Nurses’ Awareness of and Intention to Use Music Therapy in Practice

by

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A thesis submitted in conformity with the requirements for the degree of Doctor of Philosophy in Nursing

Graduate Department of Nursing
University of Toronto

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Abstract

BACKGROUND: Anxiety and pain are prevalent symptoms experienced by inpatients in acute, long-term and rehabilitation care settings. There is a need for effective relief from these symptoms without increasing the risks as a result of the intervention. Empirical evidence supports the use of music as a complementary therapy for the management of anxiety and pain. However, there is limited knowledge of nurses’ awareness of and intention to use music therapy in clinical practice.

AIMS: This study examined nurses’ awareness of and intention to use music therapy for the management of anxiety and pain, and factors that influenced nurses’ intention to implement music therapy in practice. A conceptual framework incorporating elements of the Theory of Planned Behaviour and Triandis’ Theory of Interpersonal Behaviour guided the study.

METHOD: A correlational, survey-type design was used. The sample consisted of 161 Registered Nurses who were currently providing direct care to patients in acute, rehabilitation and long-term care settings in Ontario. Data were collected using adapted instruments that were pilot tested.
RESULTS: Attitudes, subjective norms, perceived behavioural control, moral norms, and awareness were positively and moderately (all $\beta > 0.20$, $p < .05$) associated with nurses’ intention to use music therapy for the management of anxiety and pain. Role beliefs, selected demographic and professional characteristics were not significantly related to nurses’ intention to use music therapy for either anxiety or pain management. Nurse, client and unit factors were additional factors reported by nurses as affecting their use of music therapy in practice.

IMPLICATIONS: The findings suggested the need for strategies to educate nurses about music therapy to facilitate its implementation in clinical practice. Research exploring why nurses are unaware of music therapy as an intervention and revisions to the current conceptual framework to incorporate additional factors influencing intervention use are required.
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Table of Contents

Chapter 1: Background and Problem Statement ................................................................. 1
   Introduction ......................................................................................................................... 1
      Anxiety and pain in clinical practice .............................................................................. 1
      Therapies for anxiety reduction and pain management ................................................... 6
      Music therapy as an intervention for the treatment of pain and anxiety ....................... 7
      The use of music therapy: an issue of knowledge translation ....................................... 9
   Problem Statement .......................................................................................................... 11
   Study Purposes ................................................................................................................. 12
   Significance ....................................................................................................................... 13

Chapter 2: Literature Review and Conceptual Framework ............................................... 14
   Anxiety .............................................................................................................................. 14
   Pain ................................................................................................................................. 17
   Music Therapy .................................................................................................................. 21
   Summary of Literature Review ...................................................................................... 32
   Knowledge Translation and Theories of Behavioural Change .......................................... 32
   Factors Predicting Nurses’ Behavioural Intention and Performance .................................. 35
   Conceptual Framework .................................................................................................... 38
      Relationships to be tested and evidence supporting the relationships ......................... 42

Chapter 3: Methodology .................................................................................................... 47
   Pilot Testing of Measures ............................................................................................... 47
   Design ............................................................................................................................... 48
   Sample and Setting ......................................................................................................... 49
   Sample Selection Criteria ............................................................................................... 49
   Sampling Technique ....................................................................................................... 49
Sample Size ............................................................................................................................................ 50
Variables and Measures ......................................................................................................................... 51
Procedure for Participant Screening, Recruitment and Data Collection .............................................. 57
Preparation for Data Analysis ................................................................................................................ 58
Data Analysis .......................................................................................................................................... 59
Ethical Conduct and Considerations ...................................................................................................... 62
Summary ................................................................................................................................................ 63
Chapter 4: Results ................................................................................................................................. 64
Pilot Study Results .................................................................................................................................. 64
Main Study Results .................................................................................................................................. 65
  Response rates ....................................................................................................................................... 65
  Demographic and professional characteristics of participants ............................................................ 65
  Study questions ..................................................................................................................................... 71
  Summary ................................................................................................................................................ 95
Chapter 5: Discussion, Study Limitations, and Implications ................................................................. 96
Summary of Results ............................................................................................................................... 96
Representativeness of the Sample .......................................................................................................... 97
Main Discussion ...................................................................................................................................... 99
  Nurses’ awareness of music therapy ..................................................................................................... 99
  Factors affecting nurses’ intention to use music therapy .................................................................. 100
  Additional factors influencing nurses’ use of music therapy .............................................................. 108
Strengths and Limitations of the Study ................................................................................................. 109
Implications for Practice, Research and Theory .................................................................................. 111
Conclusion .............................................................................................................................................. 114
References .............................................................................................................................................. 116
List of Tables

Table 1: *Demographic and Professional Characteristics of the Sample* .................................. 67

Table 2: *Mean Scores on Items Assessing Awareness of Music Therapy* ................................. 73

Table 3: *Means, Standard Deviations, and Range for TPB concepts* ....................................... 79

Table 4: *Correlations Among TPB Concepts - Anxiety* ............................................................ 80

Table 5: *Correlations Among TPB Concepts - Pain* ............................................................... 81

Table 6: *Relationships between TPB Concepts and Intention to Use Music Therapy for Management of Anxiety* ........................................................................................................ 83

Table 7: *Relationships between TPB Concepts and Intention to Use Music Therapy for Management of Pain* ........................................................................................................ 83

Table 8: *Correlations between Demographic and Professional Characteristics, and the TPB Concepts - Anxiety* ........................................................................................................ 85

Table 9: *Correlations between Demographic and Professional Characteristics, and the TPB Concepts - Pain* ........................................................................................................ 86

Table 10: *Relationships between Intention to Use Music Therapy for Anxiety, and TPB Concepts, Demographic and Professional Characteristics, and Awareness* ........................................... 88

Table 11: *Relationships between Intention to Use Music Therapy for Pain, and TPB Concepts, Demographic and Professional Characteristics, and Awareness* ........................................... 89

Table 12: *Factors that Influence Use of Music Therapy for Anxiety and Pain* ............................ 93
List of Figures

Figure 1: Conceptual Framework ................................................................. 39
List of Appendices

Appendix A: Additional Questions for Pilot Testing ................................................................. 131
Appendix B: Questionnaire ....................................................................................................... 132
Appendix C: Content Validation ............................................................................................... 157
Appendix D: Context Validitation Index Scores obtained from the Pilot Study ...................... 160
Appendix E: Cover Letter ......................................................................................................... 172
Appendix F: Postcard ................................................................................................................ 174
Appendix G: Follow-up Cover Letter ..................................................................................... 176
Chapter 1
Background and Problem Statement

Patients frequently experience anxiety and pain in the clinical setting. Music is a well-established complementary therapy that has been shown to effectively decrease both anxiety and pain in clinical practice. Yet, it is not commonly used in the practice setting. Guided by the Theory of Planned Behaviour and the Theory of Interpersonal Behaviour, this study investigated the intention of registered nurses to use music therapy to manage pain and anxiety experienced by patients in acute, long-term and rehabilitation care settings, and the factors that influence nurses’ intention to implement music therapy as an intervention in their day-to-day practice in Ontario hospitals.

Introduction

Anxiety and pain in clinical practice

Anxiety and pain are prevalent symptoms experienced by patients admitted to various health care settings. In acute health care settings, patients experience high levels of anxiety prior to surgery (Badner, Nielson, Munk, Kwiatkowska & Gelb, 1990). This anxiety is related to a fear of death and disfigurement, loss of control and fear of being in an unfamiliar environment (Badner et al., 1990). Even minor surgical procedures can produce significant levels of anxiety and affect post-operative recovery time (Lee et al., 2004).

Patients in hospitals and long-term care facilities are also subject to a number of invasive procedures during their hospitalization. The procedures could vary from routine blood draws, intravenous infusions, urinary catheter insertion to more complex procedures such as chest tube or central line insertion. Performance of invasive procedures could induce significant levels of anxiety (Leach, Tanner & Zernicke, 2000).
As hospitals focus on maximizing medical interventions and decreasing hospital stays, patients are receiving less psychosocial support and experience increased levels of anxiety (Norred, 2000). Anxiety is defined as a "transitory emotional state or condition of the human organism that is characterized by subjective, consciously perceived feelings of tension and apprehension, and heightened autonomic nervous system activity" (Spielberger, 1983). Anxiety has various physiological manifestations such as palpitations, trembling, shortness of breath, chest pains, nausea and vomiting. Emotional and behavioural manifestations include restlessness, irritability, apprehension or dread, difficulty concentrating and tension.

Anxiety is associated with both physiological and psychological complications. It can increase respiratory rate, blood pressure and heart rate, and lead to nausea. It also is associated with negative behavioural and cognitive changes (Cooke, Chaboyer & Hiratos, 2005). Many of these anxiety-related complications contribute to adverse outcomes resulting in longer recovery times (Cooke et al., 2005), greater anaesthetic requirements, need for increased doses of pain medication, longer hospitalizations and a higher likelihood of post-surgical morbidity (Lee, Henderson & Shum, 2004).

Although there are pharmacological and psychological interventions available for managing anxiety, the interventions are not widely used for two main reasons. First, pharmacological treatments, such as anxiolytic medications, are known to cause side effects such as drowsiness, oversedation, and irritation; these side effects may delay discharge, particularly for patients undergoing out-patient procedures (Cooke et al., 2005) or may increase the risk of falls for frail adults. Therefore, many health care professionals view these treatments as unnecessary for minor procedures (Smith & Pittaway, 2003). Second, pharmacological treatments can be expensive (Lee, Chung, M. Chan & W. Chan, 2005). For example, research examining the effectiveness of anxiolytic
medications in decreasing anxiety levels during mechanical ventilation showed that these medications led to increased mechanical ventilation time and higher health care costs (Kollef et al., 1998; Seneff, Wagner, Thompson, Honycutt & Silver, 2000).

Psychological interventions focusing on anxiety-alleviation, such as relaxation techniques and counselling are effective. However, their implementation is demanding, requiring additional resources and time (Cooke et al., 2005). Well-trained health care professionals may not be available to facilitate the delivery of these interventions (Cooke et al., 2005). Often, psychological interventions are given in multiple individual or group sessions over time, which is not feasible in the current healthcare context characterized by competing demands to manage a case mix of high acuity and complexity.

Pain is another symptom experienced by patients across various health care settings. Pain is associated with different illnesses and medical and surgical procedures. Pain is defined as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage” (Merskey, 1964). Pain poses severe threats to health and well-being. It causes autonomic, behavioural, immunological and psychological responses that may hinder the healing process (Dahl et al., 2003; Dunn, 2004). For instance, pain can cause tachycardia, increase the heart’s demand for oxygen and contribute to cardiac ischemia (Morrison et al., 2003). Poor pain control can cause cardiac stress which can lead to myocardial infarction (Asher, 2004). Unrelieved pain in the chest cavity may cause patients to minimize movement of thoracic and abdominal muscles. Limiting chest wall movement can cause atelectasis and pneumonia due to ineffective clearance of mucous and secretions from the lungs. Furthermore, lung dysfunction and its resulting hypoxia can lead to cardiac complications, compromise wound healing and cause disorientation and confusion (Middleton, 2003). Uncontrolled pain can also precipitate the incidence
of delirium in older patients (Morrison et al., 2003). Pain can interfere with activity and lead to longer bed rest after surgery (Kehlet & Holte, 2001). Increased bed rest can delay initiation of physical therapy and ambulation, increase the possibility of developing thromboemboli, cause functional impairment and muscle atrophy which interfere with recovery (Morrison et al., 2003).

With the increase in the aging population, older patients constitute a greater percentage of hospitalized clients. In Ontario, older adults (over the age of 65) account for 44% of the health care budget, 50-60% of acute hospital days, and over 90% of long-term care facility days (Dalziel, 2002). About 25 to 50% of older adults suffer from chronic pain (Gallagher, 2008). The incidence of chronic pain is even higher in residents of long-term care facilities with 45 to 80% of the residents reporting severe levels of pain (Gallagher, 2008).

Pain affects psychological and physiological well-being (Ikonomidou, Rehnstrom & Naesh, 2004). Specifically, pain contributes to psychological stress which negatively influences cardiovascular function, suppresses the immune system (Ikonomidou et al., 2004), and constrains functional status (Zalon, 2004). Unrelieved pain is associated with cognitive impairment, anxiety and depression (Chodosh, Ferrell, Shekelle & Wenger, 2001; Strassels, Chen & Carr, 2002); it can negatively affect one’s mood, general activity, and relationships with others. Pain can also lead to disturbances with sleep and appetite (Chodosh et al., 2001; Strassels et al., 2002). Ineffective relief of acute pain can also lead to chronic pain syndromes (Carr, 1998; Kehlet, Jensen & Woolf, 2006).

Despite the distress and complications associated with pain and the availability of effective treatments, pain remains poorly managed in acute, long-term and rehabilitation settings. There are many reasons why pain continues to be poorly managed particularly in the older population. Poor pain management is linked to misconceptions about pain illustrated with the patients’ and health care
professionals’ belief that pain is a natural part of disease, some procedures and aging (Gallagher, 2008). Patients with cognitive or sensory impairments have difficulty articulating their pain (Gallagher, 2008). Health care professionals often fail to properly assess pain in older patients because this can often be a difficult and time consuming process (Gallagher, 2008). Yet, even when pain is assessed, health care professionals often do not manage the pain effectively because of misbeliefs or lack of knowledge about opioid use illustrated by fear of addiction and the idea that medication should only be used when pain reaches severe levels (Lebovits et al., 1997; Morrison et al., 2003). Previous studies have also shown that older patients frequently receive less analgesia after surgery than younger patients (Morrison et al., 2003), related to healthcare professionals’ awareness of increased risk of opioid side effects in older patients.

Pain management in older patients continues to be a challenging issue for nursing. Many of the patients are frail or have deteriorating conditions due to chronic, multiple health problems and inadequate social support (Paynter & Mamaril, 2004). Sensory impairments, disability or dementia often experienced by institutionalized older adults may jeopardize pain management because it is difficult to perform nursing assessments on these persons (Paynter & Mamaril, 2004).

In summary, anxiety and pain are experienced by young and older adults admitted to different clinical programs within hospitals and long term care facilities. They yield negative outcomes that interfere with physiological and psychological functioning and result in longer hospitalization and poor patient satisfaction with their care (Dunn, 2004). Thus, health care professionals are challenged to provide effective symptom management in these settings (Paynter & Mamaril, 2004).
Therapies for anxiety reduction and pain management

A wide range of pharmacological (such as anxiolytic medications) and complementary therapies such as relaxation, biofeedback, touch therapy and visual therapy are available to manage anxiety (Norred, 2000; Mitchell, 2003). The use of anxiolytic medications can be problematic for patients due to their potential adverse effects (e.g. over sedation, agitation) and associated cost to the health care system. Thus, they may not be suitable for all patients. Implementation of complementary therapies can be time consuming and require skilled personnel to effectively provide these therapies.

With the growing need to provide optimal pain management, health care professionals are exploring non-pharmacological, complementary and multimodal (i.e. combination) interventions. Conventional pharmacological therapies are often ineffective due to health care professionals’, patients’ and their families’ misconceptions about pain medications such as fear of life-threatening side-effects and addiction (Lebovits et al., 1997). The misconceptions interfere with the provision of the required medications dosage, which reduces its potency in successfully relieving pain. Furthermore, medication administration requires meticulous patient monitoring, which is demanding in acutely ill and cognitively impaired persons.

Cultural beliefs and values, cognitive impairment and communication difficulties may also influence the pharmacological management of anxiety and pain (Paynter & Mamaril, 2004). Some patients may view that pain is an expected and normal part of their illness or condition. Patients may also believe that their pain cannot be managed effectively; they may think that their pain is not severe enough; they may have an unfavourable perception of pharmacological pain treatments and be concerned about medication side effects and that treating pain can potentially mask active disease processes thereby causing further complications. Therefore they do not ask for pain medication
(Fitzcharles, DaCosta, Ware & Shir, 2009). Health care professionals often receive little formal education related to pain management. They may have misbeliefs and knowledge deficits with regards to using appropriate medications, monitoring patients’ responses to medications and managing side-effects (Lebovits et al., 1997; Watt-Watson, 1992).

There is a need for alternative pain management strategies. Results of recent research support the effectiveness of non-pharmacological multimodal interventions in alleviating pain (Gallagher, 2008; Nilsson, Rawal, Engvist & Unosson, 2003a; Paynter & Mamaril, 2004). Since pain is a multi-dimensional phenomenon (Melzack & Wall, 1996), effective therapies need to utilize a multi-modal approach. It is essential to find and use safe, yet effective therapy to manage pain that is frequently experienced by patients, of all age groups, admitted to hospitals. Nilsson et al. (2003a) identify the ideal intervention as one that is safe, effective, easy to implement and has few side effects. Therefore, many patients, health care professionals and researchers have turned to complementary treatments for managing anxiety and pain such as music therapy (Ikonomidou et al., 2004).

**Music therapy as an intervention for the treatment of pain and anxiety**

Music therapy is an established complementary therapy that uses music to achieve therapeutic outcomes. It can be administered effectively by health care professionals, including nurses, in clinical settings (Watkins, 1997). Music therapy has been linked to cognitive, emotional and physical well-being (Campbell, 1991).

Watkins (1997) proposed that music therapy could be utilized as an effective nursing intervention for the treatment of numerous health problems including anxiety and pain. Music therapy can be initiated by nurses, easily implemented, and requires minimal time and resources (McCaffrey & Freeman, 2003) and has no side effects (Dunn, 2004).
Nurses spend considerable time with patients as compared to other health care professionals. Thus, they are in a unique position to provide optimal care with regards to symptom management (Dunn, 2004). Dunn (2004) purported that nursing interventions may involve complementary and alternative therapies. Complementary therapies are often desired by patients, and by allowing patients to choose these therapies, nurses can also facilitate patient-centered approaches to care. Utilizing complementary evidence-based nursing interventions is consistent with the expected role of a registered nurse in Ontario (CNO, 2002).

Music therapy is becoming a well-researched and established complementary therapy that has positive effects on patient outcomes (Dunn, 2004). Music therapy can be used in patients of all age groups, presenting with various clinical conditions and admitted to different inpatient units as well as outpatient clinics (Evans, 2002; Kemper & Danhauer, 2005).

The positive effects of music therapy encompass maintaining, restoring, or improving physical and psychological health (Kemper & Danhauer, 2005; Watkins, 1997). Music therapy has been found effective for decreasing anxiety in hospitalized patients (Augustin & Hains, 1996; Brunges & Avigne, 2003; Lee et al., 2004, Guzzetta, 2000; Wang, Kulkarni, Dolev & Kain, 2002; Yung, Chui-Kam, French & Chan, 2002), for improving mood (Kemper & Danhauer, 2005; Koch, Kain, Ayoub & Rosenbaum, 1998), and for managing postoperative and procedural pain, as well as chronic pain conditions (Kemper & Danhauer, 2005). Music therapy has been used as a complementary intervention to promote the effectiveness of pharmacological pain medication (Nilsson, Rawal & Unosson, 2003b) and anesthesia (Ikonomidou et al., 2004).

Overall, music therapy has qualities that make it a viable nursing intervention for the management of anxiety and pain with demonstrated effectiveness in alleviating these symptoms. It is
safe and not associated with any adverse effects. It is easy to implement, and is deemed less expensive to administer (Brunges et Avigne, 2003; McCaffrey & Locsin, 2002; Mok & Wong, 2003; Norred, 2000). Application of music therapy requires minimal involvement by health care professionals and can be absorbed without any effort on the part of the listener (Mok & Wong, 2003).

Despite its documented benefits, there is limited knowledge of the extent to which music therapy is implemented in day-to-day practice. Empirical evidence supports the effectiveness of music therapy in alleviating anxiety and pain in different patient populations. However, it remains unclear if and to what extent health care professionals are using this intervention in practice for the management of anxiety and pain, which is an issue of knowledge translation. Specifically, it is unknown if nurses are aware of the beneficial effects of music therapy and provide it to manage anxiety and pain experienced by patients in different settings.

The use of music therapy: an issue of knowledge translation

With health care restructuring and diminishing resources, there is a strong push towards evidence-informed practice which is expected to improve the quality, safety and cost-effectiveness of health care (Milner, Estabrooks & Myrick, 2006). Knowledge translation is an essential element of evidence-informed practice.

Knowledge translation is defined by the Canadian Institutes of Health Research (2004) as “the exchange, synthesis and ethically-sound application of knowledge—within a complex system of interactions among researchers and users—to accelerate the capture of the benefits of research for Canadians through improved health, more effective services and products, and a strengthened health care system.” (p. 4). Of interest is the translation of knowledge pertaining to the therapeutic use of
music. Empirical evidence supports the effectiveness and safety of music therapy as a complementary intervention in managing anxiety and pain. However, the extent to which nurses are aware of and intend to use music therapy in the practice setting, as well as the factors that influence nurses’ intention to use this complementary intervention are not known.

Numerous theories have been proposed to explain human behaviour. Since the behaviour of health care professionals related to the application of interventions is largely guided by individual motivational predispositions (Godin, Belanger-Gravel, Eccles & Grimshaw, 2008), social psychological theories have been largely utilized to explain this behaviour. Two theories in particular have extensively guided research focusing on the behaviour of health care professionals: Ajzen’s Theory of Planned Behaviour and Triandis’ Theory of Interpersonal Behaviour (Ajzen, 1991; Triandis, 1980). In this study, these two theories were integrated into a framework for understanding and investigating nurses’ intention to utilize music therapy in their practice.

The Theory of Planned Behaviour (TPB) is based on social cognitive theories (Ajzen, 1991) and extends the Theory of Reasoned Action (Fishbein & Ajzen, 1975). The TPB proposes that engagement in a given behaviour is determined by intention to perform the behaviour. In turn, intention is influenced by three factors: attitudes towards the behaviour, subjective norms and perceived behavioural control (Ajzen, 1991). According to the TPB, additional factors such as demographic profile (e.g. age, sex, education) directly influence attitudes, subjective norms and behavioural control, which in turn, affect intention to engage in behaviour.

Although the theory of planned behaviour has been the predominant theory used in examining the social cognitive processes involved in the behaviour of health care professionals, other theories, primarily Triandis’ Theory of Interpersonal Behaviour (TIB), have also guided
research in this field of study. Triandis’ theory posits additional factors predictive of intention and behaviour. The factors include: past behaviour, social factors and emotions. Social factors entail self-concept, roles and norms (Triandis, 1980). Godin et al. (2008) undertook an extensive systematic review of studies that investigated the intentions and behaviours of health care professionals related to the use of evidence-based interventions. They generated a conceptual framework of health care professionals’ intentions and behaviours that integrates the Theory of Planned Behaviour and Triandis’ Theory of Interpersonal Behaviour. Godin et al.’s conceptual framework was adapted for this study aimed to examine nurses’ intention to use music therapy for managing anxiety and pain. More details about this framework are presented in Chapter 2.

**Problem Statement**

Anxiety and pain are symptoms prevalent among patients in different health care settings. However, pain and anxiety often remain undertreated or poorly managed which increases the likelihood of physiological, physical and psychological complications and subsequently the burden on patients and the health care system.

Complementary therapies can be used in conjunction with or as stand-alone treatments for the management of pain and anxiety. Music therapy is a complementary intervention that has been found effective in managing anxiety and pain in different patient populations. Despite the fact that there is empirical evidence to support its effectiveness, the extent to which music therapy is being used in practice remains unclear. There is limited knowledge of nurses’ awareness of and intention to use music therapy for the management of anxiety and pain, as well as perception of potential facilitators and barriers to its implementation in various clinical settings.
**Study Purpose**

The overall purpose of the study was twofold: 1) to understand nurses’ intention related to the implementation of music therapy for the management of anxiety and pain, and 2) to examine factors that influence nurses’ intention to use music therapy in their practice. The selection of these factors was guided by a conceptual framework integrating concepts from the Theory of Planned Behaviour and the Theory of Interpersonal Behaviour.

The specific research questions addressed in this study were:

**Question 1:** To what extent are nurses aware of music therapy as a complementary intervention for the effective management of anxiety and pain?

**Question 2:** What is the relative contribution of attitudes, subjective norms, moral norms, perceived behavioural control and role beliefs to nurses’ intention to use music therapy in practice for the management of anxiety and pain?

**Question 3:** What are the relationships between nurses’ attitudes, subjective norms, moral norms, perceived behavioural control and role beliefs regarding nurses’ intention to use music therapy and nurses’ demographic (age, sex, education) and professional (professional experience, area of practice, type of institution in which they work) characteristics, as well as awareness of music therapy as an effective intervention for the management of anxiety and pain?

**Question 4:** What is the relative contribution of nurses’ demographic and professional characteristics, awareness of music therapy, attitudes, subjective norms, moral norms, perceived behavioral control, and role beliefs to nurses’ intention to use music therapy for the management of anxiety and pain?
Question 5: What additional factors influence nurses’ intention to use music therapy in practice for the management of anxiety and pain?

Significance

Nurses have a significant role in symptom management. By providing direct patient care 24 hours a day, nurses, more so than any other health care professional group, are in a better position to provide symptom relief through frequent assessment and provision of appropriate pharmacological, behavioural or complementary interventions. There is significant evidence supporting the benefits of music therapy, as a complementary intervention, in relieving anxiety and pain. However, there is limited knowledge of its use in day-to-day practice.

The study addressed a gap in the literature, as it is not clear what factors affect the intention of nurses to use music therapy in practice. This was the first study that examined factors derived from a conceptual framework that incorporates elements of two well-supported social behavioural theories. By examining factors that influence the utilization of music therapy in practice, this study’s results could inform strategies to facilitate implementation of music therapy in clinical practice.
Chapter 2
Literature Review and Conceptual Framework

In this chapter, the literature pertinent to the major concepts of interest is reviewed. It begins with a brief description of anxiety and pain in order to facilitate an understanding of the impact of these symptoms in hospitalized patients. This is followed by an examination of music therapy, its definition, proposed mechanisms of action, and its effectiveness in managing anxiety and pain in various patient populations. Next, findings supporting the utility of the theories of behavioural change in guiding knowledge translation research are summarized. Lastly, the conceptual framework that guided the study is presented.

Anxiety

Anxiety is a prevalent problem in hospitalized patients. Anxiety can have both physical and psychological manifestations. Physical manifestations include increased heart rate and respiratory rate, chest pain or discomfort, dizziness, nausea, vomiting, trembling, shortness of breath, sweating, weakness, fatigue, muscle tension, dry mouth, restlessness and difficulty sleeping. The psychological manifestations of anxiety include irritability, tension, difficulty concentrating, inability to relax, feelings of powerlessness, impending danger and apprehension (Rector, Bourdeau, Kitchen & Joseph-Massiah, 2008).

The prevalence of anxiety within a hospital setting has been investigated in several studies. The majority of recent studies focused on surgical patients and reported high levels of anxiety experienced by patients undergoing surgical procedures (Brunges & Avigne, 2003; Evans, 2002; Kain, Sevarino, Alexander, Pincus & Mayes, 2000; Lee et al., 2004; Mitchell, 2003; Mok & Wong, 2003; Norred, 2000; Wang et al., 2002; Yung, Chui-Kam & Chan, 2002). Kindler, Harms, Amsler,
Ihde-Scholl and Scheidegger (2000) found that 25% of preoperative patients experienced anxiety, and Thornton, McQueen, Rosser, Kneale and Dixon (1997) reported that 24% of post-operative patients reported anxiety. Carr, Brockbank, Allen and Strike (2006) examined the frequency and patterns of anxiety in women undergoing gynecological surgery. They found that about 50% of the women had high anxiety levels on the morning of surgery. Women having a major surgery and those who had pain prior to surgery were most likely to experience significant pre-operative anxiety.

Kvaal, Macijauskiene, Engedal and Laake (2001) conducted a study to examine the prevalence of anxiety in hospitalized older patients. The results indicated that 41% of females and 47% of male older patients suffered from anxiety. McKinley et al. (2004) found that anxiety was reported among 85% of patients in Intensive Care environments. Hynininen, Breitve, Wiborg, Pallasen and Nordus (2005) conducted an extensive review of studies (n = 81) and reported that 10% to 100% of patients with chronic obstructive pulmonary disease (COPD) experience anxiety during hospitalization. Fu et al. (2007) reported on a multi-centre study that examined the prevalence of anxiety in 2465 hospitalized patients in Urban Chinese Hospitals with neurological, gastroenterological and gynecological diseases, as well as post-natal women. The prevalence of definitive anxiety symptoms (score ≥ 9 on the Hamilton anxiety scale) ranged from 4.4% (post-natal patients) to 21.8% (irritable bowel syndrome patients). However, the presence of probable anxiety symptoms (score ≥ 7 on the Hamilton anxiety scale) ranged from 59% (stroke patients) to 92% (post-natal women). Therefore, it is apparent that the prevalence of anxiety varies with factors such as age, gender and medical conditions, and anxiety affects a significant percentage of hospitalized patients.

Anxiety in hospitalized patients is related to the unfamiliar environment and uncertainty (Augustin & Hains, 1996; Brunges & Avigne, 2003; Wang et al., 2002). The hospital environment
can be anxiety-provoking not only because of its physical characteristics but also because of the ambient sounds, that is, health care professionals’ and other patients’ conversations and the typical noises associated with daily work and equipment used on inpatient units (Brunges & Avigne, 2003; Yung et al., 2002). Patients experience anxiety as a result of uncertainty related to unknown outcomes of the illness and related treatment, fear of pain, and loss of function (Augustin & Hains, 1996; Piliae & Chair, 2002; Wang et al., 2002).

Anxiety is associated with negative consequences. Poorly managed anxiety results in complications; these in turn, lead to longer hospitalizations and an overall poor satisfaction with care (Fu et al., 2007). Examples of complications include a heightened response to pain, delayed wound healing and inadequate retention of health information required for self-management following discharge from the hospital.

Kain et al. (2000) found a significant correlation (r = 0.35, p<.01) between pre-operative anxiety and post-operative pain. Patients with anxiety often have increased anesthetic requirements, and require more pain medication (Lee et al., 2004; Mitchell, 2003). Furthermore, anxiety can hinder surgical recovery by suppressing immune function, resulting in an increased likelihood of post-surgical complications such as delayed wound healing and sepsis (Lee et al., 2004; Mitchell, 2003).

Several treatments are currently available to manage anxiety. Pharmacological therapies are most frequently used in hospital settings, however they are not necessarily well-accepted by patients and staff. Selective serotonin reuptake inhibitors (SSRIs), benzodiazepines (BZDs), norepinephrine and serotonin reuptake inhibitors (NSRIs) are commonly used to treat anxiety (Rector et al., 2008). However, effective medications have side-effects. For example, SSRIs can commonly cause gastrointestinal discomfort, headaches, insomnia or nightmares (Compendium of Pharmaceuticals
and Specialties, 2010). Norepinephrine and NSRIs can cause nausea, fatigue, drowsiness and loss of appetite whereas benzodiazepines commonly cause drowsiness and sedation. These side effects can be significantly amplified when taken with other sedative medications (Rector et al., 2008). Anxiolytic medications can have serious adverse effects such as toxicity and anaphylaxis and can potentially cause serious drug interactions with other medications prescribed to hospitalized patients (Rector et al., 2008). Furthermore, pharmacological therapy does not provide effective relief of anxiety for all patients and can be expensive (Seneff et al., 2000).

Psychological treatments such as relaxation training, counselling, meditation and biofeedback have demonstrated effectiveness in alleviating anxiety. However, the implementation of these therapies is time consuming and requires well trained staff available in adequate numbers to manage all patients’ demands (Cooke et al., 2005). Alternative interventions for managing anxiety are needed to effectively and safely relieve this symptom in the clinical setting characterized by limited human resources.

**Pain**

Patients frequently experience pain during hospitalization. Manifestations of pain include a wide range of reactions. Acute pain is often characterized by increased autonomic activity indicated by tachycardia or tachypnea, “pain behaviours” such as vocalizations (sighs, moans), grimacing, slow movement, irritability, indicative body postures/gestures (e.g. limping, rubbing/supporting area of pain) and functional limitations such as guarding/protecting area of pain, and taking frequent rest periods (Turk, 1993). Chronic pain has no reliable physiological indicators, and is often more difficult to assess. Diagnosis of chronic pain is facilitated by obtaining a detailed patient history, and by performing focused physical examinations and diagnostic studies (Hainline, 2005).
Abbott et al. (1992) conducted a study of 2415 randomly selected patients from five Canadian hospitals to examine pain in hospitalized patients. They found that 51% of patients reported pain at the time that they were interviewed, and 67% had experienced pain in the last 24 hours. About a third (31%) of surgical patients and 21% of non-surgical patients frequently reported moderate or severe levels of unrelieved pain. A more recent study by Maier et al. (2010) examined pain in 2351 hospitalized patients from 25 hospitals in Germany. The results showed that 29.5% of surgical and 36.8% of non-surgical patients complained of moderate to severe pain at rest, and more than 50% had moderate to severe pain upon movement, whereas 56% described their pain as unbearable. In 2000, Watt-Watson, Garfinket, Gallop, Stevens and Streiner examined patients’ pain levels and analgesic administration three days following a coronary artery bypass graft surgery. They found that most patients experienced significant pain at the time of the interview, and overall nurses administered only 47% of the average maximum dose of their patients’ prescribed pain medications. Overall, the results of these studies illustrate that significant pain continues to be experienced in hospitalized patients.

Pain in hospitalized patients is often associated with surgery, invasive medical procedures (e.g. IV insertion), or bodily changes experienced with chronic or acute disease such as a tumor or cyst (Maier et al., 2010). Maier et al. (2010) found that severe pain was often triggered by movement and that medical interventions such as catheter insertion, removal of drains, lumbar puncture and endoscopy caused severe pain in 15% of surgical and 7% of non-surgical patients.

Unrelieved pain results in several physiological and psychological complications. Physiologically, pain causes adverse changes in the cardiovascular, gastrointestinal, respiratory, genitourinary, musculoskeletal and immune systems (Dunn, 2004; Kehlet, 1997; Middleton, 2003). In the cardiovascular system, pain activates the sympathetic nervous system leading to increased
heart rate, breathing rate, blood pressure and peripheral vascular resistance (Kehlet, 1997). This can increase the oxygen demand on the heart and potentially lead to myocardial ischemia or myocardial infarction especially in patients with cardiovascular diseases (Asher, 2004; Middleton, 2003; Morrison et al., 2003). Activity of the sympathetic nervous system can also impair gastrointestinal function by reducing bowel motility and gastric emptying potentially yielding severe complications such as paralytic ileus. Additionally, activation of pain receptors in the central nervous system results in vomiting (Middleton, 2003).

Patients limit movement of thoracic and abdominal muscles post-operatively in an attempt to reduce pain. However, coughing and deep breathing are integral in clearing secretions and sputum, and if patients limit chest wall movement, this can precipitate significant respiratory problems such as atelectasis and pneumonia (Kehlet, 1997; Middleton, 2003). Respiratory dysfunction can lead to hypoxia and subsequent confusion, disorientation, delayed wound healing (Kehlet, 1997) and cardiac complications such as myocardial ischemia (Asher, 2004; Middleton, 2003; Morrison et al., 2003).

Pain is associated with increased catecholamine release which can result in electrolyte imbalance such as hypokalemia (Kehlet, 1997). Electrolyte imbalances are associated with fluid overload which affects cardiac function (Middleton, 2003). Pain may generate spasms in the areas of tissue damage resulting in impaired muscle function and immobility and subsequently venous stasis, hypercoagulability and deep vein thrombosis (Kehlet, 1997; Middleton, 2003). Pain also depresses immune response potentially leading to infection and sepsis (Middleton, 2003).

In addition to physiological consequences, unrelieved pain is associated with psychological, behavioural and cognitive adverse effects (Dunn, 2004; Middleton, 2003; O’Gara, 1988). Anxiety and pain have been shown to be positively correlated. Abbot et al. (1992) found that 40% of patients
with moderate to severe pain experienced anxiety. Unrelieved acute pain can cause stressor effects leading to increased anxiety levels and impedes patients’ functional abilities related to sleeping, concentrating, eating and cognition. Abbot et al. (1992) reported that 73% of all patients who had moderate to severe pain had significant impairment in one or more areas related to their functional ability. Impaired cognitive abilities are manifested by mental confusion and disorientation (Abbot et al., 1992). In summary, unrelieved pain can cause severe complications which interfere with patients’ recovery. Thus, effective pain management is essential to prevent significant adverse effects and promote optimal patient outcomes.

A number of pharmacological and non-pharmacological treatments are available to manage pain. Pharmacological therapies are the most frequently used forms of pain management in hospital settings. Maier et al. (2010) found that 85% of surgical patients and 75% of non-surgical patients received analgesic medications to manage pain. Abbott et al. (2002) reported that the most common analgesics used in hospital for pain management are codeine with acetaminophen (41.5%), acetaminophen (20.9%), meperidine (19.1%), morphine (4.9%) and codeine (4.4%).

Although effective pharmacological treatments are available, patients do not always achieve adequate pain relief with their prescribed analgesia. Maier et al. (2010) reported that although 70.3% of surgical patients received analgesics, about 5% stated that their analgesia was ineffective, and 50% of non-surgical patients felt that their analgesia was effective. These results could be attributed to the administration of inappropriate types of analgesia. Abbot et al. (1992) found that 65% of pain medications administered were either acetaminophen or acetaminophen with codeine, thus showing that health care professionals often use low efficacy analgesics that may not be highly effective.
Health care professionals’ lack of knowledge and misbeliefs about analgesic medications can lead to inappropriate prescribing or under-prescribing of pain medications. Furthermore, they may not know how to effectively manage side-effects and thus be reluctant to administer pain medications (Lebovits et al., 1997). In rare situations, certain analgesic medications (e.g. morphine) may be contraindicated in patients with particular conditions such as hepatic insufficiency (Canadian Pharmaceutical Association, 2012). Moreover, patients are reluctant to take pain medications. Abbot et al. (1992) reported that at time of their interviews, 11% of patients experiencing pain had refused analgesics in the past 4 hours. Patients’ refusal is explained by their fear of side effects (e.g. constipation, nausea and vomiting), misconceptions regarding addictions, or perceived acceptability of pharmacological treatments for the management of pain (Fitzcharles et al., 2009).

Non-pharmacological therapies available for the management of pain include: hypnosis, biofeedback, aromatherapy, acupuncture and massage therapy. However, many of these therapies have not been extensively evaluated for their efficacy. Moreover, the implementation of these therapies is time consuming, and requires additional resources and well-trained staff. Thus, alternative therapies to manage pain in hospitalized patients are needed.

**Music therapy**

Music has been used for centuries for therapeutic purposes (Campbell, 1991). Music therapy is an established complementary therapy that can be used independently, or in combination with other/conventional treatments, for the management of physical and psychological symptoms and for the promotion of functioning and well-being.

The Canadian Association for Music Therapy defines music therapy as “the skillful use of music and musical elements by an accredited music therapist to promote, maintain, and restore
mental, physical, emotional, and spiritual health. Music has nonverbal, creative, structural, and emotional qualities. These are used in the therapeutic relationship to facilitate contact, interaction, self-awareness, learning, self-expression, communication, and personal development” (Canadian Association for Music Therapy, 2012, para. 1).

Music therapy can be implemented as an active or passive intervention. Active music therapy involves the patient and the music therapist engaging in an interactive process through playing, singing and listening to music. The therapist creates a dynamic environment and encourages the patient to actively participate in the intervention session. Passive music therapy involves having the patient listen to self-selected or prescribed pieces of music. This study will focus on passive music therapy. Although both active and passive music therapy have been shown to be effective in alleviating both pain and anxiety (Klassen, Liang, Tjosvold, Klassen & Hartling, 2008), passive music therapy can be initiated by health care professionals independently, that is, without the assistance of accredited music therapists. The use of passive music therapy is most often investigated in the healthcare context, and it has been established as an intervention that can be effectively implemented by different health care professionals, including nurses, in clinical practice (Kemper & Danhauer; 2005; McCaffrey & Freeman, 2003; Watkins, 1997) or by patients in various settings. For the purposes of this study, the implementation of music therapy consists of having individuals listen to a selection of recorded music for a period of time.

Music affects the body in a number of ways. A person’s response to music is dependent on a unique combination of physiological and psychological reactions (Krout, 2007; McCaffrey & Loesin, 2002; Nilsson et al., 2003b). Physiologically, music has been shown to have significant effects on listeners by decreasing respiratory rate, heart rate and blood pressure (Koch et al., 1998).
Psychologically, music can reduce anxiety, agitation and stress. The following section examines proposed mechanisms of action for music therapy in the management of pain and anxiety.

Music therapy can modify the pain response through its effect on cognition and affect, endorphin production and sensory perception. Music therapy can modify mood and affect. Disturbances such as anxiety, fear and depression that are often associated with illness. Patients often experience an emotional response to being hospitalized as a result of being in an unfamiliar environment, lacking control and being reliant on health care professionals (Lusk & Lash, 2005). Music therapy can activate the prefrontal and limbic areas of the brain, the same areas that are involved in pain perception, thereby modulating the emotional component of pain perception (Esch et al., 2004).

There are a number of known neurotransmitters that mediate pain such as norepinephrine, dopamine, melatonin and epinephrine. A study by Kumar et al. (1999) found that after a 4 week music therapy intervention in 20 veterans with Alzheimer’s disease, they had significantly increased levels of melatonin, epinephrine, and norepinephrine. Melatonin has been shown to modulate pain through an antinociceptive effect on spinal and supraspinal nerve stimulation in both acute and chronic pain syndromes. Furthermore, melatonin also inhibits pain through its inhibitory effect on pro-inflammatory cytokines, and by modulating the function of GABA(A) receptors (Ambriz-Tututi, Rocha-Gonzalez, Cruz & Granados-Soto, 2009). A study by Sutoo and Akiyama (2004) also found that music therapy raised dopamine levels in the brain. Dopamine has been shown to be an important neurotransmitter in mediating the pain response in the central nervous system (CNS). Decreased levels of dopamine are often found with painful symptoms in diseases such as Parkinson’s (Wood, 2008).
Music therapy may modify pain perception through stimulation of afferent (A fibers) fibers (Kwekkeboom, 2003). In 1965, Melzack and Wall developed the gate control theory which helped to explain the complexities of acute pain perception and modulation. They postulated that pain is a complex, multi-modal experience. According to the theory, pain impulses are transmitted through large A-delta and small C fibers. A-delta and C fibers terminate on inhibitory neurons in the substantia gelatinosa. The gate control theory stipulates that the modulation of pain perception occurs through the opening and closing of a neural gate which consists of cells in the substantia gelatinosa in the spinal cord. When the larger A fibers are stimulated by thermal stimuli, touch or vibration, the cells in the substantia gelatinosa close the neural gate and thereby diminish the perception of pain. When the smaller C fibers are stimulated, they inhibit the cells of the substantia gelatinosa, open the neural gate and permit noxious impulses to be transmitted to the thalamus and cerebral cortex resulting in pain perception. Pain perception is also modulated through efferent pathways from the CNS. Activation of these pathways may open, partially close or close the neural gate. CNS modulation may be affected by a person’s emotions, past experiences and attention. Although some deficiencies have been found in the gate control theory, for example, it cannot effectively explain the mechanisms in chronic pain syndromes; it remains an important milestone in pain research. Music therapy is proposed to function through CNS modulation, whereby music stimulates descending nerve impulses traveling from the brain to the spinal cord, closes the neural gate and inhibits the effects of nociceptive fibers. Music therapy can modify pain perception at the neural gate through its effect on mental state and emotion.

Two theories are briefly described which explain how music alleviates anxiety. The first is the entrainment theory. By acting on the autonomic system, music causes the body rhythms to synchronize with surrounding rhythms. Specifically, slow tempo music decreases heart rate,
respiratory rate and blood pressure which are the physical manifestations of anxiety (Marwick, 1996).

The second theory postulates that listening to music masks environmental stimuli which produce anxiety. Studies have shown that anxiety is strongly correlated with increasing levels of noise in clinical environments such as inpatient units. The ambient environment normally consists of random and disordered sound waves (Kemper & Danhauer, 2005). Music provides an organized auditory stimulus (Watkins, 1997) which modulates sounds in the surrounding environment. That is, music changes the patient’s external and internal environment by masking the ambient sounds, providing a focal point for the patient, and creating a sense of familiarity within an unknown environment (Brunges et Avigne, 2003; Hanser & Mandel, 2005; Lusk & Lash, 2005; Mitchell, 2003; Mok & Wong, 2003; Yung et al., 2002).

Music therapy was found effective in managing anxiety and pain in research studies performed in various clinical settings such as critical care, cardiac units, surgical settings, mental health units, oncology units, and maternity wards (Biley, 2000; Cooke et al., 2005). A total of 35 recent studies that examined effects of music therapy on anxiety and pain were located and reviewed next.

Nineteen studies examined the effectiveness of music therapy in alleviating anxiety. The studies varied in patient demographic characteristics, clinical settings, the timing for delivering and the characteristics of the music intervention, and outcome measures. The majority of the studies (n = 17) were conducted in surgical settings and patients underwent different types of surgery including ophthalmologic, urological, breast biopsy, gynecological, cardiac, general (e.g. hernia repair) and combinations of procedures. This can be attributed to the fact that anxiety is highly prevalent in
patients undergoing surgery (Brunges & Avigne, 2003; Lee et al., 2004, Guzzetta, 2000; Wang et al., 2002; Yung et al., 2002). The remaining two studies involved ventilated patients in the intensive care environment (Lee et al., 2005) and burn patients (Ferguson & Voll, 2004). The number of patients who participated in the studies ranged from 11 to 180. The participants’ mean age varied between 38 and 76 years. Whereas both men and women were included in most studies, the sample consisted of only men undergoing transurethral resection of the prostate in one study (Yung et al., 2002) and only women in another (Haun, Mainous & Looney, 2001).

The timing for delivering music therapy differed across studies. Music therapy was applied during the preoperative, intraoperative or postoperative periods. Seven studies applied the intervention during the preoperative period (Brunge & Avigne, Cooke et al., 2005; Haun et al., 2001; Lee et al., 2004; McRee, Noble & Pasvogel, 2003; Wang et al., 2002; Yung et al., 2002), four during the intraoperative period (Ayoub et al., 2005; Lepage, Drolet, Girard, Grenier & DeGagne, 2001; Mok & Wong, 2003; Yilmaz et al., 2003), and two during the postoperative period (Sendelbach, Halm, Doran, Miller & Gaillard, 2006; Voss et al., 2004). In the remaining studies, music therapy was provided across all three periods (Allen et al., 2001), or a combination such as the pre- and intraoperative (Kwekkeboom, 2003), and intra- and postoperative period (Nilsson, Unosson & Rawal, 2005; Twiss, Seaver & McCaffrey, 2006).

In most studies, the type of music selected was described as soothing with a tempo of 60 to 80 beats per minutes. In 15 studies, patients self-selected the music whereby they listened to music of their choice, or music that they selected from a list provided by the researchers. In the other four studies, the researchers pre-selected one specific genre of music to which patients listened.
The characteristics of music therapy differed across studies. The genres of music offered to patients varied, including classical (Ayoub et al., 2005; Cooke et al., 2005; Lepage et al., 2001; Mok & Wong, 2003; Sendelbach et al., 2006), environmental (Ayoub et al., 2005), eastern (Lee et al., 2004), country/western (Ayoub et al., 2005; Cooke et al., 2005; Lee et al., 2004), easy listening (Ayoub et al., 2005; Sendelbach et al., 2006), slow instrumental (Yilmaz et al., 2003; Yung et al., 2002; Voss et al., 2004), new age (Ayoub et al., 2005; Haun et al., 2001; Lepage et al., 2001; Nilsson et al., 2005), jazz (Cooke et al., 2005; Lepage et al., 2001; Sendelbach et al., 2006), piano (McRee et al., 2003; Voss et al., 2004) and popular (Lee et al., 2004; Lepage et al., 2001; Mok & Wong, 2003). The duration of the music intervention ranged from 5 minutes to unspecified durations when the intervention was applied during the entire time of the surgical procedure. However, 11 studies reported durations of 15-30 minutes per session (Brunges & Avigne, 2003; Cooke et al., 2005; Haun et al., 2001; Lee et al., 2004; Lee et al., 2005; Kwekkeboom, 2003; McRee et al., 2003; Sendelbach et al., 2006; Voss et al., 2004; Wang et al., 2002; Yung et al., 2002). In 17 studies, music was administered individually, using headphones. Two studies did not report the delivery method for the music intervention (Fergusson & Voll, 2004; Twiss et al., 2006).

The outcome of anxiety was assessed subjectively and objectively. The outcome measures included levels of anxiety, sedative use, blood pressure, and respiratory rate. The subjective self-report measures (e.g. STAI) demonstrated good validity and reliability (Ayoub et al., 2005; Cooke et al., 2005; Ferguson & Voll, 2004; Haun et al., 2001; Lee et al., 2004; Lepage et al., 2001; Kwekkeboom, 2003; Mok & Wong, 2003; Nilsson et al., 2005; Twiss et al., 2006; Voss et al., 2004; Wang et al., 2002; Yung et al., 2002). The accuracy and precision of data obtained from equipment used to measure the objective manifestations of anxiety (i.e. respiratory rate, heart rate and blood pressure) were not reported.
The design of four studies was a single blind randomized clinical trial (RCT); all patients wore headphones, and the intervention group patients were exposed to selected music whereas the control group participants listened to a blank tape (Haun et al., 2001; Wang et al., 2002; Yilmaz et al., 2003; Nilsson et al., 2005). One study used a double-blind RCT design (Ayoub et al., 2005). The remaining studies involved no blinding of the participants, where those assigned to the experimental group listened to music and those in the control group received usual care.

Ten of the 19 studies evaluated the effect of music on objective indicators of anxiety (Ayoub et al., 2005; Haun et al., 2001; Lee et al., 2004; Lepage et al., 2001; McRee et al., 2003; Mok & Wong, 2003; Sendelbach et al., 2006; Wang et al., 2002; Yilmaz et al., 2003; Yung et al., 2002). Participants who received the music intervention demonstrated significant decrease in blood pressure in two studies (Mok & Wong, 2003; Yilmaz et al., 2003), respiratory rate in one study (Haun et al., 2001) and heart rate in one study (McRee et al., 2003), and a significant increase in oxygen saturation in one study (Yilmaz et al., 2003).

In 12 (63%) of the 19 studies, the music intervention significantly reduced levels of self-reported anxiety (Brunges & Avigne, 2003; Cooke et al., 2005; Ferguson & Voll, 2004; Haun et al., 2001; Lee et al., 2004; Lee et al., 2005; Mok & Wong, 2003; Nilsson et al., 2005; Sendelbach et al., 2006; Voss et al., 2004; Wang et al., 2002; Yilmaz et al., 2003). Two studies reported a decreased need for sedatives in patients assigned to the music intervention group (Ayoub et al., 2005; Lepage et al., 2001). In summary, music therapy (providing recorded music with a slow tempo for a duration of 15-30 minutes) was found effective in reducing self-reported anxiety in 12 of the 19 studies.

Sixteen studies examined the effectiveness of music for the management of pain. These studies varied in patient characteristics, clinical settings, the type and timing of the music
intervention, and outcome measures. The majority of the studies (n = 14) were conducted in surgical settings whereas two studies involved patients experiencing osteoarthritic pain (McCaffrey & Freeman, 2003) and burn pain (Ferguson & Voll, 2004).

The sample size ranged from 11 to 468. The mean age of the participants varied between 34 and 76 years. Twelve studies included both men and women. Three studies included only women (Ikonomidou et al., 2004; Laurion & Fetzer, 2003; Nilsson, Rawal, Unestahl, Zetterberg & Unosson, 2001). One study did not specify the gender of the participants (Masuda, Miyamoto & Shimizu, 2005).

The types of surgery represented across studies included gynecological, orthopedic, hip and knee, open heart surgery and combinations of different surgical procedures. In most studies, the music intervention (n = 8) was delivered postoperatively (Good et al., 2001; Masuda et al., 2005; McCaffrey & Locsin, 2002; Nilsson et al., 2003a; Shertzer & Keck, 2001; Sendelbach et al., 2006; Tse, Chan & Benzie, 2005; Voss et al., 2004). In the remaining studies, the music intervention was given intra- or postoperatively (Nilsson et al., 2003b; Nilsson et al., 2005), pre- and postoperatively (Ikonomidou et al., 2004), pre-, intra- and postoperatively (Laurion & Fetzer, 2003), intraoperatively (Nilsson et al., 2001) and pre- and intraoperatively (Kwekkeboom, 2003).

Similar to studies focusing on anxiety, the type of music was described as soothing with a slow tempo of 60 to 80 beats per minutes. In 7 studies, patients self-selected music. In 9 studies, the researchers provided patients with one specific genre of music. The genres included classical (Masuda et al., 2005; McCaffrey & Freeman, 2003; Nilsson et al., 2003a; Sendelbach et al., 2006; Shertzer & Keck, 2001), slow instrumental (McCaffrey & Locsin, 2002; Voss et al., 2004), new age
(Nilsson et al., 2001; Nilsson et al., 2003b; Nilsson et al., 2005), piano (Laurion & Fetzer, 2003) and pan flute (Ikonomidou et al., 2004).

The duration of the music intervention varied between 5 minutes to unspecified time intervals when the intervention was applied during the entire time of the surgical procedure. However, the most common time interval was 15-30 minutes per session (n = 5) (Ikonomidou et al., 2004; Kwekkeboom, 2003; Masuda et al., 2005; Sendelbach et al., 2006; Tse et al., 2005). The majority of studies administered the intervention using headphones (n = 13). Two studies did not report the method of delivery (Fergusson & Voll, 2004; McCaffrey & Locsin, 2002) whereas one study reported the use of a loudspeaker (Shertzer & Keck, 2001).

Pain was measured with self-report instruments. Only four studies reported on the validity and reliability of the measures (Nilsson et al., 2001; Nilsson et al., 2003a; Nilsson et al., 2003b; Nilsson et al., 2005). Pain was also assessed with objective indicators (e.g. heart rate, respiratory rate and blood pressure). The accuracy of these objective measurements was not addressed.

The study design differed across studies; it was described as single blind in two studies (Nilsson et al., 2003a; Nilsson et al., 2005), double-blind in one study (Nilsson et al., 2001), and experimental or quasi-experimental with no blinding in the remaining studies. Five of the 16 studies examined the effects of music on the objective indicators of pain. Results showed significant reduction in heart rate and blood pressure (Tse et al., 2005), respiratory rate (Ikonomidou et al., 2004), and improvement in oxygen saturation (Nilsson et al., 2003a). In 10 (62.5 %) of the 16 studies, the intervention was shown to have a significant pain-reducing effect as demonstrated by decreased levels on self-reported pain measures (Ikonomidou et al., 2004; Masuda et al., 2005;
McCaffrey & Locsin, 2002; Nilsson et al., 2001; Nilsson et al., 2003a, Nilsson et al., 2003b, Nilsson et al., 2005; Sendelbach et al., 2006; Tse et al., 2005; Voss et al., 2004).

In six studies, analgesic use was measured as a proxy indicator of pain (Ikonomidou et al., 2004; McCaffrey & Locsin, 2002; Nilsson et al., 2003; Nilsson et al., 2005; Sendelbach et al., 2006; Voss et al., 2004). In 4 (66.7%) of these studies, the music intervention was effective in decreasing analgesic use (Ikonomidou et al., 2004; McCaffrey & Locsin, 2002; Nilsson et al., 2003a; Nilsson et al., 2005). In summary, music therapy (providing recorded music with a slow tempo for a duration of 15-30 minutes) was found effective for reducing pain in 10 of the 16 studies.

The results of the above-reviewed studies indicate that music is effective in alleviating anxiety and pain in patients with different health conditions admitted to a variety of settings. The effects of music were significant when the symptoms were measured subjectively and objectively.

The genre and the duration of the music did not seem to influence the effectiveness of the intervention. These results are consistent with those reported by Cepeda, Carr, Lau and Alvarez (2006) who conducted a Cochrane review of studies examining the impact of music on pain. Cepeda et al. (2006) found that the music’s effectiveness was similar across studies in which patients selected their own music and in which the music was selected by the researcher. A recent study by Gooding, Swezey, and Zwischenberger (2012) found the music selected by the researcher was most effective in reducing anxiety. Researchers can select music with characteristics found to be effective in alleviating anxiety such as a consistent tempo, stable dynamic range, little rhythmic variability and smooth melodic lines. Staum and Brotons (2000) indicated that the tempo of the music is the most important element of music responsible for the observed outcomes. They concluded that music should be slow and flowing with a tempo of 60 to 80 beats per minute in order to reduce the levels of anxiety and pain experienced by hospitalized patients.
Summary of Review of the Evidence on Music Therapy

Pain and anxiety are prevalent symptoms experienced by patients in a variety of clinical settings. Poorly managed pain and anxiety can lead to negative outcomes. Music therapy has been identified as a complementary intervention for the management of anxiety and pain. It demonstrated effectiveness in relieving these two symptoms in different patient populations.

Music therapy is cost-effective, and does not require additional staff or expensive equipment for its delivery. It is easily implemented in day-to-day practice by nursing staff and patients (McCaffrey & Locsin, 2002; Nilsson et al., 2003). Moreover, music therapy has no adverse effects, and patients often perceive it as an enjoyable treatment modality (McCaffrey & Locsin, 2002; Nilsson et al., 2003). However, there is limited knowledge about nurses’ view of music therapy and use in the context of day-to-day practice.

Knowledge Translation and Theories of Behavioural Change

A number of studies have examined evidence or research use in nursing and have found that a significant gap exists between the implications of research evidence and its adoption into clinical practice (Estabrooks, Floyd, Scott-Findlay, O’Leary & Gushta, 2003) as may be the case for music therapy. Although research supports the effectiveness of music therapy as an effective intervention in managing pain and anxiety, it remains unclear if nurses use music therapy in clinical practice. Thus, the use of music therapy by nurses becomes an issue of knowledge translation.

Nurses face numerous obstacles when implementing evidence-based interventions within their practice settings even though models are available to guide nurses in such initiatives. Factors that may facilitate or impede evidence-based nursing practice have been investigated. Individual nurses’ beliefs and attitudes toward research, professional characteristics and education were found
to be significant determinants of research utilization in this group of health care professionals (Estabrooks et al., 2003). The influence of these individual nurses’ factors on evidence-based practice can be best understood within clearly delineated theories of healthcare professionals’ behaviours (Estabrooks, Thompson, Lovely & Hofmeyer, 2006).

Healthcare professionals’ behaviours are often based on individuals’ intentions and decisions to change their practice. Social cognitive theories are particularly useful in examining mechanisms of behavioural change in health care professionals (Grol, Bosch, Hulscher, Eccles & Wensing, 2007; Godin et al., 2008). Godin et al. (2008) conducted an extensive review of studies that investigated health care professionals’ intentions and behaviours with regards to evidence-informed practice. They found that the Theory of Planned Behaviour (TPB) has most frequently guided the studies. The results of these studies showed a frequency-weighted mean $R^2$ of 0.35 for the prediction of health care professionals’ behaviour, and 0.81 for intention. In studies sampling only nurses, the frequency-weighted $R^2$ ranged from 0.09 to 0.41 (mean 0.23) for the prediction of behaviour, and from 0.46 to 0.77 (mean 0.63) for the prediction of intention. The individual health care professionals’ characteristics are often associated with behaviour and intention; the characteristics were drawn from the TPB and Triandis’s Theory of Interpersonal Behaviour (TIB). Godin et al. (2008) generated a theoretical framework that integrates concepts from the two theories to guide the investigation of health care professionals’ intention and actual engagement in behaviours (i.e. evidence-informed practice).

The TPB has been extensively used to examine factors contributing to health care professionals’ utilization of evidence in practice. These factors have been shown to validly predict behaviour of health care professionals such as physicians and pharmacists (Godin et al., 2008). Recently, the theory was applied to the study of nurses’ intention to administer opioids for pain relief.
(Edwards et al., 2001) and to use gloves in patient care (Watson & Myers, 2001). The findings supported the ability of the theory in identifying factors that contribute to nurses’ practice.

The TPB proposes that healthcare professionals’ behaviour is directly influenced by intention to perform the behaviour and indirectly by three factors: attitudes towards the behaviour, subjective norms and perceived behavioural control (Ajzen, 1991). Intention to perform a behavior is defined as “the likelihood that a person will engage in a given behaviour” (Ajzen & Fishbein, 1980, p. 40). Attitudes are concerned with one’s overall perception of “favourableness or unfavourableness” towards a given behaviour (Ajzen & Fishbein, 1980, p. 54). Attitudes can therefore be positive or negative. Subjective norms refer to how one views others’ perceptions of a given behaviour performance (Ajzen & Fishbein, 1980). Perceived behavioural control relates to the level of personal control that an individual has with regards to enacting a particular behaviour (Ajzen, 1991). In addition, the TPB posits that external factors such as demographic characteristics (e.g. age, sex, education) directly influence attitudes, subjective norms and behavioural control, which in turn affect behavioural intentions and subsequent performance of behaviour.

Triandis’ Theory of Interpersonal Behaviour also proposes that intentions predict behaviour and that other factors such as past behaviour, social factors and emotions affect intentions and behaviour (Triandis, 1980). Social factors include self-concept, roles and norms. Godin et al. (2008) found that role beliefs and moral norms were two important determinants of health care professionals’ intention to change practice.

Godin et al. (2008) reported that the theory of planned behaviour, when applied to health care professionals, was most useful in predicting their behaviour, whereas Triandis’ theory was effective in understanding intention to perform behaviour. Therefore, they integrated the two theories into a
framework explaining the interrelationships among factors that affect health care professionals’ intention and actual behaviour. Since the proposed study is concerned with examining nurses’ intention to use music therapy in practice and factors that influence intention, it is logical to adapt the framework to guide the study. The adaptation consisted of operationalizing the concepts relative to nurses’ intentions to use music therapy for the management of anxiety and pain in institutionalized patients.

Factors Predicting Nurses’ Behavioural Intention and Performance

A literature review was undertaken to identify factors, as proposed in the framework, that affect nurses’ intention and behaviour related to evidence-based practice. A total of 20 studies were located. Nineteen studies examined factors derived from the TPB, and one study from the TIB. The studies examined nurses’ behavioural intentions towards different practices: administering antipyretic medications to pediatric patients (Walsch et al., 2005); providing care to HIV patients in the community (Laschinger, Goldenberg & Bello, 1995; Tessaro & Highriter, 1994); providing care to self-poisoning patients (McKinlay, Coutson & Cowan, 2001); providing oral care for patients receiving chemotherapy (Wallace et al., 1997); providing care for dying patients (Waltman, 1990); providing labour support (Sauls, 2007); conducting pain assessments (Nash, Edwards & Nebauer, 1993); caring for HIV patients (Dilorio, 1997); reporting child abuse (Feng & Wu, 2005); providing breast-feeding support (Bernaix, 2000); providing homecare to AIDs or leukemia patients (Vermette & Godin, 1996); restraint use in the elderly (Werner & Mendelsson, 2001); administering opioids for pain relief (Edwards et al., 2001); adhering to universal precautions during venipuncture (Godin, Naccache, Morel & Ebacher, 2000); using clinical guidelines for providing smoking cessation advice to facilitate secondary prevention of coronary heart disease (Puffer & Rashidian, 2004); continued use of a smoking cessation protocol for cardiac patients (Bolman, de Vries & Mesters, 2002);
documentation (Renfroe & O’Sullivan, 1990); and using overly aggressive therapy in ICU patients with and without a living will (Lavoie, Blondeau & Godin, 1999). Only one study examined both the intentions and behaviours of nurses with respect to clinical glove use in nurses (Watson & Myers, 2001). The settings included: pediatric wards (Walsch et al., 2005); community (Laschinger et al., 1995; Tessaro & Highriter, 1994; Vermette & Godin, 1996); acute care units (McKinlay et al., 2001); emergency departments (Feng & Wu, 2005; McKinlay et al., 2001); oncology units (Wallace et al., 1997; Waltman, 1990); labour and delivery units (Sauls, 2007); maternity wards (Bernaix, 2000); in-patient psychiatry units (Feng & Wu, 2005); geriatric units (Werner & Mendelsson, 2001); cardiac units (Bolman et al., 2002; Puffer & Rashidian, 2004) and ICU (Lavoie et al., 1999). Most studies involved non-experimental, survey-type designs. The sample size ranged from 45 (Sauls, 2007) to 446 (Edwards et al., 2001). There was considerable variability in the response rates for the surveys ranging from 47.9% (Watson & Myers, 2001) to 75% (Lavoie et al., 1999).

Results of 19 (95%) studies indicated that attitude was a significant predictor of nurses’ intention to perform a given behaviour that is, engage in the new, evidence-based practice (Walsh et al., 2005; Laschinger et al., 1995; McKinlay et al., 2001; Wallace et al., 1997; Waltman, 1990; Sauls, 2007; Nash et al., 1993; Dilorio, 1997; Feng & Wu, 2005; Bernaix, 2000; Vermette & Godin, 1996; Werner & Mendelsson, 2001; Tessaro & Highriter, 1994; Edwards et al., 2001; Puffer & Rashidian, 2004; Watson & Myers, 2001; Bolman et al., 2002; Lavoie et al., 1999). The magnitude of the relationship between attitude and intention was small ($\beta = 0.22$; Vermette & Godin, 1996) to large ($\beta = 0.784$; McKinlay et al., 2001), indicating that nurses with positive attitudes towards the behaviour were likely to perform it.

Twelve studies (60%) found that subjective norm was significantly associated with nurses’ intention to perform a given behaviour (Walsh et al., 2005; Laschinger et al., 1995; McKinlay et al.,
The association of a small to moderate magnitude ($\beta = -0.09$ to 0.46) implied that if nurses perceive that persons who they consider important (i.e. colleagues, other health care professionals) support a particular behaviour, they perform it.

Perceived behavioural control was positively and moderately related to nurses’ intention (Sauls, 2007; Nash et al., 1993; Dilorio, 1997; Feng & Wu, 2005; Vermette & Godin, 1996; Edwards et al., 2001; Godin et al., 2000; Puffer & Rashidian, 2004; Watson & Myers, 2001; Renfroe & Sullivan, 1990). This relationship indicated that nurses who perceive minimal barriers to change implement evidence-based practice. In addition, findings showed that nurses’ behavioural intention was significantly associated with knowledge (Feng & Wu, 2005; Bernaix, 2000; Vermette & Godin, 1996), moral norms (Vermette & Godin, 1996; Godin et al., 2000), experience (i.e. the number of years working as a nurse) (Tessaro & Highriter, 1994; Werner & Mendelsson, 2001), and professional norms (Lavoie et al., 1999).

The instruments measuring the concepts were reported to have good validity and reliability (Dilorio, 1997; Puffer & Rashidian, 2004; Tessaro & Highriter, 1994; Wallace et al., 1997; Walsch et al., 2005). However, two methodological issues were noted: 1) the use of non-random sampling techniques could have introduced sample bias and therefore limited the generalizability of the findings (Burns & Grove, 2001), and 2) the small (< 65) sample sizes in several studies could have reduced the power to detect significant relationships among the concepts (Burns & Grove, 2001). Francis et al. (2004) recommend a minimum sample size of 80 for studies testing the propositions of the TPB with multiple regression analysis.
Overall, results of the studies showed that attitude, subjective norm and perceived behavioural control were significant determinants of nurses’ behaviour; the importance and the degree to which each of these factors determines behaviour has been found to vary across studies. The variability can be attributed to differences in research methods (i.e. small sample sizes, use of non-validated measures) as well as in the type of behavior investigated and clinical settings.

In reviewing the literature, no study was found that examined nurses’ intentions or behaviour related to the implementation of a complementary therapy such as music therapy. This study contributed to the growing knowledge of factors that influence nurses’ intention and behaviour related to the implementation of effective interventions and extended to the application of complementary treatments. Such an understanding will guide the design of future initiatives for promoting use of different types of nursing interventions in day-to-day practice.

**Conceptual Framework**

The conceptual framework, developed by Godin et al. (2008), was adapted for this study based on empirical evidence supporting determinants of nurses’ intention and behaviour related to evidence-informed practice. The adapted framework integrated concepts from the TPB and TIB, representing interpersonal and social determinants of intentions and behaviours, as illustrated in Figure 1.
Figure 1: Conceptual Framework

- Attitudes toward the behaviour
- Subjective norms
- Moral norms
- Perceived behavioural control
- Role beliefs

- **Professional Characteristics:**
  - Years of nursing experience
  - Primary area of practice
  - The type of institution where employed

- **Personal Characteristics:**
  - Age
  - Sex
  - Highest level of education

- Awareness of music therapy
The concepts of interest for this study were: intention, attitudes toward the behaviour, subjective norms, moral norms, perceived behavioural control, role beliefs, personal and professional characteristics, and awareness of music therapy. The next section presents the theoretical definitions of each concept based on the results of an integrative review of theoretical and empirical literature. This is followed by the presentation of the proposed relationships that were tested in this study. All concepts were measured through self-report to pertinent items on the Use of Music Therapy Questionnaire (UMTQ).

Intention was defined as the amount of effort that an individual is willing to exert to achieve a goal (Ajzen, 1991). Intention was operationalized as nurses’ plans to use music therapy for the management of anxiety and pain experienced by patients assigned to their care.

Attitude towards the behaviour refers to an individual’s positive or negative view regarding performance of the behaviour (Ajzen, 1991). Attitude was operationalized as nurses’ cognitive/affective evaluation of music therapy as an intervention for the management of anxiety and pain in clinical practice.

Subjective norms reflect an individual’s perception of social pressures that influence the adoption of a particular behaviour (Ajzen, 1991). Subjective norms were operationalized as the nurses’ overall perception of the extent to which they think that important people in their work environment (i.e. colleagues, other health care professionals, patients and their families) support or endorse the use of music therapy for the management of anxiety and pain in clinical practice.

Moral norms is a construct proposed by Triandis (1977). It represents an individual’s moral obligation or responsibility to perform a particular behaviour. Moral norms were operationalized as
nurses’ perception of their responsibility to use music therapy for the management of anxiety and pain in clinical practice.

Perceived behavioural control reflects one’s perception of necessary opportunities and resources to perform a given behaviour, as well as perceptions of any impediments or obstacles to performing a given behaviour (Ajzen, 1991). Perceived behavioural control was operationalized as the degree to which nurses believe they can implement music therapy for the management of anxiety and pain in clinical practice.

Role beliefs are “sets of behaviours that are considered appropriate for persons holding particular positions in a group” (Triandis, 1977). In this study, role beliefs were operationalized as nurses’ consideration that music therapy for the management of anxiety and pain is an appropriate nursing intervention.

Nurses’ personal and professional characteristics include: age, gender, educational level, the number of years of nursing experience, primary area of practice and the type of institution in which they work.

Awareness refers to theoretical and practical knowledge regarding a particular area or subject. Specifically, this study incorporated three types of knowledge addressed in the knowledge translation literature: experiential, interpersonal and theoretical (Ashford & LeCroy, 1991). Awareness was operationalized as nurses’ experiential, interpersonal and theoretical knowledge of the effectiveness and utility of music therapy for the management of anxiety and pain in clinical practice.
Relationships tested and evidence supporting the relationships

The propositions derived from the conceptual framework were: 1) attitudes, subjective norms, moral norms, perceived behavioural control and role beliefs influence nurses’ intention to use music therapy for the management of anxiety and pain; and 2) nurses’ personal and professional characteristics and awareness of music therapy are related to their attitudes, subjective norms, moral norms, perceived behavioural control and role beliefs pertaining to the use of music therapy in practice.

As proposed in the framework, attitudes, subjective norms and perceived behaviour control independently influence an individual’s intention to perform a given behaviour. Positive attitudes regarding a particular behaviour increases the likelihood of an individual’s intention to perform the behaviour (Ajzen, 1991). In this study, it was postulated that nurses with positive attitudes toward music therapy are likely to use music therapy for the management of anxiety and pain.

Nurses work in hierarchical establishments and within interprofessional teams. Thus, it was presumed that nurses’ behavioural intentions are influenced by social identity and that nurses are considerate of the view of others in their work environment. Thus, it was proposed that if nurses perceive that their colleagues, other health care professionals, patients and their families support the use of music therapy, then nurses are likely to use music therapy in their practice.

Nurses are often limited in their control of their work environment and practice choices. For example, nurses may be limited in their choice of pain management based on unit practices, standing orders for pain management, physician preference and best practice guidelines. Thus, perceived behavioural control affects nurses’ behavioural intentions. In this study, it was postulated that if
nurses have a perception of increased behavioural control over the use of music therapy, they are more likely to use this intervention in their practice.

The findings of recent studies examining nurses’ behaviour supported the proposed relationships. Specifically, nurses’ attitudes (Bernaix, 2000; Bolman et al., 2002; Edwards et al., 2001; Feng & Wu, 2005; Puffer & Rashidian, 2004; Sauls, 2007; Walsch et al., 2005; Watson & Myers, 2001; Werner & Mendelsson, 2001), subjective norms (Edwards et al., 2001; Feng & Wu, 2005; Sauls, 2007; Walsch et al., 2005; Werner & Mendelsson, 2001), moral norms (Vermette & Godin, 1996; Werner & Mendelsson, 2001;), perceived behavioural control (Edwards et al., 2001; Feng & Wu, 2005; Puffer & Rashidian, 2004; Sauls, 2007; Watson & Myers, 2001) and role beliefs (Lavoie et al., 1999) were significantly associated with nurses’ intention to perform various clinical behaviours.

The conceptual framework also posits moral norms and role beliefs as significant determinants of behavioural intention. Strong moral norms promote or deter a particular behaviour (Triandis, 1977). It was postulated that strong obligations to provide effective nursing interventions affect nurses’ intention to use music therapy in their practice. Role beliefs refer to behaviours that reflect what is expected of an individual in a particular role. If a given behaviour is expected to be performed by a person assuming a certain role, then there is greater probability that the behaviour is performed (Triandis, 1977). In this study, it was proposed that if nurses perceive they are expected to use music therapy as part of their professional role, then they intend to use music therapy in their practice. The influence of moral norms and role beliefs on behavioural intention was supported by the results of Godin et al. (2008), which were synthesized from a few studies that examined nurses’ behavioural intentions.
The influence of nurses’ personal (age, sex, education) and professional characteristics (number of years in nursing, primary area of practice, and the type of institution in which they work) as well as awareness on the antecedents of intention (i.e. attitude, subjective norms, moral norms, perceived behavioural control and role beliefs) were also examined in this study.

Age has been postulated to have a negative effect on attitudes toward evidence-based practice since older adults may be resistant to change (van Hoozer et al., 1987). There are no empirical findings from nursing studies to support this proposition, or to support the proposed relationship between age and the antecedents of intention. However, the proposed relationship was explored in this study.

Although there are no empirical findings from nursing studies examining the relationship of sex with the antecedents of intention, the current study examined whether sex is associated with nurses’ attitudes, subjective norms, moral norms, perceived behavioural control and role beliefs.

Education, operationalized as the highest level of schooling, has been shown to be associated with attitude and moral norms; the association depended on the behaviour being studied. For example, in the study by Werner and Mendelsson (2001), higher educational level was significantly and negatively related to attitude (r = -0.22) and to moral obligations (r = -0.17) towards using physical restraints in older patients. Laschinger et al. (1995) found that higher education in nurses was significantly related to more positive attitudes towards caring for patients who are HIV positive. In the current study, it was proposed that higher educational level is associated with positive attitudes towards using music therapy. Although there are no empirical findings from nursing studies examining the effects of higher education on nurses’ subjective norms, perceived behavioural control, moral norms and role beliefs, the current study explored these relationships.
Nursing experience showed significant relationship with intention. Tessaro and Highriter (1994) examined the intentions of public health nurses to work with HIV patients and reported that nurses who had spent fewer years in public health had stronger intentions to work with HIV patients. The researchers attributed these findings to the notion that nurses with fewer years in practice tend to be less committed to a particular specialty area and display more willingness to take on additional responsibilities. Conversely, nurses who worked many years in a specialty area tend to feel more committed to that area and are therefore reluctant to take on new responsibilities out of concern that these additional responsibilities may negatively impact on existing commitments. The current study examined whether nursing experience is related to attitudes, subjective norms, moral norms, perceived behavioural control and role beliefs.

Primary area of practice (e.g. critical care, medicine, surgery and palliative care) was related to some determinants of behavioural intention. Wallace et al. (1997) examined the provision of oral care by nurses to patients receiving chemotherapy and reported differences in attitudes toward oral care expressed by nurses working on different types of units. Specifically, nurses working in bone marrow transplant units scored lower on the attitude scales than nurses working in general oncology units. It is possible that nurses working in bone marrow transplant units see more severe cases of stomatitis and thus believe that there is little they can do to manage this problem. In the current study, differences in the predictors of intention to use music was expected among nurses working in various practice areas since pain and anxiety could be more prevalent in certain patient populations such as perioperative, emergency and critical care than others. Providing care to these patients could affect nurses’ level of experience in managing anxiety and pain and hence their attitudes and moral norms toward a complementary nursing intervention such as music therapy.
Type of institution may influence the determinants of behavioural intention. Nurses working in university affiliated institutions may be exposed to a culture that promotes evidence-based practice or have more resources available to assist in the implementation of music therapy. Overall, the relationships between nurses’ personal and professional characteristics and the predictors of intention to use music therapy were examined in the current study.

Awareness of music therapy as an effective intervention is proposed to influence nurses’ attitudes. This proposition is consistent with the TPB and with empirical evidence showing a significant relationship between knowledge and knowledge utilization among nurses (Bernaix, 2000; Edwards et al., 2001; Feng & Wu, 2005; Godin et al., 2008).

In summary, conceptual definitions were provided for the main study concepts: intention, attitudes toward the behaviour, subjective norms, moral norms, perceived behavioural control, role beliefs, nurses’ personal and professional characteristics, as well as awareness. The proposed relationships among the variables were tested in this study.
Chapter 3
Methodology

In this chapter, a detailed description is provided of the methodology that was followed to address the study questions related to nurses’ awareness of, intention to utilize music therapy for the management of anxiety and pain in their day-to-day practice and factors that influence their intention. Quantitative data pertaining to the study concepts were collected using questionnaires adapted from those originally developed by Francis et al. (2004). The adapted measures were pilot tested for comprehension and relevance prior to use in the main study.

The chapter begins with a description of the pilot testing process, followed by a delineation of the main study research design. The sample and setting, sample inclusion criteria, sampling techniques, sample size, measures, procedures for recruitment and data collection are then presented. The chapter concludes with an overview of the data analysis plan and ethical considerations.

Pilot testing of measures

The measures consisted of a series of items from established instruments. The instruments were the Awareness of Music Therapy Questionnaire (AMTQ), and the Use of Music Therapy Questionnaire (UMTQ) (Appendix B). The adapted measures were pilot tested for comprehension and relevance with a sample representative of the target population. The convenience sample consisted of 10 registered nurses who met the following eligibility criteria: 1) current registration with the College of Nurses of Ontario, 2) current practice in an acute, long-term care or rehabilitation setting, 3) involvement in the provision of direct care to patients admitted to health care facilities in Ontario, and 4) proficiency in English. They were requested to complete the adapted measures and to comment on the ease of understanding the instructions and the items, as well as the
relevance of the items’ content in assessing nurses’ awareness and intention to use music therapy in clinical practice. The pilot sample’s feedback guided the revision of the items for the purpose of enhancing clarity and relevance of the content. Specific questions proposed by Francis et al. (2004) to be used during the pilot testing of a Theory of Planned Behaviour (TPB) questionnaire were asked of participants (see Appendix A).

The content validity of AMTQ and the UMTQ was examined as the measures were adapted to the context of music therapy for the management of anxiety and pain. Participants in the pilot study were asked to rate the relevance of the items in capturing knowledge about music therapy effectiveness following the procedure described by Lynn (1986) and Armstrong, Cohen, Erikson and Cleeland (2005). Participants were asked to carefully read through and respond to the AMTQ items, then complete the content validation tool (Appendix C). The rating was performed using a scale that ranged from 0 “not relevant” to 3 “very relevant.” The content validity index (CVI) was obtained for each item and for the total measure. The CVI for each item was computed as the percentage of participants who rated the item as either “relevant” or “very relevant.” Items with CVI > 80% were considered content valid; items with CVI between 60% and 80% were modified based on participants’ qualitative feedback; and items with CVI < 60% were removed (Armstrong et al., 2005). For the total measure, the CVI was calculated as the percentage of items that were rated as “relevant” or “very relevant” by >80% of the participants. A total measure CVI of 0.75 or greater is the criterion for establishing the content validity of the measure (Yaghmaie, 2003). A high total measure CVI indicates that the items’ content captures relevant aspects of the concept being studied.

Methods for Main Study
Design

A cross-sectional design was used. Dillman’s survey method was implemented. It consisted of mailing the questionnaire and follow-up reminders at predetermined time intervals to increase response rate and prevent non-response bias (Dillman, 2007).

Sample and Setting

The target population included registered nurses who were providing direct care to patients admitted to health care facilities in Ontario. The setting included acute care, long-term care and rehabilitation units.

Sample selection criteria

Registered nurses who met the following eligibility criteria were included in the study:

1. Current registration with the College of Nurses of Ontario,

2. Current practice in an acute, long-term care or rehabilitation setting,

3. Involvement in the provision of direct care (i.e. nursing care that was focused on a particular patient for which the nurse was directly responsible and accountable) to patients admitted to health care facilities in Ontario, and

4. Proficiency in English.

Sampling technique

The College of Nurses of Ontario (CNO) was contacted to obtain a list of registered nurses in Ontario who had consented to release their names for research purposes. The CNO provided a list of registered nurses who met the study general eligibility criteria (i.e. current registration with the CNO, current practice in an acute, long-term care or rehabilitation setting). The sample inclusion criteria were also confirmed in the first section of the Questionnaire (Appendix C) wherein nurses
who did not meet the criteria were requested to not complete the questionnaire and return it in the stamped envelope. Nurses were randomly selected from the list obtained by the CNO and mailed the study package. Random selection was executed by assigning code numbers to each of the listed nurses, and then randomly drawing the numbers (with replacement) from a bag until the desired sample size (n = 490) was obtained.

Sample size

The sample size was determined using Cohen’s (1988) criteria. The sample size calculation was based on an alpha level of 0.05 to reduce the likelihood of type 2 error (Kraemer & Thiemann, 1987), 12 predictors included in the multiple regression analysis, an effect size of $R=0.3$, and a power of 0.8 (Cohen, 1988) while accounting for a response rate of 50%. A moderate effect size ($R=0.3$) was anticipated based on results from previous studies that utilized the TPB to examine factors associated with health care professionals’ intention to implement evidence-based interventions (Francis et al., 2004).

A number of recent studies using registered nurses in Ontario have reported the following response rates to surveys: 18.1% (Luk & Rose, 2011), 40.6% (RNAO, 2003), 59.7% (Gutmanis, Beynon, Tutty, Wathen & MacMillan, 2007), 65% (Barclay, 2007), and 68% (Tourangeau, 2004). The lower response rates can be attributed to limited or no follow-up and wide-spread surveying. In 2003, the RNAO surveyed 5000 casual and part-time nurses in Ontario regarding their experiences with SARS. The survey relied on one mailing with no follow-up and had a response rate of 40.6% (RNAO, 2003). Luk and Rose (2011) conducted a large scale study of critical care nurses across Canada. A single reminder post-card and one replacement survey were mailed out in 2-week intervals yielding an overall response rate of 24.5% and 18.1% for Ontario nurses. This response rate
(24.5%) was significantly lower than predicted in the pilot study (57%), however in the pilot study all nurses belonged to a single institution.

Studies that have had higher response rates have used modifications of Dillman’s methods (Tourangeau, 2004). According to Francis et al. (2004), questionnaires based on the TPB can assume response rates around 50%. Based on the literature which examined that response rates of Ontario nurses (mean response rate = 50.28) and the research by Francis et al. (2004), a response rate of 50% was expected in this study. Setting the number of predictors (n = 12), a moderate effect size (R=0.3), and a power of 0.8, the required sample size was 120. To account for a 50% response rate and the potential for incomplete or inaccurate responses, 490 nurses were randomly selected from the CNO list and mailed out the study questionnaire.

**Variables and Measures**

The instruments that were used for data collection consisted of self-administered scales. The variables operationalized the concepts in the study framework. These included the following factors influencing behavioural intention toward using music therapy for the management of anxiety and pain: nurses’ personal and professional characteristics; awareness of music therapy for the management of anxiety and pain; attitudes towards using music therapy; subjective norms regarding music therapy utilization; moral norms regarding music therapy utilization; perceived behavioural control with regards to implementing music therapy in day-to-day practice; and role beliefs with respect to nurses’ responsibilities in using music therapy as an intervention.

Standard questions (see Appendix B) were used to collect information related to the nurses’ characteristics proposed to influence the determinants of behavioural intention (Figure 1). The personal characteristics were nurses’ age, gender and ethnicity. The professional qualities related to
nurses’ educational level, experience in nursing, primary area of practice, role in nursing and type of institution in which they worked.

**Age** was a continuous variable. Participants were asked to provide their year of birth.

**Education** was a categorical variable. It was assessed by asking participants to select the category which represented their highest degree obtained: diploma, bachelor’s degree, master’s degree, doctoral degree or other.

**Ethnicity:** was a categorical variable. Participants identified the ethnic group to which they belong.

**Nursing experience** was a continuous variable. Participants were asked to report the actual number of years that they had been working in the nursing profession.

**Primary area of practice** was a categorical variable. Participants were first asked to select their primary area of practice from the following categories: acute care, long-term care, and rehabilitation. Participants then selected the categories that represented the clinical area in which they practiced nursing. Categories included: critical care, medicine, geriatrics, surgery, emergency, complex continuing care, maternal/newborn, mental health/psychiatry/addiction, paediatrics, palliative care, rehabilitation or other. The primary areas of practice were based on the CNO 2009 Annual Membership Renewal Instruction Guide (CNO, 2009). The practice areas included in the questionnaire focused on in-patient units only, which was consistent with the settings selected for the study.

**Type of institution in which nurses worked** was a categorical variable. Participants indicated whether the institution in which they practiced nursing was university affiliated or not.
Role in nursing was a categorical variable. Participants identified their primary role in nursing: staff nurse, or other. In the latter case, they were requested to specify their role.

Awareness of music therapy for the management of anxiety and pain was measured using the Awareness of Music Therapy Questionnaire (AMTQ). The AMTQ was an adaptation of the Nursing Practice Questionnaire developed by Brett (1987) to assess nurses’ adoption of specific research findings in practice. The instrument demonstrated acceptable reliability (Cronbach’s alpha = .83). For the purpose of this study, the questionnaire was adapted to assess nurses’ knowledge of music therapy as an intervention for the management of anxiety and pain. The content of the AMTQ items related to nurses’ awareness of the use of music as an intervention and of the empirical evidence supporting the use and effectiveness of music, as well as nurses’ understanding of music therapy (i.e. what music therapy can be used for, how music therapy works, and how to apply music therapy). In addition, participants were asked about the sources of information about music therapy and the usefulness of the information that they had obtained. These variables have been identified as important factors in knowledge translation (Rycroft-Malone et al., 2002).

The AMTQ was self-administered. It consisted of 10 items which are rated on a seven point scale ranging from “strongly disagree” to “strongly agree,” or from “very low” to “very high”. The total score was computed as the mean of the respective items’ scores. Higher scores reflected high levels of awareness that music therapy is an intervention for the management of anxiety and pain. It took approximately 5 minutes to complete. The content validity of the adapted instrument was assessed in the pilot study and is discussed in the results section.

Behavioural intention, attitude, subjective norm, moral norm, perceived behavioural control and role beliefs were assessed with pertinent items of the Use of Music Therapy Questionnaire
(UMTQ). The items of the UMTQ that measured each of these variables are listed in Appendix B. The UMTQ was a measure adapted based on instructions in a manual written by Francis et al. (2004) which delineates the process of constructing questionnaires founded on the Theory of Planned Behavior. Francis et al. (2004) provided a framework for adapting questionnaires to measure specific behavioural intentions in health care providers and factors that could influence intentions. The adaptations of the UMTQ consisted of referring to music therapy for the management of anxiety and pain in the respective items. This questionnaire was self-administered, contained 58 questions and took approximately 15-20 minutes to complete. The variables and relevant items (forming respective subscales) are presented next. As mentioned in the section on pilot testing, the items’ content and response options were tested for readability and comprehension. In addition, the Cronbach alpha coefficient was examined to evaluate the internal consistency of the items comprising each subscale measuring the respective variables.

Behavioural Intention was the dependent variable and was measured with six items for anxiety and six items for pain. The items consisted of statements that reflected participants’ plans to use music therapy and were scored on a seven point scale. The descriptors on the scale varied across items but were consistent with their content. The descriptors included “strongly disagree” to “strongly agree,” “very unlikely” to “very likely,” and “very low” to “very high.” A total score was computed as the mean of the items’ scores. Higher total scores reflected increased behavioural intention of nurses to use music therapy in practice. Prior adaptations of this scale have demonstrated acceptable reliability (Cronbach’s alpha > .85) and validity (Gagnon, Sanchez & Pons, 2006; Tessaro & Highriter, 1994; Vermette & Godin, 1996).

Attitude was an independent variable that represented nurses’ perception of music therapy for the management of anxiety and pain. Attitude was measured with two questions for each of anxiety
and pain. Each question contained four to six sub-statements followed by a bipolar, seven point scale. The first question was related to the perception of music therapy as 1) “harmful” – “beneficial,” 2) “bad” – “good,” 3) “unpleasant” – “pleasant,” and 4) “worthless” – “useful”; the question was stated relative to the management of each of anxiety and pain. The second question was related to the perception of music therapy as 1) “disagreeable” – “agreeable,” 2) “useless” – “useful,” 3) “unsatisfying” – “satisfying,” 4) “not gratifying” – “gratifying,” 5) “unreasonable” – “reasonable,” and 6) “dangerous” – “safe”; the question was stated relative to the management of each of anxiety and pain. The total score was computed as the mean of the respective statements’ scores. Higher scores represented favourable attitudes towards using music therapy for the management of anxiety and pain. Previous adaptations of this scale have demonstrated acceptable reliability (Cronbach’s alpha > .80) and validity (O’Boyle, Henley & Larson, 2001; Werner & Mendelsson, 2001; Gagnon et al., 2006).

Subjective norm was an independent variable and was measured with ten items for anxiety and ten for pain. The items captured nurses’ perceptions of the expectations that significant others in the nurses’ work environment (i.e. colleagues, other health care professionals, patients and their families) have with respect to the use of music therapy. A seven-point rating scale was used. The total score was computed as the mean of the items’ scores. Higher scores reflected positive norms held; in other words, significant others favoured the use of this intervention. Previous adaptations of this scale have demonstrated acceptable reliability (Cronbach’s alpha > .80) and validity (Dilorio, 1997; Godin et al., 2000; Watson & Myers, 2001).

Moral norm was an independent variable and was measured with three items for anxiety and for pain reflecting nurses’ perception of their obligations to use music therapy in practice. Items were scored on a seven-point scale ranging from “strongly disagree” to “strongly agree”. The total
score was calculated as the mean of the items’ scores. Higher scores represented a stronger sense of moral obligation to use music therapy in practice. Adaptations of this scale have demonstrated acceptable reliability (Cronbach’s alpha > .85) and validity (Gagnon et al., 2006; O’Boyle et al., 2001).

Perceived behavioural control was an independent variable and was measured with four items for each of anxiety and pain, using a seven point scale. The scale descriptors varied from “very difficult” to “very easy,” “very unlikely” to “very likely,” and from “strongly disagree” to “strongly agree.” The total score quantifying nurses’ perception of their control over the use of music therapy in practice was computed as the mean of respective items’ scores. Higher scores indicated higher perceived behavioural control. Adaptations of this scale have demonstrated acceptable reliability (Cronbach’s alpha 0.77 - 0.92) and validity (Godin et al., 2000; Dilorio, 1997).

Role beliefs was an independent variable and was measured with three items for anxiety and three for pain. Items were measured on a seven point scale ranging from “strongly disagree” to “strongly agree,” and reflected nurses’ perceptions of how their professional role determined the expectation of using music therapy. The total score was the mean of the items’ scores. Higher scores represented stronger beliefs that nurses were expected to use music therapy in practice. Adaptations of this scale reported acceptable reliability (Cronbach’s alpha 0.79) and validity (Godin et al., 2000).

Additional measures

The questionnaire contained two additional open-ended questions. These questions aimed to identify other factors that could influence nurses’ behaviour and intention to use music therapy in practice. The following questions were posed: Are there any other factors that may influence your
use of music therapy in practice for the management of anxiety? Are there any other factors that may influence your use of music therapy in practice for the management of pain?

**Procedure for participant screening, recruitment and data collection**

The study proposal was submitted for review by the Research Ethics Board at the University of Toronto. Upon approval, a list of potential participants was obtained from the College of Nurses of Ontario’s database. The College provided a list of nurses who were currently working in acute care, long-term care and rehabilitation institutions in Ontario and consented to be contacted for research purposes. Once a list of participants was obtained, each potential participant was assigned a code number. The numbers were placed in a bag and 490 participants were randomly selected. The code number was used on all data collection forms.

This study utilized Dillman’s Tailored Design Method (TDM) to increase response rates and to minimize the influence of systemic nonresponse bias (Dillman, 2007). Following Dillman’s recommendations, the following elements were implemented into the questionnaire construction for this study. The questionnaire consisted of a small neat booklet with an interesting cover title. The booklet included the name and address of the research organization (i.e. University of Toronto). A ‘thank you’ was written at the end of the questionnaire. Simple and interesting questions were presented first and ordered in a logical sequence. The questionnaire booklet had a compact layout and used boldface for questions. Lastly, instructions were used at transition sections and where needed.

Dillman’s (2007) method was used to guide the implementation of the survey. The following elements were utilized in the cover letter design. The cover letter was printed on institutional letterhead. The full name and address of the respondent were used along with the full correct date.
The cover letter contained information related to what was requested of the participant. The cover letter introduced the topic and its importance. Participants were informed that their participation was voluntary and appreciation was expressed for choosing to participate. Participants were also assured of confidentiality. Contact information of the researcher was provided in case participants had any questions about the study. Finally, participants were thanked, and the cover letter was signed with an original signature. The complete package that was mailed out to each participant contained a cover letter, the questionnaire and a self-addressed, stamped return envelope.

The schedule of mailing out the packages followed Dillman’s (2007) recommendation. The complete package was mailed out in the middle of the week, avoiding official holidays and summer holidays. After one week, a thank you reminder postcard was mailed. Two weeks later, a firm reminder was mailed out with a full package. Four weeks later, a gentle reminder postcard was mailed out.

**Preparation for Data Analysis**

Data related to the study concepts (intention, attitudes toward the behaviour, subjective norm, moral norm, perceived behavioural control, role beliefs, personal and professional characteristics and awareness) were entered into a computerized database. Data were assessed for data entry errors or missing data. Double-entry was used to identify data entry errors. Data entry errors were assessed by examining the responses on the original questionnaires with those entered into the computer database. Identified errors were corrected. The extent of missing data was determined for each variable. If more than 25% of the data were missing on a variable, the variable was excluded from further analysis (P. McKnight, K. McKnight, Sidani & Figueredo, 2007).
Outliers may be the result of incorrect data entry or the actual distribution of the population (Polit, Beck & Hungler, 2003). Outliers were determined by analyzing the data for extreme scores, ± 3 standard deviations. If outliers were identified, then the data were checked for data entry errors and the errors were corrected. If the outliers were due to actual distribution on a variable, then the outliers were truncated (i.e. eliminated) and sensitivity analyses were conducted to compare the results obtained from the complete and the truncated sample.

An examination of internal consistency reliability of multi-item measures was performed on all adapted measures. Cronbach’s alpha coefficient > .80 indicated acceptable reliability. The distribution of variables to be included in the regression analysis was examined for normality (Dillon & Goldstein, 1984). Normality was tested by examining the normal probability plot of the residuals. No data transformations were necessary, as the distribution of variables included in the regression analysis met the normality requirements.

**Data Analysis**

The data were analyzed using both descriptive and inferential statistical techniques. Descriptive statistics (i.e. measure of central tendency and dispersion) were used to characterize the sample on personal and professional characteristics and on each study variable. Multiple regression analysis was performed to determine the degree to which the dependent variables (intention) were predicted by the hypothesized variables as evidenced by the relative weight for each of the independent variables. The specific analyses that were performed to test the research questions are described next.

The first research question examined nurses’ awareness of music therapy as a complementary intervention for the effective management of anxiety and pain. Descriptive statistics were used to
address this question. Frequency distribution, measures of central tendency and dispersion were estimated.

The second research question determined the relative contribution of attitudes, subjective norms, moral norms, perceived behavioural control and role beliefs to nurses’ intention to use music therapy in practice for the management of anxiety and pain. Relationships between the variables were first explored using Pearson’s correlation coefficient. A standard multiple regression analysis with simultaneous entry of all independent variables was then performed to determine the extent to which attitudes, subjective norms, moral norm, perceived behavioural control and role beliefs were related to nurses’ intention to use music therapy in practice. A standard multiple regression with simultaneous entry was applied to maintain consistency with the theoretical model proposing that all independent variables were related to nurses’ intention. This type of regression facilitated testing of all independent variables which may have potentially been excluded in a stepwise regression analysis. The theoretical model also did not support using a hierarchical regression as it was unknown whether certain variables were more significant than others in predicting nurses’ intention (Norman & Streiner, 2008).

The β-weight associated with each predictor was evaluated for statistical significance (i.e. significantly different from zero) using the t-test and associated p-value and for clinical significance (i.e. the direction and magnitude of the β-weight). The $R^2$ determined the predictive power of the model (i.e. the percentage of variance in the dependent variable accounted for by the predictors).

The third research question examined the relationships between nurses’ attitudes, subjective norms, moral norms, perceived behavioural control and role beliefs regarding nurses’ intention to use music therapy and nurses’ demographic (age, sex, education) and professional (professional
experience, area of practice, type of institution in which they work) characteristics, and awareness of music therapy. Relationships between the variables were explored using Pearson’s correlation coefficient.

The fourth research question explored the relative contribution of nurses’ demographic and professional characteristics, awareness of music therapy, attitudes, subjective norms, moral norms, perceived behavioural control and role beliefs to intention to use this intervention for the management of anxiety and pain. A standard multiple regression analysis with simultaneous entry of all independent variables was then performed to determine the extent to which they were associated with intention to use music therapy. Interpretation of the findings was similar to that described for question 1.

The fifth research question looked at additional factors which might influence nurses’ use of music therapy in practice for the management of anxiety and pain. The qualitative responses to the open-ended questions were content analyzed. Downe-Wamboldt’s (1992) content analysis method was applied. Data were coded, summarized and categorized. Prior to categorization, the unit of contents (i.e. word, idea) was identified. An attempt was made to create mutually exclusive and exhaustive categories. The categories and themes were also verified with an independent reviewer to examine agreement on similar categories and themes. The independent reviewer examined the results of the open-ended questions that were entered into the database and independently classified the responses into categories and themes. Common themes were then identified based on analysis conducted by the two reviewers.
Ethical Conduct and Considerations

Registered Nurses in Ontario were identified from the database maintained by the College of Nurses of Ontario. Randomly selected participants were contacted via mail and received a copy of the study package. The study package contained the cover letter, the questionnaire and a stamped envelope with the Faculty of Nursing address at the University of Toronto for participants to return the completed questionnaire.

The cover letter contained an explanation of the study with information related to the study’s purpose, design, potential risks and benefits, confidentiality, and the researcher’s contact information (Appendix E). Participants were asked to read the information provided in the cover letter and contact the researcher if they had any questions. Participants were asked to complete the questionnaire if they agreed to enroll in the study. By completing the questionnaire, participants were consenting to participate in the study.

There were no known risks for completing the questionnaire. Completing the questionnaire was estimated to take 15 to 20 minutes. There were no direct benefits from participating in this study, but the results would help to inform future research about strategies to promote implementation of music therapy as an intervention to manage anxiety and pain in patients admitted to acute, long-term care and rehabilitation settings.

Confidentiality was maintained by limiting access to the study participants’ names and contact information to only the researcher. The list of participants and the coded questionnaires were kept locked in a filing cabinet at the Faculty of Nursing at the University of Toronto during the study period. The list of participants was shredded once coded data were entered in the computerized database. Coded data will be kept under lock for 5 years after study completion. At the end of this
period, the questionnaires will be shredded. Code numbers were used on all forms to maintain confidentiality. In addition, only the researcher has access to the coded computerized databases containing participant information. Data on the computerized databases were saved on a password protected, encrypted USB key. The data collected would not be provided to anyone, except as required by law. In addition, the names of the participants were not recorded on any form completed nor will their names be identified in any report that may be published. The information obtained from this study is used for research purposes. The results will be presented to researchers and health professionals. The results will be reported as a group so that no one individual will be identified.

Summary

A survey-type design was used to assess nurses’ awareness, intention to use and factors influencing intention to use music therapy for the management of anxiety and pain in practice. A sample of 490 registered nurses, proficient in English and currently practicing in acute, long-term care and rehabilitation settings was selected from the College of Nurses of Ontario’s database. Data were collected using relevant, adapted instruments that were pilot tested. Descriptive statistics, multiple regression analyses, and content analysis of qualitative responses were conducted to address the research questions.
Chapter 4
Results

In this chapter, the results of the pilot and main studies are presented. The pilot study was conducted to determine the content validity of the adapted measures. Next, the sample of nurses who participated in the main study is characterized in terms of demographic and professional profile. Last, the results pertaining to each study question are presented.

Pilot Study Results

All measures were pilot tested prior to beginning the main study in order to assess the comprehension and relevance of the adapted measures’ content. A convenience sample of 10 registered nurses took part in the pilot test. The ages of the participants ranged from 29 to 61 years with a mean of 44 (± 9.89). All participants were female. The ethnic groups identified were Canadian (80%) and Asian (20%). The majority of respondents were master’s prepared (90%); only one had a Bachelor’s degree in nursing. Participants had been working as nurses for an average of 20.9 years (± 9.83). The majority (90%) of participants identified their primary area of practice as acute care. Participants worked predominantly in clinical education (90%).

All participants reported that the items comprising the AMTQ and UMTQ were easy to understand and complete. The average completion time of the questionnaires was 15 minutes. Comments raised by the participants who participated in the pilot testing provided valuable insight in revising the questionnaire. The comments covered a variety of topics, including grammar, formatting, wording, relevance, and ease of readability. Minor alterations were made to enhance clarity and comprehension. Some alterations included increasing the font size of the overall questionnaire, and adding headers containing detailed instructions at the beginning of every new
section. The participants were also asked to complete the measures and to identify how relevant the content of items was in relation to nurses’ awareness and use of music therapy in clinical practice. The ratings of the items of the AMTQ and UMTQ are presented in Appendix D. The content validity index, representing the percentage of items rated as relevant or very relevant by at least 80% of the participants, was 100% for the AMTQ and 95% for the UMTQ. The CVI for both measures exceeded the criterion for establishing the content validity of a measure (Yaghmaie, 2003). Therefore, all items were retained on both the AMTQ and the UTMQ. The content of the items on the AMTQ and UMTQ was considered relevant in assessing nurses’ awareness, factors influencing nurses’ intention and intention to use of music therapy for the management of anxiety and pain.

Main Study Results

Response rates

Of the 490 questionnaires mailed out, 193 were returned. However, 5 questionnaires were returned to sender because of incorrect addresses and 9 were returned blank (i.e. not completed). Respondents to 18 questionnaires considered themselves ineligible for the following individual or combined reasons: retired (n = 3), not presently employed in nursing (n = 3), not currently practicing in acute, long-term care or rehabilitation settings (n = 17), and not involved in the provision of direct care to admitted patients (n = 18). The remaining 161 questionnaires were completed, yielding a response rate of 33.2% (161/485).

Demographic and professional characteristics of participants

The nurses’ demographic data are summarized in Table 1. Participants’ age ranged from 25 to 71 years with a mean of 47.77 (± 10.53). The participants were predominantly female. The largest ethnic groups identified were Canadian and European. The majority of respondents were diploma-prepared; about a third had a Bachelor’s degree and a few had a Master’s degree in nursing. A small
number of nurses had a diploma (7.4%) or a Bachelor’s degree (4.7%) in other fields such as psychology, canine science, computer science, homeopathy, therapeutic riding (horses), English and physical recreation. Participants had been in nursing for an average of 21.7 years (range = 2.75 – 49, SD 11.32). The majority of nurses identified their primary area of practice as acute care. Participants worked in a wide variety of practice areas such as emergency (19.3%), geriatrics (19.3%), surgery (16.8%), and critical care (16%). The majority of nurses worked as staff nurses, and slightly over half of the respondents worked in a teaching hospital.
<table>
<thead>
<tr>
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<th>Number of respondents</th>
<th>Percent</th>
</tr>
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<tbody>
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<td>25-39</td>
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<tr>
<td>--------------------------------</td>
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<tr>
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<td>Master’s Degree</td>
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<td><strong>Education (non-nursing)</strong></td>
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<tr>
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<tr>
<td>Bachelor’s Degree</td>
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<td>4.7</td>
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<tr>
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<td>87.9</td>
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<td></td>
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<tr>
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<td>32</td>
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</tr>
<tr>
<td>10-19</td>
<td>30</td>
<td>20</td>
</tr>
<tr>
<td>20-29</td>
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<td>&gt;40</td>
<td>8</td>
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<td></td>
</tr>
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<tr>
<td>Long-term care</td>
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<td>18.4</td>
</tr>
<tr>
<td>Rehabilitation</td>
<td>5</td>
<td>3.3</td>
</tr>
<tr>
<td>Variable</td>
<td>Number of respondents</td>
<td>Percent</td>
</tr>
<tr>
<td>-----------------------------------------</td>
<td>-----------------------</td>
<td>---------</td>
</tr>
<tr>
<td>Emergency</td>
<td>29</td>
<td>19.3</td>
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<tr>
<td>Geriatrics</td>
<td>29</td>
<td>19.3</td>
</tr>
<tr>
<td>Surgery</td>
<td>24</td>
<td>16.8</td>
</tr>
<tr>
<td>Critical care</td>
<td>23</td>
<td>16</td>
</tr>
<tr>
<td>Medicine</td>
<td>18</td>
<td>12</td>
</tr>
<tr>
<td>Maternal/newborn</td>
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<td>10.7</td>
</tr>
<tr>
<td>Mental health/psychiatric/addiction</td>
<td>11</td>
<td>7.3</td>
</tr>
<tr>
<td>Rehabilitation</td>
<td>8</td>
<td>5.4</td>
</tr>
<tr>
<td>Complex continuing care</td>
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<td>4.7</td>
</tr>
<tr>
<td>Pediatrics</td>
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<td>4.7</td>
</tr>
<tr>
<td>Perioperative/OR/PACU</td>
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<td>2.7</td>
</tr>
<tr>
<td>Palliative care</td>
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<td>2.1</td>
</tr>
<tr>
<td>Research/education</td>
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<td>2.1</td>
</tr>
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<td>Hemodialysis</td>
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<td>1.4</td>
</tr>
<tr>
<td>Oncology</td>
<td>2</td>
<td>1.4</td>
</tr>
<tr>
<td>Other</td>
<td>8</td>
<td>5.4</td>
</tr>
<tr>
<td>Variable</td>
<td>Number of respondents</td>
<td>Percent</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-----------------------</td>
<td>---------</td>
</tr>
<tr>
<td><strong>Role in nursing</strong></td>
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<td></td>
</tr>
<tr>
<td>Staff nurse</td>
<td>133</td>
<td>85.8</td>
</tr>
<tr>
<td>Manager/supervisor</td>
<td>6</td>
<td>3.9</td>
</tr>
<tr>
<td>Clinical coordination/leader</td>
<td>11</td>
<td>7.1</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
<td>3.2</td>
</tr>
<tr>
<td><strong>Type of institution where working</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching hospital</td>
<td>82</td>
<td>55.0</td>
</tr>
<tr>
<td>Non-teaching hospital</td>
<td>67</td>
<td>45.0</td>
</tr>
</tbody>
</table>
Study questions

The results addressing each study question are reported in this section. The first question related to nurses’ awareness of music therapy as a complementary intervention for the effective management of anxiety and pain. The mean scores for the individual items on the Awareness of Music Therapy Questionnaire are in Table 2. The scores ranged from 1 to 7. The mean for the total scale score was 4.97 (± 1.85) for anxiety and 4.42 (± 2.08) for pain. Overall, the scores indicated that participants had a moderate level of awareness that music therapy is an intervention for the management of anxiety and pain.

As shown in Table 2, nurses indicated that they were aware of the research supporting the use of music therapy for the management of anxiety, and that research demonstrated the effectiveness of music therapy in managing anxiety. Similarly, nurses reported that they were aware of the research that supported the use of music therapy for the management of pain, and that research supported the effectiveness of music therapy in managing pain. When nurses were asked to rate their knowledge about particular aspects of music therapy, they indicated understanding of what music therapy is, what it can be used for, the types of clinical problems that can be addressed with music therapy, and how music therapy works in the management of anxiety and pain. Nurses reported awareness of the effectiveness of music therapy for the management of anxiety and pain, and how to apply music therapy for the management of anxiety and pain.

Most (53%) participants gained knowledge about music therapy through personal experience applying it in clinical practice. Other sources of information on music therapy included information from clients (32.5%), other health care providers (31.1%), and other nurses (30.5%). Slightly more than half (57.3%) of the nurses found that the information (e.g. what music therapy can be used for,
how music therapy works, and how to apply music therapy) that they had received about music therapy (from a variety of sources) to be useful. Most (54.6%) respondents had never used music therapy in their practice, whereas 45.4% did. When used, music therapy was mostly applied in long-term care, palliative care, geriatrics, labour and delivery, and surgery/post-operative. Music therapy was most frequently used to promote relaxation, decrease anxiety, alleviate pain, reduce agitation, and for distraction.

Half of the respondents (50%) indicated that they knew someone who used music therapy in practice. Professional colleagues (69.7%) were the most likely people to provide music therapy. Colleagues included: other RNs (33.3%), music therapists/musicians (18.1%), and physicians (11.1%). When used by others, music therapy was applied in geriatric settings (10.2%), other hospital settings (10.2%), mental health/psychiatric units (10.2%), in operating room or post-operatively (10.2%), acute care units (6.8%), labour and delivery (6.8%), out-patient clinics (6.8%) and rehabilitation (6.8%). The main reason that professional colleagues used music therapy was to: decrease pain (39%), alleviate anxiety (30.5%), promote relaxation (20.3%) and ease depression (11.9%) as reported in Table 2.

Overall, respondents demonstrated some awareness of what music therapy is, and how it can be used. About half of the participants have used or know someone who has applied music therapy in practice. Music therapy was often implemented on in-patient units in a variety of settings, primarily for the management of anxiety and pain and for the promotion of relaxation.
Table 2: 

*Mean Scores on Items Assessing Awareness of Music Therapy*

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Awareness of music therapy for anxiety/pain management:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Anxiety</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Use of music therapy</td>
<td>4.97</td>
<td>1.85</td>
</tr>
<tr>
<td>b. Research supporting the use of music therapy</td>
<td>3.83</td>
<td>2.03</td>
</tr>
<tr>
<td>c. Research demonstrating the effectiveness of music therapy</td>
<td>3.81</td>
<td>1.99</td>
</tr>
<tr>
<td><strong>Pain</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Use of music therapy</td>
<td>4.42</td>
<td>2.08</td>
</tr>
<tr>
<td>b. Research supporting the use of music therapy</td>
<td>3.62</td>
<td>2.17</td>
</tr>
<tr>
<td>c. Research demonstrating the effectiveness of music therapy</td>
<td>3.56</td>
<td>2.13</td>
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<tr>
<td><strong>Knowledge related to music therapy:</strong></td>
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</tr>
<tr>
<td>a. What music therapy is</td>
<td>4.21</td>
<td>1.72</td>
</tr>
<tr>
<td>b. What music therapy can be used for</td>
<td>4.13</td>
<td>1.70</td>
</tr>
<tr>
<td>c. The types of clinical problems that can be managed with music therapy</td>
<td>3.65</td>
<td>1.69</td>
</tr>
<tr>
<td>d. How music therapy works in the management of anxiety</td>
<td>3.89</td>
<td>1.81</td>
</tr>
<tr>
<td>e. How music therapy works in the management of pain</td>
<td>3.77</td>
<td>1.82</td>
</tr>
<tr>
<td>f. The effectiveness of music therapy for the management of anxiety</td>
<td>3.95</td>
<td>1.85</td>
</tr>
<tr>
<td>g. The effectiveness of music therapy for the management of pain</td>
<td>3.71</td>
<td>1.85</td>
</tr>
<tr>
<td>Item</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>---------------------------------------------------------------------</td>
<td>------</td>
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</tr>
<tr>
<td>h. How to apply/use music therapy in the management of anxiety</td>
<td>3.36</td>
<td>1.75</td>
</tr>
<tr>
<td>i. How to apply/use music therapy in the management of pain</td>
<td>3.23</td>
<td>1.80</td>
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<table>
<thead>
<tr>
<th>Item</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Sources providing knowledge about music therapy:</td>
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<td></td>
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<tr>
<td>Personal experience using music therapy</td>
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<td>53</td>
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<tr>
<td>Clients</td>
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<td>32.5</td>
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<td>Other health care providers</td>
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<td>31.1</td>
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<td>Other nurses</td>
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<td>30.5</td>
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<tr>
<td>Family and friends</td>
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<td>28.7</td>
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<td>School</td>
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<td>24.5</td>
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<tr>
<td>Internet</td>
<td>36</td>
<td>23.8</td>
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<tr>
<td>Newspaper and magazines</td>
<td>33</td>
<td>21.9</td>
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<td>Books</td>
<td>30</td>
<td>19.9</td>
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<tr>
<td>Television/radio</td>
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<td>Journals</td>
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<td>11.3</td>
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<td>10</td>
<td>6.6</td>
</tr>
<tr>
<td>Not applicable</td>
<td>14</td>
<td>9.3</td>
</tr>
</tbody>
</table>

74
<table>
<thead>
<tr>
<th>Usefulness of information obtained about music therapy</th>
<th>4.53</th>
<th>1.59</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Respondents</td>
<td>Percent</td>
<td></td>
</tr>
<tr>
<td>Used music therapy in practice?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>69</td>
<td>45.4</td>
</tr>
<tr>
<td>No</td>
<td>83</td>
<td>54.6</td>
</tr>
<tr>
<td>Practice setting for use of music therapy:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Long-term care</td>
<td>11</td>
<td>17.2</td>
</tr>
<tr>
<td>Palliative care</td>
<td>11</td>
<td>17.2</td>
</tr>
<tr>
<td>Geriatrics</td>
<td>9</td>
<td>14.1</td>
</tr>
<tr>
<td>Labour and delivery</td>
<td>8</td>
<td>12.5</td>
</tr>
<tr>
<td>Surgery/post-operative</td>
<td>6</td>
<td>9.4</td>
</tr>
<tr>
<td>Critical care</td>
<td>5</td>
<td>7.8</td>
</tr>
<tr>
<td>Medical-surgical unit</td>
<td>5</td>
<td>7.8</td>
</tr>
<tr>
<td>Mental health</td>
<td>4</td>
<td>6.3</td>
</tr>
<tr>
<td>ER</td>
<td>2</td>
<td>3.1</td>
</tr>
<tr>
<td>Rehabilitation</td>
<td>2</td>
<td>3.1</td>
</tr>
<tr>
<td>Lab/imaging</td>
<td>2</td>
<td>3.1</td>
</tr>
<tr>
<td>Other</td>
<td>11</td>
<td>17.2</td>
</tr>
<tr>
<td>Item</td>
<td>Number of Respondents</td>
<td>Percent</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-----------------------</td>
<td>---------</td>
</tr>
<tr>
<td>Purpose for which music therapy used:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relaxation</td>
<td>14</td>
<td>23</td>
</tr>
<tr>
<td>Decrease anxiety</td>
<td>13</td>
<td>21.3</td>
</tr>
<tr>
<td>Decrease pain</td>
<td>13</td>
<td>21.3</td>
</tr>
<tr>
<td>Decrease agitation</td>
<td>7</td>
<td>11.5</td>
</tr>
<tr>
<td>Distraction</td>
<td>6</td>
<td>9.8</td>
</tr>
<tr>
<td>Calming</td>
<td>5</td>
<td>8.2</td>
</tr>
<tr>
<td>Block ambient noise</td>
<td>4</td>
<td>6.6</td>
</tr>
<tr>
<td>Entertainment</td>
<td>3</td>
<td>4.9</td>
</tr>
<tr>
<td>Ease Restlessness</td>
<td>3</td>
<td>4.9</td>
</tr>
<tr>
<td>During exercise</td>
<td>2</td>
<td>3.3</td>
</tr>
<tr>
<td>Promote sleep</td>
<td>2</td>
<td>3.3</td>
</tr>
<tr>
<td>Ease depression</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>Reduce stress</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>Other</td>
<td>7</td>
<td>11.5</td>
</tr>
</tbody>
</table>
The second question was concerned with the relative contribution of attitudes, subjective norms, moral norms, perceived behavioural control and role beliefs to nurses’ intention to use music therapy in practice for the management of anxiety and pain. The mean (standard deviation) scores for the study variables are presented in Table 3. Overall, participants had favourable attitudes towards the use of music therapy for the management of anxiety and pain. They believed that significant others (i.e. colleagues, other health care professionals, clients and their families) approved of their use of music therapy for anxiety and for pain. They perceived that they had moral obligations to use music therapy for anxiety and for pain and professional responsibilities as nurses to use music therapy for the management of these symptoms. Participants perceived control over their choice to use music therapy in practice for anxiety and for pain. However, nurses felt that there was low social pressure to use music therapy in practice as evidenced by low scores for subjective norms for both anxiety (2.67 ± 1.37) and pain (2.61 ± 1.37). Scores on the intention measures suggested that nurses were slightly more likely to use music therapy for the management of anxiety than for pain.

The bivariate relationships among the Theory of Planned Behaviour (TPB) concepts were examined. The Pearson’s correlation coefficients quantifying these relationships are presented in Tables 4 for anxiety and Table 5 for pain. Consistent with the proposed framework, attitude, subjective norms, moral norms, perceived behavioural control and role beliefs were significantly correlated with the intention to use music therapy for both anxiety and pain. The associations were positive and of a moderate magnitude. The largest correlation was between intention and attitudes followed by perceived behavioural control, subjective norms, moral norms, and role beliefs for anxiety management. For pain management, the largest correlation was between intention and
perceived behavioural control, followed by attitudes, moral norms, subjective norms, and role beliefs.
Table 3:
*Means, Standard Deviations, and Range for TPB concepts*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>Score range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavioural intention (anxiety)</td>
<td>4.69</td>
<td>1.56</td>
<td>1-7</td>
</tr>
<tr>
<td>Behavioural intention (pain)</td>
<td>4.61</td>
<td>1.63</td>
<td>1-7</td>
</tr>
<tr>
<td>Attitudes (anxiety)</td>
<td>5.79</td>
<td>1.16</td>
<td>1-7</td>
</tr>
<tr>
<td>Attitudes (pain)</td>
<td>5.66</td>
<td>1.28</td>
<td>1-7</td>
</tr>
<tr>
<td>Subjective norms (anxiety)</td>
<td>2.67</td>
<td>1.37</td>
<td>1-7</td>
</tr>
<tr>
<td>Subjective norms (pain)</td>
<td>2.61</td>
<td>1.37</td>
<td>1-7</td>
</tr>
<tr>
<td>Moral norms (anxiety)</td>
<td>4.22</td>
<td>1.71</td>
<td>1-7</td>
</tr>
<tr>
<td>Moral norms (pain)</td>
<td>4.19</td>
<td>1.76</td>
<td>1-7</td>
</tr>
<tr>
<td>Perceived behavioural control (anxiety)</td>
<td>4.25</td>
<td>1.48</td>
<td>1-7</td>
</tr>
<tr>
<td>Perceived behavioural control (pain)</td>
<td>4.15</td>
<td>1.58</td>
<td>1-7</td>
</tr>
<tr>
<td>Role beliefs (anxiety)</td>
<td>4.18</td>
<td>1.39</td>
<td>1-7</td>
</tr>
<tr>
<td>Role beliefs (pain)</td>
<td>4.09</td>
<td>1.44</td>
<td>1-7</td>
</tr>
</tbody>
</table>
### Table 4:

*Correlations Among TPB Concepts - Anxiety*

<table>
<thead>
<tr>
<th></th>
<th>Behavioural intention</th>
<th>Attitudes</th>
<th>Subjective norms</th>
<th>Moral norms</th>
<th>Perceived behavioural control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavioural intention</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitudes</td>
<td></td>
<td>0.751**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subjective norms</td>
<td></td>
<td>0.712**</td>
<td>0.448**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moral norms</td>
<td></td>
<td>0.687**</td>
<td>0.532**</td>
<td>0.554**</td>
<td></td>
</tr>
<tr>
<td>Perceived behavioural control</td>
<td></td>
<td>0.741**</td>
<td>0.518**</td>
<td>0.655**</td>
<td>0.647**</td>
</tr>
<tr>
<td>Role beliefs</td>
<td></td>
<td>0.672**</td>
<td>0.582**</td>
<td>0.624**</td>
<td>0.565** 0.513**</td>
</tr>
</tbody>
</table>

**P < 0.01**
<table>
<thead>
<tr>
<th></th>
<th>Behavioural intention</th>
<th>Attitudes</th>
<th>Subjective norms</th>
<th>Moral norms</th>
<th>Perceived behavioural control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavioural intention</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitudes</td>
<td></td>
<td>0.766**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subjective norms</td>
<td>0.694**</td>
<td>0.450**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moral norms</td>
<td>0.706**</td>
<td>0.589**</td>
<td>0.542**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived</td>
<td>0.771**</td>
<td>0.557**</td>
<td>0.640**</td>
<td>0.658**</td>
<td></td>
</tr>
<tr>
<td>behavioural control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Role beliefs</td>
<td>0.664**</td>
<td>0.616**</td>
<td>0.646**</td>
<td>0.564**</td>
<td>0.539**</td>
</tr>
</tbody>
</table>

** P < 0.01
The simultaneous relationships between the TPB concepts and nurses’ intention to use music therapy in practice were examined separately for both anxiety and pain. The results of the regression analysis are summarized in Tables 6 and 7, respectively. When intention to use music therapy for the management of anxiety was regressed on the five concepts (attitudes, subjective norms, moral norms, perceived behavioural control and role beliefs), attitudes (β = 0.395, P < 0.001), subjective norms (β = 0.251, P < 0.001), perceived behavioural control (β = 0.239, P < 0.001), and moral norms (β = 0.395, P = 0.015) showed statistically significant, small to moderate associations with the dependent variable. Role beliefs (β = 0.084, P = 0.125) did not relate significantly with intention to use music therapy. This model explained 79.1% of variance in nurses’ behavioural intention to use music therapy for the management of anxiety.

When nurses’ intention to use music therapy for the management of pain was regressed on the five concepts, attitudes (β = 0.431, P < 0.001), perceived behavioural control (β = 0.258, P < 0.001), subjective norms (β = 0.220, P < 0.001), and moral norms (β = 0.125, P = 0.016) were found to have statistically significant small to moderate relationships with intention. Role beliefs (β = 0.64, P < 0.235) did not correlate significantly with intention. This model explained 81.5% of variance in nurses’ behavioural intention to use music therapy for the management of pain.

In summary, attitudes, subjective norms, perceived behavioural control and moral norms contributed significantly to nurses’ intention to use music therapy for the management of anxiety and pain. Role beliefs were not associated with nurses’ intention to use music therapy for either anxiety or pain management.
### Table 6:

*Relationships between TPB Concepts and Intention to Use Music Therapy for Management of Anxiety*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta</th>
<th>t</th>
<th>Significance</th>
<th>Confidence interval (95%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitudes for anxiety</td>
<td>0.395</td>
<td>7.930</td>
<td>&lt; 0.001</td>
<td>0.384 – 0.638</td>
</tr>
<tr>
<td>Subjective norms for anxiety</td>
<td>0.251</td>
<td>4.466</td>
<td>&lt; 0.001</td>
<td>0.153 – 0.397</td>
</tr>
<tr>
<td>Moral norms for anxiety</td>
<td>0.133</td>
<td>2.472</td>
<td>0.015</td>
<td>0.023 – 0.211</td>
</tr>
<tr>
<td>Perceived behavioural control for anxiety</td>
<td>0.239</td>
<td>4.205</td>
<td>&lt; 0.001</td>
<td>0.130 – 0.360</td>
</tr>
<tr>
<td>Role beliefs for anxiety</td>
<td>0.084</td>
<td>1.544</td>
<td>0.125</td>
<td>-0.026 – -0.209</td>
</tr>
</tbody>
</table>

### Table 7:

*Relationships between TPB Concepts and Intention to Use Music Therapy for Management of Pain*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta</th>
<th>t</th>
<th>Significance</th>
<th>Confidence interval (95%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitudes for pain</td>
<td>0.431</td>
<td>8.622</td>
<td>&lt; 0.001</td>
<td>0.402 – 0.642</td>
</tr>
<tr>
<td>Subjective norms for pain</td>
<td>0.220</td>
<td>4.180</td>
<td>&lt; 0.001</td>
<td>0.131 – 0.368</td>
</tr>
<tr>
<td>Moral norms for pain</td>
<td>0.125</td>
<td>2.429</td>
<td>0.016</td>
<td>0.021 – 0.201</td>
</tr>
<tr>
<td>Perceived behavioural control for pain</td>
<td>0.258</td>
<td>4.764</td>
<td>&lt; 0.001</td>
<td>0.150 – 0.363</td>
</tr>
<tr>
<td>Role beliefs for pain</td>
<td>0.64</td>
<td>1.194</td>
<td>0.235</td>
<td>-0.046 – 0.186</td>
</tr>
</tbody>
</table>
The third question was about the relationships between nurses’ attitudes, subjective norms, moral norms, perceived behavioural control and role beliefs regarding nurses’ use of music therapy and nurses’ demographic (age, sex, education), professional (professional experience, area of practice, type of institution in which they work) characteristics and awareness of music therapy for the management of anxiety and pain. The bivariate relationships between demographic characteristics, professional characteristics and awareness, and each of the TPB concepts were examined, using Pearson’s correlation coefficients. The results are presented in Table 8 for anxiety and Table 9 for pain. For anxiety, the strongest correlation was between awareness and behavioural intention, attitudes, perceived behavioural control, subjective norms, moral norms and role beliefs; area of practice and subjective norms, perceived behavioural control, behavioural intention; type of institution and behavioural intention; area of practice and role beliefs; age and attitude; and lastly, years in nursing and attitude. For pain, the strongest correlation was between awareness and behavioural intention, attitudes, perceived behavioural control, role beliefs, and subjective norms; followed by area of practice and subjective norms; and lastly, type of institution and perceived behavioural control, and behavioural intention.
Table 8:

*Correlations between Demographic and Professional Characteristics, and the TPB Concepts - Anxiety*

<table>
<thead>
<tr>
<th></th>
<th>Behavioural intention</th>
<th>Attitudes</th>
<th>Subjective norms</th>
<th>Moral norms</th>
<th>Perceived behavioural control</th>
<th>Role beliefs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>0.030</td>
<td>0.174*</td>
<td>0.087</td>
<td>0.064</td>
<td>0.020</td>
<td>0.061</td>
</tr>
<tr>
<td>Gender</td>
<td>-0.131</td>
<td>-0.145</td>
<td>-0.073</td>
<td>-0.022</td>
<td>-0.087</td>
<td>-0.044</td>
</tr>
<tr>
<td>Education (nursing)</td>
<td>0.104</td>
<td>0.029</td>
<td>0.030</td>
<td>0.053</td>
<td>0.035</td>
<td>-0.014</td>
</tr>
<tr>
<td>Years in nursing</td>
<td>0.028</td>
<td>0.169*</td>
<td>0.072</td>
<td>0.057</td>
<td>0.017</td>
<td>0.037</td>
</tr>
<tr>
<td>Area of practice (acute, LTC, rehab)</td>
<td>0.246**</td>
<td>0.074</td>
<td>0.339**</td>
<td>0.155</td>
<td>0.253**</td>
<td>0.190*</td>
</tr>
<tr>
<td>Type of institution (university/non-university affiliated)</td>
<td>0.217**</td>
<td>0.091</td>
<td>0.136</td>
<td>0.115</td>
<td>0.187*</td>
<td>0.160</td>
</tr>
<tr>
<td>Awareness</td>
<td>0.544**</td>
<td>0.443**</td>
<td>0.372**</td>
<td>0.361**</td>
<td>0.396**</td>
<td>0.356**</td>
</tr>
</tbody>
</table>

** P < 0.01

* P < 0.05
Table 9:
Correlations between Demographic and Professional Characteristics, and the TPB Concepts - Pain

<table>
<thead>
<tr>
<th></th>
<th>Behavioural intention</th>
<th>Attitudes</th>
<th>Subjective norms</th>
<th>Moral norms</th>
<th>Perceived behavioural control</th>
<th>Role beliefs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>-0.077</td>
<td>0.046</td>
<td>0.060</td>
<td>0.024</td>
<td>-0.053</td>
<td>0.006</td>
</tr>
<tr>
<td>Gender</td>
<td>-0.127</td>
<td>-0.144</td>
<td>-0.085</td>
<td>-0.024</td>
<td>-0.068</td>
<td>-0.066</td>
</tr>
<tr>
<td>Education (nursing)</td>
<td>0.128</td>
<td>0.077</td>
<td>0.004</td>
<td>0.081</td>
<td>0.075</td>
<td>-0.020</td>
</tr>
<tr>
<td>Years in nursing</td>
<td>0.016</td>
<td>0.125</td>
<td>0.077</td>
<td>0.045</td>
<td>0.030</td>
<td>0.007</td>
</tr>
<tr>
<td>Area of practice (acute, LTC, rehab)</td>
<td>0.156</td>
<td>-0.033</td>
<td>0.282**</td>
<td>0.098</td>
<td>0.126</td>
<td>0.155</td>
</tr>
<tr>
<td>Type of institution (university/non-university affiliated)</td>
<td>0.169*</td>
<td>0.052</td>
<td>0.117</td>
<td>0.076</td>
<td>0.176*</td>
<td>0.113</td>
</tr>
<tr>
<td>Awareness</td>
<td>0.504**</td>
<td>0.444**</td>
<td>0.336**</td>
<td>0.397**</td>
<td>0.367**</td>
<td>0.342**</td>
</tr>
</tbody>
</table>

** P < 0.01
* P < 0.05
The fourth question focused on the relationships between the TPB concepts and nurses’ intention to use music therapy in practice along with selected demographic and professional characteristics and awareness. These relationships were examined separately for both anxiety and pain. The results of the regression analysis are summarized in Tables 10 and 11, respectively. When attitudes, subjective norms, moral norms, perceived behavioural control and role beliefs were included in the regression model along with the demographic characteristics, professional characteristics and awareness for anxiety, awareness ($\beta = 0.119$, $P = 0.009$) and the TPB concepts showed significant associations with intention to use music therapy.

Similarly, when attitudes, subjective norms, moral norms, perceived behavioural control and role beliefs were included in the regression model along with the demographic characteristics, professional characteristics and awareness for pain, awareness ($\beta = 0.084$, $P = 0.053$) and the TPB concepts showed significant associations with intention to use music therapy. The regression model including the TPB concepts and awareness explained 79.7% of variance in behavioural intention in nurses’ use of music therapy for the management of anxiety, and 83.2% of variance in pain management.

In summary, attitudes, subjective norms, perceived behavioural control, and moral norms along with awareness contributed significantly to nurses’ intention to use music therapy for the management of anxiety and pain. Selected demographic (age, gender, education), and professional (years in nursing, primary area of practice, and type of institution) characteristics were not significant predictors of nurses’ intention to use music therapy for either anxiety or pain management.
Table 10:

*Relationships between Intention to Use Music Therapy for Anxiety, and TPB Concepts, Demographic and Professional Characteristics, and Awareness*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta</th>
<th>t</th>
<th>Significance</th>
<th>Confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitudes for anxiety</td>
<td>0.392</td>
<td>7.435</td>
<td>&lt; 0.01</td>
<td>0.381 – 0.656</td>
</tr>
<tr>
<td>Subjective norms for anxiety</td>
<td>0.243</td>
<td>4.112</td>
<td>&lt; 0.01</td>
<td>0.139 – 0.398</td>
</tr>
<tr>
<td>Moral norms for anxiety</td>
<td>0.133</td>
<td>2.311</td>
<td>0.022</td>
<td>0.017 – 0.216</td>
</tr>
<tr>
<td>Perceived behavioural control</td>
<td>0.242</td>
<td>4.034</td>
<td>&lt; 0.01</td>
<td>0.127 – 0.372</td>
</tr>
<tr>
<td>Role beliefs for anxiety</td>
<td>0.085</td>
<td>1.490</td>
<td>0.139</td>
<td>-0.031 – 0.217</td>
</tr>
<tr>
<td>Age</td>
<td>-0.18</td>
<td>-0.225</td>
<td>0.823</td>
<td>-0.026 – 0.020</td>
</tr>
<tr>
<td>Gender</td>
<td>-0.042</td>
<td>-1.037</td>
<td>0.302</td>
<td>-0.836 – 0.261</td>
</tr>
<tr>
<td>Highest education (nursing)</td>
<td>0.009</td>
<td>0.213</td>
<td>0.832</td>
<td>-0.173 – 0.215</td>
</tr>
<tr>
<td>Years in nursing</td>
<td>-0.050</td>
<td>-0.627</td>
<td>0.532</td>
<td>-0.028 – 0.014</td>
</tr>
<tr>
<td>Primary area of practice</td>
<td>0.025</td>
<td>0.571</td>
<td>0.569</td>
<td>-0.186 – 0.337</td>
</tr>
<tr>
<td>Type of institution</td>
<td>0.048</td>
<td>1.179</td>
<td>0.241</td>
<td>-0.100 – 0.393</td>
</tr>
<tr>
<td>Awareness</td>
<td>0.119</td>
<td>2.648</td>
<td>0.009</td>
<td>0.025 – 0.174</td>
</tr>
</tbody>
</table>
Table 11:

*Relationships between Intention to Use Music Therapy for Pain, and TPB Concepts, Demographic and Professional Characteristics, and Awareness*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta</th>
<th>t</th>
<th>Significance</th>
<th>Confidence interval (95%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitudes for pain</td>
<td>0.441</td>
<td>8.388</td>
<td>&lt; 0.01</td>
<td>0.418 – 0.677</td>
</tr>
<tr>
<td>Subjective norms for pain</td>
<td>0.206</td>
<td>3.768</td>
<td>&lt; 0.01</td>
<td>0.112 – 0.359</td>
</tr>
<tr>
<td>Moral norms for pain</td>
<td>0.120</td>
<td>2.210</td>
<td>0.029</td>
<td>0.011 – 0.202</td>
</tr>
<tr>
<td>Perceived behavioural control for pain</td>
<td>0.264</td>
<td>4.629</td>
<td>&lt; 0.01</td>
<td>0.154 – 0.384</td>
</tr>
<tr>
<td>Role beliefs for pain</td>
<td>0.060</td>
<td>1.061</td>
<td>0.291</td>
<td>-0.056 – 0.186</td>
</tr>
<tr>
<td>Age</td>
<td>-0.038</td>
<td>-0.469</td>
<td>0.640</td>
<td>-0.030 – 0.018</td>
</tr>
<tr>
<td>Gender</td>
<td>-0.038</td>
<td>-1.007</td>
<td>0.316</td>
<td>-0.807 – 0.263</td>
</tr>
<tr>
<td>Highest education (nursing)</td>
<td>0.012</td>
<td>0.309</td>
<td>0.758</td>
<td>-0.163 – 0.224</td>
</tr>
<tr>
<td>Years in nursing</td>
<td>-0.023</td>
<td>-0.291</td>
<td>0.771</td>
<td>-0.025 – 0.018</td>
</tr>
<tr>
<td>Primary area of practice</td>
<td>0.053</td>
<td>1.273</td>
<td>0.205</td>
<td>-0.091 – 0.419</td>
</tr>
<tr>
<td>Type of institution</td>
<td>0.014</td>
<td>0.373</td>
<td>0.710</td>
<td>-0.196 – 0.287</td>
</tr>
<tr>
<td>Awareness</td>
<td>0.084</td>
<td>1.953</td>
<td>0.053</td>
<td>-0.001 – 0.128</td>
</tr>
</tbody>
</table>
Question five related to the identification of additional factors which could influence nurses’ intention to use music therapy in practice for the management of anxiety and pain. Qualitative responses to the open-ended questions were content analyzed. A number of participants (n = 90) identified several factors that might influence their use of music therapy for anxiety and pain. The results of the content analysis are summarized in Table 12. The factors were classified under three main categories: nurse, client and unit characteristics. Nurse characteristics included knowledge, training and attitudes or perceptions of music therapy. Client characteristics included preference for or acceptability of music as an intervention, type and severity of anxiety/pain, personal profile, previous experience using music therapy, and effectiveness of medication. Unit characteristics included resources, type of unit, accepted practice, busy environment, physical environment, and infection control policies.

Nurse characteristics included those factors that directly related to nurses’ training, knowledge, nurses’ or colleagues’ attitudes and perceptions of music therapy. Knowledge referred to understanding what music therapy is, what it can be used to treat, and how to incorporate it into a plan of care. Training related to how to apply the intervention in clinical practice. A number of respondents (n = 31) indicated that knowledge and training deficits with regards to facilitating music therapy in clinical practice, as illustrated in this quote: “I am wondering how music therapy would/could be incorporated into care.”

A small number (n = 14) of respondents identified nurses’ attitudes and perceptions as important factors influencing nurses’ use of music therapy in practice. Attitudes and perceptions reflected nurses’ positive or negative views of music therapy as an intervention in clinical practice, exemplified in the following quote: “I do not feel [music therapy] would be useful,”
Participants (n = 33) identified several client characteristics (preference for or acceptability of music as an intervention, type and severity of anxiety/pain, personal profile, previous experience using music therapy, and effectiveness of medication) as influencing nurses’ use of music therapy. Client characteristics encompassed factors directly related to the client’s demographic and clinical profiles, preferences and experience. The following statement best exemplifies the importance of client preference: “it depends on what the client would want, I would have an open discussion and have the client make an informed choice.” The importance of considering the severity of pain was shown through: “if the patient’s pain score is lower than 5, I may try music therapy for pain.” The need to consider the personal profile of the client was illustrated by the following quote: “it depends on the patient’s diagnosis for anxiety.” Previous experience using music therapy guided nurses’ implementation of this intervention as reported in this response: “if [music therapy] is something the patient has used before.” Lastly, the following statement illustrated the importance of considering the effectiveness of medication: “[I would use music therapy] “in people who are not managed well with medication.”

The factor most (n = 148) cited as influencing use of music therapy related to unit characteristics. Unit characteristics entailed factors inherent to a particular hospital unit that may interfere with the implementation of the intervention. The factors included: unit resources (funding, equipment, personnel), type of unit (i.e. critical care, medical/surgical, rehabilitation), accepted practices (i.e. best practices, infection control policies), busyness (related to staffing, severity of clients’ condition), and a unit’s physical features (available space, private vs. ward rooms). The majority of respondents (n = 68) identified unit resources (availability of equipment, appropriate music, funding, and personnel to train, deliver and supervise the intervention) as key factors that influence nurses’ use of music therapy in clinical practice. The importance of resources was
illustrated by: “[on my unit there are] no speakers, no earphones, no infrastructure, no music therapy specialists.” Type of unit was best reflected by: “[music therapy would] not [be] appropriate for fast-paced ER setting.” Accepted practice was exemplified by: “[I would use music therapy if] it [were] more widely accepted as a form of therapy in the ER.” The importance of support from key unit personnel was depicted by: “[I would use music therapy if there was] support from doctors and administrators.” Busy environment was reflected by: “I care for 79 dementia residents as the only RN, this makes it difficult to involve myself in additional workload.” The following quote exemplified physical environment: “ER environment [is] not conducive [for music therapy] – no private rooms, nursing in chairs and hallways.” Lastly, infection control was captured by: “if clients are isolated, we’re unable to bring a CD player into their room.”

Overall, three main categories emerged from the content analysis that examined other reasons influencing nurses’ use of music therapy for the management of anxiety or pain: nurse, client and unit characteristics. Within these three categories, the most frequently identified factors were: resources (n = 68), knowledge and training (n = 31), type of unit (n = 29), accepted practices (n = 18), and busy environment (n = 16).
### Table 12:

*Factors that Influence Use of Music Therapy for Anxiety and Pain*

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nurse characteristics:</strong></td>
<td></td>
</tr>
<tr>
<td>Knowledge &amp; training</td>
<td>31</td>
</tr>
<tr>
<td>Attitude/perceptions</td>
<td>14</td>
</tr>
<tr>
<td><strong>Client characteristics:</strong></td>
<td></td>
</tr>
<tr>
<td>Preference</td>
<td>12</td>
</tr>
<tr>
<td>Type and severity of anxiety/pain</td>
<td>8</td>
</tr>
<tr>
<td>Personal profile (health/physical condition, age, cultural barriers)</td>
<td>7</td>
</tr>
<tr>
<td>Previous experience using music therapy</td>
<td>3</td>
</tr>
<tr>
<td>Effectiveness of medication</td>
<td>3</td>
</tr>
<tr>
<td>Category</td>
<td>Number of respondents</td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>Unit characteristics:</td>
<td></td>
</tr>
<tr>
<td>Resources (equipment, appropriate music, personnel, funding)</td>
<td>68</td>
</tr>
<tr>
<td>Type of unit</td>
<td>29</td>
</tr>
<tr>
<td>Accepted practice/support from administrators/physicians/families</td>
<td>18</td>
</tr>
<tr>
<td>Busy environment</td>
<td>16</td>
</tr>
<tr>
<td>Physical environment</td>
<td>14</td>
</tr>
<tr>
<td>Infection control policies</td>
<td>3</td>
</tr>
</tbody>
</table>
Summary

In summary, 161 participants completed the study. On average, the participants were middle aged, female, diploma-prepared, and experienced nurses. Most participants worked as staff nurses in acute care teaching hospitals. Participants were aware of the use of music therapy for the management of anxiety and pain.

Attitudes, subjective norms, perceived behavioural control, moral norms, and awareness were significantly associated with nurses’ intention to use music therapy for the management of anxiety and pain. Role beliefs and selected demographic and professional characteristics were not significantly related to nurses’ intention to use music therapy for either anxiety or pain management. Nurse, client and unit factors were additional factors that influence nurses’ use of music therapy in practice.
Chapter 5
Discussion, Study Limitations, and Implications

In this chapter, the main findings are summarized first, followed by the discussion, which relates the study findings to previous empirical evidence and the conceptual framework. The strengths and limitations of the study are then highlighted. Lastly, implications for practice, research and theory are presented.

Summary of Results

The purpose of this study was twofold: to understand nurses’ awareness of music therapy as an intervention and intention to implement it for the management of anxiety and pain; and to examine the factors that influence nurses’ intention to use music therapy in their practice. The study was guided by a conceptual framework integrating concepts from the Theory of Planned Behaviour and the Theory of Interpersonal Behaviour.

A random sample of nurses was drawn from the CNO database. Overall, participants (n = 161) had some awareness of what music therapy is, and how it can be utilized in practice. About half of respondents have used or know someone who has used music therapy in practice. Participating nurses indicated that music therapy was often implemented on in-patient units in a variety of settings, primarily to manage anxiety and pain and to promote relaxation.

Participants had favourable attitudes towards the use of music therapy for the management of anxiety and pain. Participants believed that colleagues, other healthcare professionals, clients and their families approved of their use of music therapy for anxiety and pain. They perceived that they had moral obligations, professional responsibilities, and control over their choice to use music therapy for the management and anxiety and pain. However, nurses felt that there was low social
pressure to use music therapy in practice as evidenced by low scores for subjective norms for both anxiety (2.67 ± 1.37) and pain (2.61 ± 1.37). With regards to intention, nurses were more likely to use music therapy for the management of anxiety than for pain.

The factors which contributed significantly to nurses’ intention to use music therapy in practice were attitudes, subjective norms, perceived behavioural control, morals norms and awareness. Role beliefs, demographic and professional characteristics were not significant predictors of nurses’ intention to use music therapy in practice.

The qualitative data showed nurse, client and unit factors influence nurses’ use of music therapy in practice. The most cited individual factor was knowledge and training related to the use of music therapy for the management of anxiety and pain.

**Representativeness of the Sample**

In order to establish the representativeness of the sample, response rates and demographic and professional profiles of the sample were compared to relevant literature. Despite using Dillman’s method, this study’s response rate (33.2%) was lower than initially predicated in the literature (Dillman, 2007). Factoring in the response rates reported for Ontario nurses in the literature (mean response rate = 53.6%) and Francis et al.’s research (2004), a response rate of 50% was anticipated. Numerous studies have shown that the response rates of nurses and other health care professionals to mail-out surveys have been consistently decreasing (Grava-Gubins & Scott, 2008; MacDonald, Newburn-Cook, Schopflocher & Richter, 2009).

Several factors could have contributed to the low response rate of this study. The topic itself could have been a factor. Kaner et al. (1998) found that general practitioners were more likely to respond to mailed-out surveys that addressed a topic of high interest. Topical salience, the relevance
of the topic being surveyed, has been found to be among the most important predictors of response rate in survey-type studies (Goyder, 1982; Heberlein & Baumgartner, 1978). Participants might not have been interested in music therapy and therefore might have chosen not to participate in this study.

Length of the questionnaire has also been cited as an important factor contributing to survey response rate. A 2002 systematic review found that response rates to mailed-out surveys could significantly increase if surveys were shorter (Edwards et al., 2002). The current study used a 30-page questionnaire which may have been considered lengthy. The length of the questionnaire may have deterred participants from choosing to complete the survey, or choosing to answer all the questions.

A low response rate may not necessarily affect the representativeness of the sample, which was assessed by comparing the demographic and professional characteristics of the sample to that of nurses registered with the Ontario College of Nurses. The results of these comparisons were reassuring. Data showed that the sample had similar demographic and professional characteristics to the population of nurses in Ontario. Specifically, the average age of nurses in Ontario in 2011 was 46.7 years which was similar to the average age (47.7 years) of the study participants. Also, the percentages of male nurses were comparable, being 5.3% in the province and 4.7% in this study. In addition, most (86.2%) nurses in Ontario worked in hospital settings as compared to 81.6% of nurses in the study; and 89% of nurses worked as staff nurses versus 85.8% of nurses in the study (CNO, 2011). In summary, the sample was shown to be representative of the target population as demonstrated by similar demographic and professional characteristics despite the low response rate.
Discussion

The results pertaining to the study questions are discussed in relation to previous results and the study conceptual framework.

Nurses’ awareness of music therapy

Nurses demonstrated moderate levels of awareness of music therapy as an intervention for the management of anxiety and pain. Specifically, they were aware of the research supporting the use and effectiveness of music therapy for the management of anxiety and pain. Although there are no studies that specifically examined nurses’ awareness of music therapy in managing anxiety and pain, there have been studies that investigated nurses’ knowledge of complementary therapies and music therapy use in hospital settings. A recent study examined nurses’ knowledge of complementary and alternative medicine in Australian hospitals; the results showed that nurses had some but insufficient knowledge related to complementary therapies (Shorofí & Arbon, 2010). In particular, a large proportion of nurses reported that they had very little (30.4%) or only some (33.2%) knowledge about music therapy. Similarly, Sung, Lee, Chang and Smith (2011) found that 72.9% of nurses had limited knowledge of music therapy as an intervention, whereas Zanini et al. (2008) reported that 60.6% of nurses had any knowledge of complementary and alternative therapies.

The available data to date are consistent in showing nurses’ lack of knowledge of alternative therapies and of music therapy in particular, which can be implemented to assist patients manage symptoms. Knowledge deficit may be related to the lack of education about complementary therapies in most nursing programs (Halcon, Chlan, Kreitzer & Leonard, 2003). Sung et al. (2011) also noted that information related to music therapy was not commonly part of nursing curricula.
The qualitative results of this study corroborated the quantitative findings. In their responses to open-ended questions, the participants revealed limited awareness of music therapy. While most nurses were aware of the intervention, some explained that they lacked information about the effectiveness of music therapy in alleviating anxiety and pain and the procedures for implementing music therapy in practice. For example, nurses lacked information about what type of client would benefit from music therapy, what conditions music therapy could be used to treat, the type of music that should be utilized, the length and dosage of the intervention, and how to administer music therapy interventions. These findings were also consistent with results reported by Shorofi and Arbon (2010) who found that many nurses were somewhat aware of complementary therapies such as music therapy but lacked specific knowledge about how to incorporate them into a plan of patient care.

In this study about half (54.6%) of the respondents stated they never used music therapy in their practice. Similarly Sung et al. (2011) found that the majority of nurses working in long-term care facilities in Taiwan did not use music therapy in practice. Only 34.6% had used music therapy on themselves, 8.4% had used it for their families, and merely 30.8% had applied it in their practice areas (Sung et al., 2011). Shorofi and Arbon (2010) reported that half (50.3%) of participating Australian nurses do not use complementary and alternative therapies in their clinical practice.

Factors affecting nurses’ intention to use music therapy

Results of multiple regression indicated that attitudes, subjective norms, perceived behavioural control and moral norms explained 79.1% of the variance in nurses’ intention to provide music therapy for the management of anxiety, and 81.5% of the variance in nurses’ intention to provide music therapy for the management of pain. For the use of music therapy for anxiety management, attitudes had the greatest influence on nurses’ intention, followed by subjective norms,
perceived behavioural control and moral norms. For the use of music therapy for pain management, attitudes had the greatest influence on nurses’ intention, followed by perceived behavioural control, subjective norms and moral norms. Role beliefs were not associated with nurses’ intention to use music therapy for either anxiety or pain management. As proposed in the conceptual framework, these factors were positively associated with intention.

The importance of attitudes toward a behaviour in influencing nurses’ intention to perform a behaviour is confirmed in numerous studies (Walsh et al., 2005; Laschinger et al., 1995; McKinlay et al., 2001; Wallace et al., 1997; Waltman, 1990; Sauls, 2007; Nash et al., 1993; Dilorio, 1997; Feng & Wu, 2005; Bernaix, 2000; Vermette & Godin, 1996; Werner & Mendelsson, 2001; Tessaro & Highriter, 1994; Edwards et al., 2001; Puffer & Rashidian, 2004; Watson & Myers, 2001; Bolman et al., 2002; Lavoie et al., 1999). These studies showed that nurses with positive attitudes towards the behaviour were likely to perform it. In this study, most nurses had positive attitudes towards the use of music therapy for the management of anxiety and pain, whereas some nurses reported negative attitudes. These negative attitudes may be the result of limited awareness of the importance and effectiveness of this intervention. In turn, such attitudes may persuade some nurses not to use music therapy in their practice. This finding is similar to Edwards et al.’s (2001) study results which indicated that negative attitudes towards use of opioids for pain management are related to misconceptions and lack of knowledge related to opioid use. Thus, it is imperative to determine the source of these negative attitudes in order to identify possible factors that are contributing to negative attitudes and design initiatives that diminish the propagation of unfavourable perception of music therapy.

Similar to this study, a number of studies have examined nurses’ attitudes towards music therapy in various settings and have found them to be positive. Nurses had positive attitudes towards
the use of music therapy in geriatric settings (Sung et al., 2011) and in the neonatal intensive care unit (Kemper & Danhauer, 2005). Similarly, Shorofi and Arbon (2010) found that 22.4% of nurses expressed very positive attitudes towards the use of complementary and alternative therapies, and 36.6% had slightly positive attitudes. The emergence of positive attitudes toward alternative therapy may be related to the recent dissemination of relevant information through best practice guidelines (CNO, 2009). Overall, it is promising to see that nurses have favourable attitudes towards using music therapy in practice. As shown in the previous work and the current study, positive attitudes are related to behavioural intention. Thus, in order to influence nurses’ intention to use music therapy in practice, it is imperative to dispel negative attitudes about this intervention. Negative attitudes can be result of false beliefs or existing social or cultural norms (Ajzen & Fishbein, 1980). Ajzen and Fishbein (1980) proposed that knowledge could be used to change prejudicial attitudes. The importance of knowledge was further illustrated in the qualitative results of this study. A significant number of nurses identified their own lack of knowledge as a barrier to implementing music therapy interventions. Therefore, a possible way to promote nurses’ use of music therapy intervention would be to inform them of its uses, effects, and how to effectively apply it in practice.

In this study, subjective norms were significantly associated with nurses’ intention to use music therapy for the management of anxiety and pain. This finding has been replicated in many studies (Walsh et al., 2005; Laschinger et al., 1995; McKinlay et al., 2001; Wallace et al., 1997; Waltman, 1990; Sauls, 2007; Nash et al., 1993; Dilorio, 1997; Feng & Wu, 2005; Werner & Mendelsson, 2001; Edwards et al., 2001; Renfroe & Sullivan, 1990). This association implies that if nurses perceive that their colleagues, other health care professionals, clients and families support the use of music therapy, then they are likely to use music therapy in their practice. Although subjective norms were significant predictors of nurses’ intention to use music therapy in practice, the overall
scores for subjective norms were low for the use of music therapy to manage both anxiety and pain. This indicated that nurses did not believe that their colleagues, other health care professionals, clients and families felt that it was important to use music therapy in the management of anxiety or pain. Since nurses work in hierarchical establishments and within interprofessional teams, it was anticipated that their behavioural intentions would be influenced by the views of their colleagues, other health care professionals, their clients and families. The low scores for subjective norms indicate that colleagues, other health care professionals, clients and families are not very supportive of music therapy. This finding was further supported by the qualitative results. A number of nurses felt that they did not have support to implement music therapy intervention from their hospital’s administrators, physicians and clients’ families, which could help explain why nurses are less likely to use music therapy in their practice. Social norms are inherently connected to attitudes toward a given behaviour (Ajzen & Fishbein, 1980). Similar to dispelling negative attitudes, knowledge could also be used to promote stronger subjective norms with respect to nurses’ use of music therapy for anxiety and pain management.

Perceived behavioural control was positively related to nurses’ intention to use music therapy for the management of anxiety and pain. This relationship has also been reported in several studies (Sauls, 2007; Nash et al., 1993; Dilorio, 1997; Feng & Wu, 2005; Vermette & Godin, 1996; Edwards et al., 2001; Godin et al., 2000; Puffer & Rashidian, 2004; Watson & Myers, 2001; Renfroe & Sullivan, 1990). Nurses who perceive minimal barriers in implementing music therapy are likely to use music therapy in their practice. In this study, nurses reported moderate level of control over the implementation of music therapy in practice, implying that nurses are usually able to make their own decisions regarding the use of music therapy. However, the qualitative responses identified factors (i.e. lack of resources, limited knowledge and training with regards to implementing music therapy)
which could explain some nurses’ inability to initiate music therapy in their practice. These factors need to be mitigated in order to promote the use of music therapy in practice.

Moral norms were positively associated with nurses’ intention to use music therapy for the management of anxiety and pain. This association was also reported by Vermette and Godin (1996), Godin et al. (2000), and Godin et al. (2008). Strong moral norms can promote or deter a particular behaviour (Triandis, 1977), as they represent a person’s moral obligation to perform a particular behaviour (Triandis, 1977). Moral obligations are based on a person’s values. Andrews (2004) postulated that nursing is based on a distinct ethical model. Morals are influenced by values such as respect, responsibility and obligation (Nadan & Eriksson, 2004). Morals are imperative for nurses to be able to resolve conflict and prioritize their actions in problem-solving (Chitty, 2001). Thus, sound clinical decision-making requires strong moral norms. This study showed that nurses who have positive moral norms towards using music therapy interventions plan to use music therapy for the management of anxiety and pain in their practice. Jormsri, Kunaviktikul, Ketfian and Chaowalit (2005) found that nursing knowledge helps to shape nurses’ morals. By providing information on music therapy as a best practice, nurses are likely to perceive it as an important intervention to fulfill a moral obligation to provide the best care for managing their clients’ anxiety and pain.

With regard to the relative contribution of the factors related to nurses’ intention, this study showed that subjective norms were most highly associated with nurses’ intention to use of music therapy in managing anxiety, whereas perceived behavioural control was most highly associated with nurses’ intention to use of music therapy for managing pain. The difference in the relative contribution of the factors may be related to nurses’ lack of resources, knowledge and training related to the use of complementary therapies (O’Regan, Willis & O’Leary, 2010), as supported by the study’s qualitative results. A number of nurses felt that they lacked knowledge and training of
how to effectively implement music therapy. They also stated that their units lacked the resources to provide patients with music therapy. Accordingly, nurses would then perceive less control in being able to initiate alternative approaches for managing pain.

In contrast to the proposed framework, role beliefs were not significant predictors of nurses’ intention to use music therapy for either anxiety or pain management. Nurses’ role beliefs refer to behaviours that reflect what is expected of a nurse working in a given environment. According to Triandis (1977), if a particular behaviour is expected of a person assuming a certain role, then there is higher likelihood that the person performs that behaviour. In this study, it was hypothesized that if nurses perceive they are expected to use music therapy as part of their professional role, then they intend to use music therapy in their practice. Although participants considered providing music therapy within their scope of practice, role beliefs did not predict their behavioural intention to use music therapy in practice. This finding is inconsistent with those reported by Godin et al. (2008) and Lavoie et al. (1999), which indicated that nurses’ behaviour is influenced by their professional values and roles. The inconsistency could be attributed to the relative newness of incorporating complementary and alternative approaches into nursing practice; nurses may believe that the use of these therapies is an integral part of their professional role. The CNO recently issued practice guidelines which inform nurses about complementary therapy, specifically their effects, benefits and risks (CNO, 2009). As nurses become more informed about their role in providing complementary therapies, this could affect the importance of role beliefs in determining nurses’ behavioural intention to use music therapy in practice.

In this study nurses were slightly more likely to report intention to use music therapy in the management of anxiety than pain. This finding may be explained by conventional practices that focus on pharmacological treatment for pain. This recommendation has very much been ingrained in
nurses, starting in university programs. Nursing students generally have received little information on the use of complementary and alternative therapies throughout their programs (Halcon et al., 2003; Sung et al., 2011). Furthermore, studies have shown that complementary therapies tend to be used with chronic and psychological illnesses. A study by Kessler et al. (2001) showed that complementary therapies were commonly used for anxiety, chronic pain, depression, fatigue and insomnia. Most nurses who participated in the current study were working in acute care settings in which acute pain conditions are prevailing. Medication rather than complementary therapies would be perceived as the front-line treatment.

Overall, the study results supported the following propositions of the conceptual framework: attitudes, subjective norms, perceived behavioural control and moral norms are associated with nurses’ intention to use music therapy for the management of anxiety and pain. When awareness, socio-demographic and professional characteristics, in addition to the TPB concepts (attitudes, subjective norms, perceived behavioural control and moral norms) were entered into the regression analysis, awareness showed a significant positive association with nurses’ intention to use music therapy for the management of anxiety and pain. Nurses who had greater awareness of music therapy were likely to use this intervention for the management of anxiety and pain. This finding is consistent with the proposition in Godin et al.’s (2008) framework. The authors identified awareness as a significant predictor of health care professionals’ behavioural intention towards a particular intervention.

A number of studies have shown that nurses’ knowledge or awareness is significantly associated with behavioural intention (Feng & Wu, 2005; Bernaix, 2000; Godin et al., 2008; Vermette & Godin, 1996). Specifically, Shorofi and Arbon (2010) found that nurses with high levels
of knowledge about complementary and alternative therapies had positive attitudes regarding the use of these therapies.

In this study, nurses’ demographic or professional characteristics were not consistently related to the TPB concepts (i.e. attitudes, subjective norms, moral norms, perceived behavioural control, and role beliefs) that influenced nurses’ intention to use music therapy, as proposed in the conceptual framework. Limited empirical evidence suggests that nurses’ demographic and professional characteristics indirectly influence their intention to perform a particular behaviour. A few studies have suggested that nurses’ behavioural intention is significantly associated with nurses’ demographic or professional characteristics (Lavoie et al., 1999; Tessaro & Highriter, 1994; Wallace et al., 1997; Werner & Mendelsson, 2001).

Education level is a demographic variable shown to be related to nurses’ attitudes and moral norms. Werner and Mendelsson (2001) found a significant negative relationship between a high education level and nurses’ attitudes and moral obligations in using physical restraints in older patients. Laschinger et al. (1995) reported that nurses with higher education had more positive attitudes towards caring for patients who are HIV positive. Tessaro and Highriter (1994) reported that nurses who had spent fewer years in public health had stronger intentions to work with HIV patients. Therefore, nurses with fewer years in practice tend to be less committed to a particular specialty area and display more willingness to take on additional responsibilities. Conversely, nurses who worked many years in a specialty area tend to feel more committed to that area and are therefore reluctant to take on new responsibilities out of concern that these additional responsibilities may negatively impact existing commitments (Tessaro & Highriter, 1994). Thus, it would be easier for novice nurses to implement a new intervention in their practices. Shorofi and Arbon (2010) also
noted that nurses with less clinical experience are more likely to utilize complementary and alternative therapies in their practice. Wallace et al. (1997) examined the provision of oral care by nurses to patients receiving chemotherapy and reported differences in attitudes toward oral care expressed by nurses working on different types of units. Thus, both experience level and working in different areas could affect nurses’ attitudes towards specific interventions.

The conceptual framework proposed that demographic and professional characteristics of nurses would affect nurses’ attitudes, subjective norms, moral norms, perceived behavioural control and role beliefs regarding a particular intervention. The findings were inconclusive in supporting this proposition. The limited variability in nurses’ professional and demographic characteristics could account for the non-significant relationship between these characteristics and the TPB concepts. There were only a small (4.7%) proportion of male nurses in this study. Similarly, few (7.9%) nurses had any graduate level training, and most nurses worked in acute care (78.3%). Additional investigation is needed to determine if nurses’ demographic or professional characteristics can affect the factors that influence nurses’ intention.

In general, the results supported the following propositions of the conceptual framework: awareness, along with attitudes, subjective norms, perceived behavioural control and moral norms, were positively associated with nurses’ intention to use music therapy for the management of anxiety and pain.

*Additional factors influencing nurses’ use of music therapy*

Overall, three main categories of factors emerged from the nurses’ responses to the open-ended questions. The categories consisted of nurse, client and unit characteristics. Nurse characteristics included knowledge, training and attitudes or perceptions of music therapy. Client
characteristics included preference for or acceptability of music as an intervention, type and severity of anxiety/pain, personal profile, previous experience using music therapy, and effectiveness of medication. Unit characteristics included resources, type of unit, accepted practice, busy environment, physical environment, and infection control policies. Within these three categories, the most frequently identified factors were: resources (n = 68), knowledge and training (n = 31), type of unit (n = 29), accepted practices (n = 18), and busy environment (n = 16).

These factors were comparable to those reported in a recent study. Sung et al. (2011) identified the factors most frequently influencing nurses’ use of music therapy for older persons with dementia in long-term care facilities. These were: 1) lack of skills and knowledge (72.9%); 2) lack of formal training pertaining to implementing music therapy in practice (67.3%); 3) lack of time to implement music therapy for clients (56.1%); 4) inadequate resources to implement music therapy (55.1%); and 5) lack of confidence in how to effectively implement music therapy for a specific patient population (42.5%). The qualitative findings augmented the quantitative results. A number of the factors emerging from the qualitative analysis supported the propositions of the conceptual framework. Attitudes of nurses, their colleagues, other health care providers, administrators, clients and families were all reported as factors that could affect the implementation of music therapy in practice. In addition, the emerging factors are consistent with subjective norms (i.e. accepted practices of other nurses and health care providers), perceived behavioural control (i.e. nurses ability to implement music therapy intervention), and role beliefs (i.e. nurses’ beliefs that music therapy interventions are an accepted part of their role).

**Strengths and Limitations of the Study**

The strengths of the study were primarily related to the research methodology. The instruments used to measure the outcomes were reliable and valid. Internal consistency reliability
was established with acceptable values (> .70) of the Cronbach’s alpha coefficient for the different subscales measuring the study variables. Construct validity was demonstrated with the significant associations among the study variables, as hypothesized.

A conceptual model, derived from the Theory of Planned Behaviour (TPB), and Triandis’ Theory of Interpersonal Behaviour (TIB) guided this study. Combined elements of these two theories were also proposed in a conceptual framework generated by Godin et al. (2008). The framework makes explicit the factors that affect nurses’ intention to use music therapy in practice. Having a clear model offered a systemic approach to identify and operationalize the study variables. While using a theory-based approach is useful, there is the potential that other explanations for the behaviours (i.e. outside of the chosen theoretical model) are omitted. To overcome this limitation, the study complemented the quantitative data with responses to open-ended questions inquiring about participants’ perception of additional factors that would influence their use of music therapy for the management of anxiety and pain.

Another strength of the study was the use of random sampling, which minimized the potential for bias and enhanced the representativeness of the sample. Although random sampling was used, the database from which the sample originated did not include every RN in Ontario. The list provided from the CNO contained 26,856 who potentially met the study inclusion criteria and chose to be contacted for research purposes. Nurses who agreed to be contacted for research purposes may differ from those who did not, which may potentially have introduced bias into the study. However, the sample characteristics were comparable to those of the target population supporting the sample representativeness.
Despite the rather low response rate, the study had adequate statistical power to detect significant relationships among the variables. A sample size of 120 with a power of 80% was deemed adequate for the study. Therefore the sample size of 161 with power > 80% strengthened statistical conclusion validity.

Potential limitations of the study related to possible non-consent bias, subjective bias, and recall bias. Regardless of the sampling procedure, participants in any study are volunteers potentially contributing to non-consent bias. Consenting nurses may have been more motivated to participate in research studies or may have more favourable attitudes toward music therapy than non-consenting nurses. Another limitation relates to the potential for subjective or social desirability bias when responding to questionnaires (Burn & Grove, 2001). Although all questionnaires were coded and participants were assured of confidentiality, there is a possibility that subjective bias may have influenced the results as some participants may have altered their responses to be more favourable. Similarly, participants’ responses could have been affected by novelty effects; their responses may have been influenced by the fact that a researcher was interested in their ideas/opinions about a topic. To minimize this bias, participants were assured of confidentiality and informed that there is no right or wrong answer. Self-report may lead to recall bias (Burn & Grove, 2001). Participants may not have been able to correctly remember experiences or events that occurred in the past such as recollection of their colleagues’ previous experience using music therapy in practice.

**Implications for Practice, Research and Theory**

The results of this study have important implications for nurses, nurse educators, managers, administrators and nursing schools. Specifically, the results point the need to enhance nurses’ awareness of music therapy as an effective intervention for managing anxiety and pain. Nurses must learn about how to apply music therapy in clinical practice for the management of both symptoms.
This implication is consistent with the CNO acknowledgement of the importance of using complementary therapies in practice. The CNO issued a practice guideline stating that nurses should be aware of these therapies, have knowledge of their effects, benefits, and risks (CNO, 2009). Previous studies have shown that music therapy is an established complementary therapy which promotes positive patient outcomes (Dunn, 2004). Music therapy can help in maintaining, restoring, or improving physical and psychological health (Kemper & Danhauer, 2005; Watkins, 1997). It has been shown to be effective in anxiety alleviation (Augustin & Hains, 1996; Brunges & Avigne, 2003; Lee et al., 2004, Guzzetta, 2000, p.587; Wang et al., 2002; Yung et al., 2002), for improving mood (Kemper & Danhauer, 2005; Koch et al., 1998), and for managing postoperative, procedural and chronic pain conditions (Kemper & Danhauer, 2005). It can also be used to enhance pharmacological pain management (Nilsson et al., 2003b). Music therapy is safe to administer, and cost-effective to implement as it requires minimal resources (Brunges & Avigne, 2003; McCaffrey & Locsin, 2002; Mok & Wong, 2003; Norred, 2000).

The CNO also empowers nurses to use complementary therapies for their clients if they know that they will benefit their client (CNO, 2009). Through proper education, in schools or practice settings, nurses should gain familiarity with music therapy as an effective treatment for the management of both anxiety and pain in a variety of clinical applications. Strategies should be implemented by nursing schools and clinical practice areas to ensure that nurses are informed about the effectiveness of music therapy, as well as trained in the application of this intervention in practice.

Recent studies have examined strategies to assist in integrating information related to complementary therapies into nursing programs. Smith (2009) suggested the implementation of web-based learning modules that employ problem-based learning as an effective way to teach students
about complementary and alternative therapies. Van der Riet, Francis and Levett-Jones (2011) designed a multi-component elective course on complementary therapies for undergraduate nursing students. The course consisted of on-line lectures and hands-on tutorials and workshops. The course design facilitated knowledge gain about complementary therapies in a meaningful and enjoyable way.

Furthermore, strategies could be implemented to address additional factors that influence nurses’ use of music therapy in practice. Examples of strategies include ensuring that appropriate equipment is available for the delivery of music therapy, and encouraging administrators, educators, and other healthcare professionals to support use of this intervention. Support could be facilitated through the creation of standardized guidelines for the implementation of music therapy.

Future research on nurses’ implementation of music therapy in practice should replicate the study with a national sample of nurses working in different practice settings (i.e. community-based and home). Future studies can investigate strategies to facilitate the translation of music therapy in practice and improve nurses’ awareness of music therapy. The findings indicate that nurses lack awareness of music therapy as an effective intervention. Future research should explore the reasons underlying this lack of awareness, and possible strategies to inform nurses of the importance and effectiveness of using music therapy in clinical practice. Strategies could include creating best practice guidelines on specific hospital units, and provision of both didactic and hands-on in-services about how to implement music therapy in practice.

Future research could also focus on understanding the lack of association between role beliefs and intention to use music therapy. A qualitative study consisting of small focus groups could
be conducted to determine nurses’ perception of their role in using music therapy as part of their practice.

Additional nurse, client and unit factors were identified as important in influencing nurses’ use of music therapy for the management of anxiety and pain. Some of these factors helped to confirm the quantitative results (i.e. awareness), and new ones were mentioned, e.g. resources and time. These additional factors could be incorporated into the conceptual framework and then tested in a subsequent study for their effects on nurses’ attitudes, subjective norms, perceived behavioural control, moral norms, role beliefs and intention to use music therapy for the management of anxiety and pain.

This study has focused on nurses’ intention to use music therapy for the management of anxiety and pain. However, the extent to which intention relates to behaviour that is, nurses’ actual use of music in practice, needs to be further explored. Although Ajzen (1991) and Triandis (1980) argue that intention predicts behaviour, empirical evidence yields mixed results when behavioural theories are applied to specific behaviours (Wong & Sheth, 1985). Therefore, further research needs to specifically examine the extent to which nurses’ intention predicts their actual behaviour with regards to implementing music therapy in day-to-day practice.

**Conclusion**

This study examined nurses’ awareness and intention to use music therapy in clinical practice. Participants, representative of nurses working in acute care, long-term care and rehabilitation settings, were aware of the use of music therapy for the management of anxiety and pain. Attitudes, subjective norms, perceived behavioural control, moral norms, and awareness were
significantly associated with nurses’ intention to use music therapy whereas role beliefs and demographic and professional characteristics were not. Nurse, client and unit factors were additional factors that influence nurses’ use of music therapy in practice.

The strengths of the study included: instrument reliability and validity, use of a theory-based approach, random sampling, and use of mixed-methods for data collection. Limitations in the form of response, subjective and recall bias were identified. Implications for practice, research and theory included: implementation of strategies to educate nurses about music therapy interventions, research focusing on why nurses are unaware of music therapy interventions, and revisions to the current theoretical framework to incorporate the findings of this study.
References


Tourangeau, A. (2004). *Nurses, their hospital work environments, and their responses to these environments.* The 17th International Nursing Research Congress Focusing on Evidence-Based Practice.


Appendix A: Additional questions for pilot testing

Additional questions to be asked during pilot testing of the questionnaire (Francis et al., 2004)

1. Are any items ambiguous or difficult to answer?

2. Does the questionnaire feel too repetitive?

3. Does it feel too long?

4. Does it feel too superficial?

5. Are there any annoying features of the wording or formatting?

6. Are there any inconsistent responses that might indicate that changes in response endpoints are problematic for respondents who complete the questionnaire quickly?
### Appendix B: Questionnaire

**Study Variables Measured and their Corresponding Question Numbers from the Use of Music Therapy Questionnaire (UMTQ)**

<table>
<thead>
<tr>
<th>Variable</th>
<th>UMTQ question number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavioural Intention</td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>1, 13, 25, 35, 41, 45</td>
</tr>
<tr>
<td>Pain</td>
<td>2, 14, 26, 36, 42, 46</td>
</tr>
<tr>
<td>Attitude</td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>3a, 3b, 3c, 3d, 15a, 15b, 15c, 15d, 15e, 15f</td>
</tr>
<tr>
<td>Pain</td>
<td>4a, 4b, 4c, 4d, 16a, 16b, 16c, 16d, 16e, 16f</td>
</tr>
<tr>
<td>Subjective norm</td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>5, 17, 27, 37, 43, 37, 47, 49, 51, 53, 55</td>
</tr>
<tr>
<td>Pain</td>
<td>6, 18, 28, 38, 44, 38, 48, 50, 52, 54, 56</td>
</tr>
<tr>
<td>Moral norm</td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>7, 19, 29</td>
</tr>
<tr>
<td>Pain</td>
<td>8, 20, 30</td>
</tr>
<tr>
<td>Perceived behavioural control</td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>9, 21, 31, 39</td>
</tr>
<tr>
<td>Pain</td>
<td>10, 22, 32, 40</td>
</tr>
<tr>
<td>Variable</td>
<td>UMTQ question number</td>
</tr>
<tr>
<td>--------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>Role beliefs</td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>11, 23, 33</td>
</tr>
<tr>
<td>Pain</td>
<td>12, 24, 34</td>
</tr>
</tbody>
</table>
Nurses’ Awareness and Use of Music Therapy Questionnaire

ID #: ____________________
Date: ____________________

Instructions: You have received this questionnaire because you are a Registered Nurse practicing in an acute, long-term care (including nursing/retirement home) or rehabilitation setting. To confirm this, please complete the checklist below before you respond to the questionnaire. If any of the items do not apply to you, please do not complete the questionnaire but return it in the enclosed envelope. If all items apply to you, please complete the questionnaire and return it in the enclosed envelope.

☐ Currently registered with the College of Nurses of Ontario
☐ Currently practicing in an acute, long-term care or rehabilitation setting
☐ Involved in the provision of direct care to patients admitted to healthcare facilities in Ontario
☐ Proficient in English
DEMOGRAPHIC INFORMATION

The following are items related to your personal characteristics. Please respond to the following items by putting a check mark (✓) in the space next to the appropriate answer or write your answer in the space provided. You may refuse to answer any question. Please write legibly.

1. Year of birth (yyyy): _______

2. Sex:  □ Female       □ Male

3. Ethnicity: ________________

4. Highest degree obtained (include nursing and non-nursing):

   ____ Diploma                  ____ Doctoral Degree
   ____ Bachelor’s Degree        ____ Other, please specify:
   ____ Master’s Degree          ______________________

5. Number of years and months in nursing: ______  ______

          Years      Months

6. a. Primary area of practice (check one only):

       ____ Acute Care

       ____ Long-term care
6. b. Unit(s) where you are currently practicing (check all that apply):

- Critical care
- Medicine
- Geriatrics
- Surgery
- Emergency
- Complex continuing care
- Maternal/newborn
- Mental Health/Psychiatric/Addiction
- Paediatrics
- Palliative Care
- Rehabilitation
- Other, please specify: ____________________________

7. Role in nursing:

- Staff nurse
- Other, please specify ____________________________

8. Type of institution in which you work:

- University-affiliated (teaching hospital)
- Not affiliated with a teaching institution
PART A: Awareness of Music Therapy Questionnaire

Below are statements about music therapy. Please read each one carefully and circle the number which best reflects your response to each statement.

The following 3 questions are related to music therapy for the management of anxiety:

1. I am aware of the use of music therapy for the management of anxiety.
   
   Strongly disagree 1 2 3 4 5 6 7  Strongly agree

2. I am aware of research supporting the use of music therapy for the management of anxiety.
   
   Strongly disagree 1 2 3 4 5 6 7  Strongly agree

3. I am aware of research that demonstrates the effectiveness of music therapy for the management of anxiety.
   
   Strongly disagree 1 2 3 4 5 6 7  Strongly agree
The following 3 questions are related to music therapy for the management of pain:

4. I am aware of the use of music therapy for the management of pain.
   Strongly disagree [ ] [ ] [ ] [ ] [ ] [ ] [ ] Strongly agree

5. I am aware of research supporting the use of music therapy for the management of pain.
   Strongly disagree [ ] [ ] [ ] [ ] [ ] [ ] [ ] Strongly agree

6. I am aware of research that demonstrates the effectiveness of music therapy for the management of pain.
   Strongly disagree [ ] [ ] [ ] [ ] [ ] [ ] [ ] Strongly agree
7. How would you rate your knowledge about the following:

<table>
<thead>
<tr>
<th>Question</th>
<th>Very low</th>
<th>Very high</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. What music therapy is</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>b. What music therapy can be used for</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>c. The types of clinical problems that can be managed with music therapy</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>d. How music therapy works in the management of anxiety</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>e. How music therapy works in the management of pain</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>f. The effectiveness of music therapy for the management of anxiety</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>g. The effectiveness of music therapy for the management of pain</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>h. How to apply/use music therapy for the management of anxiety</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>i. How to apply/use music therapy for the management of pain</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
</tbody>
</table>
8. a. From which of the following sources have you learned about music therapy (please check all that apply):

   ___ Not applicable

   ___ Personal experience using music therapy

   ___ Family and friends

   ___ Newspapers/Magazines

   ___ Television/Radio

   ___ Internet

   ___ Books

   ___ Journals, specify: _____________

   ___ School (College/University)

   ___ Other nurses

   ___ Other health care professionals, specify: _____________

   ___ Clients/patients

   ___ Other, specify: ________________
8. b. Overall, was the information that you obtained useful?

Not at all useful 1 2 3 4 5 6 7 Very useful

___ Not applicable

9. a. Have you ever used music therapy in your practice?

___ yes

___ no

9. b. If yes, identify the practice setting and purpose for which music therapy was used?

________________________________________________________

10. a. Do you know someone who has used music therapy in practice?

___ yes

___ no

10. b. If yes, what was his or her profession?

___________________________
What was the **practice setting** and **purpose** for which music therapy was used?

______________________________________________________________

**PART B: Use of Music Therapy Questionnaire**

*MUSIC THERAPY refers to the use of music for therapeutic goals. Patients/clients listen to a wide variety of music that usually has a slow and flowing tempo, for a prescribed period of time. The term patient/client/resident refers to people that receive care by RNs. The term client will be used throughout this questionnaire to be consistent with CNO best practices.*

**Instructions:** The following are statements about the use of music therapy for the management of anxiety and pain. Please read each statement carefully and circle the most appropriate response. There are no right or wrong answers.

**Rating:** Please answer the following questions by circling the most appropriate number.

1. I expect to use music therapy for the management of **anxiety** in my clinical practice.

   Strongly disagree [ ] 1 2 3 4 5 6 7 Strongly agree

2. I expect to use music therapy for the management of **pain** in my clinical practice.

   Strongly disagree [ ] 1 2 3 4 5 6 7 Strongly agree
3. I think that using music therapy for the management of anxiety is:
   a. Harmful  
   b. Bad  
   c. Unpleasant  
   d. Worthless

4. I think that using music therapy for the management of pain is:
   a. Harmful  
   b. Bad  
   c. Unpleasant  
   d. Worthless

5. On my unit, most people who are important to me (i.e. colleagues, other health care professionals) think that I should use music therapy for the management of anxiety:

   Strongly disagree  
   Strongly agree
6. On my unit, most people who are important to me (i.e. colleagues, other health care professionals) think that I should use music therapy for the management of pain:

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

7. It would be within my moral principles to use music therapy for the management of anxiety.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

8. It would be within my moral principles to use music therapy for the management of pain.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

9. For me, using music therapy for the management of anxiety would be:

Very difficult 1 2 3 4 5 6 7 Very easy

10. For me, using music therapy for the management of pain would be:

Very difficult 1 2 3 4 5 6 7 Very easy
11. Nurses believe in using music therapy for the management of anxiety.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

12. Nurses believe in using music therapy for the management of pain.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

13. I want to use music therapy for the management of anxiety in my clinical practice.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree


Strongly disagree 1 2 3 4 5 6 7 Strongly agree
15. If I used music therapy for the management of anxiety, this would be:

a. Disagreeable 1 2 3 4 5 6 7 Agreeable
b. Useless 1 2 3 4 5 6 7 Useful
c. Unsatisfying 1 2 3 4 5 6 7 Satisfying
d. Not gratifying 1 2 3 4 5 6 7 Gratifying
e. Unreasonable 1 2 3 4 5 6 7 Reasonable
f. Dangerous 1 2 3 4 5 6 7 Safe

16. If I used music therapy for the management of pain, this would be:

a. Disagreeable 1 2 3 4 5 6 7 Agreeable
b. Useless 1 2 3 4 5 6 7 Useful
c. Unsatisfying 1 2 3 4 5 6 7 Satisfying
d. Not gratifying 1 2 3 4 5 6 7 Gratifying
e. Unreasonable 1 2 3 4 5 6 7 Reasonable
f. Dangerous 1 2 3 4 5 6 7 Safe
17. On my unit, it is expected of me that I use music therapy for the management of anxiety.

Strongly disagree 1 2 3 4 5 6 7  Strongly agree

18. On my unit, it is expected of me that I use music therapy for the management of pain.

Strongly disagree 1 2 3 4 5 6 7  Strongly agree

19. I would feel guilty if I did not agree to use music therapy for the management of anxiety.

Strongly disagree 1 2 3 4 5 6 7  Strongly agree

20. I would feel guilty if I did not agree to use music therapy for the management of pain.

Strongly disagree 1 2 3 4 5 6 7  Strongly agree

21. If I wanted to, I could use music therapy for the management of anxiety.

Very unlikely 1 2 3 4 5 6 7  Very likely
22. If I wanted to, I could use music therapy for the management of pain.

Very unlikely 1 2 3 4 5 6 7 Very likely

23. Experienced nurses believe in using music therapy for the management of anxiety.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

24. Experienced nurses believe in using music therapy for the management of pain.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

25. I intend to use music therapy for the management of anxiety in my clinical practice.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

26. I intend to use music therapy for the management of pain in my clinical practice.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree
27. On my unit, I feel under social pressure (from colleagues, other health care professionals, educators, managers) to use music therapy for the management of anxiety.

Strongly disagree 1 2 3 4 5 6 7  Strongly agree

28. On my unit, I feel under social pressure (from colleagues, other health care professionals, educators, managers) to use music therapy for the management of pain.

Strongly disagree 1 2 3 4 5 6 7  Strongly agree

29. I think that it would be morally unacceptable if I refused to use music therapy for the management of anxiety.

Strongly disagree 1 2 3 4 5 6 7  Strongly agree

30. I think that it would be morally unacceptable if I refused to use music therapy for the management of pain.

Strongly disagree 1 2 3 4 5 6 7  Strongly agree
31. The decision to agree to use music therapy for the management of anxiety would be completely mine.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

32. The decision to agree to use music therapy for the management of pain would be completely mine.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

33. Novice nurses believe in using music therapy for the management of anxiety.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

34. Novice nurses believe in using music therapy for the management of pain.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

35. If the occasion presents itself, I would agree to use music therapy for the management of anxiety.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree
36. If the occasion presents itself, I would agree to use music therapy for the management of pain.

Strongly disagree 1 2 3 4 5 6 7  Strongly agree

37. On my unit, I feel under social pressure from clients or their families to use music therapy for the management of anxiety.

Strongly disagree 1 2 3 4 5 6 7  Strongly agree

38. On my unit, I feel under social pressure from clients or their families to use music therapy for the management of pain.

Strongly disagree 1 2 3 4 5 6 7  Strongly agree

39. I would feel able to use music therapy for the management of anxiety.

Strongly disagree 1 2 3 4 5 6 7  Strongly agree

40. I would feel able to use music therapy for the management of pain.

Strongly disagree 1 2 3 4 5 6 7  Strongly agree
41. My chance of agreeing to use music therapy for the management of anxiety is

Very low 1 2 3 4 5 6 7 Very high

42. My chance of agreeing to use music therapy for the management of pain is

Very low 1 2 3 4 5 6 7 Very high

43. On my unit, people who are important to me (i.e. colleagues, other health care professionals) want me to use music therapy for the management of anxiety.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

44. On my unit, people who are important to me (i.e. colleagues, other health care professionals) want me to use music therapy for the management of pain.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree
45. I would tend to agree to use music therapy for the management of anxiety.

Very unlikely 1 2 3 4 5 6 7 Very likely

46. I would tend to agree to use music therapy for the management of pain.

Very unlikely 1 2 3 4 5 6 7 Very likely

47. On my unit, clients and their families want me to use music therapy for the management of anxiety.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

48. On my unit, clients and their families want me to use music therapy for the management of pain.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree
49. On my unit, the people important to me (i.e. colleagues, other health care professionals) think that it would be correct for me to use music therapy for the management of anxiety.

Very unlikely 1 2 3 4 5 6 7 Very likely

50. On my unit, the people important to me (i.e. colleagues, other health care professionals) think that it would be correct for me to use music therapy for the management of pain.

Very unlikely 1 2 3 4 5 6 7 Very likely

51. On my unit, clients and their families think that it would be correct for me to use music therapy for the management of anxiety.

Very unlikely 1 2 3 4 5 6 7 Very likely

52. On my unit, clients and their families think that it would be correct for me to use music therapy for the management of pain.

Very unlikely 1 2 3 4 5 6 7 Very likely
53. On my unit, most people important to me (i.e. colleagues, other health care professionals) would recommend that I use music therapy for the management of anxiety.

Very unlikely  1  2  3  4  5  6  7  Very likely

54. On my unit, most people important to me (i.e. colleagues, other health care professionals) would recommend that I use music therapy for the management of pain.

Very unlikely  1  2  3  4  5  6  7  Very likely

55. On my unit, clients and their families would recommend that I use music therapy for the management of anxiety.

Very unlikely  1  2  3  4  5  6  7  Very likely

56. On my unit, clients and their families would recommend that I use music therapy for the management of pain.

Very unlikely  1  2  3  4  5  6  7  Very likely
Additional Questions (Please print clearly)

57. Are there any other factors that may influence your use of music therapy in practice for the management of anxiety?

_____________________________________________________

_____________________________________________________

_____________________________________________________

58. Are there any other factors that may influence your use of music therapy in practice for the management of pain?

_____________________________________________________

_____________________________________________________

_____________________________________________________

Thank you for taking the time to complete this questionnaire 😊
Appendix C: Content Validation

Content Validation Calculation In Part A of the Nurses’ Awareness and Use of Music Therapy Questionnaire

Please identify how relevant the items on the scale are to assessing nurses’ awareness of music therapy interventions for the treatment of anxiety and pain in clinical settings.

<table>
<thead>
<tr>
<th>Item</th>
<th>Not relevant</th>
<th>Slightly relevant</th>
<th>Relevant</th>
<th>Very Relevant</th>
<th>Percentage of Raters who considered item either relevant or very relevant</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I am aware of the use of music therapy for the management of anxiety.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>10/10 = 100%</td>
</tr>
<tr>
<td>2. I am aware of the research supporting the use of music therapy for the management of anxiety.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>10/10 = 100%</td>
</tr>
<tr>
<td>3. I am aware of research that demonstrates the effectiveness of music therapy for the management of anxiety.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>10/10 = 100%</td>
</tr>
<tr>
<td>4. I am aware of the use of music therapy for the management of pain.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>10/10 = 100%</td>
</tr>
</tbody>
</table>
5. I am aware of the research supporting the use of music therapy for the management of pain.

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>10/10 = 100%</th>
</tr>
</thead>
</table>

6. I am aware of research that demonstrates the effectiveness of music therapy for the management of pain.

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>10/10 = 100%</th>
</tr>
</thead>
</table>

7. How would you rate your knowledge about the following:

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>10/10 = 100%</th>
</tr>
</thead>
</table>

a. What music therapy is

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>10/10 = 100%</th>
</tr>
</thead>
</table>

b. What music therapy can be used for

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>10/10 = 100%</th>
</tr>
</thead>
</table>

c. The types of clinical problems that can be managed with music therapy

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>10/10 = 100%</th>
</tr>
</thead>
</table>

d. How music therapy works in the management of anxiety

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>10/10 = 100%</th>
</tr>
</thead>
</table>

e. How music therapy works in the management of pain

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>10/10 = 100%</th>
</tr>
</thead>
</table>

f. The effectiveness of music therapy for the management of anxiety

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>10/10 = 100%</th>
</tr>
</thead>
</table>

g. The effectiveness of music therapy for the management of pain

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>10/10 = 100%</th>
</tr>
</thead>
</table>

h. How to apply/use music therapy in the management of anxiety

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>10/10 = 100%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>How to apply/use music therapy in the management of pain</td>
<td></td>
<td></td>
<td></td>
<td>10/10 = 100%</td>
</tr>
<tr>
<td>---</td>
<td>------------------------------------------------------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---------------</td>
</tr>
<tr>
<td>8. a. Which of the following sources have provided you with knowledge about music therapy: (list of sources)</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>9/10 = 90%</td>
</tr>
<tr>
<td>8. b. Overall, was the information that you obtained: very useful/not at all useful</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>9/10 = 90%</td>
</tr>
<tr>
<td>9. a. Have you ever used music therapy in your practice?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>9/10 = 90%</td>
</tr>
<tr>
<td>9. b. If yes, identify the practice setting and purpose for which music therapy was used.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>9/10 = 90%</td>
</tr>
<tr>
<td>10. a. Do you know someone who has used music therapy in practice?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>9/10 = 90%</td>
</tr>
<tr>
<td>10. b. If yes, what was his or her profession? What was the practice setting and purpose for which music therapy was used?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>9/10 = 90%</td>
</tr>
</tbody>
</table>

Number of raters = 10

Content validity index = number of items with a percentage > 80%

Total number of items = 21/21 = 100%
## Appendix D: Context Validation Index Scores obtained from the Pilot Study

### A: AMTQ

<table>
<thead>
<tr>
<th>Item</th>
<th>Not relevant</th>
<th>Slightly relevant</th>
<th>Relevant</th>
<th>Very Relevant</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I am aware of the use of music therapy for the management of anxiety.</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>9</td>
<td>100%</td>
</tr>
<tr>
<td>2. I am aware of the research supporting the use of music therapy for the management of anxiety.</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>9</td>
<td>100%</td>
</tr>
<tr>
<td>3. I am aware of research that demonstrates the effectiveness of music therapy for the management of anxiety.</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>9</td>
<td>100%</td>
</tr>
<tr>
<td>4. I am aware of the use of music therapy for the management of pain.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>10</td>
<td>100%</td>
</tr>
<tr>
<td>5. I am aware of the research supporting the use of music therapy for the management of pain.</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>8</td>
<td>100%</td>
</tr>
<tr>
<td>6. I am aware of research that demonstrates the effectiveness of music therapy for the management of pain.</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>8</td>
<td>100%</td>
</tr>
<tr>
<td>7. How would you rate your knowledge about the following:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. What music therapy is</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>7</td>
<td>100%</td>
</tr>
<tr>
<td>Question</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>b. What music therapy can be used for</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>c. The types of clinical problems that can be managed with music therapy</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>d. How music therapy works in the management of anxiety</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>e. How music therapy works in the management of pain</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>f. The effectiveness of music therapy for the management of anxiety</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>g. The effectiveness of music therapy for the management of pain</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>h. How to apply/use music therapy in the management of anxiety</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>i. How to apply/use music therapy in the management of pain</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>8. a. Which of the following sources have provided you with knowledge about music therapy: (list of sources)</td>
<td>0</td>
<td>1</td>
<td>5</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>8. b. Overall, was the information that you obtained: very useful/not at all useful</td>
<td>0</td>
<td>1</td>
<td>6</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>9. a. Have you ever used music therapy in your practice?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>9. b. If yes, identify the practice setting</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>9</td>
<td></td>
</tr>
</tbody>
</table>
and purpose for which music therapy was used.

<table>
<thead>
<tr>
<th>Item</th>
<th>Not relevant</th>
<th>Slightly relevant</th>
<th>Relevant</th>
<th>Very Relevant</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10. a. Do you know someone who has used music therapy in practice?</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>6</td>
<td>90%</td>
</tr>
<tr>
<td>10. b. If yes, what was his or her profession? What was the practice setting and purpose for which music therapy was used?</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>9</td>
<td>90%</td>
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</tbody>
</table>

Content Validity Index for AMTQ = 100%

B: UMTQ

<table>
<thead>
<tr>
<th>Item</th>
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<th>Slightly relevant</th>
<th>Relevant</th>
<th>Very Relevant</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I expect to use music therapy for the management of anxiety in my clinical practice.</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>9</td>
<td>100%</td>
</tr>
<tr>
<td>2. I expect to use music therapy for the management of pain in my clinical practice.</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>9</td>
<td>100%</td>
</tr>
<tr>
<td>3. a. I think that using music therapy for the management of anxiety is harmful/beneficial.</td>
<td>0</td>
<td>2</td>
<td>7</td>
<td>1</td>
<td>80%</td>
</tr>
<tr>
<td>3. b. I think that using music therapy for the management of anxiety is bad/good.</td>
<td>0</td>
<td>2</td>
<td>7</td>
<td>1</td>
<td>80%</td>
</tr>
<tr>
<td>3. c. I think that using music therapy for</td>
<td>0</td>
<td>3</td>
<td>6</td>
<td>1</td>
<td>70%</td>
</tr>
</tbody>
</table>
the management of anxiety is unpleasant/pleasant.

<table>
<thead>
<tr>
<th>3. d. I think that using music therapy for the management of anxiety is worthless/useful.</th>
<th>0</th>
<th>2</th>
<th>6</th>
<th>2</th>
<th>80%</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>4. a. I think that using music therapy for the management of pain is harmful/beneficial.</th>
<th>0</th>
<th>2</th>
<th>7</th>
<th>1</th>
<th>80%</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>4. b. I think that using music therapy for the management of pain is bad/good.</th>
<th>0</th>
<th>2</th>
<th>7</th>
<th>1</th>
<th>80%</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>4. c. I think that using music therapy for the management of pain is unpleasant/pleasant.</th>
<th>0</th>
<th>3</th>
<th>6</th>
<th>1</th>
<th>70%</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>4. d. I think that using music therapy for the management of pain is worthless/useful.</th>
<th>0</th>
<th>2</th>
<th>6</th>
<th>2</th>
<th>80%</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>5. On my unit, most people who are important to me think that I should use music therapy for the management of anxiety.</th>
<th>0</th>
<th>0</th>
<th>3</th>
<th>7</th>
<th>100%</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>6. On my unit, most people who are important to me think that I should use music therapy for the management of pain.</th>
<th>0</th>
<th>0</th>
<th>3</th>
<th>7</th>
<th>100%</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>7. It would be within my moral principles to use music therapy for the management of anxiety.</th>
<th>0</th>
<th>2</th>
<th>6</th>
<th>2</th>
<th>80%</th>
</tr>
</thead>
</table>
8. It would be within my moral principles to use music therapy for the management of pain. | 0 | 2 | 6 | 2 | 80%

9. For me, using music therapy for the management of anxiety would be very difficult/very easy. | 0 | 0 | 1 | 9 | 100%

10. For me, using music therapy for the management of pain would be very difficult/very easy. | 0 | 0 | 1 | 9 | 100%

11. Nurses believe in using music therapy for the management of anxiety. | 0 | 0 | 1 | 9 | 100%

12. Nurses believe in using music therapy for the management of pain. | 0 | 0 | 1 | 9 | 100%

13. I want to use music therapy for the management of anxiety in my clinical practice. | 0 | 0 | 1 | 9 | 100%

14. I want to use music therapy for the management of pain in my clinical practice. | 0 | 0 | 1 | 9 | 100%

15. a. If I used music therapy for the management of anxiety, this would be disagreeable/agreeable. | 0 | 2 | 7 | 1 | 80%

15. b. If I used music therapy for the management of anxiety, this would be useless/useful. | 0 | 2 | 7 | 1 | 80%
15. c. If I used music therapy for the management of anxiety, this would be unsatisfying/satisfying. | 0 | 1 | 6 | 3 | 90%
15. d. If I used music therapy for the management of anxiety, this would be not gratifying/gratifying. | 0 | 2 | 5 | 3 | 80%
15. e. If I used music therapy for the management of anxiety, this would be unreasonable/reasonable. | 0 | 2 | 6 | 2 | 80%
15. f. If I used music therapy for the management of anxiety, this would be dangerous/safe. | 0 | 1 | 6 | 3 | 90%
16. a. If I used music therapy for the management of pain, this would be disagreeable/agreeable. | 0 | 2 | 7 | 1 | 80%
16. b. If I used music therapy for the management of pain, this would be useless/useful. | 0 | 2 | 7 | 1 | 80%
16. c. If I used music therapy for the management of pain, this would be unsatisfying/satisfying. | 0 | 1 | 6 | 3 | 90%
16. d. If I used music therapy for the management of pain, this would be not gratifying/gratifying. | 0 | 2 | 5 | 3 | 80%
16. e. If I used music therapy for the management of pain, this would be unsatisfying/satisfying. | 0 | 2 | 6 | 2 | 80%
<table>
<thead>
<tr>
<th></th>
<th>unreasonable/reasonable.</th>
</tr>
</thead>
<tbody>
<tr>
<td>16. f. If I used music therapy for the management of pain, this would be dangerous/safe.</td>
<td>0</td>
</tr>
<tr>
<td>17. On my unit, it is expected of me that I use music therapy for the management of anxiety.</td>
<td>0</td>
</tr>
<tr>
<td>18. On my unit, it is expected of me that I use music therapy for the management of pain.</td>
<td>0</td>
</tr>
<tr>
<td>19. I would feel guilty if I did not use music therapy for the management of anxiety.</td>
<td>0</td>
</tr>
<tr>
<td>20. I would feel guilty if I did not use music therapy for the management of pain.</td>
<td>0</td>
</tr>
<tr>
<td>21. If I wanted to, I could use music therapy for the management of anxiety.</td>
<td>0</td>
</tr>
<tr>
<td>22. If I wanted to, I could use music therapy for the management of pain.</td>
<td>0</td>
</tr>
<tr>
<td>23. Experienced nurses believe in using music therapy for the management of anxiety.</td>
<td>0</td>
</tr>
<tr>
<td>24. Experienced nurses believe in using music therapy for the management of pain.</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>25. I intend to use music therapy for the management of anxiety in my clinical practice.</td>
<td>0</td>
</tr>
<tr>
<td>26. I intend to use music therapy for the management of pain in my clinical practice.</td>
<td>0</td>
</tr>
<tr>
<td>27. On my unit, I feel under social pressure to use music therapy for the management of anxiety.</td>
<td>0</td>
</tr>
<tr>
<td>28. On my unit, I feel under social pressure to use music therapy for the management of pain.</td>
<td>0</td>
</tr>
<tr>
<td>29. I think that it would be morally unacceptable if I refused to use music therapy for the management of anxiety.</td>
<td>0</td>
</tr>
<tr>
<td>30. I think that it would be morally unacceptable if I refused to use music therapy for the management of pain.</td>
<td>0</td>
</tr>
<tr>
<td>31. The decision to agree to use music therapy for the management of anxiety would be completely mine.</td>
<td>0</td>
</tr>
<tr>
<td>32. The decision to agree to use music therapy for the management of pain would be completely mine.</td>
<td>0</td>
</tr>
<tr>
<td>33. Novice nurses believe in using music therapy for the management of</td>
<td>0</td>
</tr>
<tr>
<td>Question</td>
<td>Votes</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>34. Novice nurses believe in using music therapy for the management of pain.</td>
<td></td>
</tr>
<tr>
<td>35. If the occasion presents itself, I would agree to use music therapy for the management of anxiety.</td>
<td></td>
</tr>
<tr>
<td>36. If the occasion presents itself, I would agree to use music therapy for the management of pain.</td>
<td></td>
</tr>
<tr>
<td>37. On my unit, I feel under social pressure from clients or their families to use music therapy for the management of anxiety.</td>
<td></td>
</tr>
<tr>
<td>38. On my unit, I feel under social pressure from clients or their families to use music therapy for the management of pain.</td>
<td></td>
</tr>
<tr>
<td>39. I would feel able to use music therapy for the management of anxiety.</td>
<td></td>
</tr>
<tr>
<td>40. I would feel able to use music therapy for the management of pain.</td>
<td></td>
</tr>
<tr>
<td>41. My chance of agreeing to use music therapy for the management of anxiety is very low/very high.</td>
<td></td>
</tr>
<tr>
<td>42. My chance of agreeing to use music therapy for the management of pain.</td>
<td></td>
</tr>
</tbody>
</table>
therapy for the management of pain is very low/very high.

<table>
<thead>
<tr>
<th>Question</th>
<th>Number 0</th>
<th>Number 1</th>
<th>Number 2</th>
<th>Number 3</th>
<th>Number 4</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>43. On my unit, people who are important to me want me to use music therapy for the management of anxiety.</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>5</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>44. On my unit, people who are important to me want me to use music therapy for the management of pain.</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>5</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>45. I would tend to agree to use music therapy for the management of anxiety.</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>9</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>46. I would tend to agree to use music therapy for the management of pain.</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>9</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>47. On my unit, clients and their families want me to use music therapy for the management of anxiety.</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>8</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>48. On my unit, clients and their families want me to use music therapy for the management of pain.</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>8</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>49. On my unit, the people important to me think that it would be correct for me to use music therapy for the management of anxiety.</td>
<td>0</td>
<td>1</td>
<td>4</td>
<td>5</td>
<td>90%</td>
<td></td>
</tr>
<tr>
<td>50. On my unit, the people important to me think that it would be correct for me to use music therapy for the management of pain.</td>
<td>0</td>
<td>1</td>
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<td>51. On my unit, clients and their families think that it would be correct for me to use music therapy for the management of anxiety.</td>
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<td>52. On my unit, clients and their families think that it would be correct for me to use music therapy for the management of pain.</td>
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<td>53. On my unit, most people important to me would recommend that I use music therapy for the management of anxiety.</td>
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<td>54. On my unit, most people important to me would recommend that I use music therapy for the management of pain.</td>
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<td>55. On my unit, clients and their families would recommend that I use music therapy for the management of anxiety.</td>
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<td>56. On my unit, clients and their families would recommend that I use music therapy for the management of pain.</td>
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<td>57. Are there any other factors that may influence your use of music therapy in practice for the management of anxiety?</td>
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58. Are there any other factors that may influence your use of music therapy in practice for the management of pain?

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Content Validity Index for UMTQ = 94.59%
Appendix E: Cover Letter

Dear (Name of participant),

You are being invited to participate in a research study entitled “Nurses’ Awareness and Intent to Use Music Therapy in Clinical Practice.” The purposes of this study are to examine whether nurses are aware of music therapy in the management of anxiety and pain, and to identify factors that affect nurses’ use of this therapy in practice. It is being conducted by Jana Lok, a doctoral student at the Faculty of Nursing, University of Toronto. This project is under the supervision of Dr. Souraya Sidani, Dr. Kathy McGilton and Dr. Michael McGillion.

You are being asked to participate in this study because you are a Registered Nurse, currently registered with the College of Nurses of Ontario, who is providing direct care to patients admitted to health care facilities in Ontario. About 240 nurses will be invited to volunteer for this study.

The study consists of completing a questionnaire. The questionnaire has several parts that have questions about yourself (like your age, and education), your awareness of music therapy, and questions related to factors that may influence nurses’ intention to use music therapy in practice. Completing the questionnaire will take about 15-20 minutes of your time. The researcher will also send you postcards to remind you to complete the questionnaire. Once you complete the questionnaire, you can return it in the stamped envelope provided.

There are no known risks for taking part in this research study. Some nurses may feel uncomfortable answering certain questions on the questionnaire. You may refuse to answer any question if you so desire.

You will not directly benefit from taking part in this study. However, the results of this study will help inform future research about strategies to promote implementation of music therapy interventions in clinical practice.

The information that is collected from you during this study will be kept confidential. Your name will not appear on the questionnaire that you complete in this study. A code number will be used so that there is no way of linking your name to the responses you provide. The information that you give will be kept
under lock in the research office at the University of Toronto. The forms on which this information is recorded will be destroyed upon completion of the study.

The information obtained will be used for research purposes. The results will be reported as a group so that no one person will be identified. The findings of this study will be used to meet the requirements of the researcher’s dissertation research. The results will be presented to meet the requirements of a doctoral degree, and may be used in academic publications or conferences.

Your participation in this study is voluntary. Your choice of whether or not to participate will not influence you in any way. If you decide to participate, you are free to stop your participation at any time without penalty or loss of benefits to which you are otherwise entitled. At any point in the study, you may refuse to answer any question if you so desire.

There is no cost to you in participating in this study except the time you spend completing the questionnaire. The postage costs for returning the questionnaires will be paid by the researcher.

If you have any questions about the study, please contact the researcher Jana Lok, jana.gegus@utoronto.ca, or her thesis advisor, Dr. Souraya Sidani, at 416-979-5000 extension 2572. If you have any question about your rights as a research participant, please call the Office of Research Ethics at (416) 946-3273, or contact the office via email at ethics.review@utoronto.ca.

By completing the questionnaire, you are consenting to participate in this research study. If you would like to receive a copy of the results of this research study, please indicate this on the enclosed survey.

Sincerely,

(Signature)

Jana Lok

Researcher Name: Jana Lok, RN, MN, PhD Candidate
Researcher Address: Bloomberg Faculty of Nursing, University of Toronto, 155 College Street, Suite 130, Toronto, ON., M5T 1P8
jana.gegus@utoronto.ca
Appendix F: Postcard

Postcard Front:

“Nurses’ Awareness and Intent to Use Music Therapy in Clinical Practice.”

Your participation would be greatly appreciated!
Dear (Name of Participant),

A few weeks ago you received an invitation to participate in a study on the use of music therapy in clinical practice.

As one of a small group of RNs from all over Ontario that have been asked to participate, I would very much appreciate your feedback.

If you have already returned the survey, thank you. If not, please complete it at your earliest convenience. I will also be sending out another package to you in case you may not have received the initial one.

Thank you in advance for your help with this study,

(Signature)

Jana Gegus Lok
Bloomberg Faculty of Nursing, University of Toronto
Jana.gegus@utoronto.ca
Appendix G: Follow-up cover letter

Date

Dear (Name of Participant),

Recently you received a package inviting you to participate in a research project entitled “Nurses’ Awareness and Intent to Use of Music Therapy in Clinical Practice.” Participating in this study involves completing a questionnaire, which takes 15-20 minutes of your time.

If you have completed the questionnaire, I would like to thank you and ask you to return the completed questionnaire in the stamped envelope. If you have not completed the questionnaire, I would encourage you to do so and return it in the stamped envelope. Your voluntary participation is appreciated.

If you have any questions or concerns about the study, please do not hesitate to contact me at the address below.

Sincerely,

(Signature)

Jana Lok

Researcher Name: Jana Lok, RN, MN, PhD Candidate
Researcher Address: Bloomberg Faculty of Nursing, University of Toronto, 155 College Street, Suite 130, Toronto, ON, M5T 1P8 jana.gegus@utoronto.ca