritional support, including oral nutritional supplements and individualized dietary counseling, was found to be beneficial. Multicomponent interventions, often involving a combination of nutritional support, exercise, and personalized care plans, also showed positive outcomes.	[9]
[6] Variations in Prescribing Rates of End-of-Life Medications Among Long-Term Care Residents in Alberta Compared with Ontario—a Retrospective Cohort Study (Simon et al., 2025)	The study aims to determine if the prescribing rate of subcutaneous medications can serve as a valid indicator of the quality of EOL care across different jurisdictions. The retrospective cohort study analyzed data from LTC residents who died between January 1, 2017, and March 17, 2020, in Alberta, comparing it to a previously published Ontario cohort. Investigating end-of-life medication prescriptions during a resident’s last 14 days.	[17]
[7] Engagement in purposeful activities and social interactions	Investigates the level of engagement in purposeful activities and social interactions among individuals with dementia in two different long-term care	[14]

amongst persons with dementia in special care units compared to traditional nursing homes: An observational study (Adlbrecht et al., 2022)	settings: specialized dementia care units (SCUs) and traditional nursing homes (TNHs). The background highlights the growing global population of individuals with dementia and the importance of meaningful activities and social engagement for their well-being. The authors observed 120 residents (60 in SCUs and 60 in TNHs) for 12 hours each, recording their engagement in various activities and social interactions.	
[8] Role of Rehabilitation in Opioid Tapering: A Scoping Review (Weins et al., 2022)	A scoping review exploring the current evidence on physiotherapy and occupational therapy interventions in opioid tapering for individuals with chronic pain. Rehabilitation, particularly through physiotherapy and occupational therapy, plays a significant role in supporting opioid tapering for individuals with chronic pain. The positive outcomes reported across a variety of study designs suggest that these nonpharmacological approaches can be effective in reducing opioid use.	[5]
[9] The Potential Impact of Social Prescribing on Meaningful Engagement in Collective Aged Care Settings: Perspectives From the Global South (Kilian et al., 2025)	The background highlights that meaningful engagement is crucial for the well-being of older adults in care settings, yet it is often lacking. Social prescribing, a holistic approach that connects individuals to non-medical sources of support within the community, is presented as a potential solution. Stakeholders identified potential benefits such as improved mental health, increased social connections, enhanced physical activity, and a greater sense of purpose for older adults.	[15]
[10] Can illness representations be used to understand pain experienced in breast cancer survivorship-a cross-sectional study (Langford et al., 2025)	Explores the associations between illness representations, chronic cancer pain, and health-related quality of life in women who have survived breast cancer. The study highlights that chronic pain is a recognized long-term consequence of breast cancer and its treatment. The main findings revealed that having a strong illness identity was significantly associated with higher levels of chronic cancer pain. This suggests that how individuals perceive and attribute their symptoms to their illness plays a crucial role in their experience of pain. The study implies that understanding and addressing these illnesses representations could be a valuable approach in managing chronic pain in breast cancer survivors.	[16]
[11] The relationship between pain, sleep quality, and care dependency in older adults living in a long-term care facility (Puto et al., 2025)	The background highlights that pain and sleep disorders are common in older adults, particularly those in long-term care, and can significantly influence their functional independence and quality of life. The findings suggest that poor sleep quality is associated with higher pain levels, increased care dependency in daily activities, and a greater likelihood of feeling depressed. This highlights the importance of comprehensive assessments and interventions that address pain and sleep disturbances to potentially reduce care dependency and improve the overall quality of life for older adults in these settings.	[11]
[12] Social connection in long-term care homes: a qualitative study of barriers and facilitators (Chapman et al, 2024)	Explores the factors that either hinder or promote social connection among residents in long-term care (LTC) homes. The study emphasizes that social connection is a fundamental human need, crucial for the quality of life and overall well-being of LTC residents and is a key aspect of person-centered care.	[13]
[13] Correlates of Opioid Use Among Ontario Long-Term Care Residents and	The study highlights that chronic non-cancer pain is common in this population but often goes unrecognized and inadequately treated, while also acknowledging growing concerns about opioid prescribing. The objectives of the study were to estimate the prevalence and identify the correlates of opioid	[7]

Variation by Pain Frequency and Intensity: A Cross-sectional Analysis (Iacono et al., 2022)	use, as well as to investigate how opioid use varies by the frequency and intensity of pain reported by residents.	
[14] Effects of an integrated social-art intervention on cognitive and psychosocial outcomes among older adults with mild cognitive impairment in nursing homes: a mixed methods study (Huang et al., 2025)	Integrated social-art interventions are presented as a promising approach for enhancing cognitive function and reducing social isolation. The mixed-methods approach provides a comprehensive understanding of both the efficacy and the experiential benefits of such interventions. The findings support the implementation of similar programs in nursing homes to potentially slow the progression of MCI and enhance the quality of life for older adults.	[10]
[15] Evaluation of an intervention to improve the safety of medication therapy via HIT-supported interprofessional cooperation in long-term care - a mixed method study (Schreier et al., 2022)	Evaluates a three-part health information technology (HIT)-driven intervention designed to enhance medication therapy safety in Austrian nursing homes. The study highlights the critical need for close interprofessional cooperation and high levels of expertise to ensure safe and appropriate medication therapy in long-term care settings, a process that online digital documentation and communication technology can facilitate.	[20]
[16] Long-Term Opioid Therapy for Nonterminal Pain (Sonoda and Wakabayashi, 2025)	Discusses the complexities and considerations surrounding the use of long-term opioid therapy for chronic, non-terminal pain. The authors emphasize that chronic pain affects a significant portion of the US adult population and often leads to considerable mental and social burdens. The article highlights that non-opioid therapies are generally preferred for chronic non-terminal pain, and opioid therapy should not be considered a first-line treatment.	[8]
[17] Successful Initiation of Buprenorphine for Chronic Non-Cancer Pain in an Opioid-Experienced Patient: A Case Report (Silva and Linn, 2025)	The article introduces buprenorphine as a potentially effective and safe option for chronic pain management, especially for patients already on long-term full-opioid agonists. The authors conclude that this case demonstrates the feasibility and potential benefits of transitioning opioid-experienced patients with chronic non-cancer pain to buprenorphine using a low-dose initiation protocol.	[18]

Note: The Title numbers above are the numbering used for thematic analysis. The Citation column displays the reference list numbering, formatted according to consecutive order.

3.1 Findings from Table 1

The data extracted from the 17 articles underwent careful review, leading to the identification of five recurring themes. These themes, all directly pertinent to the research question, were then organized into a frequency table (Table 2) to illustrate their prevalence across the established body of literature. The five themes found throughout the literature were as follows: (a) Use of nonpharmacological interventions to treat chronic pain, (b) use of pharmacological interventions to treat chronic pain, (c) quality of life with chronic pain, (d) impact of social interaction on quality of life and a coping mechanism from chronic pain, (e) Impact of interventions on

residents' functional capacity, (f) adverse events using pharmacological interventions.

Table 2: Frequency of occurrence in literature.

Theme	Articles (n)	Instances of Attributes (n)	Percentage (%)
Use of nonpharmacological interventions to treat chronic pain.	1, 2, 3, 4, 5, 7, 8, 9, 11, 12, 14	n = 11	65%

Use of pharmacological interventions to treat chronic pain.	2, 5, 6, 8, 11, 13, 15, 16, 17	n = 9	53%
Quality of life with chronic pain.	2, 3, 7, 9, 11, 14	n = 6	35%
Impact of social interaction on quality of life and a coping mechanism for chronic pain.	1, 7, 9, 10, 12, 14	n = 6	35%
Impact of interventions on residents' functional capacity.	4, 5, 8, 11	n = 4	24%
Adverse events using pharmacological interventions.	6, 8, 13, 16	n = 4	24%

3.2 Findings from Table 2

After the research was completed, 65% of the articles included the use of nonpharmacological interventions to treat chronic pain [1, 2, 3, 4, 5, 7, 8, 9, 11, 12, 14]. 53% pertained to the use of pharmacological interventions to treat chronic pain [2, 5, 6, 8, 11, 13, 15, 16, 17]. Quality of life with chronic pain was found in 35% of the articles [2, 3, 7, 9, 11, 14]. The findings also showed 35% included the impact of social interaction on quality of life and a coping mechanism for chronic pain [1, 7, 9, 10, 12, 14]. Impact of interventions on residents' functional capacity was found in 24% of the articles [4, 5, 8, 11]. Lastly, 24% were related to adverse events using pharmacological interventions [6, 8, 13, 16].

4. DISCUSSION

The systematic literature review aimed to investigate the effects of pharmacological interventions compared to nonpharmacological interventions in residents of long-term care facilities experiencing chronic pain, focusing on pain intensity, functional capacity, quality of life, and the occurrence of adverse events. Seventeen peer-reviewed articles that were published between 2021 and 2025 were considered in the study, which allowed for a current analysis of long-term care facilities, nonpharmacological pain management, and pharmacological pain management. The data results shown in Table 2 display the main themes that emerged from the literature analysis. Six main themes emerged

from the literature analysis that included use of nonpharmacological interventions to treat chronic pain [1, 2, 3, 4, 5, 7, 8, 9, 11, 12, 14], use of pharmacological interventions to treat chronic pain [2, 5, 6, 8, 11, 13, 15, 16, 17], quality of life with chronic pain [2, 3, 7, 9, 11, 14], impact of social interaction on quality of life and a coping mechanism from chronic pain [1, 7, 9, 10, 12, 14], impact of interventions on residents' functional capacity [4, 5, 8, 11], and adverse events using pharmacological interventions [6, 8, 13, 16].

4.1 Theme 1

Several authors documented the significant role of nonpharmacological interventions (NPIs) in managing chronic pain among long-term care residents, with a high percentage (65%) of the articles in this review demonstrating their use [Table 1 Articles: 1, 2, 3, 4, 5, 7, 8, 9, 11, 12, 14]. These interventions encompassed a wide range of approaches, including mobility exercises, functional cognition activities, sensory deficit correction, self-care training, sleep interventions [4], and comprehensive rehabilitation through physiotherapy and occupational therapy [5]. The implementation of these NPIs directly contributed to improving residents' functional capacity, mobility, and overall independence by addressing the physical and cognitive barriers imposed by chronic pain. Researchers' findings indicate a high percentage of participants using NPIs for chronic pain management, with one study reporting 92% usage among community-dwelling older adults [6]. Furthermore, while specific numerical pain intensity scores were not uniformly reported across all studies, nonpharmacological interventions like rehabilitation [5] were shown to contribute to overall pain management, often facilitating the reduction of opioid dependency [7; 8], thereby suggesting a positive impact on residents' pain levels. Programs demonstrating prolonged success often utilized multicomponent interventions, combining nutritional support, exercise, and personalized care plans [9], or integrated social-art interventions to enhance cognitive function and reduce social isolation [10]. In contrast, some studies highlighted the predominance of pharmacological treatments despite their associated risks [8]. However, the overall results indicate that a majority of the authors (65%) demonstrate the effectiveness and increasing exploration of nonpharmacological interventions as safe and beneficial alternatives or supplements to traditional medication-based treatments for chronic pain in long-term care settings. The emphasis on these alternative methods underscores the need for comprehensive assessments and interventions that address pain and sleep disturbances to potentially reduce care dependency and improve the overall quality of life for older adults.

4.2 Theme 2

The use of pharmacological interventions to treat chronic pain was also a prominent theme, appearing in 53% of the reviewed articles [Table 1 Articles: 2, 5, 6, 8, 11, 13, 15, 16, 17]. These studies often discussed the complexities and considerations surrounding the use of medications, particularly

opioids, for chronic non-terminal pain [8]. While pharmacological treatments remain a predominant approach, the literature highlighted concerns regarding their extensive application in vulnerable populations. For instance, studies estimated the prevalence of opioid use among long-term care residents and investigated how this varies by pain frequency and intensity [7]. The role of rehabilitation in opioid tapering was also explored, suggesting that physiotherapy and occupational therapy can significantly support individuals with chronic pain in reducing opioid use [5]. The findings indicate that while pharmacological interventions are widely used, there is a growing recognition of the need for careful management and consideration of alternative approaches due to associated risks.

4.3 Theme 3

Quality of life with chronic pain was identified as a key concern in 35% of the articles [Table 1 Articles: 2, 3, 7, 9, 11, 14]. Chronic pain acts as a pervasive barrier, severely impacting residents' ability to function independently, such as decreased mobility and socialization, which negatively affect quality of life [9; 11]. Studies underscored that pain and sleep disorders are common in older adults, particularly in long-term care, and significantly influence functional independence and quality of life [11]. The literature also highlighted the challenge healthcare professionals face in balancing standardized quality frameworks with the individualized care needs of patients with long-term conditions, emphasizing that a strict adherence to metrics can overlook holistic needs and preferences [12]. Furthermore, integrated social-art interventions were presented as a promising approach for enhancing cognitive function and improving the quality of life for older adults with mild cognitive impairment in nursing homes [10]. These findings collectively emphasize that effective pain management must extend beyond mere pain reduction to encompass a holistic improvement in the resident's functional capacity and quality of life.

4.4 Theme 4

The impact of social interaction on quality of life and its role as a coping mechanism for chronic pain was discussed in 35% of the articles [Table 1 Articles: 1, 7, 9, 10, 12, 14]. Social connection is recognized as a fundamental human need crucial for the well-being of long-term care residents and a key aspect of person-centered care [13]. Studies investigated the level of engagement in purposeful activities and social interactions among individuals with dementia in different long-term care settings, highlighting the importance of meaningful activities for their well-being [14]. Social prescribing, a holistic approach connecting individuals to non-medical support, was presented as a potential solution to improve mental health, increase social connections, and enhance a sense of purpose for older adults in care settings [15]. In practice, this could involve care coordinators linking residents to community-based activities like gardening clubs, art classes, or volunteer opportunities that align with their interests and promote social engagement. Additionally, understanding how individuals

perceive and attribute their symptoms to their illness plays a crucial role in their experience of pain, suggesting that addressing illness representations could be valuable in managing chronic pain [16]. These findings suggest that fostering social interaction and meaningful engagement, such as participation in hobbies, creative expression, and social contribution, can serve as vital nonpharmacological strategies to enhance coping mechanisms and improve the quality of life for residents experiencing chronic pain.

4.5 Theme 5

The impact of interventions on residents' functional capacity was a theme identified in 24% of the articles [Table 1 Articles: 4, 5, 8, 11]. Several studies highlighted how various interventions directly influenced residents' ability to perform daily activities and maintain independence. For instance, occupational therapy-led multidisciplinary interventions, including mobility exercises and self-care training, were explored for their feasibility in managing delirium in long-term acute care, thereby improving functional outcomes [4]. Similarly, multicomponent interventions that combined nutritional support with exercise and personalized care plans demonstrated positive results in optimizing nutrition in older adults, which in turn supports their functional capacity [9]. Furthermore, rehabilitation, particularly through physiotherapy and occupational therapy, was found to play a significant role in supporting individuals with chronic pain, contributing to improved functional abilities and reduced reliance on opioids [5]. The literature also indicated that addressing factors like pain and poor sleep quality through targeted interventions could reduce care dependency and enhance functional independence in older adults living in long-term care facilities [11]. These findings collectively emphasize that effective interventions can significantly enhance residents' functional capacity, promoting greater independence and overall well-being.

4.6 Theme 6

Lastly, adverse events using pharmacological interventions were addressed in 24% of the articles [Table 1 Articles: 6, 8, 13, 16]. This theme highlighted the significant risks associated with medication use in long-term care residents. Adverse events commonly reported include increased risk of falls, gastrointestinal issues, respiratory depression, and cognitive impairment [17; 8]. Specifically, studies examined variations in prescribing rates of end-of-life medications, suggesting that such rates could indicate the quality of end-of-life care [17]. The literature also discussed the complexities of long-term opioid therapy for chronic non-terminal pain, emphasizing that non-opioid therapies are generally preferred and that opioids should not be considered a first-line treatment due to serious side effects [8]. The feasibility and potential benefits of transitioning opioid-experienced patients to safer alternatives like buprenorphine were also explored [18]. These findings underscore the critical need for healthcare providers to maintain a careful balance between effective pain management

and ensuring patient safety, prioritizing interventions that minimize adverse events.

4.7 Limitations

Despite the valuable insights gained from this review, it's important to acknowledge certain limitations. The timeframe for conducting this review was relatively short, which might have constrained how extensively the literature could be explored. Additionally, by only including articles published in English, there's a possibility that relevant research from other languages was overlooked, potentially introducing a bias. The specific keywords used for the literature search also mean that some pertinent articles might not have been captured if they used different terminology. Finally, the inherent subjectivity involved in the selection and interpretation of articles by the reviewers could lead to varying perspectives on the findings.

To address these limitations, a strict adherence to the PRISMA guidelines for systematic reviews was maintained throughout the process [Rethlefsen et al., 2021]. This involved a rigorous screening process, starting with a large initial pool of 197 articles and progressively narrowing them down to only those directly relevant to the research question. Each chosen article was then carefully read and evaluated to ensure it aligned with the study's objectives. While these steps helped to enhance the review's rigor, it's recognized that the inherent nature of systematic reviews means some limitations are unavoidable. Nevertheless, the findings from this study lay a solid groundwork for understanding how different pain management approaches impact long-term care residents.

4.8 Future Implications

Looking ahead, the findings of this literature review can serve as a springboard for future research, particularly for studies employing mixed methods designs. Researchers could consider integrating both qualitative and quantitative data collection, such as surveys and interviews, to gain a more comprehensive understanding of the effectiveness of these interventions in real-world clinical environments. Furthermore, healthcare professionals can use these results to inform the development and implementation of comprehensive pain management strategies that thoughtfully combine both pharmacological and nonpharmacological methods, customized to meet the unique needs of residents in long-term care facilities. Future investigations could also delve into the long-term effectiveness of these interventions, assess their economic viability, and identify factors that influence how well patients adhere to and engage with various pain management strategies.

5. CONCLUSION

Chronic pain significantly impacts the quality of life and functional independence of long-term care residents, necessitating effective and safe management strategies. While pharmacological interventions have been the mainstay, their associated risks, such as polypharmacy and adverse drug reactions, highlight the critical need for alternative and

supplementary approaches. The systematic literature review aimed to investigate the comparative effects of pharmacological and nonpharmacological interventions on pain intensity, functional capacity, quality of life, and adverse events in this vulnerable population. Six key themes emerged from the analysis of 17 rigorously selected articles: the prevalent use and effectiveness of nonpharmacological interventions, the complexities and risks associated with pharmacological interventions, the profound impact of chronic pain on quality of life, the beneficial role of social interaction as a coping mechanism, the impact of interventions on residents' functional capacity, and the occurrence of adverse events linked to pharmacological treatments. Our review identified a growing body of evidence supporting the integration of nonpharmacological methods, often complementing traditional pharmacological approaches, and the results indicate a clear benefit in terms of pain reduction, improved functionality, and enhanced quality of life, while also emphasizing the importance of minimizing adverse events. The implications of these findings provide healthcare professionals, administrators, and policymakers an opportunity to develop and implement comprehensive, patient-centered pain management strategies that thoughtfully combine both pharmacological and nonpharmacological methods, customized to meet the unique needs of residents in long-term care facilities.

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