AMERICAN UNIVERSITY OF BEIRUT

# IMPLEMENTATION OF A NON-PHARMACOLOGICAL APPROACH TO ENHANCE ADULT CANCER PAIN MANAGEMENT: THE COMFORT KIT

by
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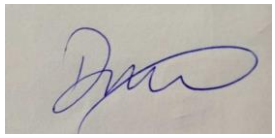

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# ABSTRACT
# OF THE PROJECT OF

Adnan Hassan Kriek for Master of Science in Nursing
Major: Nursing – Adult Gerontology
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Title: Implementation of a Non-Pharmacological Approach to Enhance Adult Cancer Pain Management: The Comfort Kit

**Background:** Cancer pain is prevalent and often inadequately managed, leading to compromised quality of life and increased healthcare costs. Non-pharmacological approaches, such as complementary and alternative medicine (CAM), offer potential to complement conventional pain management. However, their integration into clinical practice remains limited, particularly in Lebanon.

**Objective:** This project aimed to develop and implement a comfort kit incorporating CAM therapies to enhance pain management for Adult Oncology In patients at the American University of Beirut Medical Center (AUBMC).
Methods: A literature review was conducted to examine evidence on non-pharmacological pain management strategies and comfort kits. A comfort kit was designed, and a nurse-led educational program was implemented to introduce and guide patients on its use.

**Results:** The comfort kit included various CAM therapies (e.g., acupuncture wristbands, aromatherapy, positioning pillows, sleep masks, stress-relief tools). Nurses played a pivotal role in educating patients about the kit's benefits and safe use.

**Conclusion:** Integrating CAM therapies through a comfort kit can complement conventional pain management, potentially improving quality of life, reducing reliance on pharmacological interventions, and empowering patients in their healing process. Nurses are crucial in educating and supporting patients' use of CAM therapies. Further research is needed to evaluate the effectiveness of the comfort kit in larger patient populations and assess its impact on patient outcomes.

**Keywords:** Cancer pain, complementary and alternative medicine, comfort kit, integrative pain management, nursing education

TABLE OF CONTENTS

# TABLES

Table

# ABBREVIATIONS

**CAM** - Complementary and Alternative Medicine

**QoL** - Quality of Life

**CK** – Comfort Kit

**AUBMC** - American University of Beirut Medical Center

**WHO** - World Health Organization

**IASP** - International Association for the Study of Pain

**NCCIH** - National Center for Complementary and Integrative Health

**MOPH** - Ministry of Public Health

**OSHA** - Occupational Safety and Health Administration

**SDS** - Safety Data Sheets

**LHA** - Local Heat Applications

**HCPs** - Health Care Providers

**PHQ-4** - Patient Health Questionnaire

**NCCN** - National Comprehensive Cancer Network

# CHAPTER I

# INTRODUCTION

Cancer represents a significant global health challenge, it's the second greatest cause of mortality globally, surpassed only by heart disease (Fitzmaurice et al., 2017; Kachfe et al., 2019). This disease accounts for nearly one in six deaths, with approximately 10 million fatalities in 2020 alone, according to the World Health Organization (WHO, 2022). Cancer`s significance is further shown by the fact that it was leading cause of mortality worldwide in 2018 with an estimated 9.6 million deaths (WHO, 2018). The most recent data, derived from the GLOBOCAN 2020 estimates, highlights the increasing burden of this disease. An estimated 19.3 million new cases of cancer and about 10 million deaths from cancer were reported globally in 2020, demonstrating the ongoing and significant impact of cancer on global health (Sung et al., 2021).

Cancer pain remains a significant and feared symptom and one of the most prevalent symptom that patients describe. Despite the availability of various analgesic therapies and established guidelines, a substantial proportion of cancer patients, up to 90% in some studies, continue to experience pain (Gallaway et al., 2020; Cluxton, 2019; Blackburn et al., 2019). Inadequate pain management can be devastating and have adverse physical and psychological effects on patients, ultimately impacting their quality of life (QoL) (Farhat et al., 2020; Li et al., 2018, IASP, 2023). An estimated 60% or more of cancer patients report having pain at some point throughout their illness, with 20-30% of patients reporting severe pain that significantly impacts their daily living activities (Can et al., 2019). The management of cancer pain is challenging

for healthcare providers and patients themselves because of its complex nature, etiology and multifactorial causes (Edwards et al., 2019; Klafke et al., 2016). Traditionally, cancer pain management relied heavily on medications, specifically opioids and non-opioid analgesics, which often come with side effects.

The opioid crisis in the US in 1999 led to addiction, drug overdose deaths, depression and suicide. Solutions are needed to provide personalized pain management strategies that consider individual preferences, conditions, and needs, aiming for safer and more effective solutions while reducing the burden of costly opioids and hospital readmissions (Mercadante & Portenoy, 2016). As a result complementary alternative therapies (CAM) and integrative approach have gotten popularity among adult patients with cancer especially that some methods were proven to be effective in reducing pain (IASP, 2023).

According to the International Association of Study of Pain (IASP, 2023) integrative pain care refers to the thoughtfully coordinated incorporation of various evidence-based treatments, tailored to address an individual's pain experience. This approach aims to be personalized (centered around the person), guided by the mechanisms involved, and coordinated.

Integrative pain care is a methodical combination of various evidence-based therapies, thoughtfully designed and offered to a person in pain. This approach focuses on being tailored to the individual (person-centered), based on the underlying mechanisms of pain, and organized in a timely manner (ISAP, 2023). Alternative medicine or complementary medicine are therapies that describe non-conventional modalities that are used with or instead of conventional medicine. As stated by the National Center for Complementary and Integrative Health in the United States

(NCCIH, 2017; Katta et al., 2022), Complementary and Alternative Medicine (CAM) is described as "a group of various health care and medical systems, practices, and products that are not currently regarded as being part of conventional medicine." According to Katta et al. (2022) the potential of incorporating non-pharmacological integrative therapy for addressing persistent cancer pain has been significantly overlooked and should be taken into account either prior to or alongside other treatment approaches. This consideration is crucial to ensure comprehensive and suitable care. Non-Pharmacological methods of health care can assist individuals in coping with symptoms or the side effects of treatment (NCCIH, 2021).

In Lebanon, the overall incidence of cancer has been increasing reaching 11,589 new cases in 2020 (Global Cancer Observatory, 2020). Moreover, 31,894 cancer deaths were reported in the year of 2019, with the most common cancer being bronchus and lung cancer (23.3%) followed by breast cancer (10.3%) (MOPH, 2019). Studies in the Lebanese population showed that cancer-related pain is still inadequately controlled (Farhat et al., 2020; Hamieh et al., 2018) leading to increased healthcare utilization and costs (Jaafar et al., 2022; Blackburn et al., 2019). Furthermore, economic constraints and political problems present in the country are limiting the availability and affordability of pain medications, emphasizing the requirement for a more comprehensive strategy in pain management (Ghanem, 2021; Das, 2021).

The proposed project focuses on the development of a comfort kit designed to provide non-pharmacological relief for adult cancer patients, both within the hospital and at home. This project consists of a review of the literature on the topic, design of a comfort kit, and a proposed implementation program and evaluation in the hospital setting.

## A. Background and Significance

Cancer pain is a multifactorial and debilitating resulting from the disease itself, its treatments, or associated complications (American Cancer Society, 2019). It can range from mild discomfort to chronic, severe pain that significantly affects a person's overall quality of life (IASP, 2023). An estimated 30–75% of cancer patients have pain, and up to 50% of these patients receive inadequate care for their pain. Moderate to intense pain was reported by 30.6% of patients in a study by Snijders et al. (2023). In Lebanon, data on cancer pain incidence is not available, however, pain research in Lebanese adults with breast cancer revealed that the majority of patients 46% had insufficient treatment, and the prevalence of pain was 29.8%. Among those who experienced pain, the highest proportion had moderate pain (37.8%) (Hamieh et al., 2018).

Managing cancer pain is complex due to the diverse pain types and the potential impact of cancer treatments on the body (Farhat et al., 2020). Despite advancements in pain management techniques, many cancer patients still endure substantial pain that hampers their social, professional, psychological, and daily living activities, as well as their general well-being (Bennett et al., 2019). Though pain relief could not be fully attained in all patients, the aim of pain management is to reduce pain to a degree that permits an acceptable level of quality of life (WHO, 2019). On that basis, integrative pain management gained recognition worldwide.

CAM encompasses various interventions such as; acupuncture wristbands, aromatherapy, positioning pillows, sleep masks, stress-relief tools, and herbal remedies. These therapies have proven effective in alleviating pain and enhancing the quality of life in cancer patients by addressing their bio psychosocial needs and preferences (Jin et

al., 2023). CAM can complement medication-based pain management while minimizing side effects (Blackburn et al., 2019). However, in clinical practice, cancer patients frequently prioritize pharmacological treatments over non-pharmacological methods.

Working as a pain nurse at AUBMC gave me the chance to get to know cancer patients personally and to observe their coping mechanisms. I observed a high prevalence of CAM use among these patients, as many of them turned to holistic strategies to manage their pain and side effects from cancer therapy. Additionally, I conducted informal patient interviews to obtain more information about the use of CAM and its effects on cancer patients. I concluded that many cancer patients were familiar with CAM therapies and their advantages. However, they lacked adequate knowledge and guidance to incorporate it into their treatment plan. Cancer patients in Lebanon are reluctant to use CAM because of cultural barriers impacted by traditional beliefs, religious views, and society attitudes about healthcare.

Cultural norms, a lack of understanding or worries about going against accepted medical methods were among the many reasons why patients, I spoke with, were reluctant to use CAM. This motivated me to select the topic of CAM usage among cancer patients as my project. Obstacles to the implementation of CAM in Lebanon include doubts about its advantages, inadequate medical advice, wrong assumptions about the safety of CAM, difficulties with insurance payments, and a lack of knowledge about CAM among healthcare providers (Kharroubu et al., 2018).

Thus, the purpose of this project is to introduce a more comprehensive approach to pain management for adult oncology patients at the American University of Beirut Medical Center (AUBMC). It attempts to integrate CAM into patients' pain

management plan through designing a comfort kit. This kit is believed to improve cancer patients` quality of life, enhance their general well-being and, decrease the financial burden from the pharmacologic treatment.

# CHAPTER II

# LITERATURE REVIEW

The literature review section of this study aims to present an in-depth overview of the current state of knowledge on the use of non-pharmacological approaches to pain management in oncology patients. This section will examine the available literature on the topic, including studies, articles, and reviews, to identify key trends, gaps, and opportunities in the field. It will provide an in-depth analysis of the use of comfort kits as a secondary strategy for pain management tool and explore the current state of practice in the field, including the types of interventions used, their effectiveness, and the impact on patient outcomes. In addition, it will also consider cultural differences in the use of non-pharmacological approaches to pain management, and their impact on patient outcomes and satisfaction. As a result, the findings of the literature review will direct the creation and application of the comfort kit and will provide a foundation for the development of the objectives and methodology of the study.

## A. Definition of Pain

The International Association for the Study (IASP) of Pain defines pain as "an unpleasant experience, both physically and emotionally, associated with or resembling the feelings associated with actual or potential tissue damage.” Six key notes develop this definition, and the origin of the word "pain" is examined to offer more background and understanding"(IASP, 2020).

- Personal experience: Pain is always unique and individual, shaped by biological, psychological, and social factors to varying degrees.

- Differentiating pain from nociception: Pain is the emotional reaction to nerve signals that are triggered by nociception, which is the detection of tissue injury. Neuron activity alone cannot be used to identify it.
- Learned concept: understanding of pain develops through life experiences.
- Respecting pain reports: We must always take someone's description of pain seriously, regardless of their ability to communicate verbally.
- Adaptive but possibly harmful: Although pain frequently acts as a warning, it can also have an adverse effect on wellbeing and function.
- Non-verbal expressions: Words alone cannot convey the depth of pain. Inability to communicate verbally doesn't necessarily mean an absence of pain experience.

**B. Mechanism of Pain**

Pain perception within the nervous system is a sequential process that involves several pivotal stages. Initially, during the nociception phase, specialized nerve endings called nociceptors detect harmful stimuli, such as tissue damage or inflammation (Yam et al., 2018). Once these stimuli are detected, the transduction phase begins, and they are converted into electrical signals (Armstrong & Herr, 2023). Following this, in the transmission phase, these signals are relayed to the central nervous system (CNS), primarily via nerve fibers that lead to the spinal cord. As these signals reach the brain, the perception phase commences. Here, individuals become consciously aware of the pain. Notably, the anterior cingulate cortex plays a central role in processing these signals, with its variable activation accounting for individual differences in pain experiences. Other brain structures, including the medial prefrontal cortex and nucleus

accumbens, contribute to the emotional and motivational facets of pain (Cosio, 2020). The process culminates in the modulation phase, where the perception of pain undergoes regulation or alteration. The subject mechanisms range releasing innate pain-relieving compounds to the activation of descending inhibitory pathways that either intensify or mitigate pain sensations (Finnerup et al., 2021).

## C. Cancer Pain Management

### *1. WHO Ladder of Pain*

Cancer pain management is intricately linked to the well-established World Health Organization (WHO) Ladder of Pain, a tripartite guideline designed to address the varying degrees of pain intensity experienced by individuals with cancer (Woodruff, 2016). Traditionally recognized as a fundamental approach in the pain management scope, the WHO Ladder sequentially recommends interventions based on the severity of pain. In step 1, non-opioid analgesics are introduced to alleviate mild pain. Progressing to step 2, which is tailored for moderate pain, weak opioids come into play. Finally, in step 3, where severe pain requires targeted intervention, potent opioids such as morphine are administered (Woodruff, 2016). This progressive approach ensures a systematic response to cancer-related pain, facilitating healthcare practitioners to tailor interventions specific to the needs of patients.

Building on the structured approach of the WHO Ladder of Pain, the primary objective of cancer pain management is to alleviate pain to a level that ensures an acceptable quality of life (Woodruff, 2016). The historical context reveals that the WHO first issued guidelines on cancer pain management in 1996, marking a pivotal moment in shaping the strategies employed in oncology care. The current guidelines have evolved

to encompass three main sections, each addressing specific aspects of cancer pain management.

- **Analgesia for cancer pain**: covers the selection of appropriate analgesic medications for initiating pain relief and maintaining pain control.
- **Adjuvant medications for cancer pain:** Addresses the use of additional medications, such as steroids, antidepressants, and anticonvulsants, to complement the management of cancer pain.
- **Management of pain related to bone metastases:** Focuses on the use of bisphosphonates and radiotherapy as strategies to manage pain associated with bone metastases, a common complication in advanced cancer.

  In the current practice of managing oncology patients' pain, the primary methods involve pharmacological approaches like opioids and non-steroidal anti-inflammatory drugs (NSAIDs) (Klafke et al., 2016). These medications are widely used to alleviate pain and enhance the quality of life for cancer patients (Kroenke et al., 2010).

### *2. Pharmacological Pain Management*

Building upon the foundation of WHO guidelines and contemporary pharmacological practices in cancer pain management, the integration of multimodal analgesia emerges as a progressive strategy that aims at optimizing patient outcomes (Tuan et al., 2023). This approach recognizes the nuanced nature of cancer pain and tailors interventions based on pain severity. Opioids, such as morphine, fentanyl, and oxycodone, operate by activating receptors in various parts of the nervous system, effectively blocking pain signals and altering pain perception (Stoeber et al., 2018).

Simultaneously, analgesics such as NSAIDs contribute to the relief of pain by limiting inflammation and swelling (Klafke et al., 2016). However, the inherent side effects of these pharmacological treatments, ranging from nausea to tolerance, warrant a careful consideration of their use (Mercadante & Portenoy, 2016; Farhat et al., 2020). Cost considerations further underscore the complexity of pain management, and vary based on factors like location and insurance coverage (Potter, 2016).

In this context, the concept of multimodal analgesia gains significance, wherein adjuvants such as NSAIDs and acetaminophen complement the analgesic effects of opioids. This strategic combination not only allows for the use of lower opioid doses, mitigating the risk of associated adverse effects, but also targets specific aspects of the pain pathway through diverse mechanisms of action. As a result, multimodal analgesia provides a more comprehensive spectrum of relief for both nociceptive and neuropathic pain while minimizing the side effects associated with high doses of a single analgesic treatment (Tuan et al., 2023). This transition underscores the evolution of cancer pain management strategies, highlighting the shift towards a more nuanced and patient-centered approach. Awareness is needed about the use of integrative pain care approach, which emphasizes on the integration of non-pharmacological approaches within the patient care plan.

In addressing the critical issue of pain management in cancer treatment, there is a growing emphasis on the exploration of alternative methods beyond conventional opioid usage. This change reflects an increasing inclination towards patient-centric strategies, incorporating complementary and alternative medicine (CAM) along with innovative tools for pain relief. By embracing non-pharmacological approaches, the aim

is to complement existing interventions and, potentially, reduce reliance on medications.

IASP defines integrative pain care as a comprehensive approach that integrates multiple evidence-based treatments, tailored to the individual's needs, and focuses on being person-centered, mechanism-guided, and temporally coordinated. This approach combines various treatment strategies, potentially including complementary/alternative and traditional medicine, to address the complex nature of pain which involves bio psychosocial interactions (IASP, 2023). In contrast, complementary medicine involves the application of unconventional treatments alongside standard medical care, enhancing rather than replacing traditional methods (NIH, 2023).

### *3. Non-pharmacological or Complementary and Alternative Medicine*

CAM emerges as a significant aspect of non-pharmacological interventions, offering individuals dealing with cancer a diverse set of tools to manage treatment side effects, alleviate symptoms such as nausea and pain, find comfort, reduce stress associated with cancer treatment, actively participate in their care, and explore potential alternative treatment or cure options (NIH, 2023).

According to the National Institutes of Health (2021), complementary approaches within CAM can be categorized based on their main therapeutic delivery methods. These include cognitive approaches, exemplified by mindfulness practices; physical interventions like massage and spinal manipulation; behavioral methods, and combined approaches such as the integration of cognitive and physical measures, as seen in practices like yoga, tai chi, acupuncture, dance, or art therapies. This exploration sets the stage for understanding the potential of non-pharmacological methods to

complement traditional treatments and enhance the overall well-being of individuals navigating the challenges of cancer. In non-pharmacological cancer pain management, the focus extends to specific techniques within this realm.

a. Physical Measures

This category encompasses therapies that involve physical manipulation or movement of the body (NIH, 2023). Examples of physical measure include acupuncture, hypnosis, massage therapy, heat therapy, and cold therapy. Acupuncture, as demonstrated in studies by Yang et al. (2021) and Chen et al. (2017), emerges as a notable practice with proven efficacy in managing cancer-related pain, particularly in palliative care and for addressing side effects like aromatase inhibitor-induced arthralgia in breast cancer patients. Moreover, Carvalho et al. (2023) found that acupuncture, hypnosis, and massage therapy can help in reducing cancer pain (Table 3).

Heat and cold therapy are widely recognized as effective non-pharmacological treatments for managing various types of pain. Heat therapy, involving the application of warm compresses, heating pads, or warm baths, functions by increasing blood flow and oxygen supply to the affected area (Permanente, 2020). This enhancement in circulation aids in relaxing sore muscles and reducing stiffness, thereby alleviating discomfort, particularly in cases of chronic muscle pain or arthritis(Cleveland Clinic, 2022). On the other hand, cold therapy, often administered through ice packs or cold compresses, is effective in reducing inflammation and numbing sharp pain. It's particularly beneficial immediately after an injury, such as a sprain or acute joint pain, because it lessens edema and nerve activity by slowing down blood flow to the affected area, which in turn decreases pain. Both therapies offer valuable pain relief options, and

their effectiveness can vary depending on the type and location of the pain, highlighting the importance of tailoring the treatment to the individual's specific needs (Grazioso & Djouder, 2023).

b. Cognitive Methods

According to NIH (2023) these techniques integrate mental attention, breathing, and body movements to help relax the body and mind. These methods include mindfulness and meditation techniques, which emphasize on increasing consciousness of thoughts, emotions, and behavior, as well as placebo conditioning and book listening, all aimed at relaxing the body and mind to positively affect pain severity, anxiety, stress, depression, and general quality of life in adult cancer patients. A study by Ngamkham et al. (2019) showed that mindfulness and meditation techniques specifically like increasing awareness of one's thoughts, emotions, and actions, placebo conditioning and book listening had a positive effect on pain severity, anxiety, stress, depression, and overall quality of life for adult cancer patients. Turning attention to chemotherapy-induced peripheral neuropathy (CIPN), Langley-Brady et al. (2023) conducted a pilot randomized controlled trial to assess the effectiveness of an essential oils like peppermint and rosemary in reducing chemotherapy-induced peripheral neuropathy in female adult cancer patients. Participants in the intervention group, utilizing pain medications in conjunction with essential oils, stated that their pain was significantly lower than that of the placebo group. The results highlighted the promise of essential oils as interventions for managing CIPN symptoms (Table 4).

c. Behavioral Methods

These approaches focus on modifying behaviors to improve health and well-being. They often involve strategies to change habits or lifestyles that are detrimental to health (NIH, 2023). These methods include aromatherapy, music therapy, and the use of acupressure wristbands.

Deng et al. (2021) delved into the effects of perioperative aromatherapy (AT) and/or music therapy (MT) on pain and anxiety levels in women undergoing breast cancer surgery. The combination therapy (CT) group emerged as particularly noteworthy in displaying the most significant improvements in pain, anxiety, interleukin-6 (IL-6) levels. In comparison, both the AT and MT groups exhibited lower pain intensity, IL-6, reduced anxiety when compared to the standard care group. This underscores the potential of combining AT and MT as a promising complementary therapeutic approach for breast cancer patients (Table 4).

In the same vein, Ilter et al. (2019) conducted a nonrandomized controlled trial to examine the impact of inhaler aromatherapy on invasive pain, procedural adherence, and vital signs during port catheter insertion in adult cancer patients. The intervention group, inhaling an aromatic mixture during the procedure, experienced significantly diminished pain and improved adherence compared to the control group. Intriguingly, vital signs and saturation levels remained unaffected, suggesting that a combination of inhaler aromatherapy with pharmacological therapies during catheterization procedures could be prudent to alleviate invasive pain and enhance patient adherence (Table 4).

In a study conducted by Fatma (2018) the effectiveness of an acupressure wristband in alleviating nausea and vomiting in breast cancer patients undergoing chemotherapy was investigated through a quasi-experimental design. The research

involved 25 participants, all of whom were breast cancer patients experiencing chemotherapy-induced nausea and vomiting (CINV). The primary objective of the study was to assess the impact of combining acupressure wristbands with antiemetic treatment on the severity of CINV in these patients. The evaluation of nausea and vomiting severity was conducted using the Rhodes Index of Nausea, Vomiting, and Retching (INVR) questionnaire. The findings indicated a significant reduction in chemotherapy-induced nausea and vomiting among the participants who used the acupressure wristband, with a reported p-value of 0.000, highlighting the potential efficacy of this non-pharmacological intervention in managing CINV in breast cancer patients (Table 4).

Moreover, Molassiotis et al. (2014) conducted a randomized controlled trial to evaluate the effectiveness of acupressure wristbands in managing chemotherapy-related acute and delayed nausea in adult cancer patients. It highlighted the potential efficacy of acupressure wristbands as a non-pharmacological approach to managing chemotherapy-induced nausea.

d. Combined Methods

This category includes practices that integrate cognitive and physical elements. These approaches recognize the interconnectedness of the mind and body and often aim to bring them into harmony (NIH, 2023). One example of combined methods is the use of comfort kits designed to provide patients with accessible means to manage pain and discomfort through combined methods or various CAM modalities (Blackburn, 2019). A study conducted by Blackburn et al. (2019) focused on optimizing adult cancer pain management with CAM therapy, which incorporated a combination of complementary

therapies. This quality project aimed to identify and implement easy-to-use therapies that could complement pharmacologic pain management for adult cancer patients. The items used included acupressure wrist bands, aromatherapy essential oils (lavender, lemon, and peppermint), a sleep mask, and stress balls. The study involved a substantial sample size of 242 adult cancer patients. The primary objective was to assess the impact of these items on patient satisfaction with pain management, with percentile ranking as the measure. The findings from this study were notable. During the trial, there was a significant reduction in average pain intensity, with a decrease of 2.25 points observed on a scale ranging from 0 to 10. This reduction in pain intensity occurred within a 24-hour period following the use of the CAM therapy. Additionally, patients reported a decreased reliance on pharmacologic pain treatments, indicating that these items effectively complemented traditional pain management methods.

Furthermore, a study conducted by Ilter et al. (2019) explored the use of inhaler aromatherapy of essential oils of orange, chamomile, and lavender as part of a CAM kit during port catheter insertion in oncology patients. The findings highlighted that inhaler aromatherapy significantly reduced pain experienced during the procedure and improved procedure adherence, it showed that the mean pain score was 6.2 prior to the procedure, and it dropped to 5.0 during the procedure. The combination of these essential oils in the CAM kit played a crucial role in enhancing pain management and overall patient comfort during the invasive procedure.

In addition, a study by Izgu et al. (2019), focused on the effect of aromatherapy massage using essential oils such as peppermint oil, chamomile, and rosemary oil. The study aim is to mitigate chemotherapy-induced peripheral neuropathic pain and fatigue in patients receiving oxaliplatin. The results indicated that the intervention group

experienced a significantly lower rate of neuropathic pain and less severe painful paresthesia compared to the control group, emphasizing the effectiveness of the specific essential oils used in aromatherapy massage for this purpose.

Another study by Molassiotis et al. (2014), investigated the effectiveness of acupressure in controlling and managing chemotherapy-related acute and delayed nausea in adult cancer patients. This study was designed as a randomized, three-group, sham-controlled trial and included a substantial sample size of 500 participants.

The primary aim of the study was to provide clarity on whether acupressure could effectively alleviate chemotherapy-induced nausea and vomiting. Another aim was to assess the outcomes, participants reported their levels of nausea daily for seven days during each chemotherapy cycle, totaling four cycles. The findings revealed promising results for the use of acupressure in managing chemotherapy-related nausea. Results showed an odds ratio of 1.18 for reduced nausea in the acupressure group and 1.42 in the sham acupressure group. Importantly, a significant gender interaction effect was observed ($P = 0.002$), indicating that the impact of acupressure on nausea experience may vary based on gender These results suggest that acupressure has the potential to improve the overall nausea experience in cancer patients undergoing chemotherapy, particularly when compared to a sham acupressure group.

Emiroglu et al. (2023) studied the effect of cold therapy in managing pain in adult patients with cancer. This randomized controlled clinical trial, which included 60 participants, focused on the efficacy of cold therapy in alleviating post-surgery pain. The use of the visual analog scale (VAS) for pain assessment revealed that the mean pain level in the cold therapy group was significantly lower in the first 24 hours post-operation (1st, 6th, 12th, and 24th hours) compared to the control group, a difference

that was statistically significant (p = .001). Furthermore, the study highlighted a remarkable reduction in the need for additional analgesics within the same period: only 4 patients (12.5%) in the cold therapy group required extra pain medication, in stark contrast to the control group where all patients (100%) needed additional analgesics (p = .001). This study underscores the potential of cold therapy as an effective non-pharmacological intervention for pain relief in postoperative care for breast cancer surgery patients.

A systematic review and meta-analysis on the effectiveness of local heat applications (LHAs) in treating acute or chronic musculoskeletal disorders by Clijsen et al. (2022) found significant benefits. LHAs were effective in reducing pain compared to no treatment, standard therapy, pharmacologic therapy, and placebo, with respective P values of <.001, .020, <.001, and .044. Improvements in physical function, disability, and quality of life were also noted with statistical significance. The analysis highlighted increased range of motion and reduced stiffness when compared with pharmacologic therapy and placebo. Also, LHAs showed immediate superior effects on muscular strength against no treatment, cold therapy, and placebo. The study, however, noted the high heterogeneity and mostly unclear risk of bias among the included studies.

The studies reviewed highlight the importance of specific measures, such as acupressure bands, essential oils, stress balls, sleep masks, and their potential to alleviate pain and anxiety in cancer patients. These findings emphasize the significance of tailoring CAM interventions to include the right combination of measures to optimize patient outcomes. CAM kits with carefully selected measures offer non-invasive and potentially effective approaches to improving the well-being of cancer patients undergoing various treatments.

## D. CAM use in Lebanon

### *1. CAM Use among Patients*

In Lebanon, research on CAM for cancer pain relief is still limited. Along with traditional medical care, some patients are turning to use complementary and alternative forms of treatment, knowing that we still have patients that are not ready to these practices due to lack of awareness and knowledge about the benefits of CAM therapy. In order to enhance over all well-being, complementary therapies are frequently combined with conventional medical treatments in order to have better outcome and enhance the quality of life of our patients. Acupuncture, herbal remedies like aromatherapy, and mindfulness training are the most common therapies used in our community (Nisrine N. Makarem, MD, Instructor of Clinical Family Medicine, personal communication, September 2023).

A study by Naja et al. (2015) showed that 30% of the population in Lebanon reported using CAM including herbal products and dietary supplements (Naja et al., 2015). Interestingly, CAM use was reported by 40% of breast cancer patients (Naja et al., 2015)), 41% of lung cancer patients (Naja et al., 2017) and 38% of diabetic patients (Naja et al., 2014).

We argue that CAM therapies are actually entrenched in the Lebanese culture, which make them culturally acceptable. For example, herbal medicines have been passed down from generations of practitioners (Naja et al., 2017) and became engrained in the collective memory of the Lebanese (Naja et al., 2014). Further they are widely available within the local CAM landscape (Naja et al., 2014), where there is a rich repertoire of natural medicinal herbs (Saad et al., 2005).

A nationwide study that focused on understanding CAM use in Lebanon indicated that approximately one-third of Lebanese adults engage in CAM practices. This study, led by Kharroubi et al. (2018), sheds light on the intricate dynamics surrounding CAM usage, revealing a connection between the adoption of CAM kits and the financial capacity of patients. The findings of the study revealed that various factors influenced the use of complementary and alternative medicine (CAM). These factors included age, dissatisfaction with conventional medicine (referred to as the Push factor), and several aspects of the Pull factors, which involve a preference for taking control of one's own health. The study specifically noted that older individuals, those who were discontent with traditional medicine, and those who favored self-management of health were more inclined to utilize CAM. Additionally, income was identified as a significant enabler, with higher income levels correlating with a greater likelihood of CAM usage.

Another study conducted by Jaafar et al. (2020), explores the perspectives of individuals using CAM. The study groups shared a common understanding of CAM, defining it as a non-conventional therapy for disease prevention, treatment, or well-being enhancement. Both CAM users and providers identified critical factors that affect using CAM therapy including “distrust in healthcare providers,” “lack of patient-centered care in conventional medicine,” and “limitations and side effects of conventional “medicine, “and all groups highlighted that the limited knowledge of CAM among healthcare providers contributed to the absence of patient-centered care which forms a significant barrier. Additionally, the affordability of CAM, along with social and cultural support, emerged as primary facilitators of its widespread use across all groups. This intricate interplay between financial considerations, individual preferences, and healthcare dynamics underscores the complex of CAM utilization in

Lebanon. A qualitative study by Jaafar et al. (2022) exploring the main factors attracting Lebanese to use CAM therapies included trust in their perceived effectiveness and safety, lowering cost, and social support for CAM use. In terms of trust, the perceived effectiveness of CAM on the physical health, i.e. pain relief, and the psychological relief when used, make them appealing and provide them with 'a sense of empowerment'.

It gives them more autonomy over how they manage their pain, and allow them to relief the symptoms when needed. When compared to the conventional medicine, CAM therapies are less costly, hence attractive to use. In addition, given they are accepted in the culture, there is support from friends and families for using them (Jaafar et al., 2022). In fact, CAM therapy provides a cost-effective, non-pharmacological approach to pain management in cancer patients (Kallman et al., 2023).

In accordance with the nuanced landscape of CAM utilization in Lebanon, studies have further accentuated the diverse patterns and influences shaping its adoption.

The study by Naja et al. (2015) examining Lebanese breast cancer patients revealed significant findings. Of the 180 patients surveyed, a notable 40% chose to use Complementary and Alternative Medicine (CAM).The analysis also uncovered a negative correlation between CAM use and age, treatment at philanthropic hospitals, while a positive correlation was observed in advanced disease stages. The predominant CAM modalities embraced by participants included 'special food,' 'herbal teas,' 'diet supplements,' and 'spiritual healing.' Despite the prevalence of CAM use, health professionals exerted minimal influence, with only 4% of CAM users citing their

impact, and a mere one in four patients disclosed their CAM utilization to their treating physicians (Naja et al., 2015).

Thus, we believe the penetration of the proposed Comfort Kit into practice will be high given the history of the CAM in the country.

### *2. Perspective of Healthcare Professionals*

Exploring the perspective of healthcare professionals, Hijazi et al. (2019) investigated CAM beliefs and practices among pharmacists in Lebanon. The study found that 86% of participating pharmacists expressed positive beliefs in the effectiveness of CAM products, with 80.3% suggesting exclusive sales in pharmacies. However, concerns were raised about the regulation of commercially marketed CAM products, and only 55.8% believed that the media positively contributes to educate users on these products. Notably, while 64.5% of pharmacists frequently advised patients on safe CAM use, knowledge gaps were evident, with awareness of CAM product uses being more common than understanding the side effects and drug interactions.

In navigating the intricate landscape of CAM utilization in Lebanon and understanding the various factors influencing its adoption, it becomes evident that challenges persist on multiple fronts. The studies conducted among breast cancer patients, college students, and pharmacists collectively paint a picture of diverse preferences, perceptions, and barriers in the realm of CAM practices. Despite the prevalence of CAM use, health professionals, particularly physicians, remain minimally involved in guiding its usage, leaving patients to often rely on family and media for decisions regarding CAM (Naja et al., 2015). Another study focusing on the perspectives of Lebanese CAM users, CAM providers, and healthcare providers (HCPs)

identified common understanding of CAM as non-conventional therapies used to prevent/treat diseases or enhance wellbeing. Factors driving CAM use included distrust in HCPs, lack of patient-centered care in conventional medicine, and the limitations and side effects of conventional medicine. However, there was a notable discrepancy between CAM users/providers and HCPs regarding the perceived safety and effectiveness of CAM therapies. The study highlighted the need for improving HCPs' CAM-related knowledge and fostering open dialogue between HCPs and CAM providers (Jaafar et al., 2022).

### *3. Barriers to CAM use In Lebanon*

While non-pharmacological pain management techniques exhibit effectiveness in decreasing cancer pain and alleviating symptoms, several barriers hinder their widespread utilization. One critical consideration is the necessity to match the specific therapy with the condition being treated, as highlighted by Freiwald et al. (2021) and emphasized by the National Institutes of Health (NIH, 2021). Despite their potential benefits, healthcare professionals may perceive complementary methods as posing direct dangers, fearing negative outcomes due to possible harmful interactions with traditional therapies, as noted by Stub et al. (2018). Another significant barrier is the lack of knowledge about (CAM) among both healthcare professionals and cancer patients. Källman et al. (2023) note that while CAM use is prevalent among cancer patients, many find it challenging to discuss these practices with their healthcare providers. Bridging this knowledge gap becomes crucial to enhance communication between healthcare providers and their patients. Furthermore, Becker et al. (2017) revealed that patient-reported obstacles toward the use of non-pharmacological

treatment encompassed high financial costs, transportation challenges, and diminished motivation, while reported facilitators highlighted the positive impact of a diverse range of non-pharmacological modalities (NPMs) and a collaborative, team-based approach, including follow-up sessions. In contrast, provider-reported barriers centered on the difficulty of promoting NPMs once opioid therapy had been initiated and patient skepticism concerning the efficacy of non-pharmacological interventions.

In Lebanon, systemic challenges in the implementation of CAM, including insufficient infrastructure, lax regulation, ineffective policy measures, and inadequate collaboration among key participants were reported in two studies by (Alameddine et al., (2011) and Jaafar et al., (2020)). Financial constraints also emerge as a significant factor, with the frequency of CAM use found to be linked to income levels, emphasizing that higher-income individuals tend to utilize CAM more frequently, as outlined by Kharroubi et al. (2018). These findings collectively underscore the multifaceted nature of barriers to effective CAM integration in Lebanon.

### E. Cultural Differences in the Use of Non-Pharmacological Approaches

In the realm of cancer pain management, acknowledging the influence of cultural norms and beliefs becomes paramount. As highlighted by Blackburn et al. (2019), these cultural factors play a pivotal role in shaping the acceptance and desirability of non-pharmacological techniques among patients. The willingness of individuals to embrace such interventions is intricately tied to their cultural background, which emphasizes the need for a nuanced understanding by healthcare providers. In pain management, religious and cultural beliefs play a crucial role in determining when and how pain should be treated. Some cultures may be resistant to opioid use, often due

to misconceptions about the association of excessive doses of opioids with euthanasia (Givler et al., 2023). Dispelling myths and educating patients and families is essential, addressing concerns such as the fear of addiction or the belief that opioids limit future treatment options. To maximize the use of CAM and enhance overall cancer pain management, healthcare providers must recognize and address these cultural differences. Tailoring interventions to align with individual needs and preferences is crucial in fostering patient acceptance and engagement with non-pharmacological techniques (Edwards et al., 2019; Hökkä et al., 2014). The study by Tangkiatkumjai et al. (2020) sought to understand why people either use or avoid CAM in various global regions and among different health conditions. The study found that in Asia, the Middle East, and Europe, a common reason for choosing CAM was mistrust in conventional medicine. Additionally, people with specific health conditions often turned to CAM to avoid invasive treatments or due to dissatisfaction with standard healthcare.

In both Asian and Western populations, CAM users preferred CAM practitioners for their thorough explanations and dedicated time, not found with conventional health professionals. Difficulty in accessing CAM was a common challenge for condition-specific populations in Asia and Africa, prompting them to turn to CAM. Furthermore, In Africa, CAM use is influenced by factors like psychological advantages, including the enhancement of overall well-being and the cultivation of hope and a sense of control despite the physical ailment; and sociocultural influences shaped by folk knowledge and cultural beliefs (Githaiga & Swartz, 2023). On the other hand, building upon these non-pharmacological strategies, Alsharif and Mazanec's (2019) study delved into the frequency of (CAM) use among Saudi women undergoing breast cancer treatment. The findings revealed that participants employed various CAM

therapies, with a common thread being religious practices such as reading the Holy Qur'an and praying. This study highlighted not only the prevalence of CAM use among Saudi women facing breast cancer but also underscored the significant role of religious practices in influencing individuals dealing with life-threatening illnesses. In Lebanon, as in many cultures, CAM is often embraced by individuals seeking holistic and alternative approaches to health and well-being. The Lebanese culture may influence how CAM is perceived and integrated into healthcare practices with its rich history and diverse traditions (Naja et al., 2015). The inclination towards herbal remedies as CAM is deeply rooted in Lebanon's historical culture, reflecting a longstanding tradition and appreciation for herbal medicine within the region (Svitlana, 2021). Thus, the Lebanese culture generally exhibits a positive outlook towards CAM. When comparing this perspective with other cultures globally, it's essential to recognize the diversity in attitudes towards CAM, with cultural, religious, and historical factors playing significant roles in shaping these perspectives across different societies. Recent studies have provided insightful information on the use of CAM in the Lebanese culture. A national survey revealed that approximately 29.9% of Lebanese adults reported using some type of CAM. "Folk Herbs" (75%), "Natural Health Products" (31.7%), "Folk Foods" (13.2%), and "Vitamins and Minerals" supplements (3.8%) were the most widely used kinds of CAM. The most often utilized herbs were green tea, chamomile, anise, and peppermint. The main uses of CAM were for weight loss and slimming, as well as for the treatment and prevention of common cold, indigestion and stomach problems. A significant majority of CAM users who belong to middle-aged group and to the highest household income category and reported having chronic diseases were

satisfied with the products used and would recommend them to others (Kharoubi et al., 2018).

## F. Summary of the Review

This comprehensive literature review thoroughly explores strategies for pain management in oncology patients, focusing on both pharmacological and non-pharmacological approaches, particularly the implementation of comfort kits. The analysis commences by defining pain and examining its subjective nature and classifications. It provides a detailed exploration of pain mechanisms, covering nociception, transduction, transmission, perception, and modulation.

The review then delves into the World Health Organization's (WHO) Ladder of Pain, a guideline advocating a stepwise approach to cancer pain management involving non-opioids, weak opioids, and potent opioids. It considers the potential transition to a two-step ladder. Stressing the importance of integrating non-pharmacological methods, especially through multimodal analgesia, the review recommends combining pharmacological treatments (e.g., opioids and NSAIDs) with non-pharmacological interventions.

Focusing on cancer pain management, the research describes the WHO's step-by-step pain ladder and explores various pharmacological interventions, from non-opioids to opioids. Additionally, it examines non-pharmacological approaches, including CAM, highlighting their applications and outcomes. The review underscores that a multimodal strategy combining pharmacological and non-pharmacological therapies is more effective than relying solely on medication for pain management.

Specific attention is given to the use of CAM in Lebanon, offering insights into regional norms and preferences. In addressing obstacles, the review considers medical experts' perspectives and examines how cultural variations impact the implementation of non-pharmacological interventions. This comprehensive review not only explores the scientific aspects of pain treatment but also delves into the social and cultural factors influencing the use and acceptance of various pain management techniques.

By understanding the synergy between the WHO ladder and non-pharmacological methods, healthcare professionals can develop personalized pain management plans that address the physical, emotional, and social dimensions of pain, ultimately enhancing patient outcomes and improving the quality of life.

# CHAPTER III

# COMFORT KIT

In this chapter, we propose an evidence-based CAM Comfort Kit (CK) for adult oncology patients in Lebanon, more specifically at Adult Oncology Inpatients Unit at AUBMC.

We divide this section into 2 parts. Part A: We start by providing evidence for the prevalence of CAM use among Lebanese population including oncology patients, and understanding of the perceived factors that push patients to use CAM treatment. Then, we elaborate on the guiding principles for choosing the items on the kit. Part B: we propose the design of the Comfort Kit in which we describe each item including the evidence associated with benefits for oncology patients, the cost of each item, and storage of the items in the Comfort Kit.

## A. Guiding principles for choosing the items of the kit

The proposed items on the Comfort Kit for adult oncology patients were based on the following guiding principles:

- **Evidence-based effectiveness of the diverse CAM options on patients' symptoms:** We specifically targeted items on the Comfort Kit that were found to be effective in alleviating cancer-related pain, increase sleep time, decrease chemotherapy induced nausea (Blackburn et al., 2019). We made sure that those items help manage the localized symptoms, muscle-related, or stress-induced, both at home and in healthcare settings (Farhat et al., 2020; Bernabei, 2010). Thus, providing a holistic approach to symptom management.

- **Cost Savings on Pain Medications**: we made sure that the items on the Comfort Kit are affordable to all population groups. Knowing that many conventional pain medications can be costly, and the long-term use of such medications can significantly impact a patient's budget, incorporating the items on the Comfort Kit are expected to be associated with a cost saving to patients (Abrahão et al., 2019).
- **Improved Well-being**: The use of the Comfort Kit is expected to enhance the overall well-being of cancer patients (Wode et al., 2019). The mere fact that cancer patients often experience physical and emotional challenges, over and above their health condition, adds to the worsening of their quality of life. Hence, we specifically targeted items on the Comfort kit known for their soothing and calming effects that can alleviate both physical discomfort and emotional distress. This improvement in well-being acknowledges the importance of addressing not only physical health but also mental and emotional wellness during cancer care.
- **Enhanced Cancer Care through using a patient-centered approach**: We are proposing a range of items on the Comfort Kit, thus providing the patients to choose the options that suit them best. This enhancement in care ensures that patients receive the best possible support when needed and based on their own convenience.
- **Accessible and affordable:** We will ensure that the sourcing and preparation of the comfort kit components for patient utilization hinge on securing financial support from cancer-related foundations in Lebanon. The provision of funds from these organizations plays a critical role in obtaining the necessary

ingredients for the comfort kit. This financial backing will mitigate the affordability of securing those items.

## B. Comfort Kit Design

### *1. Proposed items on the Comfort Kit*

The Comfort Kit is thoughtfully designed to cater for the diverse needs of patients, offering a comprehensive selection of items to enhance their well-being (Table 1). Following recommendations from previous studies, the Comfort kit will include stress balls, sleep masks, acupressure wristbands, aromatherapy essential oils, and cold and heat water pads. Table 4 provides the list of items and the benefits of every one.

- **Stress balls:** a gentle source of comfort, providing a way to relax and de-stress. They were shown to be effective in reducing anxiety and pain (Blackburn et al., 2019).
- **Sleep masks:** encourage restful sleep (Blackburn et al., 2019).
- **Acupressure wristbands:** provide holistic pain management and effective in relieving the common side effect of chemotherapy-induced nausea (Molassiotis et al., 2014).
- **Aromatherapy (Lavender, peppermint, and rosemary):** to relieve pain, anxiety, were chosen for their calming, stimulating, and pain-relieving properties, and other side effects of cancer treatment as evidenced by the referenced studies (Deng et al. (2022), Ilter et al. (2019), and Izgu et al. (2019)).
- **Hot and cold-water pads**: effective in relieving muscular pain. Cold therapy reduces blood flow, which can help to reduce inflammation and swelling. Heat

therapy increases blood flow and relaxes muscles, which can help alleviate pain from muscle stiffness or spasms (Permanente, 2020).

Table 1: Items of the Comfort Kit

| Items | Picture |
|---|---|
| Stress ball |  |
| Sleep mask |  |
| Hot and cold water Pads |  |
| Acupressure wrist band |  |

| | |
|---|---|
| Lavender Oil |  |
| Peppermint Oil |  |
| Rosemary Oil |  |

### *2. Cost of the Selected Items on the Comfort Kit*

Most selected items are priced affordably at a cost not exceeding the $11 per item (Table 2).

Table 2: Prices of the Comfort Kit Items

| Items | Price ($) | Manufacture in Lebanon |
|---|---|---|
| **Stress Ball** | 0.75 | Scentle Shop |
| **Sleep Masks** | 5 | Scentle Shop |
| **Hot and cold water pads** | 10 | Scentle Shop |
| **Acupressure wrist band** | 7 | Scentle Shop |
| **Aromatherapy (Essential Oils):** | | |
| • **Lavender Oil** | 10 | Scentle Shop |
| • **Peppermint Oil** | 11 | Scentle Shop |
| • **Rosemary Oil** | 9 | Scentle Shop |
| **Total price:** | 52.75 | |

### *3. Storage of the comfort kit*

CK items will be stored in an easily accessible and safe location to prevent damage. Essential oils will be stored with precision, separate from other chemicals, to avoid mixing, and storage practices will adhere to Safety Data Sheets and hospital-specific guidelines.

## C. Summary

Our objective is to integrate the Comfort Kit into adult oncology care in Lebanon. This initiative recognizes the cultural significance of complementary and alternative medicine (CAM) practices within the community.

The Comfort Kit offers a diverse selection of CAM options specifically chosen to alleviate cancer-related symptoms and pain. Its implementation presents potential cost savings in pain medication and anxiety/stress medication, while additionally aiming to enhance patients' overall well-being and contribute to improved cancer care. Each item in the kit is described based on its targeted effect on adult oncology patients, outlining its purpose and specific benefits.

# CHAPTER IV

# IMPLEMENTATION AND EVALUATION OF THE COMFORT KIT

In this chapter, the implementation and evaluation of the Comfort Kit will be conducted based on Kotter's 8-Step Model of Change (Graves et al., 2023). This renowned framework, for leading change, provides a structured approach for effective change management, ensuring a thorough and systematic execution and assessment of the Comfort Kit in a clinical setting. The eight steps in the model of change include creating a sense of urgency, forming powerful guiding coalitions, developing a vision and a strategy, communicating the vision, removing obstacles and empowering employees for action, creating short-term wins, consolidating gains and strengthening change by anchoring change in the culture.

## A. Creating a Sense of Urgency

- Well-researched data and studies highlighting the positive impacts of CAM therapies on cancer patients will be shared. The CK has demonstrated remarkable success in providing swift relief to patients, significantly improving their well-being and overall experience, it mitigates medication side effects, and achieve cost savings and decrease overall healthcare costs.
- Given that there are no policies regarding the use of CAM therapy at AUBMC, our proposed Comfort Kit would be beneficial for patients during their treatment.

**B. Forming Powerful Guiding Coalitions**

Collaborating with the pain clinical nurse specialist and other key stakeholders at AUBMC will be an essential step to build coalition. This coalition will guide the project and ensure the buy-in.

We will call for a meeting with the stakeholders of the institution (Nursing director, Nurse leader of the unit, Nurse Manager of the unit, Clinical and Professional Development Center Manager at AUBMC, Pain Clinical Nurse Specialist, Nurse Leader for Research and Advanced Practice, and Pain Resources Nurses) to discuss the potential of integrating the Comfort Kit into patient care.

This initiative involves presenting the proposed nursing departmental Performance Improvement (PI) project during the collaborative cancer meeting, where clinical projects and initiatives are discussed before implementation, seeking valuable feedback from stakeholders.

**C. Developing a Vision, Mission, and Strategic Initiatives**

Following a preliminary approval, the crucial step of integrating Complementary and Alternative Medicine (CAM) therapies in patient care involves preparing a clear and compelling vision, mission, and initiatives for implementing the protocol to be shared with the key stakeholders.

Vision Statement: Envisioning a future where cancer patient care at AUBMC is holistic, seamlessly combining both conventional and alternative treatments to address the multifaceted needs of patients.

Mission Statement: Our mission is to enhance pain management at AUBMC by embracing a holistic approach. This entails integrating CAM therapies into the standard care protocol, with a focus on achieving superior patient outcomes.

A series of specific strategic initiatives will be conducted. These include:

- Comprehensive Training Program Mission: To develop and implement a cutting-edge training program at AUBMC, empowering nurses with comprehensive knowledge and skills in CAM therapies, ensuring they become adept practitioners in enhancing patient care.
- Informational Materials Mission: To create informative and accessible materials for patients and their families, guiding them through the understanding and potential benefits of CAM therapies, fostering informed decision-making in their healthcare journey.
- Partnerships with CAM Practitioners Mission: To establish strategic partnerships with CAM practitioners, leveraging their insights and expertise to enrich the training programs and enhance the integration of CAM therapies into our patient-centered care model. This includes collaborating with programs like the AUBMC Wellness Program, which offers mindfulness meditation, yoga, and other CAM therapies to patients and staff.
- CAM Integration in the nursing and medicine curriculum
- Continuous Improvement and Feedback Mission: To set up a dynamic feedback mechanism that engages nurses and patients, allowing us to continuously refine and improve the implementation of CAM therapies based on real-world experiences, ultimately enhancing the overall quality of patient care at AUBMC.

## D. Communicating the vision

### *1. Introducing of the CK to the health care team*

We will conduct an introductory session to oncologists, fellow residents and medical students to introduce them to the project and its significance in order to support the implementation of the Comfort Kit.

### *2. Initial Preparation, education and training the Nurses*

- In my role as the principal stakeholder of this protocol, I will undertake the responsibility of the following:
    - Introduction of Comfort Kit to 2 pain resource nurse at AUBMC in Oncology, for in-depth education on Comfort Kit modalities, benefits, patient selection, and how to role play in an Arabic context.
    - Education on the evaluation scales and follow-up matrix.
    - Database creation to track patients receiving the Comfort Kit.

a. Training the trainers

This phase will focus on organizing and conducting training workshops in order to equip nurses at Adult Oncology Inpatient Unit with the necessary knowledge and abilities to effectively implement the Comfort Kit and become trainers at AUBMC and beyond. This training will be done based on the following outline:

i. Introduction:

- Importance of CAM in patient-centered care
- Introduction to the CAM kit and its benefits (Appendix A)

- Ask patients to return demonstrations. When introducing the comfort kit's usage.
- Using the each back method.
- Encourage patients and their primary caregiver to ask questions and provide them appropriate feedback.
- Ensure patients are caregivers are aware of refilling items on the kit.
- Inform patients who the contact person will be to overcome obstacles

ii. CK Items and Benefits (Appendix A).

- Interactive presentation on each item in the CAM kit, including:
    - Description
    - Potential benefits
    - Practical considerations for use
    - Discussion inclusion criteria
    - Prior to recommending the Comfort Kit nurses will assess the readiness of the patient to use the CK.
- Role Play

b. Patient Education

A structured approach will be taken to educate patients and their caregivers about the CK.

### *3. CK Implementation*

a. Identification of Eligible Patients

i. Inclusion Criteria:

- Conscious patients
- Patient with Moderate to severe distress (>4) according to the NCCN Distress Scale (Appendix G)

ii. Exclusion Criteria:

- Unconscious patients
- Imminently dying patients.

b. Oncology nurses will screen according to the inclusion criteria:

- Physicians order:

  Once eligible patients are identified, the nurse in charge will inform the physicians to order the CK.

c. The following steps will be followed:

i. Introduction of the intervention and its purpose

The introduction of the kit comprises an overview of its components and the advantages associated with each. The various categories of items included will be detailed, accompanied by visual aids to facilitate understanding. (Appendix A)

Prior to recommending the Comfort Kit nurses will evaluate the patient's preparedness, ensuring a tailored approach to their needs. This could involve:

- Gauging the patient's physical and emotional state. Are they open to trying new comfort measures?
- Considering cultural and religious sensitivities. Are there any items the patient might not be comfortable using?
- Discussing the kit with the patient and their family. Explain the purpose, benefits, and how to use the items.

  Moreover; if a patient expresses interest in a specific item, nurses should offer it. This individualizes care and respects patient preferences.

  - Assessing patient symptoms using numerical pain scale (Appendix B)
  - Ask patients to return demonstrations when introducing the comfort kit's usage.
  - Using the teach back method, caregivers are encouraged to articulate, in simple terms, how they would explain the purpose and utilization of the comfort kit to a loved one. It is crucial to ensure that patients fully grasp how to use the kit.
  - Encourage patients and their primary caregiver to ask questions and provide them appropriate feedback.
  - Ensure patients are caregivers are aware of refilling items on the kit.
  - Inform patients who the contact person will be to overcome obstacles.

**E. Removing the obstacles**

- Limited financial resources may pose a significant obstacle
- Approval from all stakeholders to implement the Kit
- Healthcare providers may resist adopting new practices

- Insufficient awareness or understanding among healthcare professionals
- Varying patient preferences and cultural differences may influence the acceptance of comfort kits

## F. Creating Short-Term Continuous Follow-up

### *1. Evaluating the Effectiveness of the Comfort kit*

The effectiveness of the kit will be evaluated using the following scales that will be distributed to the patients before and after using the kit.

- Numerical Pain Scale (Thong et al., 2018; Alghadir et al., 2016). (Appendix B): A numerical pain scale (NPS) is a simple and widely used tool for measuring pain intensity. It consists of a numbered line, typically ranging from 0 to 10, with 0 representing "no pain" and 10 representing the "worst pain" imaginable. The patients will be asked to write their pain score before and after using the kit so that comparisons between pre and post pain scores can be made. The scale is valid a reliable in English and Arabic language.
- Effectiveness Scale for Comfort Kit Items (Appendix C): The scale evaluates the effectiveness of various items included in a comfort kit, such as a stress ball, sleep mask, hot and cold therapy, wrist band, and oils (lavender, peppermint, rosemary). Each item is rated based on its effectiveness in achieving a specific outcome, such as reducing stress, promoting better sleep, alleviating neck and shoulder pain, reducing nausea, aiding relaxation, and alleviating pain and headaches. The ratings range from “Strongly Ineffective” to “Strongly Effective.”

- Patient Health Questionnaire (PHQ-4) (Bhakta et al., 2022; (Al Hadi et al., 2017): is a brief screening tool used to assess for symptoms of anxiety and depression in adults. It consists of four brief questions, two each targeting anxiety and depression. Each question asks about the frequency of specific symptoms experienced in the past two weeks, with response options ranging from "not at all" to "nearly every day". Scoring is simple: each answer choice has a point value, and the total score indicates the level of distress. (Appendix D and E). The scale is valid a reliable in English and Arabic language.

a. Satisfaction

i. Overall Satisfaction:

- How satisfied were you with the Comfort Kit approach to managing your pain?
- Did the CK help you feel more in control of your pain? Why or why not?

ii. Individual Item Benefits:

- Which items in the CK did you find most beneficial for managing your pain? Why?
- Were there any items in the CK that you did not find helpful? Why?

Recommendations and Improvements:

- Would you recommend the CK to other patients experiencing pain? Why or why not?
- What suggestions do you have for improving the Comfort Kit or its implementation?

Additional Comments:

- Is there anything else you would like to share about your experience with the Comfort Kit?

## G. Consolidating Gains

The ongoing assessment of the kit's ease of use and practicality, including promoting comfort, pain relief and impact on reducing opioid addiction, helps in consolidating the gains. The kit is kept useful and efficient by using ongoing feedback for additional instruction and reinforcement.

## H. Institute Change

- Add the usage of CK to hospital policies and procedures.
- Establish an acknowledgment system to inspire employees and strengthen the cultural shift.
- Create a long-term strategy to ensure that the use of comfort kits is sustainable.
- Share stories that highlight the positive impact of comfort kits during staff meetings or training sessions.

# CHAPTER V

# CONCLUSION

The utilization of CAM therapies plays a critical role in the holistic management of cancer patients, offering a broader spectrum of options beyond conventional treatments. CAM therapies, which can include practices such as meditation, acupuncture, and the use of natural products like herbs and vitamins, have been increasingly acknowledged for their potential to alleviate a range of symptoms associated with cancer and its treatment. For many patients, these therapies provide significantly lessen the physical and psychological effects of their illness, enhancing their quality of life. They can help manage side effects of conventional treatment, reduce tension and anxiety, and enhance general well-being. The importance of CAM lies not only in its symptom management but also in empowering patients with a sense of control over their healing process, providing them with comforting adjuncts to their medical care that align with their personal values and preferences.

Nurses play a critical role in the education and administration of CAM therapies within the clinical setting. As front-line providers of patient care, nurses are in a unique position to introduce CAM options to patients, guiding them through the array of available therapies and helping to integrate these into their treatment plans. In the context of this study, nurses were tasked with the crucial responsibility of educating patients about the CAM kit. By leveraging their expertise and compassionate communication, nurses were able to demystify the components of the CAM kit, explain their benefits, and demonstrate their use. This educational role is essential, as it ensures that patients are well-informed about their choices and can use CAM therapies safely

and effectively as part of their cancer treatment. The nurse-led education process thus serves as a cornerstone for the successful implementation of CAM in cancer care, fostering a therapeutic alliance and ensuring that patients can make informed decisions about their health.

Addressing cancer pain with CAM therapies is becoming increasingly important as part of comprehensive cancer care. Pain is one of the most common and feared symptoms among cancer patients, and managing it effectively is crucial for improving patients' quality of life. Incorporating CAM therapies into the management of cancer pain and its associated symptoms provides a multi-faceted approach that can enhance the effectiveness of conventional pain management strategies. The synergy between CAM therapies and traditional medical treatments can lead to more personalized and patient-centered care, potentially offering relief where conventional medicine alone may fall short. The need to integrate CAM into the management of cancer pain is driven by patient demand for less invasive, non-pharmacological options that align with their lifestyle and preferences, and the growing body of evidence supporting the efficacy of certain CAM practices. By adopting an integrative approach that combines the best of conventional and alternative therapies, healthcare providers can offer a more comprehensive and responsive care plan that acknowledges the complex needs of cancer patients.

# APPENDIX A

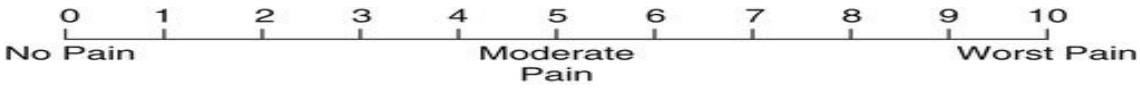
# PATIENTS TEMPLATE

| Product | How to Use | Benefits |
|---|---|---|
| **Stress Balls** | Squeeze the stress ball gently in your hand to relieve tension. | Helps reduce stress and muscle tension. |
| **Sleep Masks** | Place the sleep mask over your eyes when resting or sleeping. | Promotes better sleep and relaxation. |
| **Acupressure Wrist Band** | Wear the wrist band and gently apply pressure to acupressure points on your wrist. | May reduce nausea and pain. |
| **Hot and cold water Pads** | Placed on the area of the body where pain or discomfort is experienced | The heat can soothe and relax muscles to alleviate pain, while the cold can reduce inflammation and numb discomfort. |
| **Lavender Oil** | Add a few drops to the tissue and inhale the aroma. | Calms the mind and promotes relaxation. |

| | | |
|---|---|---|
| **Peppermint Oil** | Add a few drops to the tissue refreshing and invigorating scent. | May help reduce headaches and muscle pain. |
| **Rosemary Oil** | Add a few drops to the tissue for a rejuvenating and clarifying aroma. | May aid in pain reduction and mental focus. |

# APPENDIX B

## NUMERICAL PAIN ASSESSMENT SCALE
## (THONG ET AL., 2018; ALGHADIR ET AL., 2016)



# APPENDIX C

# EFFECTIVNESS SCALE

The stress ball effectively reduces my stress and muscle tension.

- Strongly Ineffective
- Ineffective
- Neutral
- Effective
- Strongly Effective

The sleep mask effectively promotes better sleep and relaxation.

- Strongly Ineffective
- Ineffective
- Neutral
- Effective
- Strongly Effective

The wrist band effectively reduces my nausea and pain when applied.

- Strongly Ineffective
- Ineffective
- Neutral
- Effective

- Strongly Effective

Lavender oil effectively calms my mind and promotes relaxation.

- Strongly Ineffective
- Ineffective
- Neutral
- Effective
- Strongly Effective

Peppermint oil effectively helps reduce my headaches and muscle pain.

- Strongly Ineffective
- Ineffective
- Neutral
- Effective
- Strongly Effective

Rosemary oil effectively aids in pain reduction and improves my mental focus.

- Strongly Ineffective
- Ineffective
- Neutral
- Effective
- Strongly Effective

The hot and cold water pads are effective in the reduction of pain when placed on the affected area

- Strongly Ineffective
- Ineffective
- Neutral
- Effective
- Strongly Effective

# APPENDIX D

## PATIENT HEALTH QUESTIONNAIRE (PHQ-4)
## (BHAKTA ET AL., 2022)

| Over the past few weeks have you been bothered by these problems? | Not at all | Several days | More days than not | Nearly every day |
|---|---|---|---|---|
| Feeling nervous, anxious, or on edge | 0 | 1 | 2 | 3 |
| Not being able to stop or control worrying | 0 | 1 | 2 | 3 |
| Feeling down, depressed, or hopeless | 0 | 1 | 2 | 3 |
| Little interest or pleasure in doing things | 0 | 1 | 2 | 3 |

# APPENDIX E

## PHQ-4 مخزون الصحة النفسية
## (ALHADI ET AL., 2017)

.الرجاء قراءة كل سؤال بعناية واختيار الإجابة التي تتناسب مع تجربتك خلال الأسبوعين الماضيين

1. على مدى الأسبوعين الماضيين، إلى أي مدى شعرت بالأمور التالية؟

- شعرت بالتوتر، والقلق، أو على حافة الهاوية؟
  - على الإطلاق (0 نقطة)
  - عدة أيام (1 نقطة)
  - أكثر من نصف الأيام (2 نقطة)
  - تقريباً كل يوم (3 نقاط)
- لم أستطع إيقاف أو السيطرة على القلق؟
  - على الإطلاق (0 نقطة)
  - عدة أيام (1 نقطة)
  - أكثر من نصف الأيام (2 نقطة)
  - تقريباً كل يوم (3 نقاط)

2. على مدى الأسبوعين الماضيين، إلى أي مدى شعرت بالأمور التالية؟

- شعرت بالإحباط، والاكتئاب، أو اليأس؟
  - على الإطلاق (0 نقطة)
  - عدة أيام (1 نقطة)
  - أكثر من نصف الأيام (2 نقطة)
  - تقريباً كل يوم (3 نقاط)
- قلة الاهتمام أو المتعة في القيام بالأشياء؟
  - على الإطلاق (0 نقطة)
  - عدة أيام (1 نقطة)
  - أكثر من نصف الأيام (2 نقطة)
  - تقريباً كل يوم (3 نقاط)

التسجيل:

- قم بتجميع نقاط إجاباتك على جميع الأسئلة الأربعة.
- مجموع النقاط يتراوح بين 0 و 12.

التفسير:

- 0-2: لا يوجد ضيق أو ضيق بسيط.
- 3-5: ضيق خفيف. النظر في إجراء تقييم إضافي.
- 6-8: ضيق متوسط. يوصى بمزيد من التقييم والتدخل.
- 9-12: ضيق شديد. تحويل لتقييم نفسي سريع.

# APPENDIX F

# PATIENT SATISFACTION SURVEY

1. Did you experience pain before starting your cancer treatments? (Y/N/NA)
2. How did pain affect your daily life during your treatment course?

    a. No pain

    b. I experienced pain, but it did not limit my daily activities

    c. I experienced pain, and it limited some of my daily activities

    d. I experienced pain, and it limited most/all of my daily activities
3. How do you feel your pain was managed during your treatment?

    a. My pain was always at an acceptable level

    b. My pain was typically at an acceptable level, with periods of “breakthrough” pain

    c. My pain was rarely at an acceptable level

    d. My pain was never at an acceptable level
4. What was the level of difficulty you experienced in managing your pain at home?

    a. Easy

    b. Moderate

    c. Hard

    d. Extremely difficult
5. What additional methods or tools could have helped you manage your pain better? (Text)

6. Do you feel the medical team did all they could to control your pain? (Y/N/NA)

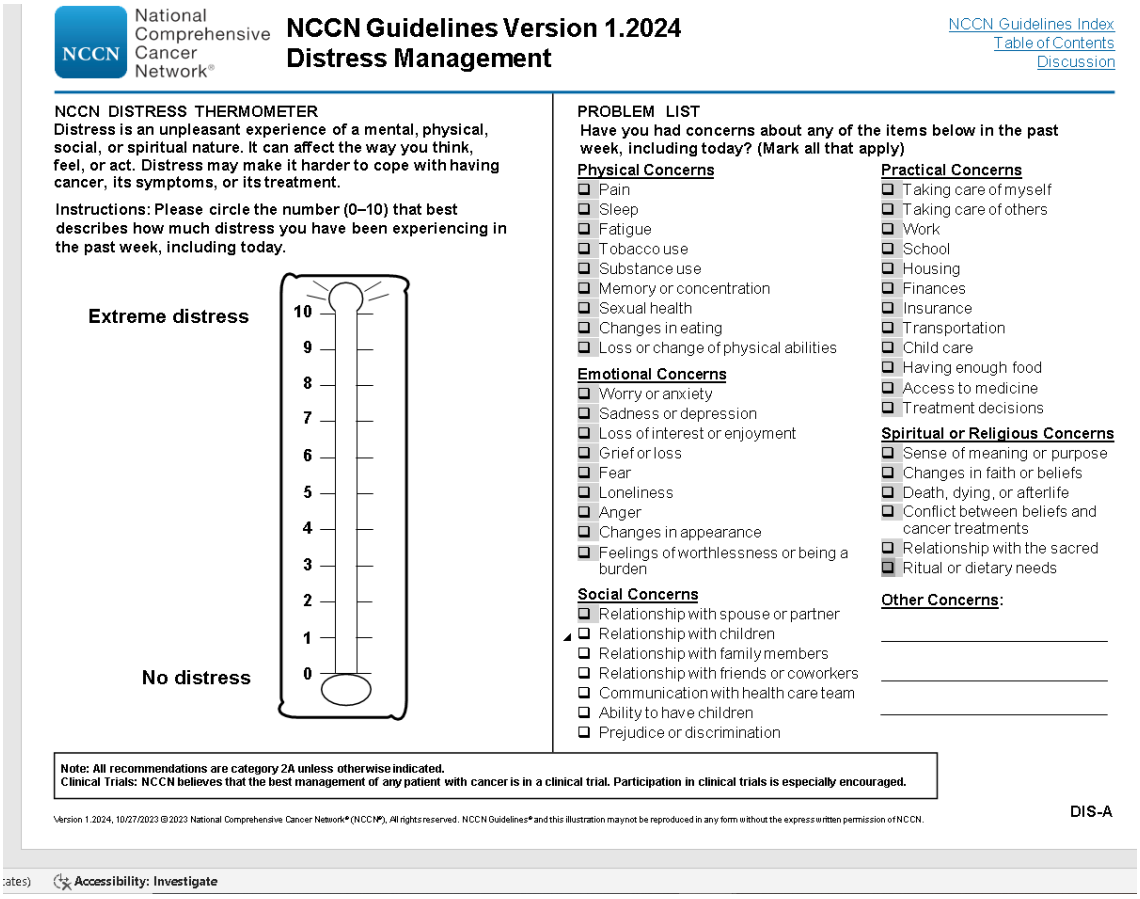
7. Was the education you received regarding pain management adequate? (Y/N/NA)

8. Did you ever contact the clinic or physician to complain of pain? (Y/N/NA)

    a. If yes, did this contact provide you with what you needed? (Y/N/NA)

# APPENDIX G

# NCCN DISTRESS THERMOMETER SCORE



National Comprehensive Cancer Network®

**NCCN Guidelines Version 1.2024**
**Distress Management**

NCCN Guidelines Index
Table of Contents
Discussion

**NCCN DISTRESS THERMOMETER**

**Distress is an unpleasant experience of a mental, physical, social, or spiritual nature. It can affect the way you think, feel, or act. Distress may make it harder to cope with having cancer, its symptoms, or its treatment.**

**Instructions: Please circle the number (0–10) that best describes how much distress you have been experiencing in the past week, including today.**

**Extreme distress**

10 9 8 7 6 5 4 3 2 1 0

**No distress**

**PROBLEM LIST**

**Have you had concerns about any of the items below in the past week, including today? (Mark all that apply)**

**Physical Concerns**
- ☐ Pain
- ☐ Sleep
- ☐ Fatigue
- ☐ Tobacco use
- ☐ Substance use
- ☐ Memory or concentration
- ☐ Sexual health
- ☐ Changes in eating
- ☐ Loss or change of physical abilities

**Emotional Concerns**
- ☐ Worry or anxiety
- ☐ Sadness or depression
- ☐ Loss of interest or enjoyment
- ☐ Grief or loss
- ☐ Fear
- ☐ Loneliness
- ☐ Anger
- ☐ Changes in appearance
- ☐ Feelings of worthlessness or being a burden

**Social Concerns**
- ☐ Relationship with spouse or partner
- ☐ Relationship with children
- ☐ Relationship with family members
- ☐ Relationship with friends or coworkers
- ☐ Communication with health care team
- ☐ Ability to have children
- ☐ Prejudice or discrimination

**Practical Concerns**
- ☐ Taking care of myself
- ☐ Taking care of others
- ☐ Work
- ☐ School
- ☐ Housing
- ☐ Finances
- ☐ Insurance
- ☐ Transportation
- ☐ Child care
- ☐ Having enough food
- ☐ Access to medicine
- ☐ Treatment decisions

**Spiritual or Religious Concerns**
- ☐ Sense of meaning or purpose
- ☐ Changes in faith or beliefs
- ☐ Death, dying, or afterlife
- ☐ Conflict between beliefs and cancer treatments
- ☐ Relationship with the sacred
- ☐ Ritual or dietary needs

**Other Concerns:**

_____

_____

_____

**Note: All recommendations are category 2A unless otherwise indicated.**
**Clinical Trials: NCCN believes that the best management of any patient with cancer is in a clinical trial. Participation in clinical trials is especially encouraged.**

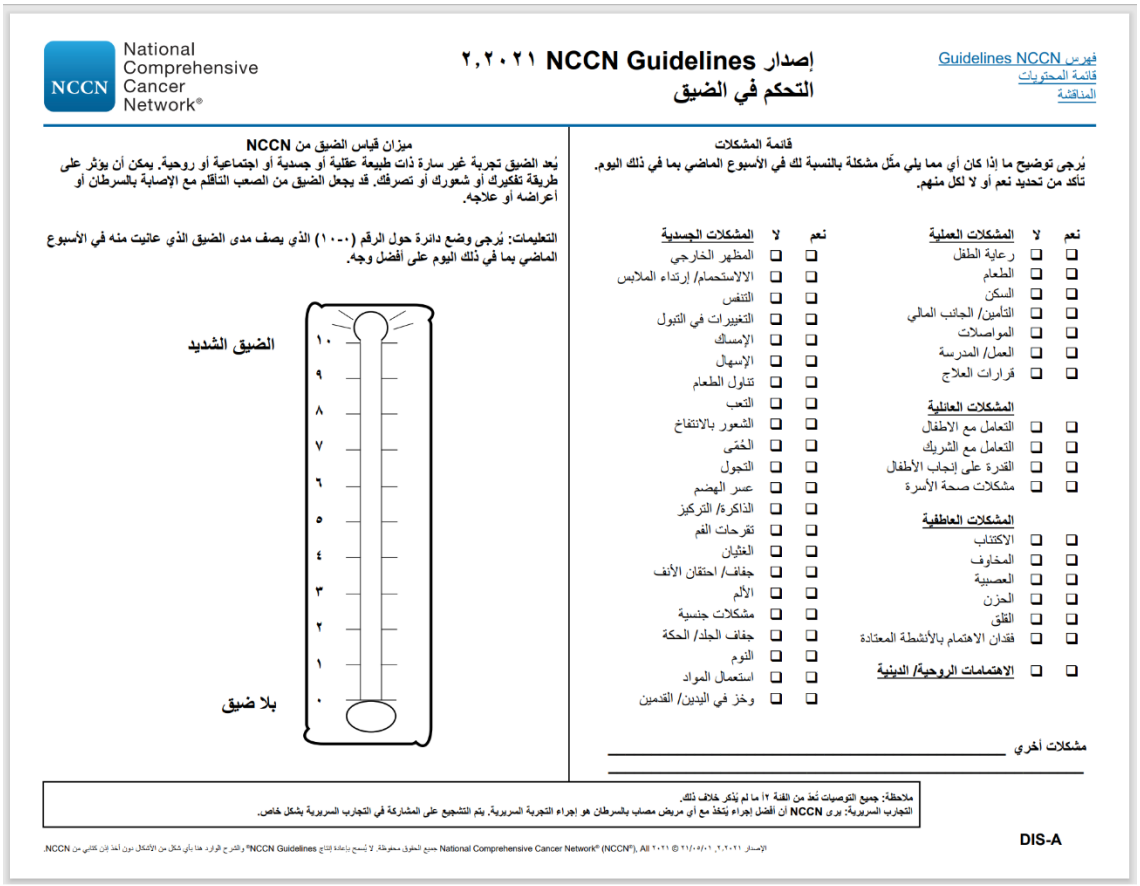


DIS-A

ates) Accessibility: Investigate

# APPENDIX H

# NCCN DISTRESS THERMOMETER SCORE



National Comprehensive Cancer Network®

**إصدار NCCN Guidelines ٢,٢٠٢١**
**التحكم في الضيق**

فهرس Guidelines NCCN
قائمة المحتويات
المناقشة

**قائمة المشكلات**

**يُرجى توضيح ما إذا كان أي مما يلي مثّل مشكلة بالنسبة لك في الأسبوع الماضي بما في ذلك اليوم. تأكد من تحديد نعم أو لا لكل منهم.**

| | نعم | لا |
|---|---|---|
| **المشكلات العملية** | | |
| رعاية الطفل | ❑ | ❑ |
| الطعام | ❑ | ❑ |
| السكن | ❑ | ❑ |
| التأمين/ الجانب المالي | ❑ | ❑ |
| المواصلات | ❑ | ❑ |
| العمل/ المدرسة | ❑ | ❑ |
| قرارات العلاج | ❑ | ❑ |
| **المشكلات العائلية** | | |
| التعامل مع الاطفال | ❑ | ❑ |
| التعامل مع الشريك | ❑ | ❑ |
| القدرة على إنجاب الأطفال | ❑ | ❑ |
| مشكلات صحة الأسرة | ❑ | ❑ |
| **المشكلات العاطفية** | | |
| الاكتئاب | ❑ | ❑ |
| المخاوف | ❑ | ❑ |
| العصبية | ❑ | ❑ |
| الحزن | ❑ | ❑ |
| القلق | ❑ | ❑ |
| فقدان الاهتمام بالأنشطة المعتادة | ❑ | ❑ |
| **الاهتمامات الروحية/ الدينية** | ❑ | ❑ |

| | نعم | لا |
|---|---|---|
| **المشكلات الجسدية** | | |
| المظهر الخارجي | ❑ | ❑ |
| الاستحمام/ إرتداء الملابس | ❑ | ❑ |
| التنفس | ❑ | ❑ |
| التغييرات في التبول | ❑ | ❑ |
| الإمساك | ❑ | ❑ |
| الإسهال | ❑ | ❑ |
| تناول الطعام | ❑ | ❑ |
| التعب | ❑ | ❑ |
| الشعور بالانتفاخ | ❑ | ❑ |
| الحُمّى | ❑ | ❑ |
| التجول | ❑ | ❑ |
| عسر الهضم | ❑ | ❑ |
| الذاكرة/ التركيز | ❑ | ❑ |
| تقرحات الفم | ❑ | ❑ |
| الغثيان | ❑ | ❑ |
| جفاف/ احتقان الأنف | ❑ | ❑ |
| الألم | ❑ | ❑ |
| مشكلات جنسية | ❑ | ❑ |
| جفاف الجلد/ الحكة | ❑ | ❑ |
| النوم | ❑ | ❑ |
| استعمال المواد | ❑ | ❑ |
| وخز في اليدين/ القدمين | ❑ | ❑ |

**مشكلات أخرى** _____

**ميزان قياس الضيق من NCCN**

**يُعد الضيق تجربة غير سارة ذات طبيعة عقلية أو جسدية أو اجتماعية أو روحية. يمكن أن يؤثر على طريقة تفكيرك أو شعورك أو تصرفك. قد يجعل الضيق من الصعب التأقلم مع الإصابة بالسرطان أو أعراضه أو علاجه.**

**التعليمات: يُرجى وضع دائرة حول الرقم (٠-١٠) الذي يصف مدى الضيق الذي عانيت منه في الأسبوع الماضي بما في ذلك اليوم على أفضل وجه.**



**ملاحظة: جميع التوصيات تُعد من الفئة ٢أ ما لم يُذكر خلاف ذلك.**
**التجارب السريرية: يرى NCCN أن أفضل إجراء يُتخذ مع أي مريض مصاب بالسرطان هو إجراء التجربة السريرية. يتم التشجيع على المشاركة في التجارب السريرية بشكل خاص.**

**DIS-A**

# APPENDIX I
# RELATED STUDIES

Table 3: Related Studies

| Article Title | Author/s | Study Type/population | Sample Size | Setting | Aim | Measures | Findings |
|---|---|---|---|---|---|---|---|
| The Benefits of Integrative Medicine for Pain Management in Oncology: A Narrative Review of the Current Evidence | Caravalho_et al. (2023) | systematic review: Adults and pediatric cancer patients | Not applicable | Cancer patients in a hospital settings. | - To evaluate current evidence on integrative medicine approaches for managing pain in cancer patients and provide recommendations for practicing physicians.<br><br>-To examine guidelines and consider integrative medicine's potential in treating cancer pain. | Pain intensity, symptom relief, and adverse events | -Integrative medicine is becoming more popular as a result of the substantial socioeconomic implications of chronic pain.<br><br>-Using integrative medicine can result in less pain, better patient outcomes, and lower hospital expenses.<br>-More than half of cancer patients have pain; integrative medicine offers an alternative to conventional methods.-<br><br>-The recommendations for practicing physicians are made clearer with the designation of acupuncture, massage, and hypnosis as having intermediate-strength evidence quality and being moderately recommended for different types of cancer pain.<br>-Particular recommendations for massage for palliative care pain, hypnosis for procedural pain, and acupuncture for joint pain related to aromatase inhibitors provide useful information for healthcare professionals. |

# APPENDIX J
# COMFORT KIT RELATED STUDIES

Table 4: Comfort Kit Related Studies

| **Article Title** | **Author** | **CAM kit ingredients** | **Study Type** | **Sample Size** | **Population** | **Aim** | **Measures** | **Findings** |
|---|---|---|---|---|---|---|---|---|
| Effect of aromatherapy massage on chemotherapy-induced peripheral neuropathic pain and fatigue in patients receiving oxaliplatin: An open label quasi–randomized controlled pilot study | Izgu et al. (2019) | Aromatherapy (peppermint oil, chamomile, and rosemary oil) | open-label, parallel-group, quasi–randomized controlled pilot study | N=46 | Adult patients with colon cancer in Turkey | To examine the impact of aromatherapy massage on peripheral neuropathic pain and fatigue brought on by chemotherapy in oxaliplatin-using individuals. | Neuropathic pain using Douleur Neuropathies 4 Questions. Severity of painful paresthesia with a numerical rating scale. Fatigue severity: Piper Fatigue Scale (PFS) measured fatigue levels. | - **Reduced neuropathic pain:** Aromatherapy massage significantly decreased the rate of neuropathic pain in the intervention group compared to the control group at week 6.<br>**- Lower pain intensity:** Aromatherapy massage significantly lowered the severity of painful paresthesia (assessed by NRS) at weeks 2, 4, and 6 compared to the control group.<br>**- Improved fatigue:** At week 8, the intervention group experienced significantly lower fatigue severity compared to the control group. |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| A Pilot Randomized Controlled Trial Evaluating Essential Oils for Chemotherapy-Induced Peripheral Neuropathy | Langley-Brady et al. (2023) | Essential oil blend (Turmeric Peppermint Geranium rose Black pepper Rosemary cineole chemotype Ginger Jojoba) | Pilot, single-blind, randomized, placebo-controlled quantitative strand | N=27 | Females with breast cancer | To ascertain the efficacy of an essential oil intervention to reduce Chemotherapy-induced peripheral neuropathy. | Measuring Pain intensity using the Short-Form-McGill Pain Questionnaire-2 weekly and the Visual Analogue Scale daily. Quality-of-life was assessed using the Quality-of-Life: CIPN-20 and Quality-of-Life Adult Cancer Survivor questionnaires | - The essential oil intervention significantly reduced pain compared to placebo in participants using pain medications such as duloxetine, gabapentin, pregabalin, tramadol, acetaminophen, aspirin, ibuprofen, along with adjuvant medications like CBD oil, hydroxyzine, cyclobenzaprine, and various over-the-counter topical. |
| The Use of Comfort Kits to Optimize Adult Cancer Pain Management | Blackburn et al. (2019) | Acupressure wrist bands Aromatherapy essential oils (Lavender Lemon Peppermint) Sleep mask Stress balls | quality project | N=242 | Adult cancer patients | To investigate the effectiveness of using comfort kits containing non-pharmacological comfort interventions on pain management and patient satisfaction in adult cancer patient | - Pain intensity assessed using the Numeric Rating Scale (NRS).<br>- Patient satisfaction with pain management measured using the Patient Satisfaction with Pain Management Scale (PSPMS). | - The comfort kit trial resulted in a significant 2.25 point reduction in average pain intensity on a 0-10 scale.<br>- The comfort kit group also showed higher patient satisfaction with pain management compared to the control group.<br>- Opioid use was significantly lower in the comfort kit group during hospitalization. |
| | | | | | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| The Effect of Acupressure Wristband on Nausea Vomiting in Breast Cancer Patients Who Received Chemotherapy | Fatma( 2018) | Acupressure wristband | Quasi experimental | N=25 | Breast cancer patients | To investigate the effect of combination acupressure wristband and antiemetic among chemotherapy induced nausea vomiting (CINV) on breast cancer patients. | - Nausea and vomiting score were measured by Rhodes Index Nausea, Vomiting and Retching (INVR) questionnaire | - Acupressure wristband significantly reduce the chemotherapy induced nausea and vomit (p value = 0.000) |
| Effect of Cold Therapy on Managing Postoperative Pain Following Breast Conserving Surgery | Emiroglu et al. (2023) | Cold therapy | Randomized controlled clinical trail | N=60 | Patient with breast cancer | To evaluate the therapeutic effect of cold therapy on managing postoperative pain following breast-conserving surgery (BCS) | - visual analog scale ( VAS) | - The mean of pain level in the cold therapy group was lower in the first 24 hours (1st, 6th, 12th, and 24th hours) of the postoperative period ($p$ = .001).<br>- Only 4 (12.5%) patients in the cold therapy group received additional analgesics after 24 hours of surgery, whereas all patients (100%) in the control group received additional analgesics ($p$ = .001). |

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