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Implementation of a progressive muscle relaxation intervention to decrease cancer patients' distress: a quality improvement project.

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Implementation of a Progressive Muscle Relaxation Intervention to Decrease Cancer Patients' Distress: A Quality Improvement Project

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Dedication

This project is dedicated to the following:

To my Husband, Clay, you are the strongest man I have ever known. Your love, protection, and sacrifices for me will allow me to help people in the way I believe God intended me to. I love you beyond what I could ever manage to put into words. Thank you for choosing me to be your wife. To my nephew, Ro, who is currently fighting cancer. When you beat this illness, I will tell you how you changed our families' lives in extraordinary ways. To my God, whose unfailing grace and love for me have given me a sense of conviction, faith, and inner peace that I have never known.

Acknowledgments

I want to thank my husband for his unconditional love and support. You sacrificed and worked a challenging job to pay for school so that we may live our dreams. I am thankful most of all for your dedication to healing for our family. I want to thank my sister, her husband, and her two children for being my glue over the past three and a half years. I would also like to thank my twin brother for his vulnerability and words of encouragement when I needed him most. And to my younger brother, Sam, your kindness, random phone calls, and encouragement kept me going; thank you. To my parents, you will always be my heroes; thank you for loving your four children more than anything in the world. And a special thank you to Dr. Schirmer and Dr. Adelstein for their generosity toward me throughout the program and their dedication to their students.

Abstract

Background: People affected by cancer often experience psychological distress that ultimately decreases their health, adherence to treatment, overall well-being, and quality of life. Research has shown that MBIs can reduce psychological distress, depression, and anxiety and increase quality of life. A needs assessment conducted within a local cancer support organization, Gilda's Club Kentuckiana, has expressed the need for providing a more comprehensive range of accessible MBIs in their programming to meet their psychosocial goals by reducing psychological distress in their members. PMR is an MBI not currently used by GCK that has been proven effective at reducing anxiety, depression, and psychological distress. It is easy to deliver and can be practiced by members outside of sessions, making it an easily accessible MBI intervention.

Setting: The project will take place at a cancer support institution, Gilda's Club Kentuckiana, located in West Louisville, KY.

Purpose: The purpose of this project is to implement a new MBI program at Gilda's Club Kentuckiana to help meet organizational psychosocial goals, improve Gilda's Club members' access to mental health interventions, and decrease psychological distress in members.

Procedures: Members registered for the programming will meet for one PMR session once a week for four weeks. Sessions will involve a pre-test distress screening, an explanation of PMR by the DNP student, a PMR group session, and a post-test distress screening.

Measures: Outcomes measured in this project are psychological distress, as measured by the Patient Health Questionnaire (PHQ-8), the Generalized Anxiety Disorder screening (GAD-7), and the National Comprehensive Cancer Network Distress Thermometer tool (NCCN DT).

Keywords: progressive muscle relaxation, cancer patients, depression, anxiety, distress

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Implementation of a Progressive Muscle Relaxation Intervention to Decrease Cancer Patients' Distress: A Quality Improvement Project

Background

Distress in cancer is an unpleasant, multifactorial experience of cognitive, behavioral, emotional, spiritual, social, and/or physical nature that interferes with one's ability to cope with a cancer diagnosis effectively, its accompanying physical symptoms, and its treatment (National Cancer Institute [NCI], 2022). Multiple studies have found that 22% to 58% of cancer patients report experiencing significant psychological distress (Carlson et al., 2012). Distress in cancer ranges from expected feelings of transience, sadness, and fear of the future to debilitating, diagnosable mental disorders such as anxiety, panic, social isolation, or depression (NCI, 2022). People diagnosed with cancer are three times more likely than the general population to experience depression, and two-thirds are likely to experience clinically significant anxiety symptoms (Linden et al., 2012). The distress caused by cancer often extends beyond the patient. Family members and friends experience distress in the form of fatigue, sleep problems, anxiety, depression, and burnout, and this is especially true if they have taken on a caregiver role in the cancer treatment process (Hudson et al., 2010).

Even with distress accompanying those affected by cancer, psychological treatments for distress are commonly overlooked and remain untreated (Linden et al., 2012). Many factors limit access to evidence-based psychological interventions in cases where distress has been correctly identified. Limited access to mental health services is a problem in the cancer community, especially considering there are detrimental consequences when distress, depression, and anxiety in cancer patients go untreated (Pitman et al., 2018; Stark & House, 2000). These consequences

include a decreased adherence to cancer treatment, lower quality of life, and a higher risk of mortality (Pitman et al., 2018; Stark & House, 2000).

External Evidence

Nationally, access to psychological therapies for patients with cancer in psychological distress varies widely (Pitman et al., 2018). In areas with major cancer centers, mental health therapies are sometimes integrated into support services related to psychological distress, but these benefits are specific only to these areas (Pitman et al., 2018). Even when access to healthcare services is abundant, healthcare insurance companies often fail to provide adequate mental health coverage (American Psychological Association [APA], 2019). A law instated in 2008 required the coverage of mental and behavioral health services to be comparable to physical health coverage (APA, 2008). However, a survey by the APA (2019) found that over 90% of Americans are unaware of this law. Another insurance-related issue cancer patients face is that mental health providers can choose whether to accept specific insurance. Despite the rising costs of owning and operating a mental health practice, insurance companies have neglected to increase the reimbursement rate for mental health providers over the past 20 years (APA, 2019). This has resulted in insurance companies struggling to retain mental health professionals within their networks (APA, 2019). With providers accepting fewer insurances and moving towards out-of-pocket payment, access to mental health therapies is further reduced. This is especially true for cancer patients, as the financial burden they face regarding treatments is significant.

In 2020 the annual medical cost of cancer in the United States was around $157.8 billion, an increase from an average of 124.6 billion in 2010 (Mariotto et al., 2020). The rise in cost has caused third-party payers to shift a portion of the increased costs directly to cancer patients

through copayment and coinsurance. Among a group of insured cancer patients that did not request copayment assistance, 85% reported experiencing financial hardship related to cancer expenses, with 27% stating the burden was either significant or catastrophic (Sharp et al., 2012).

On the state level, data collected from 2018 revealed that Kentucky has the highest rate of new cancer diagnoses of any state in America (Centers for Disease Control, 2020). It is also estimated that over a quarter of people living in Kentucky struggled with depression in 2020, which is expected to be much higher as the number of people with clinical depression is rising exponentially (United Health Foundation, 2021). From 2015 to 2019, reports of adults experiencing frequent mental distress, including anxiety, increased by 4.2% (United Health Foundation, 2019). The growing number of cancer cases in Kentucky, coupled with the increasing number of Kentucky residents in psychological distress, puts even further demand on Kentucky's mental health providers. In Kentucky, there are an estimated 25 mental health providers for every 10,000 people (United Health Foundation, 2021). The United Health Foundation (2021) also estimates that Kentucky has one of the larger proportions (74.29%) of its population living in mental health shortage areas. These troublesome numbers have resulted in Kentucky receiving the designation of a Federal Health Professional Shortage Area (HPSA) (Health Professional Shortage Area, 2021). Due to their consistent interaction with patients, mental health professionals are in the best position to deliver psychiatric interventions and therapies. A shortage of these individuals contributes widely to the problem of mental health care accessibility within the cancer community.

Problems also exist at the local level in Louisville, Kentucky. Louisville is the largest urban center in Kentucky, with an estimated 628,594 residents, per the United States Census Bureau (2021). A Louisville community health needs assessment found that around 30% to 40%

of residents expressed concerns about mental health care disparities throughout the city (Department of Public Health and Wellness, 2018). Mental health was also designated as a high-priority issue in the inner east and central regions of Louisville. Louisville has three main community mental health care organizations (CMHCO): Bridgehaven, Centerstone, and Wellspring. These organizations work with emergency care services in Louisville including the University of Louisville Peace Hospital, Central State Hospital, The Brook, and University of Louisville Emergency Psychiatric Services. Along with these organizations, there are multiple outpatient psychiatric services that take insurance, require private pay, or provide both options. Two hospital systems in the community, Norton and the University of Louisville Health, offer mental health services specifically to cancer patients. Louisville is also the home of Gilda's Club Kentuckiana, a cancer support organization that offers mental health services to community members impacted by cancer. Even with these services, according to HPSA (2021), Louisville is one of the indicated areas of mental health professional shortages. Better access to behavioral therapies is imperative to meet the mental health needs of Louisville residents impacted by cancer.

The distress and mental health needs that accompany cancer cause harm to patients and their families if they are not treated. Aspects like limited access to mental health care and the financial burden of cancer make it difficult to attain proper care for these issues.

Needs Assessment

One local community cancer organization in Louisville, Kentucky that understands this issue is Gilda's Club Kentuckiana (GCK). GCK is one of the 40+ chapters of the national organization known as the Cancer Support Community. Working together with their satellite chapters, their vision is to foster a world in which no person faces cancer alone (Gilda's Club &

Cancer Support Community, 2022). GCK is a non-profit organization that offers its members social and emotional support free of charge by providing different programs in a nonresidential, home-like setting. These include but are not limited to support groups, educational classes, health and wellness workshops, social events, some individual/family counseling, networking groups, lectures, and many more. Local chapters provide meeting spaces for community members dealing with cancer or anyone who has been affected by cancer in some way. "At Gilda's Club Kentuckiana, our mission is to ensure those impacted by cancer are empowered by knowledge, strengthened by action, and sustained by community. We are dedicated to creating a support system unlike any other" (Gilda's Club Kentuckiana [GCK], 2022).

A needs assessment was completed with GCK's Chief Operating Officer, Lori Mangum, where a need for improved access to psychosocial support programs was identified. Although GCK has its own mental health professionals to offer counseling support, these sessions are limited. If they are unable to meet the demand, GCK staff can refer its members to trusted mental health resources in the community outside the organization; however, their aim is to provide programming in-house for their members that enables and empowers them to combat psychological distress in their daily lives. The stakeholders of GCK resounded that while many of the mindfulness-based programs they currently provide are aimed at improving psychological distress, the organization dedicates itself to expanding the range of interventions that are easily conducted and accessible. The specifically voiced the need for more mindfulness-based interventions (MBI) offerings for members experiencing psychological distress. According to the COO, the psychological distress of members is a key issue GCK aims to target. At the time of the needs assessment, the COVID-19 pandemic had only compounded the psychological distress members were facing (L. Mangum, personal communication, September 6, 2021). The

immunocompromised nature of the cancer population required that GCK prioritize the safety of its members and move its programming online. GCK needed programs to support psychological distress that members could learn and use outside of programming.

Literature Review

The purpose of this literature review was to examine the effect of stress on the cancer community and analyze solutions to this problem that fit the specific needs of GCK.

Identification and Selection of Studies

Electronic databases (PubMed, CINAHL, and PsychInfo) were searched for publication from the first available date to 2021. Search terms were used to find randomized control trials and meta-analyses on MBIs and cancer-related distress. A PICO approach was used to search the databases combining the following terms: *Population* (cancer) AND *Intervention* (mindfulness-based intervention OR mind-body intervention or progressive muscle relaxation OR mindfulness) AND *Outcome* (distress OR psychological distress OR anxiety OR depression OR mental health). Due to its restrictive effect, no search for *Comparison* was used. In the literature review on the selected topic, 20 articles were chosen and totaled 5,449 participants. The sample sizes of all the studies ranged from 36 to 272. The body of evidence selected for this literature review was meticulously graded for clinical relevance and quality. Out of the 20 studies collected, 14 were graded at level 2 evidence or above. While the level of evidence was high, the sample sizes of the studies, even collectively, were weak compared to the population of people struggling with cancer. According to the National Institute of Health (2020), as of January 2019, there were an estimated 16.9 million cancer survivors in the United States. This number is expected to increase vastly over the next ten years. While both women and men were studied, women were more predominantly studied. The most common cancer studied was breast cancer.

Literature Review

Distress in cancer patients

Among all the difficulties cancer patients must face, unmet psychological needs are one of great proportions (Baker-Glenn et al., 2011). Despite psychosocial intervention, 48% of cancer patients reported experiencing psychological distress, and two-thirds also reported having unmet psychosocial needs (Baker-Glenn et al., 2011). Carlson et al. (2012) also found that a majority of cancer patients report they are in significant distress. This was echoed by Absolom et al. (2011), who reiterated that psychosocial distress symptoms in cancer patients are well documented throughout the literature. Even though well documented, the detection and treatment of distress in cancer continue to pose challenges as patients consistently report their need for psychological support (Absolom et al., 2011). Distress in cancer can result in a multitude of negative consequences. One study found that chronic distress plays a significant role in cancer progression (Nagaraja et al., 2013). Other studies have shown that distress with cancer can cause a decreased adherence to cancer treatment, lower quality of life, and a higher risk of mortality (Pitman et al., 2018; Stark & House, 2000). Zabora et al. (2001) further confirmed these findings when they found that decreased quality of life and increased healthcare costs were consequences of psychological distress in cancer. The distress caused by cancer also extends beyond the patient themselves. Family members and friends experience distress in the form of fatigue, sleep problems, anxiety, depression, and burnout; especially if they have taken on a caregiver role in the cancer treatment process (Hudson et al., 2010).

Mindfulness-Based Interventions (MBIs)

Carlson et al. (2012) indicate that evidence-based interventions used for depression and anxiety symptoms are appropriate psychological treatments for psychological distress. Anxiety

and distress-related disorders are the most predominant mental health problems worldwide (Kessler et al., 2007). First-line treatment for these disorders are currently antidepressants and cognitive behavioral therapy (CBT) (Katzman et al., 2014); however, it is estimated that only about 60% of patients respond favorably to these modalities, and often times residual distress symptoms linger (Bystrisky, 2006; Springer et al., 2018). Over the past 20 years, evidence has grown in support of mindfulness-based interventions (MBIs) as an alternative form of treatment for distress-related disorders. Mindfulness is defined as paying attention in a particular way, on purpose, in the present moment, and nonjudgmentally (Carlson, 2016). MBIs enable individuals to maintain awareness of the present moment; disengage themselves from unhealthy beliefs, thoughts, or emotions; and heighten their sense of emotional balance and well-being (Carlson et al., 2014). MBI modalities train individuals to cultivate mindfulness and incorporate its practice into daily life (Toussaint et al., 2021). They include interventions such as mindfulness meditation, body scans, and progressive muscle relaxation.

Across several meta-analyses, the literature suggests that MBIs can significantly improve anxiety and depression in cancer patients (Cillessen et al., 2019; Piet et al., 2012; Xunlin et al., 2019). In a meta-analysis comparison study of MBI versus CBT, it was observed that MBIs were superior at reducing distress symptoms (DSMC = − 0.45; 95% CI−0.7 to −0.21; p=0.0003) (De Abreu Costa et al., 2018). One meta-analysis found that MBIs produced a clinically significant reduction in anxiety and depression scores across 9 separate randomized control trials (RCT) (Hedges's g: 0.37 and 0.44) (Piet et al., 2012). Another analysis of 28 RCTs found statistically significant pooled effects of MBIs on decreasing psychological distress post-MBI intervention (Hedges's g = 0.32; 95% CI: 0.22-0.41; P < .001) and at six-month follow-up (g = 0.19; 95% CI: 0.07-0.30; P < .002) (Cillessen et al., 2019).

PMR

GCK offers multiple MBIs to decrease distress with its programming. One intervention they were not practicing was progressive muscle relaxation (PMR). PMR is a specific relaxation technique that involves tensing and relaxing muscle groups in a sequence throughout the whole body (Peterson, 2020). The goal is to relieve tension, activate the body's autonomic response, and relieve psychological distress.

PMR was developed by Dr. Edmund Jacobson in the early 1920s and is one of the simplest, easy-to-learn, and cost-effective techniques for reducing distress (Mirgain & Singles, 2016). PMR is a two-step practice where first, mild tension is created in specific muscle groups of the body, followed by relaxation of the muscles to drain tension away. Participants move through the body alternately tensing and relaxing muscle groups in a certain order to deepen the mind-body connection and train the body to let go of pent-up stress (Mirgain & Singles, 2016). PMR can be practiced sitting up or lying down. Sessions usually last from 10-15 minutes and can be done through a guided session or on one's own. Once the skill is mastered, focused versions can be practiced by creating tension and relaxing in only certain muscle groups (Mirgain & Singles, 2016). It is recommended to start at one part of the body and work systematically from one side to the other and either up to down or down to up (Mirgain & Singles, 2016).

Several studies in the literature resounded that PMR is a highly effective therapy for cancer patients (De Paolis et al., 2019; Parás-Bravo et al., 2017; Zhou et al., 2015). De Paolis et al. (2019) found that post-PMR intervention depression and anxiety scores decreased by a clinically significant 32%, and total symptom distress scale (TSDS) scores improved by 23% ($\alpha = 0.05$; $p < 0.0001$). Significant improvements in emotional well-being and quality of life were found in a study of 272 patients with different oncologic pathologies post-PMR intervention ($p <$

0.001) (Parás-Bravo et al., 2017). A study with PMR involving women with breast cancer showed that the intervention group had significant improvements in both depression and anxiety post-treatment ($F = 20.31$, $P < 0.001$; $F = 5.41$, $P = 0.017$) (Zhou et al., 2015).

PMR was found to be helpful in a variety of populations. In a study with 60 healthy undergraduate students, it was found that PMR groups scored significantly higher on follow-up assessment relaxation scores when compared to the control group (mean difference = 0.43, $p=0.046$) (Toussaint et al., 2021). PMR was introduced to a sample of people with schizophrenia and was shown to be successful at reducing anxiety and psychological distress (Vancampfort et al., 2013). Beck Anxiety Inventory Scores from this study dropped by 57.3% in acute inpatients, compared to 13.3% in the control subjects; and the Subjective Exercise Experiences Scale used to measure psychological distress dropped by 35.3% and –25.7% vs. –0% and +2.5%, respectively (Vancampfort et al., 2013). In patients with pulmonary arterial hypertension (PAH), PMR was implemented and the number/proportion of patients with clinically important anxiety or depression significantly decreased ($p <0.05$) (Li et al., 2015). A population in which PMR has not been studied is those who have been indirectly impacted by cancer. More research must be done to understand if PMR is effective in the family and friends of cancer patients that are also known to experience psychological distress.

Several studies found that therapies like PMR can be delivered outside outpatient psychological or primary care (Hoifodt et al., 2011; Keefe et al., 2005), which suggests that with proper education, PMR can be administered or completed by non-healthcare individuals to improve the psychological distress of people affected by cancer (Keefe et al., 2005).

A theme found through the literature analysis was the lack of information on the efficacy of internet-delivered PMR (iPMR). The literature did suggest that internet-delivered MBIs

(iMBIs) provide the same education and strategy effectiveness as face-to-face-delivered MBIs (Nissen et al., 2019); however more studies specifically related to iPMR are necessary. The innovative delivery method of internet-delivered psychological interventions has the potential to overcome typical barriers met with in-person therapy. These include issues regarding location, mobility, inconvenience, stigma, and time constraints. Internet-delivered interventions are also more cost-effective (Hedman et al., 2012). The advancement of technology has undoubtedly opened more doors regarding the accessibility of MBIs, however, the literature on PMR has not caught up with this rapid advancement. With the increasing costs of cancer previously discussed, providing and teaching a skill that relieves some psychological distress and can be performed outside the healthcare setting would allow cancer patients to help heal their bodies and minds in a cost-effective way (Mirgain & Singles, 2016)

Barriers

The small sample sizes and quantity of articles related to PMR for cancer patients were a barrier within this literature review. Without a substantial body of evidence or a large group of people studied to support the use of PMR in cancer patients, it is difficult to conclude an inference. Also, the research on PMR is lacking in other populations besides cancer patients. The use of MBIs in the treatment of anxiety and depressive symptoms is well documented; however, the use of MBIs in the treatment of distress and psychiatric disorders is relatively new and should be considered preliminary in nature. It was also identified that previous studies on MBIs have been on two sides of the spectrum regarding their scope. For example, they are either narrow in their focus- evaluating a specific intervention on only one type of cancer patient; or cultivated in their overview of collective mindfulness-based interventions. There were no comparative studies available amongst different modalities of PMR. It must also be noted that a large body of

literature is dedicated to non-pharmacological approaches involving people's depression and anxiety; however, the body of evidence specifically related to cancer patients dealing with these illnesses dwindles in comparison. Another limiting factor was that no previous meta-analyses on this topic have explored between-study differences in either patient, cancer, or intervention characteristics. Meaning that MBIs such as mindfulness cognitive behavioral therapy (MCBT) versus mindfulness-based stress reduction MBSR versus PMR, etc., have rarely been evaluated on their comparative effectiveness. Knowing how between-study differences influence the efficacy of mindfulness interventions on psychological distress would further the clinical knowledge of the best approaches to take. The lack of information on the efficacy of iPMR is another barrier in the body of literature. With healthcare becoming more reliant on technology by the day, it seems reasonable that more research in this area will be conducted.

Summary

The literature review yielded a detailed look at the mental distress that accompanies cancer, the use of MBIs as an alternative form of treatment for distress-related disorders, and the efficacy of a particular MBI that GCK has never used: PMR. Most importantly, the review of the literature indicated that there is limited information available regarding the effects of PMR on cancer patients and their affected families/friends, thus supporting the purpose of the proposed DNP project. In the next section, conceptual framework, rationale for and feasibility of the implementation of PMR at GCK will be discussed. Following that section, the project methods, data collection, data analysis, and evaluation plan will be illustrated.

Conceptual Framework

For this project, the widely used Iowa Model of Evidence-Based Practice served as the conceptual framework. As advanced practitioners and their teams work to launch, implement,

and revise organizational systems, quality improvement models provide a roadmap for navigating the project from start to finish. The Iowa Model was chosen because it is the model GCK uses to introduce new interventions into their programming.

Step one of the Iowa Model - selecting the topic - was completed through a needs assessment with the chief development officer at GCK. Providing access to more mindfulness-based strategies that decrease psychological distress was chosen as the organizational need, and a team was formed to begin project development. Step two of the Iowa Model is team formation, which is essential because a clinical leader cannot successfully implement and complete a project without the support and cooperation of multiple aspects of an organization (LoBiondo-Wood et al., 2018). With an organizational need and a team defined, an EBP question was constructed in PICO (population, intervention, comparison, and outcome) format to guide further research. Steps three through six involve assembling relevant research, synthesizing and disseminating the research, and deciding whether the literature supports a change. These steps were completed by gathering evidence through multiple databases, including CINAHL, PubMed, and PsychInfo. Once collected, each article was synthesized, vetted, and graded. From there, the entire collection of evidence gathered was evaluated. Once the evidence collected was critiqued and synthesized, several of the chosen articles were dismissed due to a lack of scientific merit. From the evidence gathered, progressive muscle relaxation (PMR) proved to be an effective therapy for psychological distress. The implementation of this into GCK's programming was presented to leaders at GCK and was accepted. The DNP student developed the project with the help of GCK members and the DNP committee team. The remaining steps of the Iowa model, steps seven through nine, involved developing, implementing, disseminating, and evaluating the evidenced-based intervention and are discussed in detail later on.

Rationale & Feasibility

A designated high-priority Healthy People 2030 goal in the United States is to increase the mental and physical health-related quality of life of cancer survivors (Office of Disease Prevention and Health Promotion [OASH], 2020). The literature review made clear that people affected by cancer often experience psychological distress that ultimately decreases their health, adherence to treatment, overall well-being, and quality of life. Studies have documented the value of conducting interventions to decrease distress in cancer. These studies have shown that MBIs can decrease psychological distress, depression, and anxiety and increase quality of life. A needs assessment conducted within a local cancer support organization, Gilda's Club Kentuckiana, has expressed the need for providing a wider range of accessible MBIs in their programming to meet their psychosocial goals by reducing psychological distress in their members. They specifically wanted to improve the accessibility of MBIs by providing easy-to-use MBIs that did not require a mental health professional to conduct. PMR is an MBI not currently used by GCK that has been proven effective at reducing anxiety, depression, and psychological distress. It is easy to conduct and cost-effective (Mirgain & Singles, 2016). The DNP student proposed that participation in PMR programming would decrease distress scores in GCK members while improving their access to psychosocial interventions in the GCK community. The project also aligned with all three of the organizational goal categories: increasing member engagement, meeting, or exceeding the operating budget, and expanding the range and accessibility of MBIs the organization offers. The DNP project implemented and evaluated a PMR program at GCK.

Project Feasibility

Several factors make the intended implementation and outcomes for this project feasible. The first is that the number of staff members at GCK is relatively small, and they have both individually and collectively shown excitement for implementing PMR. The guiding philosophy of GCK is entirely member-centered (L. Mangum, personal communication, February 19, 2022). From their programming to their decision-making, to their implementation and revision of available content, at the core, is always what is in the best interest of the members of GCK. Leaders in GCK gather feedback from their members, synthesize the feedback, and pivot or stay on the course depending on what the data and anecdotal evidence are showing them.

Also, GCK is continually updating, adjusting, creating, implementing, and evaluating its programming. The processes GCK has in place have allowed them to provide their members with advanced and comprehensive, member-based programming and dynamic pivoting when the needs of the members and the organization change (L. Mangum, personal communication, February 19, 2022). This provided a seamless implementation of PMR into their already existing programs. An overview of Gilda's Club Kentuckiana through the lens of the 5P model was completed and revealed that the implementation of PMR was promising. The alignment of all five Ps – purpose, principals, processes, people, and performance – is evident throughout this organization. This alignment catalyzed strategic management by DNP students, staff members, and future leaders looking to incorporate best practices into the member experience.

Financial Impact of Project

Gilda's Club Kentuckiana and all Gilda's Clubs across the United States are entirely funded by contributions from their local communities. They do not receive any general funding from the National Gilda's Club organization, meaning that all programming is made possible through the generosity of individual donors and corporate and foundation contributions. Gilda's

Club continues to receive donations and volunteers because of the rich programming and uniting support they consistently provide to their members. The financial impact of implementing the DNP project is aimed at maintaining the financial goals GCK already has in place. Their goal is to be fiscally responsible with the donations that keep the organization running and meet or surpass it. The DNP project fits seamlessly into the already successful operation of the company. When the organization's needs require change, leaders start by researching the problem or concept at hand. They then synthesize that information and collaborate on the best course of action. Both steps were accomplished by the DNP student, saving GCK the time and money allocated for these parts of the process. Some help from staff to connect with members was necessary; however, the time spent doing this was minimal and already a part of the duties of GCK staff. The DNP student developed the plan for implementation, data collection and dissemination, also saving the organization time and money. The DNP student's involvement in implementing new programming will allow GCK revenue to grow as a direct effect of the conservation of time and money spent providing the new programming to GCK members. The financial burden of the DNP project is minimal, if not entirely non-existent.

PMR is an intervention that is low-cost, easy to conduct, and can be administered by a non-healthcare professional at little to no cost to the GCK institution, thus, making it a financially responsible and feasible program to implement.

Setting, Purpose & Aims

Previous PMR research and its effects on psychological distress in the cancer community have shown promising results, however, more studies are necessary. In this study, the effects of PMR on cancer patient distress will be the priority. The following methodology section seeks to

explain the “what and how” of the project and includes the project layout, aims, implementation plan, measurement tools, data collection methods, data analysis, and ethics.

Target Population and Setting

Members of GCK are the target population for the DNP project. GCK has two locations, one on the East side and one on the West side of Louisville. The project will take place in person at their West Louisville location.

Project Purpose and Aims

The purpose of this project was to implement a new MBI program, specifically a PMR intervention, at Gilda’s Club Kentuckiana to help meet organizational psychosocial goals, improve Gilda’s Club members’ access to mental health interventions, and decrease psychological distress in members. The addition of the PMR program into GCK aimed to 1. improve member’s satisfaction with GCK’s programming as measured by a Likert scale, 2. decrease member’s distress as measured with the distress thermometer before and after the intervention, 3. improve access to mental health therapies for cancer patients experiencing psychological distress, 4. Provide GCK with evidence-based mindful programming that is sustainable, effective, low cost, and easy to conduct.

Ethical Considerations/Permissions

This project was approved by GCK’s Chief Operating Officer and GCK’s national research and technology team (Appendix H). The proposal for this project was submitted to the University of Louisville IRB for approval before implementation. IRB approval was obtained in January 2023. Consent from participants was collected and confirmed before implementation began. All information remained HIPPA compliant, and anonymous member identifiers were used to protect member confidentiality. Any sensitive member information collected by the DNP

student remained behind two locked entities except when accessed by the DNP student until the project ended. Upon project completion, identifying or sensitive patient information was destroyed.

Methods

Project Design

This quality improvement project used a mixed methods design to determine the effect of PMR on psychological distress in GCK members. The independent variable in this project was PMR. The dependent variables were distress, depression symptoms, anxiety symptoms, and member satisfaction. The sample was members of GCK who registered to be a part of the four-week PMR program implementation at GCK. In this mixed methods design, quantitative data was collected in the form of surveys, and qualitative data was collected via open-ended questions answered by participants at the conclusion of the PMR sessions. The surveys were completed individually and online by utilizing each participant's personal device. Participants who did not have a functioning device were given a paper copy and pen to fill out. Surveys were completed in a pre and post-test design. Survey questions were created using the evidence-based tools: PHQ-8, GAD-7, Distress Thermometer, and Likert scales. Participants took the PHQ-8 and GAD-7 at the first and last day of programming, while the Distress Thermometer was used before and after each individual PMR session. A Likert satisfaction scale survey that included four open-ended questions was completed following the conclusion of the program. The data collected from each of these surveys was stored on the SurveyMonkey platform and transferred over to an excel sheet for further organization. The excel sheet addressed participants by their assigned project identifier to protect member information and confidentiality. Once collected, the

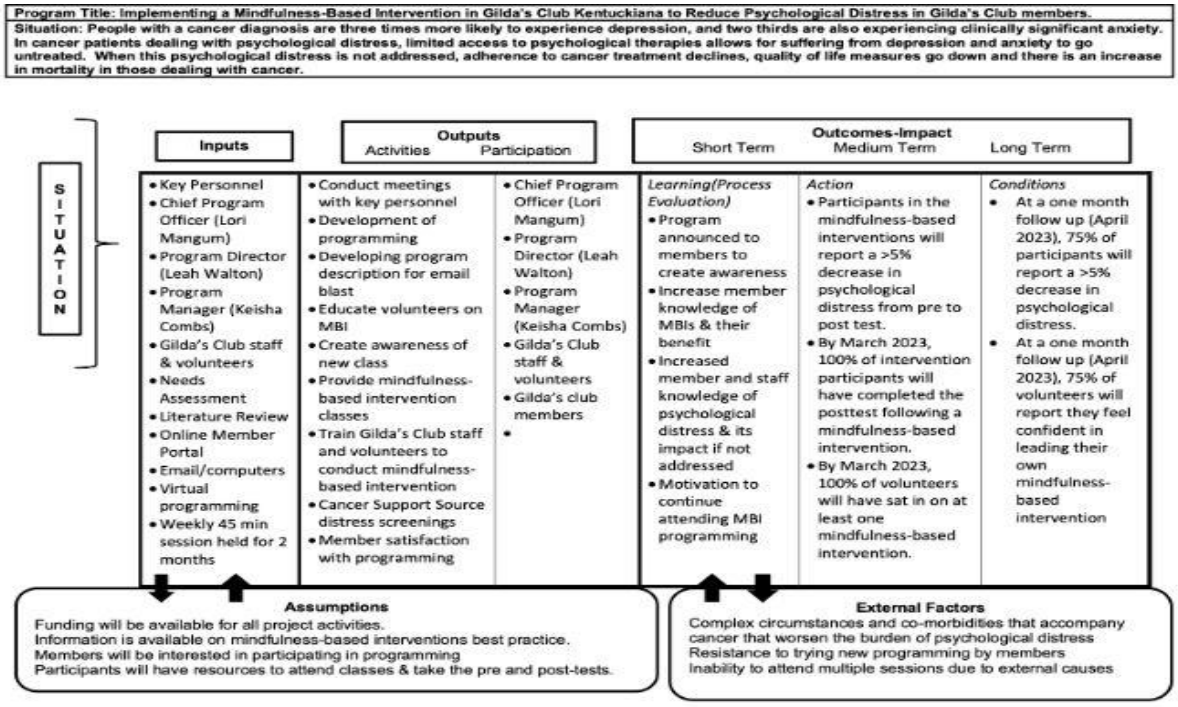
data was disseminated and analyzed using various statistical methods. The project design is explained in detail in the following paragraphs.

Logic Model

Figure 1 depicts the logic model of the implementation plan. The purpose of the logic model is to "depict the sequence of events that identifies program resources, matches them to needs, activates the service process, completes the service process and measures results which includes the project's short-term, medium, and long-term goals" (Kettner et al., 1998, p. 6).

Figure 1

Logic model



Timeline

The obtainment of IRB project approval was confirmed in January 2023. Following approval, the intervention started in mid-January and proceeded for four weeks. Upon

completion of the program, data was analyzed, and the results were disseminated by April 2023 (Appendix H).

Procedures

GCK works on a bi-monthly calendar programming schedule where the programming schedule is decided upon two months in advance. For example, the program calendar for January 2023 through February 2023 is decided upon by the end of November 2022. At the 2022 November meeting, the implementation of PMR into programming was finalized and added to the 2023 GCK member calendar by the program manager. The project description and sign-up were then sent to members via their monthly update. This included a description of the project and the new PMR program available to them (Appendix A). This information was updated on the GCK website, where members have twenty-four-hour access. Members registered for the program online through their member portal or by calling the facility and expressing interest. A running list of participants was kept up to date as members registered and GCK's COO shared this information with the DNP student. Upon registering, members were assigned a unique participant identifier, their street name and the last four digits of their phone number. This assured their information would be kept confidential. Members signed the consent form and took the initial pre-tests via SurveyMonkey on their first day of programming.

Intervention

The PMR programming consisted of a four-week course in which members were expected to attend one PMR session every Tuesday from mid-January to mid-February. The DNP student provided PMR programming in 30-minute increments at 9 am, 10 am, 12 pm, 3 pm, and 5 pm. This began Tuesday, January 24th, 2023, and concluded on February 14th, 2023. PMR sessions were held in person at GCK's West Louisville location in one of their private group

meeting rooms. Recruitment for the program continued until the last session on the first day of programming. Recruitment included posting flyers around Gilda's Clubs organization and attending several GCK events to spread the word.

On the first day of programming, participants took the pre-test screenings consisting of the PHQ-8 and the GAD-7 (Appendix D and E). They also filled out demographic information via SurveyMonkey that consisted of age, race, gender, relationship with cancer, and cancer type (Appendix C). Each individual PMR session involved an explanation of PMR by the DNP student, pre-test distress screening, a PMR group session, and a post-test distress screening (Appendix B). No additional personnel were required to conduct the sessions. The PMR meditation was played via the group room television by connecting the DNP student's computer.

The student used pre-recorded 15-minute PMR recordings available on YouTube or relaxation applications that guided members through tensing and relaxing 14 different muscle groups (Connelly et al., 2015). The content was free to the organization and allowed members to access the PMR sessions if they chose to use the interventions outside of the provided sessions.

At the final PMR session, in addition to the usual distress screening done at each session, participants took a post-test that included the PHQ-8 and the GAD-7, as well as a member satisfaction survey in the form of a Likert scale. The satisfaction survey included four open-ended questions:

1. What did you like or dislike about the program?
2. What could be done to improve the program?
3. Did you use the PMR technique outside of the four in-person sessions? If so, how often and under what circumstances?

4. Are there any information/life circumstances you feel would be relevant or essential for the researchers to know regarding your mental health/well-being during the past four weeks of this programming?

Measures

The scoring tools utilized for this project were the Patient Health Questionnaire Depression Scale (PHQ-8), the Generalized Anxiety Disorder Self-Report Scale (GAD-7), and the Distress Thermometer (DT). A Likert scale was provided to measure attitudes, knowledge, perceptions, areas for improvement, potential external factors, and overall thoughts of the members attending the programming (Appendix G). Also, open-ended questions were given to qualitatively assess members' satisfaction with the program. The assessment of standardized outcomes was essential for a successful project, and great care was used in selecting standardized assessment instruments. The strong psychometric properties of these screenings are described in the following section.

PHQ-8

The PHQ-8 was developed and used by state health departments in 2006 to assess the current prevalence and impact of depression in the United States (Kroenke et al., 2009). The PHQ-8 is a Likert scale of eight questions to identify clinically significant depression. The PHQ-8 was recommended by GCK's National Research and Technology team over the PHQ-9 because it leaves out suicidality questioning found in the PHQ-9. The PHQ-8 asks participants to select the response that best describes how often they have been bothered by a particular depressive symptom in the past two weeks. Participants can select from the following: 0 to 1 day = "not at all," 2 to 6 days = "several days," 7 to 11 days = "more than half the days," and 12 to 14 days = "nearly every day," with points (0 to 3) assigned to each category, respectively. The

scores for each item are summed, with the highest possible score being 24 points. A score of 0 to 4 represents no significant depressive symptoms; a score of 5 to 9 represents mild depressive symptoms; 10 to 14, moderate; 15 to 19, moderately severe; and 20 to 24, severe (Kroenke et al., 2001).

The PHQ-8 was administered with the GAD-7 on the first day of programming before participating in the PMR session. After the fourth and final PMR session, these tools were administered again, and differences in the scores from the beginning to the end of the project were examined.

Psychometric properties

According to Kroenke and Spitzer (2002), a PHQ-8 score of greater than or equal to ten has 88% specificity and sensitivity for major depression. It is important to note that regardless of diagnostic status, this score typically represents clinically significant depression. In a study designed to test the reliability and validity of the PHQ-8, internal consistency reliability (Cronbach α) was 0.82 (Pressler et al., 2010). Construct validity was evaluated by confirmatory factor analysis and was determined a good fit, Pearson correlation coefficients ($r = 0.73$, $P < .001$ when compared to the Living with Heart Failure Questionnaire), and analysis of variance ($\chi 2$ value of the PHQ-8 was 24.75 with 18 degrees of freedom ($P = .13$)) (Pressler et al., 2010).

GAD-7

The GAD-7 was born out of a need for a brief and accurate scale to identify possible cases of generalized anxiety disorder (GAD) (Spitzer et al., 2006). The GAD-7 consists of 7 questions in the same format as the PHQ-8, except with questions related to anxiety symptoms. The maximum total score possible is 21 points, with 0-4 points = no to low risk, 5-9 = mild risk, 10-14 = moderate risk, and 15-21 = severe risk (Spitzer et al., 2006). The GAD-7 was

administered immediately upon members signing up for the DNP project and following their final PMR session.

Psychometric Properties

Assessment of construct validity of the GAD-7 was completed through the analysis of covariance to identify the relationship between anxiety severity on the GAD scale and the Short Form Health Survey (SF-20, self-reported disability days, and physician visits; and was determined to be good in all categories (Spitzer et al., 2006). Sensitivity and specificity were (89%) and (82%), respectively. Internal consistency was excellent (Cronbach $\alpha = .92$), and test-retest reliability was also sufficient (intraclass correlation - .83) (Spitzer et al., 2006).

Distress Thermometer

In response to the recommendation from the National Comprehensive Cancer Network (NCCN) that routine screening for distress is performed in cancer patients, the Distress Thermometer was created (Ownby, 2019). The NCCN Distress Thermometer tool (NCCN DT) is a Likert scale that resembles a thermometer, in which patients rate their distress over the past week from 0 (no distress) to 10 (extreme distress) (Ownby, 2019). The tool was utilized in the DNP project before and after every PMR session to assess the immediate response to the therapeutic sessions (Appendix F).

Psychometric Properties

Internal consistency was confirmed to be good (Cronbach $\alpha = \geq .90$) (Haverman, 2013). Sensitivity of the scale was (83%), and specificity was (68%) (Donovan et al., 2013). Scoring using the NCCN DT was strongly related to the scores of the problem list ($.63 \leq r \leq .68$) and to the scores of practical, emotional, physical, and cognitive problem domains ($.50 \leq r \leq .61$) (Haverman, 2013).

Member Satisfaction Likert Scale

Client satisfaction surveys are another standard part of most mental health and human service programs (Calley, 2011). Because of how client satisfaction surveys are developed, they are typically not rigorously tested; however, this did not pose a problem in this project, as client satisfaction was viewed as an additional, but not primary, aspect of the intervention (Calley, 2011). In some cases, client satisfaction directly impacts more significant client outcomes, and as a result, it must be carefully assessed to understand the potential impact of satisfaction on intervention efficacy (Calley, 2011). This was true in the case of the implementation of PMR with Gilda's Club. Client satisfaction data was collected via a Likert scale questionnaire with several open-ended questions at the end of programming and used to determine the program's relevancy, efficacy, and sustainability.

Disclaimer

We did not anticipate these screenings would cause any distress outside the members' norm; however, if an incidence of this nature had occurred or a member had indicated through screening that they require further psychiatric assessment, members were directed to the

Member Protection

All data collection was HIPPA compliant. All members completed an information/consent release form upon registering for the program to allow the DNP student to safely use pertinent member information/data for the DNP project implementation. All members were given a member identifier number to keep their personal information private. Participation in the programming was voluntary, and members were notified that they can choose to no longer participate at any time.

Data Analysis and Evaluation Plan

Quantitative and qualitative data analysis was conducted following the collection of data. A paired t-test was used to analyze the results from the pre-and post-intervention PHQ-8, GAD-7, and Distress thermometer scores. The independent variable in the project was participation in a PMR program, and the dependent variable was psychological distress (as measured by the PHQ-8, GAD-7, and Distress Thermometer).

Once the data was collected, it was determined whether there was an appropriate range of scores collected, for example, noting any outliers (Calley, 2011). Scores were evaluated, and the DNP student made pre-and post-test comparisons. Positive outcomes were measured by a decrease in distress, anxiety, or depression scores between pre and post-tests after participating in PMR sessions. The evaluation of outcomes focused on the effect of the PMR on Gilda's Club members participating in the programming. In mental health interventions, this is the most critical information to determine the intervention's impact on the individuals served (Calley, 2011).

A one-sample t-test was conducted to analyze the member satisfaction survey results, and the open-ended questions on the survey were reviewed for themes and confounding variables.

Data Collection and Privacy

Data was collected from January 24th, 2023, until February 14th, 2023, on a convenience sample of 25 participants. Participants filled out scoring questionnaires via survey monkey, and the DNP student organized these results into an Excel spreadsheet. Participants' privacy was kept confidential by using their street names and the last four digits of their phone numbers as an identifier. Participants input their unique identifier for each form completed. Participant confidentiality and anonymity were maintained throughout the project.

Data Analysis

Data analysis was completed using Jamovi version 2.3.21.0. A pretest-posttest follow-up design with quantitative data analysis was performed to evaluate the effectiveness of PMR on psychological distress. Descriptive statistics, including frequencies, central tendencies, and standard deviation, were used to describe the characteristics of participants and pre, post-, and follow-up data. A qualitative data analysis was performed to evaluate the satisfaction questionnaire.

Dissemination

The final project manuscript will be submitted to the Journal of the National Cancer Institute. The results of the project will be shared with GCK staff members and GCK's national research and technology team. Results will also be presented at the University of Louisville SON poster presentation day with the opportunity to be selected for dissemination at a future conference.

Results

Demographic Data

Demographic data was collected and is shown in Figure 1. The majority of the sample were Caucasian females over the age of 65. 28.57% of participants were undergoing active treatment for their cancer, and 21.43% were in remission. 35.71% were family members/friends of a person with cancer.

In total, 25 participants engaged in at least one day of programming. A total of seven members attended all four PMR sessions. Attendance is illustrated in Figure 2.

Figure 1

Demographics

	n	%
Gender		
Male	7	28

Female	18	72
Age		
18-25	0	0
26-35	5	20
36-45	4	16
46-55	4	16
56-65	4	16
65 & older	8	32
Race		
White	19	76
Black	4	16
Hispanic or Latino	0	0
Asian or Asian American	2	8
American Indian or Alaskan Native	0	0
Native Hawaiian or Pacific Islander	0	0
Time since Diagnosis		
Less than 1 year	4	16
1 year or longer	7	28
Family or friend of someone with cancer	6	24
Currently in treatment	4	16
Currently in remission	4	16

Figure 2

Attendance

Participant	Week 1	Week 2	Week 3	Week 4
1	X			
2	X			
3	X	X	X	X
4	X	X	X	X
5	X			X
6	X	X	X	X
7	X	X	X	X
8	X			
9	X			
10	X			
11	X			
12	X		X	
13	X	X	X	X
14	X	X	X	X
15	X			
16	X	X	X	X
17		X	X	X
18				X
19		X	X	X
20		X		X
21			X	

22			**X**	
23			**X**	
24			**X**	**X**
25			**X**	

Post Program Results

The PHQ-8 and GAD-7 were distributed to eight participants who attended on both the first and last day of programming. The PHQ-8 and GAD-7 pre-tests were distributed before the first PMR session on the first day of programming and after the final PMR session on the last day of programming. Descriptive analysis measuring standard error skewness revealed that the data were normally distributed; therefore, a parametric test, the paired t-test, was performed to compare pretest and posttest results for significance. The paired t-test for the PHQ-8 confirmed statistical significance in improved depression scores, with $p<0.05$ (Figure 3). Results indicated that PHQ-8 scores decreased for seven out of the eight participants (87.5%) who participated in the pre-and post-intervention PHQ-8. On average, depression scores decreased by three points. A non-parametric test, the Wilcoxon Signed Rank Test, was performed in conjunction with the parametric test and revealed a statistically significant decrease in PHQ-8 scores following the PMR intervention $p = 0.029$.

A paired t-test for the GAD-7 determined that the results were not statistically significant, $p > 0.05$ (Figure 3). On average, the anxiety scores of participants decreased by 4.5 points. The GAD-7 post-intervention scores went down for four out of the seven participants (57.1%) who took the pre- and post-GAD-7 survey. Scores increased for one out of the seven participants (14.3%), and scores stayed the same for two participants (28.6%).

Figure 3

Results PHQ-8 and GAD-7

	PHQ-8 Wk 1	PHQ-8 Wk 4	*p*-value	GAD-7 Wk 1	GAD-7 Wk 4	*p*-value
N	16	11		19	9	
Mean	7.5	5.91		6.88	4.89	
Student's *t*			0.025			0.150
Wilcoxon			0.029			0.172

The Distress Thermometer was distributed before and after each PMR intervention. Over all four weeks of the program, 92.2% of Distress Thermometer scores improved. 5.9% stayed the same, and only 1% of scores worsened. On average distress severity scores decreased by 2 points. A paired t-test found these results statistically significant, p <0.001 (Figure 4). There were 15 participants in week one, and 0/15 of the Distress Thermometer scores worsened. 80% of the scores improved, and 20% showed no difference. In the second week, 90% of scores improved, and 10% stayed the same. In week three, 12 out of the 13 participants (92.3%) distress scores improved, and one person had a worsening score (7.7%). In the final week, 100% of the 13 participants had an improvement in their psychological distress scores.

Figure 4

Results Distress Thermometer

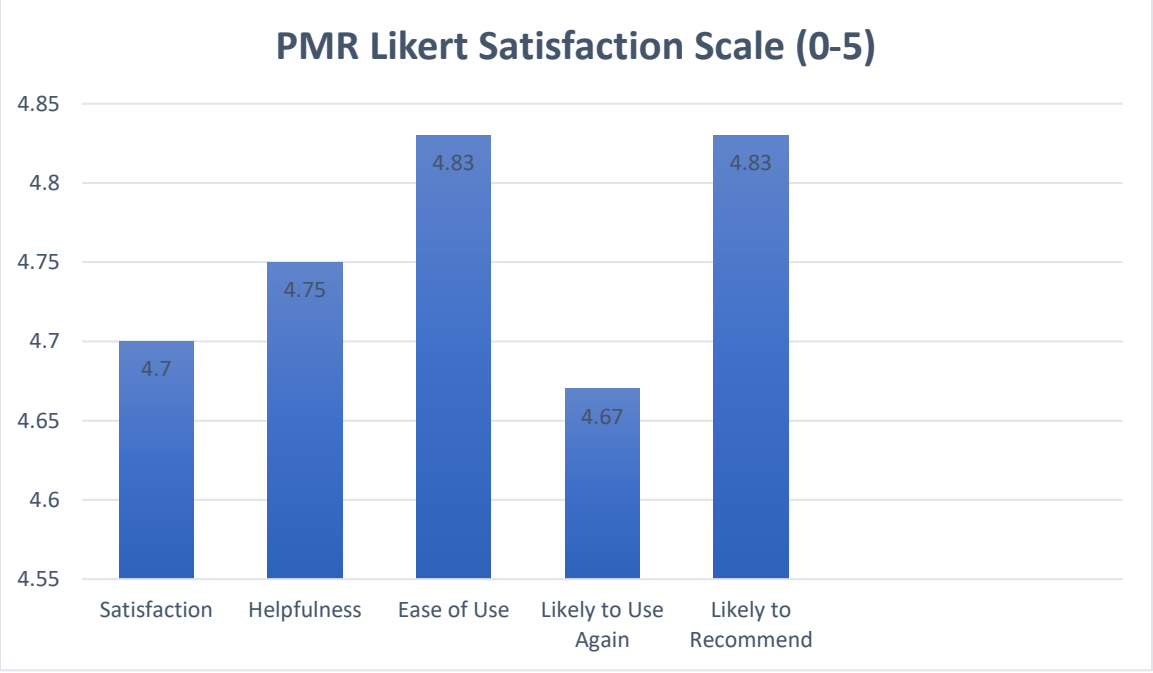
	DT Wk 1 Pre	DT Wk 1 Post	*p*-value	DT Wk 2 Pre	DT Wk 2 Post	*p*-value	DT Wk 3 Pre	DT Wk 3 Post	*p*-value	DT Wk 4 Pre	DT Wk 4 Post	*p*-value
N	16	15		10	10		14	13		13	13	
Mean	3.50	1.73		4.70	2.80		4.93	2.06		4.62	1.92	
Student's *t*			<0.001			<0.001			<0.001			<0.001
Wilcoxon			0.001			0.004			0.001			<0.001

Descriptive statistics were run for the Likert satisfaction survey (Figure 5). Measures of frequency were the most appropriate to consider because the mean cannot be used as a measure of central tendency, as it has no meaning with this type of data. Results of the satisfaction survey

revealed that 100% of participants were either satisfied (25%) or very satisfied (75%) with the program. Nine out of twelve (75%) also found the program very helpful for decreasing distress, and three out of twelve (25%) found it somewhat helpful. Ten participants said it was very easy to complete the intervention, and two said it was somewhat easy. A majority of the participants (75%) reported they were very likely to use PMR as a tool to decrease distress, as well as recommend PMR to a friend. 16.7% reported they were somewhat likely to use/recommend it, and 8.3% reported they were neither likely nor unlikely to do both. Open-ended questions revealed that many participants used PMR outside the programming and found it helpful. The most common themes were how easy PMR was to perform and the calming and relaxing impact it had on participants. Several participants mentioned that it helped them with their insomnia. One participant reported it was the most helpful tool she used to manage her stress whilst leading up to one of her cancer scans.

Figure 5

Descriptive Statistics Likert Satisfaction Survey



Discussion

Psychological distress and access to its treatment are significant problems facing cancer patients in the United States (Linden et al., 2012). This was an issue within a local cancer organization in Louisville, Kentucky, Gilda's Club Kentuckiana. An analysis of the literature revealed that progressive muscle relaxation (PMR) was an accessible and effective way of reducing psychological distress in the cancer population. Implementing this therapy into GCK was aimed at improving access to MBIs and reducing members' depression, anxiety, and psychological distress.

A pre- and post-test comparison between PHQ-8 scores revealed a statistically significant decrease in depression scores ($p < 0.05$). This finding suggests that the PMR program was successful at its intended goal of improving depression symptoms in GCK members. This is consistent with previously published studies that found that MBIs have been shown to decrease depression (Cillessen et al., 2019; De Paolis et al., 2019; Piet et al., 2012; Zhou et al., 2015).

This is an exciting finding considering its implications for improving GCK members' lives. Members were given a free psychological tool they can use anywhere, anytime, taking only 15 minutes to complete. Several participants shared that PMR gave them a sense of control over their life circumstances and their bodies. This sense of control is something that they desperately desired. Participants reported that so much of their bodies and lives felt out of control since receiving a cancer diagnosis. One participant noted, "I have often felt helpless and have been so angry at my body for turning on me. PMR gives me back a sense of autonomy and peace that there are aspects of my body that can actually help me."

Upon data analysis, a decrease in GAD-7 scores was noted; however, it was not deemed to be statistically significant ($p > 0.05$). While several of the studies reviewed found significant

improvements in GAD-7 scores, this was not consistent with the implementation of PMR in this DNP project (De Paolis et al., 2019, Piet et al., 2012, Zhou et al., 2015). Despite not being statistically significant, the results have clinical relevance when one considers that, on average, anxiety scores from the beginning to the end of the program decreased by 4.5 points. For participants who attended all four PMR sessions, more than half of the GAD-7 scores (57.1%) decreased from the beginning of the program to the end.

It is important to consider that while not all GAD-7 scores showed improvement, most of the participants did see improvement. Only one participant who attended every PMR session had their GAD-7 score worsen slightly; however, the participant disclosed in the open-ended questions that there were extenuating circumstances that had occurred since the beginning of the program resulting in an increase in their baseline stress levels. One client who saw significant improvement in their anxiety because of the program reported that they had used PMR leading up to a treatment scan that they were particularly nervous about. The participant disclosed how it helped them handle the intense anxiety they felt about it and expressed, “I even used it [PMR] to help me while in the waiting room as I waited to go back for my scan.” Using PMR as a tool to cope with anxiety was a common theme reported when participants answered what they enjoyed about the program and how they used PMR outside of the provided sessions.

Pre- and post-test distress screening after each PMR session showed an overwhelming improvement in distress scores. This demonstrates the power of PMR at decreasing distress within a single session. This is consistent with findings in previous studies that have indicated the benefits of PMR on decreasing distress and promoting relaxation (Toussaint et al., 2021 & De Paolis et al., 2019). Out of the 20 PMR sessions completed over the four weeks of programming, improvement in distress scores after a single PMR session was seen 92.2% of the

time. These results make it abundantly clear how PMR has an immediate and direct impact on reducing distress. Multiple participants found this particularly helpful outside of the provided classes, especially when they were trying to fall asleep. One expressed, “I used it to help with sleep, and my husband liked it too… he fell asleep several minutes into using it. Another participant added, “I liked that this is something I can do before bed to help with sleep… it is also an easy tool to use when I am feeling overwhelmed or stressed.”

Another clinical takeaway from the program was how easy it was for participants to use and experience the benefits of PMR in their daily lives. Providing the information on how to access the free guided PMR meditations offered in the DNP project outside the sessions helped patients to use PMR wherever and whenever they wanted to. Participants appreciated that once they had learned about PMR, they did not have to attend an in-person session to continue using it. This greatly improved their access to evidence-based interventions for psychological distress with minimal effort and costs involved, suggesting that PMR is a greatly accessible, feasible, and effective intervention for cancer patients.

Limitations

The empirical results reported herein should be considered in the light of some limitations. First, the small sample size limits the ability to generalize the findings. Further research should focus on gathering a larger sample size. This could be done by providing the intervention online, which would increase the accessibility to participants. Incentivization could also be used as a tool to in the recruitment of study participants.

Also, a convenience sample of GCK members does not accurately encompass the cancer population, which limits the results in relation to sample bias. The study was predominantly white females over the age of 65 years old. Also, many of the participants were indirectly

impacted by cancer and did not have cancer themselves. With a limited ability to gain access to the appropriate geographic scope of participants, the people who participated in the PMR programming may not truly be a random sample representative of the cancer community.

Next, participants were not required to attend all four of the PMR sessions. If a participant did not attend the first and last day of programming, they did not take the PHQ-8 and GAD-7. This made it difficult to see the impact PMR had on depression and anxiety over the entirety of the program. Future research should either require that participants attend all four program days or have clients fill out the PHQ-8 and GAD-7 upon their first PMR session, even if it is not on the first day of programming. This way, researchers could evaluate if attending more than one PMR session had a greater impact on outcomes.

Lastly, a different PMR meditation was used for every PMR session. This was so that participants were given a variety of PMR options to see what worked best for them. This, however, makes it difficult to determine if one PMR recording was more effective than another. There is limited research comparing different PMR recordings. Further research should conduct comparative studies to determine if there is a superior PMR meditation to offer participants.

Conclusions

People affected by cancer experience psychological distress that negatively impacts their physical and emotional health, adherence to treatment, overall well-being, cancer costs, and quality of life (Nagaraja et al., 2013, Parás-Bravo et al., 2017, Pitman et al., 2015, Stark & House, 2000, Zabora et al., 2001) Access to psychological interventions can be limited or financially unrealistic within the cancer population (Pitman et al., 2015 & Sharp et al., 2012). While it is impossible to eliminate psychological distress altogether, its high prevalence within the cancer community indicates the need for more easy-to-conduct/use interventions that

improve depression, anxiety, and distress (Carlson et al., 2012 & Linden et al., 2012). This project illustrates the value and impact of conducting simple interventions that decrease the psychological distress in those affected by cancer. This project will continue to improve the lives of individuals impacted by cancer, as the project site has adopted PMR as one of their MBI tools to help members that are experiencing psychological distress. The PMR meditations are available on the GCK website for any member or staff person to use when they see fit.

This project provided members experiencing psychological distress with a free and easy-to-learn/use intervention to help manage the psychological difficulties that come with cancer. It also expanded the MBI programming that the GCK organization offers, as well as increased their member's access to mental health interventions without costing them any money. The ease of use and promising impact on mental health indicates that PMR could be used in a multitude of other settings. PMR has the potential to be taught or provided as a resource by any healthcare entity that has clients experiencing anxiety, depression, or psychological distress. Further studies are warranted to evaluate the effectiveness of PMR within the cancer community, as well as other populations experiencing mental health needs. Research should aim to replicate the findings of this project on a larger scale and compare the impact of different MBIs against one another to determine if there is a superior intervention.

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Appendix A

Appendix A: Project Description

PROGRESSIVE MUSCLE RELAXATION

A MINDFULNESS-BASED PROGRAM

WHAT IS IT?

PROGRESSIVE MUSCLE RELAXATION (PMR) IS ONE OF THE SIMPLEST, EASY-TO-LEARN TECHNIQUES FOR REDUCING DISTRESS. PMR IS A TWO-STEP PRACTICE WHERE FIRST, MILD TENSION IS CREATED IN SPECIFIC MUSCLE GROUPS OF THE BODY, FOLLOWED BY RELAXATION OF THE MUSCLES TO DRAIN TENSION AWAY. IT HAS BEEN USED FOR CENTURIES TO CONNECT THE MIND AND BODY THROUGH REDUCING STRESS.

WHO CONDUCTS IT?

A PSYCHIATRIC MENTAL HEALTH DOCTOR NURSE PRACTITIONER STUDENT, TESS THOMAS. SHE WILL BE IMPLEMENTING THE PROGRAM INTO GILDA'S CLUB FOR HER GRADUATE PROJECT.

WHAT IS MY COMMITMENT?

A FOUR-WEEK COURSE WHERE MEMBERS ARE EXPECTED TO ATTEND ONE 30-MINUTE IN-PERSON PMR SESSION EVERY TUESDAY FOR FOUR CONSECUTIVE WEEKS. PARTICIPANTS WILL FILL OUT A PRE-EVALUATION UPON REGISTRATION AND A POST-EVALUATION FOLLOWING THE 4-WEEK COURSE. AT THE BEGINNING AND END OF EACH PMR SESSION, PARTICIPANTS WILL FILL OUT A SHORT SCREENING.

WHEN?

TUESDAY, JANUARY 24TH, 2023, AND CONCLUDE ON FEBRUARY 14TH, 2023. COME TO ANY ONE OF THE SESSIONS AT 9 AM, 10 AM, 12 PM, 3 PM, OR 5 PM.

WHO WILL BENEFIT?

PMR HAS BEEN PROVEN TO LOWER PSYCHOLOGICAL DISTRESS AND IMPROVE SYMPTOMS OF ANXIETY AND DEPRESSION. YOU WILL ALSO BENEFIT A FUTURE PSYCHIATRIC DOCTOR NURSE PRACTITIONER IN HER EFFORTS TO GRADUATE!

Appendix B

PMR Session Script

Introduction:

Hello everyone and welcome to this mindfulness-based program! We will start by each filling out the distress thermometer, which should only take a few minutes. Once those are filled out and collected, I will go into a little detail about the mindful intervention we will be doing today. If there are no questions we will continue with the exercise, which should be around 15 minutes. When finished, you will all fill out the distress thermometer once again. Following the collection of the post-distress thermometer, any closing comments or questions will be welcomed, and participants will be free to go about their day. Are there any comments or questions before we begin the first screening? *If yes, answer questions, if no, distress thermometer screenings will be distributed.*

Education:

Now that we have completed the screening. I would like to introduce you to the mindfulness-based intervention we will be doing today called progressive muscle relaxation (PMR). PMR was developed by Dr. Edmund Jacobson in the early 1920s and is one of the simplest, easy-to-learn techniques for reducing distress (Mirgain & Singles, 2016). PMR is a two-step practice where first, mild tension is created in specific muscle groups of the body, followed by relaxation of the muscles to drain tension away. We will follow a guided PMR meditation that will move you through your body as you alternately tense and relax muscle groups. The purpose of this is to deepen the mind-body connection and train the body to let go of pent-up stress. When we are in the midst of stress, our body can easily go into “fight, flight or freeze” mode. When we are in this mode, our bodies can sometimes harbor stress. This tool we are about to do is designed to get our bodies out of this mode so that we may go through our days

and our lives with a greater sense of ease. It doesn't mean that we don't have stress, but that we have a tool to know how to work with distress and decrease it when it is impacting our life. Are there any questions or comments before we begin? *If yes, answer questions, if no, proceed with the exercise.*

If there are no questions, then we will get started. This exercise can be done sitting or lying down. Please take a moment to find a spot or position anywhere in the room where you feel like you have space to relax. I will give you a minute to do that now while I set up our exercise. *Set up exercise and allow participants to get in position.*

If everyone is comfortable, we will go ahead and begin. Feel free to close your eyes or soften your gaze during the exercise.

Exercise:

Begin by allowing your body to get more comfortable wherever you are right now. Take some full, slow breaths in through your nose and out through your mouth. Allow any distracting thoughts to come and go as if you're watching them floating down a stream and guide your attention back to your slow and easy breathing.

Right Fists/Forearms: "When you're ready, breathe in and make a tight fist with your right hand. Hold and focus on what that tension feels like to you now. Breathe out and release all the tension in the fist. Let your hand become nice and loose. Again, make a tight fist at the right hand and hold it. Then let the tension and the hand relax. Fully focus on what your hand feels like to you when it is relaxed.

Right Biceps: Next, slowly breathe in and bring your right forearm up to your shoulder and tighten your upper arm- hold. Now breathe out and release again. Make a

muscle with your right arm. Hold and focus on what the tension feels like in your upper arm now breathe out slowly and relax your arm.

Left Fist/Forearm: Breathe in and now make a tight fist with your left hand. Hold the tension exhale and release. Let the tightness and discomfort flow all the way out of your hand. Again make a tight fist with your left hand and hold. Exhale and release.

Left Biceps: Breathe in again and bring the left forearm up to your shoulder to make a muscle. Hold and focus on the tension in your arm. Slowly breathe out and release. Notice how that feels. Again, make a muscle with your left arm and hold it there. Now exhale and release.

Face: Now take a long breath in and raise your eyebrows as high as they will go. Hold, exhale, and release letting relaxation smooth across your forehead. Breathe in again and raise your eyebrows as high as they will go. Hold, release, and breathe out slowly. Next, squeeze your eyes tightly shut and make a tight smile. Notice how that tension feels. Breathe out and release, relaxing your eyes and cheeks. Breathe in again and squeeze your eyes closed. Hold, exhale, and release the tension. Now slowly open your mouth wide and hold it there. Exhale and release. Notice what that feels like to you. Again, open your mouth and hold. Release and breathe out slowly.

Neck: Next, slowly and carefully pull your head back as though you are looking up at the ceiling. Hold, exhale, and slowly return your head to whatever position is most comfortable to you. Study what that relaxation feels like to you. Again, breathe in and pull your head back slowly. Hold, exhale and slowly release.

Shoulders: Inhale and push your shoulders up towards your ears hold them there for a moment. Exhale and release. Let all of the tightness flow completely out of your

shoulders. Again, breathe in and bring your shoulders up. Hold them there for a moment. Exhale and release. Let all of the tightness flow completely out of your shoulders. Now breathe in and push your shoulder blades back, trying to almost touch them together. Hold that tension, now exhale letting your shoulders and chest relax all at once. Again, push your shoulder blades back and your chest forward, hold, release and breathe out slowly.

Chest: Breathe in slowly and now let your chest and stomach expand all the way like a balloon filling with air. Hold, slowly exhale releasing all the tension from your chest and stomach. Again, breathe in fully and let your stomach and chest push out. Exhale and release.

Legs: Next, tighten your thighs so that you're pushing yourself up a bit out of your chair and hold. Exhale and release, taking note of what it feels like in your upper legs. Again, tighten up your thighs and hold. Exhale and release. Now, slowly pull the toes on your right foot up toward your shin, stretching your calf muscle. Hold the tension, exhale, and release. Again, pull your toes up tightening your calf muscle and hold and release and breathe out slowly. Noticing what that right foot now feels like to you.

Feet: Breathe in and now curl the toes of the right foot downwards and hold that tension. Exhale and release. Again, curl the toes of your right foot downwards and hold. Exhale and release and study what that feels like. Next, slowly pull the toes on your left foot up toward your shin stretching your calf muscle. Hold the tension, exhale, and release. Again, slowly pull your toes up tightening your calf muscle and hold. Exhale and release. Breathe in and now curl the toes of the left foot downwards. Hold, exhale, and

release. Again, curl the toes of your left foot downwards and hold. Breathe out slowly and release.

Closing: You have done a great job going through this relaxation exercise. Continue to take some slow easy breaths for the next few moments just notice what your body feels like and enjoy the success you've had in being able to relax your body. Keep that feeling with you throughout the day and remember how good it can feel to be relaxed in your body. Whenever you're ready, take some time to slowly wiggle your muscles around a little then count backward from 5 to 1 to end this exercise.

Final Words:

Excellent job everyone. If you would, please fill out the post-distress scale to indicate your current level of distress after the PMR exercise. When you are finished, you are welcome to head out and go about your day. Please leave your distress scales with me. Thank you so much for taking the time to be a part of this program, and I look forward to seeing you all next week.

Appendix C

D emographic Survey

Demographic Pre-Survey

PAGE TITLE

1. Which category below includes your age? 0

- 17 or younger
- 18-25
- 26-35
- 36-45
- 46-55
- 56-65
- 65 and older

2. Please specify your race 0

- White
- Black or African American
- Hispanic or Latino
- Asian or Asian American
- American Indian or Alaska Native
- Native Hawaiian or other Pacific Islander

Other (please specify)

3. Please specify your gender 0

- Female
- Male

Other (please specify)

4. Which of these applies to you in regard to how you've been effected by cancer? 0

- I was diagnosed with cancer in the past year
- I was diagnosed with cancer over a year ago
- I do not have a cancer diagnosis but a family member or friend does/has
- I am currently in treatment for my cancer
- I am currently in remission

Other (please specify)

5. If you have been diagnosed with cancer, what is the type? If this does not apply to you please type N/A in the box. 0

Appendix D

PHQ-8

GCK DNP Project Pre-Intervention Survey: PHQ-8

Pre-Screening PHQ-8

Over the last 2 weeks, how often have you been bothered by any of the following problems? Select which option best applies to you.

* 1. What is your assigned project number and first & last initial of your name? (#, A.A)

* 2. Little interest or pleasure in doing things

Not at all	Several days	More than half the days	Nearly every day

* 3. Feeling down, depressed, irritable or hopeless

Not at all	Several days	More than half the days	Nearly every day

* 4. Trouble falling or staying asleep, or sleeping too much.

Not at all	Several days	More than half the days	Nearly every day

* 5. Feeling tired or having little energy

Not at all	Several days	More than half the days	Nearly every day

* 6. Poor appetite or overeating.

Not at all	Several days	More than half the days	Nearly every day

* 7. Feeling bad about yourself- or that you are a failure or have let yourself or your family down

Not at all	Several days	More than half the days	Nearly every day

* 8. Trouble concentrating on things, such as schoolwork, reading, or watching television

Not at all	Several days	More than half the days	Nearly every day

* 9. Moving or speaking so slowly that other people could have noticed? Or the opposite- being so fidgety or restless that you have been moving around a lot more than usual

Not at all	Several days	More than half the days	Nearly every day

Appendix E

GAD-7

GCK DNP Project Pre-Intervention Survey GAD-7

Pre-Screening GAD-7

Over the last 2 weeks, how often have you been bothered by any of the following problems? Select which option best applies to you.

1. What is your assigned project number and first & last initial of your name? (#, A.A)

2. Feeling nervous, anxious or on edge

Not at all	Several days	More than half the days	Nearly every day
☆	☆	☆	☆

3. Not being able to stop or control worrying

Not at all	Several days	More than half the days	Nearly every day
☆	☆	☆	☆

4. Worrying too much about different things

Not at all	Several days	More than half the days	Nearly every day
☆	☆	☆	☆

5. Trouble relaxing

Not at all	Several days	More than half the days	Nearly every day
☆	☆	☆	☆

6. Being so restless that it is hard to sit still

Not at all	Several days	More than half the days	Nearly every day
☆	☆	☆	☆

7. Becoming easily annoyed or irritated

Not at all	Several days	More than half the days	Nearly every day
☆	☆	☆	☆

8. Feeling afraid, as if something awful might happen

Not at all	Several days	More than half the days	Nearly every day
☆	☆	☆	☆

Appendix F

Distress Thermometer Pre- and Post-Test

Distress Thermometer Pre-Test

1. Please click the corresponding star to indicate on a scale of 0 (no distress) to 10 (extreme distress), how much distress you are feeling

1 2 3 4 5 6 7 8 9 10

Type 0 in the box if you are experiencing no distress

2. What is your assigned project number and first and last initial of your name? (#, A.A)

3. Which week of programming are you in?

- Week 1
- Week 2
- Week 3
- Week 4

Please put N/A if you are not a part of the research project.

Distress Thermometer Post-Test

1. Please click the corresponding star to indicate on a scale of 0 (no distress) to 10 (extreme distress), how much distress you are feeling

1 2 3 4 5 6 7 8 9 10

Type 0 in the box if you are experiencing no distress

2. What is your assigned project number and first and last initial of your name? (#, A.A)

3. Which week of programming are you in?

- Week 1
- Week 2
- Week 3
- Week 4

Please put N/A if you are not a part of the research project.

Appendix G

Post-Program Satisfaction Survey

Post-Program Satisfaction Survey

Post-Program Satisfaction Survey

Please answer the following questions to the best of your ability. There are no right or wrong answers. Feel free to elaborate on your experience in questions 7-10.

1. What is your assigned project number and first & last initial of your name? (#, A.A)

2. Overall, how satisfied are you with the Progressive Muscle Relaxation Program?

Very satisfied	Somewhat Satisfied	Neither satisfied nor dissatisfied	Somewhat dissatisfied	Very dissatisfied
☆	☆	☆	☆	☆

3. Overall, how helpful did you find the sessions were at helping to decrease distress?

Very helpful	Somewhat helpful	Neither helpful nor unhelpful	Somewhat unhelpful	Very unhelpful
☆	☆	☆	☆	☆

4. Overall, how easy or difficult was it to complete a PMR session?

Very easy	Somewhat easy	Neither easy nor difficult	Somewhat difficult	Very difficult
☆	☆	☆	☆	☆

5. After the completion of the program, how likely are you to continue using PMR as a tool to decrease distress?

Very likely	Somewhat likely	Neither likely nor unlikely	Somewhat unlikely	Very unlikely
☆	☆	☆	☆	☆

6. How likely are you to recommend PMR to a friend?

Very likely	Somewhat likely	Neither likely nor unlikely	Somewhat unlikely	Very unlikely
☆	☆	☆	☆	☆

7. What did you like or dislike about the program?

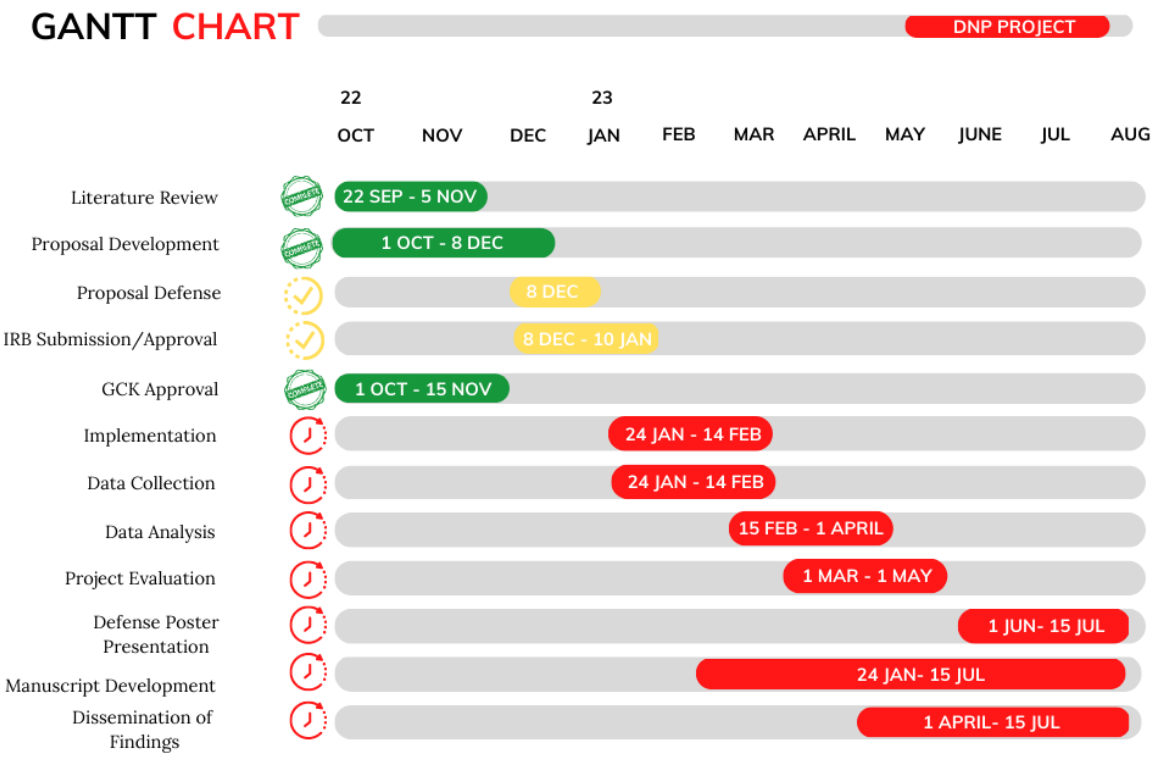
8. What could be done to improve the program?

9. Did you use the PMR technique outside of the four in-person sessions? If so, how often and under what circumstances?

10. Are there any information/life circumstances you feel would be relevant or essential for the researchers to know regarding your mental health/well-being during the past four weeks of this programming?

Appendix H

GANTT Chart Timeline



Appendix I

Approval Letter from Gilda's Club Kentuckiana

Monday, December 5, 2022

To Whom It May Concern:

I am sending this letter to inform you of our approval and acceptance of Theresa Thomas' DNP Project entitled, 'Implementation of a Progressive Muscle Relaxation Intervention to Decrease Cancer Patients' Distress: A Quality Improvement Project'. She will be providing this service to GCK members at the West Louisville Location in Louisville, KY. We look forward to participating in this project.

Respectively,
Lori Mangum, COO