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Non-Pharmacological Pain Management Interventions to Decrease Pharmacological Need in a Long-Term Care Facility: A Quality Improvement Study

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Long-Term Care Facility: A Quality Improvement Study

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Abstract

Effective pain management is a universal issue throughout the healthcare field, especially in long-term care environments. The increasing older adult population, coupled with chronic understaffing, produces an environment that inhibits efforts to treat chronic pain and acute pain flares that are often present in this patient demographic. In response to an increasing demand for improved pain treatment, research has focused on locating and testing the efficacy of many non-pharmacological pain management techniques. These techniques include healing touch, music therapy, cold/heat application, repositioning, range of motion exercises, and environmental modification. The long-term care facility in this study, Good Shepherd Community, identified controlling chronic pain with acute flares as an area that would benefit from a quality improvement project. In response to this issue, we established a pain management chart with non-pharmacological interventions corresponding to the facility's pain rating scale (1-10) for six to eight residents on three separate units. Our goal was to decrease the rating and occurrence of pain through the utilization of non-pharmacological treatment in conjunction with medications already prescribed to the resident. Additionally, the use of opioids for the maintenance of chronic pain in long-term care facilities is under-researched; data from this study can further benefit proper opioid stewardship. Ultimately, proper implementation of these interventions translated to the decreased opioid usage and increased pain management efficacy.

Introduction

Chronic pain continues to be one of the paramount issues regarding the older adult population. In an age where the demographic continues to grow, several factors lead to what researchers consider "suboptimal pain management" (Justina Yat & Leung, 2017). As a result, effective pain management continues to generate research, especially in long-term care environments. Current analysis cites an aggressive focus on cost-efficient care, unrefined opioid prescription guidelines and stigmatization, age-related complications, comorbidities, and polypharmacy as primary barriers for proper pain management. At Good Shepherd Community, the authors of this study found that the percentage of severe pain across the facility was substantially higher than the average Minnesota nursing home. Per facility request, the authors focused their efforts on creating a project that would investigate the cause of this issue, as well as implement possible solutions.

This study advocates for a more effective and efficient pain management regimen, utilizing both pharmacological and non-pharmacological treatment techniques. In lieu of previous research, interventions favor the latter for both chronic and acute pain flares. With guidance from previous research in the field and aid from current care staff, we amalgamated a pain management guide to be implemented at Good Shepherd Community to increase pain intervention efficacy and decrease the use of opioid drugs and overall pain.

Analysis-Literature Summary

The United States is currently amid a growing epidemic of opioid misuse. Among geriatric patients, increased levels of pain and depression compound this issue. Furthermore, the

aging process affects the ways in which the body processes drugs. Generally, aging leads to altered drug absorption and renal excretion, which results in a high risk for drug toxicity in this population (Chang & Compton, 2016).

Many nursing home residents utilize ongoing opioid prescriptions for the management of chronic pain. This ongoing use needs to be more closely monitored to evaluate the risks and benefits, especially with the potential for adverse effects, than it currently is. While opioid agents play a strong role in the management of acute pain and chronic cancer pain, their use in treating chronic non-cancer pain is unclear. In 1986, the World Health Organization developed a stepladder approach that is used as a foundation for pain management. This model details titrating analgesic agents from non-opioid drugs, to weak opioid drugs, to strong opioid drugs based on patient pain scores. Chronic pain that is unrelated to cancer does not respond well to opioid drug therapy (Lumish, Goga, & Brandt, 2018).

Many older adults live with persistent pain. Causes that may lead to this persistent pain result from advances in treating previously lethal conditions, late treatment effects, or lifestyle patterns that sensitize the nervous system such as poor diet, activity level, stress, and sleep. In addition, psychosocial factors, including a history of trauma, and social determinants of health make older adults vulnerable to persistent pain. Caution is warranted in prescribing opioids in order to prevent over-prescription of opioids in older adults as they are particularly vulnerable to adverse events, including falls and overdose deaths. While there is no exact age when older adults experience the specific mental and physical changes attributed to aging, those older than 65 are deemed at risk for poor pain control. Numerous barriers make older adults more susceptible to the effects of pain than their younger counterparts (Marie, & Arnstein, 2016).

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Analgesic options include opioid, nonopioid, and adjuvant medications. The determination of appropriate analgesic usage is based on careful risk-benefit analysis, considering unique individual characteristics, risk factors, comorbidities, and personal preference. Nonopioid analgesic drugs are effective and appropriate for mild to moderate pain, and they are appropriate to use in conjunction with opioid analgesics. Further controversy over opioid usage stems from the fact that there are no double-blind, placebo controlled, randomized controlled trials that have been conducted for more than a few months duration. Also, there is no efficacy study using the above definition of evidence for any treatment of persistent pain, only acute. While acetaminophen is the preferred choice for non-opioid pain management, its non-superiority to placebo contradicts its status as a first-class analgesic for older adults to treat all types of pain. Additionally, high dose long-term usage of acetaminophen has the same serious GI, cardiovascular, and renal drug events that are often seen with NSAIDs. Patients utilizing NSAIDs must be monitored for GI bleeds, renal failure, cognitive impairment, and congestive heart failure (Arnstein, Herr, & Butcher, 2017). Opioids are considered safer than long-term NSAID therapy for older adults with persistent pain. When possible, other medications should be used in conjunction with opioids in order to minimize the dosage and the duration of exposure to opioid agents. Patients on opioids for long-term therapy should be periodically reassessed for aberrant behaviors, sleep disordered breathing, and bone mass density regardless of gender to ensure safety while taking the medications.

Non-pharmacological interventions are promising additions and alternatives to existing pharmacological treatments of persistent pain in older adults. The prevalence of persistent pain in long-term care residents is high at 45-83% (Tederko, Krasuski, & Szczypiorowska, 2014). Despite the availability of different treatment techniques, chronic pain remains undertreated.

Elderly people frequently perceive and accept pain as an inherent part of life. For this reason, many do not seek medical advice until pain becomes unbearable. The consequences of this course of action include delayed diagnosis of health conditions, inadequate treatment, and pain chronification. Among the elderly population, persistent pain may result from many different health conditions with the highest percentage being from chronic musculoskeletal disorders of the spine, knee, hip, or shoulder (Tederko, Krasuski, & Szczypiorowska, 2014). The chronic pain can result in the alteration of cell membrane potentials, accumulation of metabolites in the affected area, abnormal activity of the autonomic nervous system, muscular spasms, appearance of trigger points, abnormal motion stereotypes, immobilization, anxiety, depression, decreased social participation, worsening of disability, and increased healthcare utilization and costs (Tederko, Krasuski, & Szczypiorowska, 2014). Successful pain therapy must address the pain's intensity, along with the psychological, psychosocial, and cognitive aspects of the pain.

Long-term care facilities assist those who cannot function in everyday life independently. The residents of these facilities experience a multitude of chronic, debilitating conditions that are especially vulnerable to persistent pain related deterioration. High rates of dementia and behavioral signs among LTC residents decrease the recognition of pain and its consequences. The use of analgesic drugs is typically consistent with pharmacological guidelines, but pain therapy is often ineffective due to the complexity of the residents and other barriers. The application of analgesics alone cannot combat the psychological symptoms of pain related to loneliness, withdrawal from social participation, deteriorated communication, self-care and locomotion abilities, and immobilization. Unlike medications, non-pharms can relieve pain with a low risk for side effects. Non-Pharmacological Interventions may produce a therapeutic effect administered alone or with medications.

In one particular study of Non-Pharmacological Interventions (NPIs), an online survey was sent to nurses and available for 25 days and out of 104 nurses invited to participate, 68 nurses responded to the survey (Lewis et al., 2018). All the nurses surveyed reported an understanding of NPIs and stated they had used both pharmacological and non-pharmacological interventions in their practice. All the participants had used one or more NPI. Results from the study included: 97 % of participants utilized repositioning, 95.6 % utilized heat or cold, 92.7 % utilized distraction, 86.7 % utilized breathing, 67.6 % utilized environmental modification, 47.1 % utilized music therapy, 36.8 % utilized relaxation and imagery, 32.4 % utilized superficial massage, and 14 % utilized spiritual practice (Lewis et al., 2018). The above study demonstrates many of the above interventions can be used effectively by nurses and nursing staff. Patients were also interviewed regarding satisfaction with their pain management. Out of sixteen patients who were interviewed, fifteen reported their pain was effectively managed during their hospitalization. Additionally, when provided examples, all the patients reported that at least one of their nursing staff had used an NPI in conjunction with pain medication to provide pain relief (Lewis et al., 2018).

One non-pharmacological intervention used at our facility is healing touch. This therapy is a relaxing, nurturing, non-invasive energy therapy that works to balance physical, emotional, mental, and spiritual health (Anselme, 2016). Healing touch is grounded in nursing practice and is safe for all ages. Research done in the realm of energy therapy has shown healing touch significantly reduces pain and improves quality of life among a diverse population of patients. It has been used in patients postoperatively, with acute or chronic pain, with osteoarthritis, and even hospitalized patients with cancer have been shown to have reduced pain (Anselme, 2016). Healing touch is relatively simple to learn and easy to incorporate into standard nursing practice,

and it has benefits not only for the patient, but for the health care provider as well. For nurses, the practice reduces stress, anxiety, and depression while improving anxiety and wellbeing (Anselme, 2016).

Chronic pain is an ever-present issue in Long-Term Care facilities and major driving factor for our research. In recent history, "approximately 45% to 80% of LTC residents have substantial pain, and 25% of those with daily pain were not administered any medication or intervention for pain relief" (Good, Riley-Doucet, & Dunn, 2015, p. 34). Furthermore, studies show that 83% of the LTC population "may experience pain on a regular basis" (Good, Riley-Doucet, & Dunn, 2015, p. 34). Living a life fraught with chronic pain can negatively impact many aspects of an individual's life, in which its symptoms and efforts to combat it prohibit freedom and increase risk of "treatment burden" (Schreiner, Schreiner, & Daly, 2018). Unfortunately, pain is often under-reported and incorrectly assessed in older-adult populations. This is compounded with comorbidities and polypharmacy that further affects an altered body physiology consistent with older age (Telford, 2017). All these factors play into a phenomenon that require a multi-faceted and dynamic approach. Understanding pain's prevalence in the community utilized for our study may provide insight in what would be most beneficial for others with a similar demographic.

<div align="center">**Development**</div>

Once pain prevalence was identified as an area of improvement for the facility and a goal of decreasing both resident pain and pharmacological pain intervention use was identified, the authors generated three plans for possible implementation. The first, more frequent pain assessments. We developed a checklist that would have been individual to each unit at Good

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Shepherd. The checklist would have listed all the names of the unit's residents in a column and had a box for every two hours listed behind the names. The boxes would be checked off as the RNs or LPNs assessed resident pain levels every two hours. We decided against implementing this checklist due to similarities to another Quality Improvement Project being completed at the same facility. The second plan was to do an analysis of one unit's resident's pain history, look for trends, and develop individual pain management interventions for each patient. We decided against this due to perceived implausibility of implementation on a wider scale across the facility. The process would have been extremely time consuming and it would have been difficult to ensure that the individualized pain management interventions for all the residents would be kept current and trends analyzed frequently enough. The third plan is the one we proceeded with, as it was individualized to each patient, supported by research, relatively simple to implement, not time consuming for Good Shepherd Staff, and would streamline the pain management process, hopefully increasing efficiency and efficacy.

We created a step-by-step guide for nurses to utilize when assessing a resident's pain with the new facility-wide process. Our guide correlates with the pain chart nurses use to assess and provides a seamless transition to the treatment of pain with non-pharmacological interventions and pharmacological interventions. Data was collected from six-to-eight residents from each unit, including: Memory Lane, North Shore, and Canary Creek. Each resident had an individualized guide with personal prescriptions included, but the implementation process was standardized across all residents participating in the study. The goal of the guide was to create a process that utilizes non-pharmacological pain treatment options in the most effective manner, while also reducing residents' ratings of pain and the administration of pain medications.

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Methods

We conducted our study at the Good Shepherd Community facility. After considering

research on the topic of pain management, we decided to implement a plan that involved

utilizing both pharmacological and non-pharmacological intervention and organized it into a

single-page guide for the nurses' reference. The guide was organized into three pain levels: 1-3,

4-6, and 7-10. For each pain level, we designated specific interventions. Before the procedure

began, we discussed our ideas and showed our plans to the Director of Nursing and Assistant

Director of Nursing. Then, after gaining approval, we informed the nurses on each unit of how

we wanted the guide implemented and answered any questions they had.

Upon every pain assessment (or resident verbalization of pain), the nurse assessed the

resident's pain on a 0-10 scale. Based on the resident's verbalized number, the nurse offered and

implemented one or multiple correlating interventions on the guide or delegated appropriate

interventions to the nursing assistant. For levels 1-3, the guide recommended the following

options: healing touch, music therapy, cold/heat application, reposition/pillow support, deep

breathing, range of motion (ROM) exercises/stretching, environmental modification, dim

lighting, a quiet room, or adjusting room temperature. For levels 4-6, the guide recommended:

healing touch, music therapy, cold/heat application, reposition/pillow support, ROM

exercises/stretching, massage, and non-opioid medications (per resident prescription). For the

most severe pain verbalized (7-10), the guide recommended: healing touch, music therapy,

cold/heat application, reposition/pillow support, ROM exercises/stretching, massage, and opioid

medication (per resident prescription).

After the resident verbalized or was otherwise assessed and found to have pain, the

interventions identified above were carried out as corresponding to the respective pain level by

the nurse and/or nursing assistant. The resident's pain was then reassessed 30 minutes after the interventions were completed. Data collected on the patients was organized into the columns "Pre-Intervention Pain Level," "Intervention," "Pain Level Reassessed," and "Effectiveness," which was collected by the nurse and CNA. This was implemented over the course of three weeks with data being continuously accumulated by all care staff.

Instructions Given with Guide:

Instructions: When the resident rates their pain, offer the pain treatments from the column on the right that corresponds to the number they gave. Implement one or more of the non-pharmacological pain management intervention chosen by the resident. Reassess after 30 minutes and record the new pain assessment rating and continue to resident's treat pain, if still present. If resident is not interested in a non-pharmacologic pain management intervention within the corresponding box for their pain assessment rating but wishes to utilize another from a different box, provide desired intervention and record change.

Note: If the resident's medication orders change and no longer perfectly align with this form, follow physician's new orders, make note of change, and contact a study supervisor: Kent Edeburn (320-250-4941 or KWEDEBURN@CSBSJU.EDU), Hunter Hicks (612-558-9008 or HHHICKS@CSBSJU.EDU), or McKenna Mages (507-766-2749 or MLMAGES@CSBSJU.EDU)

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The Guide Used to Implement Project:

Treatment of -Resident's Pain Based on Pain Assessment Rating (1-10 Scale)	
1 - 3	Non-Pharmacological Options: ● Healing touch ● Music Therapy ● Cold/heat application ● Reposition/pillow support ● Deep breathing ● ROM exercises/Stretching ● Environmental modification: dim lighting, quiet room, adjust temperature
4 - 6	Non-Pharmacological Options: ● Healing touch ● Music Therapy ● Cold/heat application ● Reposition/pillow support ● ROM exercises/Stretching ● Massage Medication Options: ● Individual options for patients we gathered data on
7 - 10	Non-Pharmacological Options: ● Healing Touch ● Music Therapy ● Cold/heat application ● Reposition/pillow support ● ROM exercises/Stretching ● Massage Medication Options: ● Individual options for patients we gathered data on

Results

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	Pre-Intervention Pain Level	Intervention	Pain Level Reassessed	Effectiveness
Patient A	6	Healing touch	0	Effective
Patient A	5	Healing touch	0	Effective
Patient A	4	Healing touch	1	Effective
Patient A	3	Healing touch	1	Effective
Patient A	5	Healing touch	0	Effective
Patient A	4	Healing touch	0	Effective
Patient A	3	Healing touch	0	Effective
Patient A	5	Healing touch	0	Effective
Patient A	3	Healing touch	0	Effective
Patient B	8	Healing touch	3	Effective
Patient B	6	Healing touch	2	Effective
Patient B	8	Healing touch	4-5	Effective
Patient B	7	Healing touch	0	Effective
Patient B	8	Healing touch	6	Effective
Patient C	8	Healing touch	8	Not Effective
Patient C	10	Healing touch	9	Not Effective
Patient C	9	Healing touch	8	Not Effective
Patient C	10	Healing touch	8	Effective
Patient C	8	Healing touch	7	Not Effective

Patient C	8	Healing touch	6	Effective
Patient C	9	Healing touch	8	Not Effective
Patient C	8	Healing touch	8	Not Effective
Patient C	6	Healing touch	6	Not Effective

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Patient C	8	Healing touch	6	Effective
Patient C	8	Healing touch	6	Effective
Patient C	10	Healing touch	8	Effective
Patient D	6	Healing touch	3	Effective
Patient D	5	Healing touch	2	Effective
Patient D	7-8	Healing touch	4	Effective
Patient D	7	Healing touch	0	Effective
Patient D	8	Healing touch	1	Effective
Patient D	7	Healing touch	1-2	Effective
Patient D	7	Healing touch	0	Effective
Patient D	7-8	Healing touch	3	Effective
Patient E	Complains of pain	Warm blanket	-	Effective
Patient E	Complains of pain	Ice pack and scheduled acetaminophen	-	Effective
Patient E	Complains of pain	Warm blanket	-	Effective
Patient E	Complains of pain	Ice pack and tramadol	-	Effective

Patient E	Complains of severe pain	Warm blanket, ice, and Tylenol	-	Not effective
Patient E	Complains of pain	Ice pack and repositioned	-	Effective
Patient E	Complains of pain	Refused warm blanket, given prn oxy	-	Effective
Patient E	Complains of pain	Attempted distraction	-	Not effective

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Patient E	Complains of pain	Refused intervention	Not Applicable	Not Applicable
Patient E	Complains of pain	Distraction	-	Not effective
Patient E	Complains of pain	Tylenol, oxy, warm blanket	-	Effective
Patient F	9	Oxy and Tylenol	-	Not effective
Patient F	7	Repositioned and given prn	-	Effective
Patient F	Complains of pain	Oxy given	-	Effective
Patient F	Complains of pain	Repositioned	-	Effective
Patient F	Complains of pain	Repositioned	-	Effective
Patient F	Complains of pain	Heat applied and repositioned	-	Effective
Patient F	Complains of pain	Repositioned	-	Effective
Patient F	Complains of pain	Prn Tylenol and warm blanket	-	Effective
Patient F	5	Heat applied	-	Effective
Patient F	6	Heat applied	-	Effective
Patient F	6	Heat applied	-	Effective
Patient F	7	Heat applied	-	Effective
Patient F	7	Heat applied	-	Effective

Key:

Effective   s = Three point or greater decrease in pain rating or reported "pain relieved"

Not Effective = 0-2-point decrease in pain rating or reported "not relieved"

-          = No reassessment data

Discussion

The Good Shepherd Community staff understood our education materials and were attentive, engaged, and open to the project during the initial phase. The nurses involved with pain assessment and treatment, as well as the Director of Nursing and Assistant Director of nursing were also very supportive. All care staff involved were also committed to an overall quality of care and life, desire to provide adequate pain management and least amount of pain for the residents in their care.

Heading into our implementation stage, we also recognized and advocated for the utility of the nursing assistant in this process in combination with the nurse. Prior research points to Certified Nursing Assistants (CNAs) exhibiting a holistic understanding of pain, and can differentiate every day from new onset pain, and mitigate and/or report it (Halifax, Miaskowski, & Wallhagen, 2018). We, as researchers, relied on the close relationship the CNAs have with the residents of Good Shepherd. Those relationships, established from frequent interaction, provided the aids with a high acuity to residents' lifestyles, habits, and onset of pain. An understanding of the latter was especially helpful in suggesting to the nurse when to assess a certain resident's pain, as well as implementing interventions that required the work of multiple caregivers within their scope of practice.

In the chart showing our results above, there are fifty-eight times combined that several residents reported pain. One of the fifty-eight reports of pain is not applicable due to the resident refusing to have pain treated even though pain was present. With treatment, 46/58 instances or 79.31% of the time the pain management was effective and produced a result of three or more points less (on a 1-10 scale for pain assessment) upon reassessment or a verbal declaration of

pain relief. Pain management was not deemed effective 11/58 times or 18.97% failure rate. In the literature regarding pain and techniques to manage it in the older adult population, the results have not been this significant. We have almost a four-in-five success rate with our pain management intervention guide implementation, a very significant finding.

Limitations

Our data was collected from the units specified in the methods section of this document and while we included a total of nineteen residents in our project, only six of the nineteen reported pain during our three-week trial of the guide. The length of this project was only three weeks and three weeks is not a sufficient length of time for results to be useful on their own; so, follow-up will be required. Nurses assisting with the implementation of this quality improvement project did not always ask for a pain assessment rating (1-10) or for another pain assessment rating (1-10) for the pain reassessment, so we were not able to gather as many numbers to analyze the degree of decrease in pain presence as might have been possible had this been done consistently across each unit by every nurse. The case manager nurses for each unit involved in the study identified which patients they knew a.) Have pain consistently and b.) might be open to trying interventions other than pharmacological only. This means that we did not have a randomized group and data is skewed. Furthermore, the night shift nurses did not receive as thorough training from the authors due to time constraints and may have contributed to the variability in data collection.

Future Direction

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The Good Shepherd Community facility can view the results of this project as a positive outcome and should consider adopting this method that we have created and testing it on a larger group of residents for a more extended time period so that they have more information about the viability of this option for facility-wide implementation. Other nursing home facilities who also struggle to keep resident pain levels under control might also benefit from this guide or a similar guide for pain management interventions at their facility and can use this document as a starting point for developing their own quality improvement project centered on pain.

Conclusion

Among several complications affecting the older adult population today, chronic pain continues to be among the most persistent. Subsequently, effective pain management continues to require tireless research for increased patient satisfaction. Our quality improvement project focused on this issue, with the intent of attaining lower pain ratings with non-pharmacological pain management and incorporating pharmacological, if necessary. The goals of the project were met, and implementation of the guide is seen as a success for the facility. With our pain intervention guide, pain was effectively managed 79% of the time in the six patients who experienced consistent pain. If more projects like this and studies such as those in the literature-analysis section of this document continue, more residents like those at Good Shepherd Community will access better pain management and achieve an improved quality of life.

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