WOUND RELATED PAIN MANAGEMENT IN A COMMUNITY HEALTHCARE SETTING: A PROGRAM EVALUATION

by

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Background and Significance

Chronic wounds affect approximately 65 million individuals in the United States with an estimated 25 billion dollars in excess spent on their treatment (Sen et al., 2009). Increasing healthcare costs, an aging population, and an increasing incidence of diabetes and obesity all contribute to a continued increase in this financial burden (Sen et al., 2009). As many as 80% of patients with pressure ulcers experience severe and constant pain, with dressing removal being the most painful care procedures related to the wound (Meaume, Teot, Lazareth, Martini, & Bohbot, 2004). Studies have found some success using complementary and alternative medicine (CAM) techniques in treating wound-related pain in the community. In 2012 it was reported that 33.2% of adults aged 18 and older utilize complementary health approaches (Clarke, Black, Stussman, Barnes, & Nahin, 2015). Severe pain during wound care procedures can lead to hurried and incomplete care, increased infection risk, delayed healing, and increased cost, making it an important problem to address in the clinical setting (Gardner et al., 2014).

Review of Literature

The literature review explored what is relevant in regards to non-pharmacologic treatment of pain in a community-dwelling population of wound care patients, including non-pharmacologic treatment and evidence based guidelines. The review was organized into three categories related to wound care dressing change and non-alternative pain management techniques used in the community health setting. The categories were: 1) pain with dressing changes, 2) complementary and alternative therapies, and 3) professional practice guidelines for community wound care. Relevant sources were retrieved using CINAHL, PubMed, and PsychInfo databases using the search terms "community health", "wound care",

"nonpharmacologic", “complementary and alternative medicine”, “guidelines”, and "pain management". Twenty-one relevant articles published between 2003-2016 were retrieved.

Community-based Pain Management

Butcher and White (2014) reported that the majority of patients reporting pain during dressing changes have their wounds redressed three times a week as opposed to weekly, indicating that frequency of dressing changes play a role in the amount of pain experienced. In addition to self-report, physiological indicators of pain such as heart rate, blood pressure, and respiratory rate have been measured during dressing changes. In a study done by Upton, Solowieg, Hender, and Woo (2012) that examined the relationship between stress and pain during wound dressing changes, it was found that heart rate was significantly higher at dressing change as well as mean state anxiety scores, numerical pain, and stress ratings when compared to the control condition. In another study it was found that not only is pain-induced stress prevalent during wound dressing changes, but this stress can also result in delayed wound healing through its physiologic manifestations such as increased cortisol levels (Upton & Solowiej, 2012).

Dressing selection has been identified as a key factor in the amount of pain that a patient experiences during wound care procedures. It has been found that patients experience more pain with gauze dressings than any other advanced moisture balance dressings, yet gauze continues to be one of the most commonly used dressings in clinical practice (Woo, Abbott, & Librach, 2013). To support this, a study conducted in France found that participants who were switched from simple gauze dressings to a new non-adherent dressing that promoted a moist wound-healing environment reported decreased pain during dressing change with acute and chronic wounds (Meaume et al., 2004). Atraumatic and nonadherent dressing selections, such as silicone, have been found to minimize pain during dressing changes when used instead of traditional

gauze dressings (Woo et al., 2013). Furthermore, physiological indicators of pain including heart rate, blood pressure, and cortisol level were found to be higher during dressing changes in patients being treated with conventional dressings when compared to the atraumatic dressings (Upton & Solowiej, 2012).

Pain is well controlled in the hospital setting, but once the patient leaves pain control is often a challenge in the community setting. It has been found that the highest pain scores reported on a visual analog scale (VAS) are more likely to be seen in community care settings versus lower scores that are seen in the hospital setting (Butcher & White, 2014).

In a descriptive correlational study by Van Hecke and colleagues (2009), they found that pain control in the community setting is inadequate and that pain often goes untreated, either from underestimation by nurses or patients considering their pain to be “expected” or “normal”. This study surveyed community health nurses with 82.9% confirming that their patients had leg ulcer pain related to treatment methods and that only one third of these patients received analgesics for their pain. A similar study looked at how effective community leg ulcer clinics were in providing advanced support, treatment, and social support in controlling pain for individuals with chronic venous leg ulcers (Edwards et al., 2004). Significant reduction was found in the intervention group in regards to amount of pain experienced, the degree to which pain affected mood, sleep, and interfered with normal work. Pain is one of the main limitations to mobility and lifestyle for individuals with these wounds, therefore, it is important to control it to maintain the patient's quality of life.

Inconsistent wound care may lead to poor healing, increased pain, and impaired quality of life. Determining consistency in treating ulcers in the community setting can be done through observational studies of the practices employed by community health nurses. It has been found

that dry wound care is still performed, despite the evidence for occlusive dressings (Ribu, Haram, & Rustøen, 2003). It has also been found that over half of community health nurses do not practice proper aseptic technique when caring for wounds, even when knowing that infection is a major factor determining wound related pain. Improper documentation and communication between nurses also contributed to the inconsistency in wound care (Ribu et al., 2003). Van Hecke and colleauges (2011) found that a major factor influencing compliance and consistency with wound care treatment was the level of trust the patient had with their nurse, making this another important factor to consider when assessing wound care quality in the community health setting.

When the patient transitions from the hospital to a community setting, care of the wound continues but pain control changes. Some important questions to ask when assessing pain control during wound treatment outside of the hospital include: 1) How well controlled is pain in this community dwelling wound care patient? 2) Are guidelines used for management of pain in this type of wound care patient? 3) Are non-pharmacologic therapies used by patients and/or nurses in controlling their pain at an acceptable level?

Complementary and Alternative Medicine (CAM)

CAM is defined as "a group of diverse medical and health care systems, practices, and products that are not generally considered part of conventional medicine" (Tobon, 2010, p. 47). Complementary medicine is used in conjunction with conventional medicine, whereas alternative medicine is used in place of it. The 4 main categories of CAM practice are biologically-based, energy medicine, manipulative or body-based, and mind-body medicine (Tobon, 2010). CAM has been used as a strategy to engage older adults with chronic venous leg ulcer pain to become more active in their care, therefore empowering them and minimizing social isolation (Tobon,

2010). The most commonly used CAM therapies identified by a surveyed group of community-dwelling older adults in the Midwest were nutritional supplements, spiritual healing, vitamins, and herbal medicine (Tobon, 2010). Cognitive therapy is considered to be a part of CAM, and is aimed at altering anxiety by modifying attitudes, beliefs, and expectations of pain. This therapy has been found to be significantly successful at managing pain during wound care procedures (Woo et al., 2013). Some other techniques that have been employed with success include distraction techniques, imagery, and relaxation (Woo et al., 2013). Studies using CAM therapies during wound dressing change procedures have shown some success in the literature.

A number of complementary therapies have been used to study their effect on pain levels during wound dressing change. Among those in the literature were, high-intensity transcutaneous nerve stimulation (HI-TENS), aromatherapy, guided imagery, virtual reality distraction, and massage.

The use of high-intensity transcutaneous nerve stimulation (HI-TENS) has been found to significantly reduce severe to moderate pain during wound care procedures. In one study it was found that pain was decreased on an average of 3 points on a numerical pain rating scale for participants who used HI-TENS in comparison to those who did not (Gardner et al., 2014). This reduction is comparable to the pain reduction that is achieved with opioid analgesics in the surgical wound environment (Gardner et al., 2014).

Aromatherapy is a practice where essential oils are absorbed by the body through various routes stimulating the limbic system to release neurochemicals that reduce pain (Seyyed-Rasooli et al., 2016). Massage and inhalation as routes of absorption for aromatherapy have been found to be effective in reducing pain and anxiety in burn patients (Seyyed-Rasooli et al., 2016). It has been found that lavender scent and relaxing music employed during dressing changes of vascular

wounds significantly reduces pain immediately following wound care procedures (Kane et al., 2004).

Guided imagery promotes self-management in individuals dealing with a wide variety of pain types. Individuals can use guided imagery to change their beliefs about pain and alter the stress response that their body produces in response to the pain (Lewandowski & Jacobson, 2013). Guided imagery is also thought to decrease pain by promoting immune-mediated analgesia, which is a process through which immune cells release endogenous opioids during periods of painful inflammatory conditions (Lewandowski & Jacobson, 2013). Chronic stress can actually suppress this response; therefore, the positive effects of guided imagery on stress help to preserve this mechanism. In a study that investigated the effects of progressive relaxation techniques and guided imagery, it was found that individuals with chronic pain who were taught to perform these techniques at home experienced clinically significant decreases in self-reported pain (Chen & Francis, 2010).

Another mind-body complementary therapy used with primarily younger patients is virtual reality. In a study involving children with chronic wounds on lower limbs it was found that virtual reality distraction using a video game lowered pain scores as well as pulse rates before, during, and after dressing changes when compared to a control group receiving standard distraction techniques. The duration of the dressing change was also significantly decreased in this group (Hua, Qui, Yao, Zhang, & Chen, 2015).

Massage is one of the top ten most commonly used complementary therapies by individuals (NCCIH, 2016). Daily massage therapy has been supported by research in significantly reducing VAS pain ratings as well as itching and anxiety levels in adolescents with burns when compared to a control group (Gürol, Polat, & Akçay, 2010). Massage, when applied

by trained professionals, is known to be more effective than other methods used for pain reduction such as acupuncture and cold exposure (Gurol et al., 2010).

Best practice guidelines

While pain may physically be related to the procedure, often it is based on the perception of the patient (Czarnecki et al., 2011). Some things that may affect a patient's perception of pain include emotional and psychological state, level of anxiety, previous pain experiences, understanding of the procedure, and setting. Nonpharmacological interventions to manage pain may be used in conjunction with pharmacological measures to reduce patient's physical pain and change their perception of pain. The nurse's role in implementing these interventions includes evaluating the appropriateness of their use for the procedure, determining the patient's willingness and readiness to use various therapies, teaching the patient how to use the available options, supporting and reinforcing correct use before, during, and after the procedure, and evaluating and documenting the effectiveness of the activity (Czarnecki et al., 2011).

The American Society of Pain Management Nurses (ASPMN) believes that a procedure should be considered a biopsychosocial experience for the patient rather than simply a task to be completed by the healthcare provider, and therefore, the creation of an individualized plan of care for comfort and coping is required before the procedure begins (Czarnecki et al., 2011). In a position paper outlining clinical practice recommendations, interventions outlined for inclusion in pain management for wound care patients are: a.) Establish a plan and agreed upon comfort goal for the patient. b.) Include distraction, breathing, or relaxation coping techniques. c.) Provide education to meet patient needs. d.) Acknowledge patient fears and concerns. e). Consider relevant factors when choosing location. f.) Agree on optimal patient position. g.) Provide verbal coaching in a calm, reassuring manner (Czarnecki et al., 2011).

Whatever the cause of pain, the psychosocial environment will influence the patient's experience during dressing change procedures (World Union of Wound Healing Societies, 2004). In a best practice guideline specifically addressing wound pain during dressing change the World Union of Wound Healing Society (2004) outlines how to reduce pain. They identified the following interventions: a.) When assessing pain it is key to involve the patient as much as possible using an agreed upon method and a layered approach that assesses factors such as feelings, perceptions, expectations, meaning of pain and its impact on daily life. b.) Pain should also be assessed before, during, and after the procedure. c.) Choosing a scale to assess pain should reflect individual patient needs and the same scale should be consistently used throughout treatment. d.) When preparing the environment for the procedure to take place in a non-stressful environment should be chosen, proper positioning should be evaluated, and the patient should be involved throughout and allowed a full explanation of the procedure. e.) Techniques that may be used to allowing for optimum comfort include "time-outs", focusing on slow rhythmic breathing, counting up and down, and listening to music.

The purpose of this program evaluation is to understand 1) the demographics and clinical characteristics of community dwelling wound care patients in a rural community, 2) the prevalence of pain and how it is managed, and 3) if best practice guidelines are employed for pain control in community wound patients.

Context of study

This programmatic study was conducted in a rural county in eastern North Carolina (NC). The county is largely agricultural with a population of 126,000. The demographic composition is 63.3% White, 32% Black, and 11.2 % Hispanic/Latino (United States Census Bureau, 2015). The population of African Americans is higher in this county than the national average of 13.3%

for most geographic areas (United States Census Bureau, 2015). Infrastructure of the county includes, an air force base, numerous factories, and a wide variety of religious institutions. An environmental assessment of the community showed there was a public bus system, numerous fast food restaurants, and various residential neighborhoods. A community soup kitchen serves between 100-120 persons, six days per week. A public school system serves over 19,000 children from pre-school through high school. The high school graduation rate is lower than the state rate. Approximately 18.4% of the population lives in poverty (United States Census Bureau, 2015).

The health resources available to the population include hospitals, private medical clinics, nursing homes, and the health department. A federally qualified health center serves the under or uninsured individuals with 5 outreach clinics in the county. Individuals without health insurance under the age of 65 make up 16.7% of the population. According to the County Community Health Assessment (2012) diabetes is the 5th leading cause of death in the county, with 12.8% of the population being diagnosed in 2012 (Wayne County Community Health Assessment). Additionally, 35% of adults in the county are categorized as obese.

This study was done as part of a seven-week public health clinical rotation in a baccalaureate nursing program in a rural county in eastern North Carolina. The study site for this program evaluation was a wound healing and hyperbaric center that is affiliated with the local community hospital. The wound center is a new building that sees 50-60 clients per day. It is staffed by registered nurses, case managers, hyperbaric technicians, 2 nurse practitioners, and one physician. Collaboration with a clinical preceptor and faculty mentor assisted in the development of an audit tool relevant to pain practice guidelines in the community dwelling pain patient, as well as analysis of results from chart audits and observations.

Methodology

A program evaluation was conducted using a chart audit tool to gather demographic and clinical information in a community wound care clinic. Completion of the audit tool included data gathered each day spent in the clinic relevant to pain experienced by the patient along with documented and observed wound practices. Specific data from chart audits included demographic data including gender, age, and race/ethnicity and data about the wounds including, type, location, age, dressing, and change frequency. Pain specific data points included, topical medications, pain medication, antibiotics, numeric rating scale (NRS) of 0-10, and complementary pain management therapies being used. This data was analyzed for descriptive statistics of the population and for pain practices used when compared to best practice guidelines. Descriptive statistics and frequencies were run using IBM SPSS version 22.

Findings/Results

A total of 50 client charts and observations were made during patient wound care visits to the clinic. Demographic data can be found in Table 1 for the overall population (N=50) and the reported pain group (n=24). The mean age of the sample (N=50) was 61.48 years with 56% being male. Frequencies of wound type, location, dressing type, and change frequency can be found in Table 2. Clients were receiving wound care most commonly related to diabetes (36%), surgery (22%), and pressure ulcers (20%). The foot (34%) and leg (26%) were primary locations of the wounds.

Pain management for the wounds along with mean pain score are found in Table 3 for the overall population and the reported pain group. A major finding of the program evaluation in the reported pain group was at the time of wound care 48% (n=24) of clients reported a mean pain score of 5.04 (*S.D.* $\pm$ 1.83) on a numeric pain scale (0-10), with 8 being the highest reported pain

score by one individual. Of those with pain 83.3% had pain medication prescribed. No clients reported use of non-pharmacologic or complementary therapies in the overall or pain group. An observed finding when patients were being assessed and managed for their wounds was that there was no change in the pain management plan.

Discussion

In this programmatic evaluation of community dwelling wound patients receiving care at a wound clinic, the clients seen reflects the demographics of the county. The total sample (*N = 50)* had a mean age of 61.5 years, were mostly men (56%) and white (68%). In the community assessment, it was also noted that diabetes was a common diagnosis, which reflects within the evaluation preformed at the wound care clinic. Diabetic wounds (36%) were the most common cause of the total number of clients seen (*N* = 50).

In the sample of clients, those that reported pain at the time of their visit to the clinic was nearly half (48%, *n*=24). Of the reported pain group, the mean pain on a numerical rating scale (NRS) was 5.04 ($\pm$ 1.83). The highest reported pain on the NRS was an 8. In the group reporting they had pain during their visit to the clinic 83.3% stated they had prescribed pain medication at home. The elevated pain level in this sample of community dwelling wound patient is reflective of the literature. Van Hecke and colleagues (2008) reported that pain control is not adequate after leaving the hospital and returning to wound care in the community. In their study, they found that approximately 83% of their sample had pain during dressing change for leg ulcers in the community with only 33% who received pain medication for control. Contrary to Van Hecke et al., this evaluation found that a high number had medication prescribed, but when assessed in the wound clinic, they continued to report pain.

Another contributor to pain during wound care is the frequency in which dressings are changed. Butcher and White (2014) reported that pain typically is worse in those clients with wounds that have dressings changed 3 times a week or more often. This supports what was found in this evaluation. Of the reported pain group 79.2% had wounds redressed 3 times a week or more often.

The type of dressing used can also add to the overall pain experience. Despite the advanced dressings on the market, gauze continues to be primarily used. Studies have supported that patients experience more pain when gauze or absorbent dressings are used (Meaume et al., 2004; Woo et al., 2013). This evaluation also supports these findings, with absorbent dressings being one of the top dressings used in the reported pain group (20.8%).

A major finding of this study was that no clients reported use of non-pharmacologic or complementary therapies, despite their use being a best practice for pain control for wounds (Butcher & White, 2014; World Union of Wound Healing Societies, 2004). Furthermore, there was no observation of this being part of the discussion during pain assessment.

Of the two guidelines that specifically discussed adult wound care pain in the community, one was conducted as a delphi study from the United Kingdom (UK) (Butcher & White, 2016) and the second addressed principles of best practice from the World Union of Wound Healing Society (2004), also from the UK. No specific best practice guidleines were found for wound pain during dressing change in the community dwelling patient from the United States of America (USA). Reflective of these guidelines, an accurate and thorough assessment is recommended for optimal pain management. While an assessment was done in the wound care clinic, observation showed no consistent method of pain assessment. While some clients reported moderate pain at the time of wound care even with pain medication prescribed, non-

pharmacologic therapies, such as “time-out”, focused breathing, counting, and music were not discussed or explored with clients as options (World Union of Wound Healing Societies, 2004). In addition, pain should be assessed before, during, and after procedures and include factors such as feelings, perceptions, expectations, meaning of pain and its impact on daily life (World Union of Wound Healing Societies, 2004). The only form of assessment done was prior to wound care by a response to pain numeric rating. Furthermore, no adjustment was made in the client’s pain plan when pain was reported.

Limitations

A limitation of this study was the small sample of clients seen in a wound clinic that typically has 50-60 visits per day. A larger sample is needed to see the overall frequency of pain in this type of clinic in a rural community setting. Another limitation was the inability to collect data relevant to how long the client had been receiving wound care on their particular wound. This information was available for some clients and not for others. This could add to better understanding which clients are dealing with elevated levels of pain and help in the management of wound pain.

Conclusion

Nonpharmacological methods and complementary therapy have been identified to be best practice for pain management related to wounds. The lack of the use of nonpharmacological pain relief methods in the community setting has major implications for wound care nurses. Additional studies comparing pain scores in patients with wounds before and after receiving complementary pain relief methods could be a future research initiative that would add to nursing knowledge in this area. The literature provided very few studies related to pain management in community dwelling wound patients. Furthermore, clinical guidelines for this

specific group of patients need to be further explored and adapted nationally to guide nursing practice in the community.

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Table 1.

Demographics (N = 50)

Variable	Total N (%)	Reported Pain Group n (%)
Age, mean (SD)	61.48 (±16.25)	61.75(±13.57)
Gender		
Male	28(56)	12(50)
Female	22(44)	12(50)
Race		
White	34(68)	14(58.3)
African American	15(30)	10(41.7)
Hispanic	1(2)	0(0)

Table 2.

Frequencies Wound, Dressing, Pain & Therapy

Variable	Total *N*=50 *(%)*	Reported Pain Group *n=24* (%)
Wound Type		
Diabetic	18(36)	9(37.5)
Surgical	11(22)	7(29.2)
Pressure	10(20)	4(16.7)
Trauma	4(8)	1(4.2)
Venous	3(6)	2(8.3)
Burn	1(2)	0(0)
Other	3(6)	1(4.2)
Wound Location		
Foot	17(34)	10(41.7)
Leg	13(26)	6(25)
Sacrum	4(8)	1(4.2)
Back	4(8)	4(16.7)
Abdomen	4(8)	1(4.2)
Amputation	3(6)	0(0)
Other	5(10)	2(8.3)
Dressing Type		
Silver	13(26)	6(25)
Absorbent	10(20)	5(20.8)
Foam	6(12)	3(12.5)
Wound Vac	6(12)	4(16.7)
Matrix	5(10)	1(4.2)
Petroleum	3(6)	1(4.2)
Amniotic Membrane	1(2)	1(4.2)
Silicone	1(2)	0(0)
Other	5(10)	3(12.5)
Dressing Change Frequency		
Daily	10(20)	7(29.2)
3 x week	29(58)	12(50)
2 x week	5(10)	2(8.3)
1 x week	4(8)	2(8.3)
Other	2(4)	1(4.2)

Table 3.

Therapies Used for Pain Control

Variable	Total *N= 50* (%)	Reported Pain Group *n=24*(%)
Pain Score (0-10), mean (SD)	2.42(±2.84)	5.04(±1.83)
Topical Med Use		
Yes	15(30)	7(29.2)
No	35(70)	17(70.8)
Antibiotic Use		
Yes	22(44)	11(45.8)
No	28(56)	13(54.2)
Pain Med Use		
Yes	34(68)	20(83.3)
No	16(32)	4(16.7)
Alternate Therapy Use		
Yes	0(0)	0(0)
No	50(100)	24(100)