The Use of Multidisciplinary Care Teams in Diagnosing and Managing Care of Cancer Patients in Eastern Kentucky

by

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Abstract

The purpose of this casual comparative quantitative study addressed the lack of individual-level data on the effectiveness of multidisciplinary care teams for cancer patients in rural hospitals. The research questions sought to evaluate the strengths and weaknesses of multidisciplinary care teams for cancer patients in rural hospitals and the roadblocks for successful implementation. The study utilized the pragmatism paradigm to focus on the problem rather than the view of reality. This study was conducted with a fixed design using quantitative methods, specifically, casual comparative. This research worked within the framework of a well-established theory prevalent in the pertinent literature: Social Systems Theory. The actors in this casual comparative study included the healthcare organizations, Ackerville Regional Healthcare and Pinkerton Medical Center, administration, clinic managers, and medical teams. Independent variables included partnership, cooperation, and coordination within multidisciplinary cancer teams and the dependent variable was the provision of quality patient care. This study operated from a Biblical perspective. This study sought to fill gaps in the information of why this phenomenon persists. The results of a Kruskal-Wallis Test revealed statistical significance in multidisciplinary care teams between collaboration score (Kruskal-Wallis = 26.34, $p < .001$), partnership score (Kruskal-Wallis = 37.67, $p < .001$), and coordination score (Kruskal-Wallis = 24.95, $p < .001$). Multidisciplinary teams support patient outcomes through coordination in ways that use the resources of time, tools, and skills more effectively.

Keywords: Interdisciplinary (Multidisciplinary) Care, Multidisciplinary Team (MDT), Social Systems Theory (STS).

Dedication

This work is dedicated to the memory of Lieutenant Ruth Yesenia Cortes, PA-C. You are my heart.

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Section 1: Foundation of the Study

The problem addressed in this study is the lack of individual-level data on the effectiveness of multidisciplinary care teams for cancer patients in rural hospitals. The research questions sought to evaluate the strengths and weaknesses of multidisciplinary care teams for cancer patients in rural hospitals and the roadblocks to successful implementation. The study utilized the pragmatism paradigm to focus on the problem rather than the view of reality. This study was conducted with a fixed design using quantitative methods, specifically causal comparative. In addition, quality-of-care issues arise from a lack of data on organized multidisciplinary care, particularly in rural settings. To gain a greater understanding of the strengths, weaknesses, and roadblocks to multidisciplinary care teams, this study examined the opinions of members of multidisciplinary care teams on factors such as partnership, cooperation, and coordination to improve care team practices and enhance patient care through more effective collaboration.

This research worked within the framework of a well-established theory prevalent in the pertinent literature: Social Systems Theory (Sales et al., 2022). The actors in this casual comparative study included the healthcare organizations, Ackerville Regional Healthcare and Pinkerton Medical Center, administration, clinic managers, and medical teams. This study operated from a Biblical perspective. This research examined whether a relationship existed between multidisciplinary care teams and staff collaboration, partnership, and coordination when providing care to cancer patients (Williams & Kamat, 2017; Soukup et al., 2018; Taylor et al., 2019). Data analysis featured descriptive statistics on multidisciplinary teams for gender, age, employment status, education level, discipline, tenure, time within the team, and location. Further analysis utilized hypotheses testing to answer the research questions, where MANOVA

acted as the primary testing method. This researcher used the Multiple Kruskal Wallis test when MANOVA violated assumptions testing (Kruskal-Wallis = 26.34, $p < .001$).

The independent variable was multidisciplinary teams that provided treatment to cancer patients (Kedia et al., 2020). This researcher assigned each team member to two groups, multidisciplinary teams, and non-multidisciplinary teams. Participants classified as CMA, CNA, and LPN were not multidisciplinary team members, so this researcher selected them for the non-multidisciplinary group. The remaining classifications of Dosim, Med Onc, Med Phys, NP, PA, Rad Onc, Reg Diet, RN, RRT, RT, and Surg Onc were all considered multidisciplinary and placed into the interdisciplinary group (abbreviations spelled out in descriptive statistics). The grouping created a dichotomous, independent variable, which provided comparable groups to be used in the analysis.

The dependent variables were collaboration, partnership, and coordination among team members when providing care to cancer patients. Each variable was determined by the respective scores using the AITCS-II survey. The survey consisted of three sections that correlated to collaboration, partnership, and coordination. Each section's answers were calculated to give a total score and expressed as Collaboration, Partnership, and Coordination scores. The newly created dependent variables were used alongside the independent variable to address the research questions in hypotheses testing.

Background of the Problem

Treating a single cancer patient requires input from many physicians, specialists, administrators, and departments (Ringstrom et al., 2018). Cancer patients work with registration staff, billing personnel, imagining technologists, various clinical staff, and multiple oncology specialists. Ongoing cancer treatment requires travel to multiple locations for many consecutive

days (Ringstrom et al., 2018). Patients will need labs, imaging, follow-up care, and regular checkups to ensure they tolerate the treatment well enough. These activities often occur in different facilities and with different personnel. Staff from various organizations manage appointments, testing and imaging, physician schedules, and other areas of the process (Soukup et al., 2018). This disorganization leads to delays and an overall lack of continuity, leading to potentially harmful health implications (Shakib et al., 2016). A multidisciplinary approach refers to the philosophy of converging multiple specialties and technologies to establish a diagnosis or effect a therapy.

While this is a growing trend in healthcare, the practice has not yet permeated the industry in much of rural America (Soukup et al., 2018). Multidisciplinary care teams have been the recommended approach for cancer care since the mid-1990s (Selby et al., 2019). However, the execution of effective care teams remains elusive for healthcare agencies, especially in small medical facilities or rural areas (Selby et al., 2019).

Selby et al. (2019) state that healthcare organizations often struggle with maximizing the effectiveness of care teams. Care teams should result in more effective knowledge sharing among experts, opportunities for patients to join high-quality medical trials, and better patient access to information. However, without optimized implementation of multidisciplinary care teams, some of or all of the benefits of care teams are replaced by disorganization and ineffectiveness (Selby et al., 2019). Often, multidisciplinary care strategies serve to meet collaborative care objectives effectively, but real-world challenges such as communication, teamwork, and time management impact the effectiveness of care teams (Lamprell et al., 2018).

Problem Statement

The general problem addressed was a lack of information regarding the successful functioning of multidisciplinary care teams for cancer patients (Williams & Kamat, 2017; Soukup et al., 2018; Taylor et al., 2019). In a report by the American Hospital Association ([AHA]; 2019), 20% of Americans use rural hospitals for primary and specialized healthcare. However, there is a decreased ability of rural healthcare to provide specialized care (AHA, 2019). Though medical practice guidelines often recommend multidisciplinary care teams for the treatment of cancer patients, there is little information on the strengths, weaknesses, and roadblocks to effective multidisciplinary care team utilization (Selby et al., 2019; Shao et al., 2019). Poor communication and unnecessary referrals lead to compromised quality of care (Williams & Kamat, 2017). Although many community hospitals have local tumor boards, many providers in smaller institutions have no access to boards specializing in a particular type of cancer, demonstrating the lack of options and expertise (Soukup et al., 2018). Ineffective or absent care teams inhibit engagement across specialties and slow test results' return (Taylor et al., 2019).

The specific problem addressed was the lack of data on the relationship between a multidisciplinary care team and oncology staff partnerships, collaboration, and coordination in two Eastern Kentucky hospitals. Lack of communication and teamwork potentially result in quality-of-care issues for particular oncology patients (Bhattacharyya & Lichtman, 2017). Therefore, gaining additional insight into the relationship between care team effectiveness, communication, and teamwork could improve patient outcomes in rural hospital settings (Bhattacharyya & Lichtman, 2017; Hickman et al., 2015; Jung et al., 2018).

Purpose Statement

The purpose of this fixed design quantitative casual-comparative study was to examine the relationship between multidisciplinary approaches provider partnerships, collaborations, and coordination in healthcare organizations in Eastern Kentucky (Kelly et al., 2018). Though multidisciplinary care teams are often considered the standard of care for treating cancer patients, the effectiveness of such teams can be highly dependent on the teamwork and coordination of the staff involved (Selby et al., 2019). Although many community hospitals have local tumor boards of various specialists, these institutions often lack access to rare specialists and struggle with implementing and managing multidisciplinary care. The results of this research revealed methods to potentially improve interdisciplinary care for patients and defined ways to organize that process (Goldkuhl, 2017). In addition, research suggests that staff metrics, such as collaboration, partnerships, and coordination, impact cancer patients' quality of care. By gaining a deeper understanding of the role that multidisciplinary care teams play in establishing these essential metrics, this study provided critical information for hospitals to assess the structure of their care teams (Lamprell et al., 2019; Selby et al., 2019; Shao et al., 2019).

Research Questions

Research questions aim to accomplish the purpose of this study based on the research problem and the chosen framework. The questions guide the choice of methodology for this study. Quantitative research questions aim to understand or explain (Halcomb, 2018).

RQ1: What is the relationship between multidisciplinary care teams and staff collaboration in providing care to cancer patients?

H10: There is no statistically significant relationship between multidisciplinary care teams and staff collaboration in providing care to cancer patients.

H1a: There is a statistically significant relationship between multidisciplinary care teams and staff collaboration in providing care to cancer patients.

RQ2: What is the relationship between mutlidiciplinary care teams and staff partnership in providing care to cancer patients?

H20: There is no statistically significant relationship between multidisciplinary care teams and staff partnership in providing care to cancer patients.

H2a: There is a statistically significant relationship between multidisciplinary care teams and staff partnership in providing care to cancer patients.

RQ3: What is the relationship between multidisciplinary care teams and staff and coordination in providing care to cancer patients.

H30: There is no statistically significant relationship between multidisciplinary care teams and staff coordination in providing care to cancer patients.

H3a: There is a statistically significant relationship between multidisciplinary care teams and staff coordination in providing care to cancer patients.

The study research questions sought to understand if a relationship existed between staff coordination, partnership, and collaboration when caring for cancer patients in a rural Kentucky hospital. The problem addressed by this study is a lack of information regarding the relationship between multidisciplinary care teams and essential metrics for staff teamwork (Soukup et al., 2018). By understanding how multidisciplinary care teams impact staff teamwork, hospitals will be better able to make decisions regarding staff teamwork and optimize care teams to achieve objectives better.

Nature of the Study

The problem addressed concerned the lack of knowledge regarding the successful functioning of multidisciplinary care teams for cancer patients, especially related to collaboration, coordination, and staff partnership in a healthcare organization in Eastern Kentucky (Kelly et al., 2018; Soukup et al., 2018). To address this problem, this researcher chose a fixed quantiative methodology, which allowed the researcher to collect measurable data and discern the relationship between the independent and dependent variables (Rutberg & Bouikidis, 2018).

In addition to deciding upon quantitative methods, the researcher employed a casual-comparative design. The casual-comparative design allowed the researcher to examine the relationship between multidisciplinary approaches to partnerships, collaborations, coordination, and patient care (Mertens & McLaughlin, 2004). Finally, the researcher chose the pragmatism paradigm focusing on the problem rather than the view of reality, using any tools available to understand the problem (Kaushik & Walsh, 2019). The justification for these choices will be expanded upon in the following sections.

Research Paradigms

Paradigms depend on several factors, including beliefs about the nature of reality (ontology), the values that underpin the research (axiology), ideas about knowledge (epistemology), and the nature of how knowledge generates methodology (Halcomb, 2018). Selecting the most suitable research method is heavily dependent on the research paradigm. According to Baskarada and Koronios (2018), the first paradigm is the ontological assumption. Ontological assumptions are beliefs about the nature of reality and how reality is framed or

constructed. The nature of reality can be considered through the lens of subjectivism, constructivism, and objectivism (Berryman, 2019).

According to Berryman (2019), subjectivism refers to the idea that an individual forms reality through meaning placed on objects within their world. Constructivism can be defined as the idea that humans create their reality based on their respective experiences. Finally, objectivism's research paradigm asserts that all humans have the same reality or that reality is interpreted similarly among all persons. Epistemology is how knowledge is obtained through positivism, interpretivism, and pragmatism (Baskrada & Koronios, 2018). Positivism is the assumption that knowledge is obtained through physical evidence. Interpretivism assumes that knowledge comes from experience and an in-depth understanding of individuals (Berryman, 2019).

A paradigm is a means that scientists use to make sense of their world (Kaushik & Walsh, 2019). The development of pragmatism reflects the results of the paradigm wars. Using a single research method was criticized, resulting in the movement to use approaches that included quantitative and quantitative methods. Pragmatist researchers focus on plurality, which is reflected in the many techniques, methods, and designs that they can choose to best answer their research questions (Kelly et al., 2018). As a research paradigm, pragmatism accepts that there can be single or multiple realities, all open to empirical inquiry (Kaushik & Walsh, 2019). Research paradigms are these beliefs or philosophical assumptions about what is of importance.

The research paradigm is pragmatism, focusing on the problem rather than the view of reality, using any tools available to understand the problem (Kelly et al., 2018). The general problem addressed was a lack of information regarding the successful functioning of multidisciplinary care teams for cancer patients (Williams & Kamat, 2017; Soukup et al., 2018;

Taylor et al., 2019). The specific problem addressed was the lack of data on the relationship between multidisciplinary care teams and oncology staff partnerships, collaboration, and coordination in an Eastern Kentucky hospital. The research aimed to examine how multidisciplinary care teams impact staff collaboration, partnerships, and coordination, which are essential patient care metrics (Soukup et al., 2018; Taylor et al., 2019). The researcher also examined how organizations manage multidisciplinary care in rural healthcare settings and determined the quality-of-care issues resulting from a lack of organized multidisciplinary care. For these goals, pragmatism was the preferred paradigm of the researcher (Kaushik & Walsh, 2019). A quantitative researcher may adopt a pragmatist stance seeking constructive knowledge. Pragmatism focuses on action and change and the relationship between knowledge and action (Goldkuhl, 2017).

Design

Within research, there are two main design paradigms, flexible and fixed. Flexible designs allow the researcher to adapt their study to fit the needs of the research. Thus, aspects of the study can be altered to ensure that the most suitable options are implemented throughout the entirety of the proposed research. Flexible designs typically are aligned with qualitative research. Conversely, a fixed research design ensures that all aspects of the study are decided upon before initiating the research. Thus, the researcher must adhere to the prescribed methodology throughout the research no matter what occurs. Fixed designs are commonly associated with quantitative methods.

This study was conducted using a quantitative method. Quantitative research questions seek to understand or explain measurable variables and how they relate to one another (Rutberg & Bouikidis, 2018). There are many quantitative designs, including experimental, descriptive,

and causal-comparative. Experimental designs allow the researcher to uncover cause and effect relationships through careful control of an independent variable or treatment given to group members (Creswell & Creswell, 2017). The results are then compared to a control group, allowing the investigator to better understand the influence of the treatment on participants (Creswell & Creswell, 2017). However, this research did not have a treatment, nor were the participants split into groups, making experimental design an unsuitable choice for this quantitative research.

In descriptive designs, the researcher uses multiple sources of quantitative data to describe a phenomenon (Creswell & Creswell, 2017). Often descriptive designs are used when the researcher wants to describe why or how a phenomenon is occurring, which often provides areas for future research (Creswell & Creswell, 2017; Rutberg & Bouikidis, 2018). Although useful in describing phenomena, descriptive design cannot determine cause and effect relationships, making it unsuitable for this quantitative study.

Instead, the design used in this study was casual-comparative. The purpose of casual-comparative research is to find relationships between variables following a previous event or circumstance. In this quantitative research, the event under exploration was the dependent variable of multidisciplinary care teams. Once the care team was established and functioning, the study was able to assess how that dependent variable impacts the independent variables of partnership, cooperation, and coordination.

Methods

This study was conducted using a quantitative methodology. The primary purpose of quantitative research is to perform statistical analysis on the relationship between variables (Sukamolson, 2007). Quantitative research examines relationships with the intended purpose of

examining cause and effect dynamics in phenomena. This was an appropriate method for the present study, which sought to understand the relationship between the independent variables of partnership, cooperation, and coordination within multidisciplinary cancer teams and the dependent variables of providing quality patient care.

Qualitative methods were also considered for use within this study but were deemed inappropriate within this context. Qualitative methods are usually selected when the goal of the research problem is to examine, understand, and describe a phenomenon. Qualitative research is typically small-scale in terms of the number of persons or situations researched. The qualitative researcher seeks to investigate the meaning of human experience. In this way, the researcher acknowledges that 'truth' may be subjective and interpreted differently by individuals with different circumstances (Halcomb, 2018). However, qualitative methods did not align with the objectives of this research. Thus, they were unsuitable for use within this quantitative research. The final method under consideration for this research was the mixed-method approach. Mixed methods allow the researcher to combine quantitative and qualitative research aspects to fully describe a phenomenon (Creswell & Creswell, 2017). However, mixed methods research was also unsuitable for use, as qualitative methods will not be employed.

Summary of the Nature of the Study

The general problem addressed was a lack of information regarding the successful functioning of multidisciplinary care teams for cancer patients (Williams & Kamat, 2017; Soukup et al., 2018; Taylor et al., 2019). The research examined why there is a lack of organized multidisciplinary care in the healthcare industry and sought to better understand the value of well-managed, precisely executed multidisciplinary care for the patient and the organization. This researcher also examined how organizations fail to effectively manage multidisciplinary

care in rural healthcare settings and identified the quality-of-care issues that can arise from a lack of organized multidisciplinary care. The chosen research paradigm was pragmatism, focusing on the problem rather than the view of reality, using any tools available to understand the problem. This study was conducted with a quantitative casual-comparative design. The literature supported the paradigm and methodology to address the stated problem and research questions.

Theoretical Framework

Theories found in the literature are central to the research problem, creating a lens through which to consider the study. This quantitative research operated within the framework of a well-established theory prevalent in the pertinent literature: social systems theory. The actors in this quantitative casual-comparative study included the healthcare organizations, Ackerville Regional Healthcare and Pinkerton Medical Center (in Hinton and Pinkerton, respectively, in Litton County, Kentucky), administration, clinic managers, and medical teams. Independent variables included partnership, cooperation, and coordination within multidisciplinary cancer teams and the dependent variable was the provision of quality patient care (Soukup et al., 2018; Bhattacharyya & Lichtman, 2017; Jung et al., 2018).

The diagram below (Fig 1.) outlines the proposed framework for the quantitative casual-comparative study.

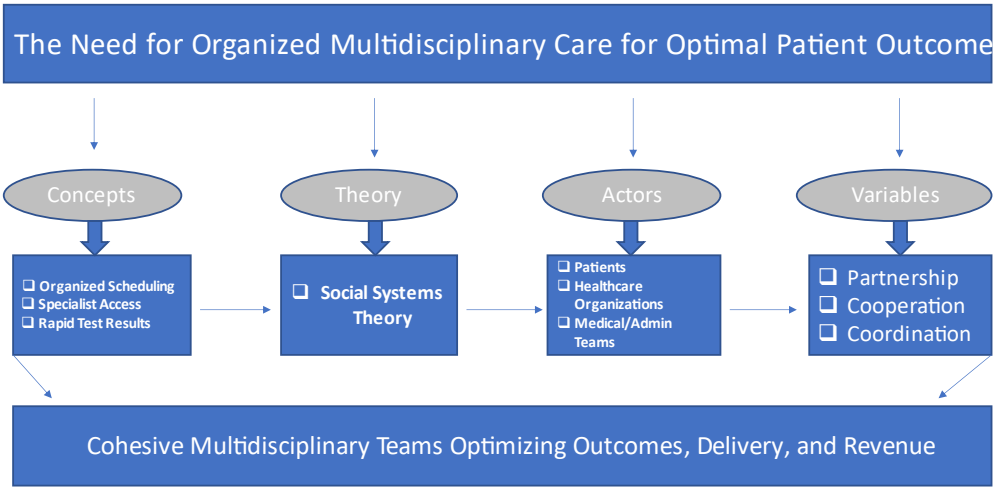

Figure 1. Relationships between concepts. Adams (2021).

Theory

Systems theory operates in natural sciences as part of research on biology and technology. This research sought to work within the framework of social systems theory (Sales et al., 2022). Like systems theory, which aims to understand how components in a system work together and how the more significant system operations influence them, social systems theory posits that individuals are products of their environment. Systems theory generally holds that the whole system is greater than the sum of its parts (Jackson, 1984). Similarly, social systems theory explains that the root of functioning in individuals relates to the individual's environment, rather than wholly a product of their responsibility (Sales et al., 2022).

Numerous individuals have contributed to forming social systems theory, including Talcott Parsons. Parsons integrated action theory into the social science framework to explain why groups or societies maintain cohesion or take actions, such as the formation of new governments or uprisings. When applied to social sciences, action theory relates to how groups

make decisions and individuals' roles in groups (Talcott, 1951). Talcott's (1951) theory included four tenants that all groups must consist of to function properly. The tenants are adaptation, goal attainment, integration, and latency. Adaption addresses whether the group can obtain sufficient resources to continue. Goal attainment relates to whether the group can set and implement goals (Sales et al., 2022). Integration refers to cohesion between the individual components of the group. Finally, latency relates to the ability of the group to create a specific culture or value set and transmit it to the particular group components (Talcott, 1951).

Actors

The actors in this quantitative casual-comparative study included Ackerville Regional Healthcare and Pinkerton Medical Center, two hospitals in Southeastern Kentucky, each with multiple outreach clinics. Both accept and send referrals to various surrounding cities and states. The quantitative study took place within these organizations. A lack of organized multidisciplinary care is evident in these and other rural healthcare organizations (Bhattacharyya & Lichtman, 2017; Hickman et al., 2015; Soukup et al., 2018). The respective administration teams, including finance, operations, compliance, tumor registry, and more, are also actors in the quantitative study. Due to a lack of organized multidisciplinary care, some concerns for administration include lost revenue and poor patient outcomes (Bhattacharyya & Lichtman, 2017; Soukup et al., 2018).

A lack of multidisciplinary care directly impacts clinic managers as it falls to them to implement the process. It is an intricate management process to connect specialists with healthcare teams (Soukup et al., 2018). Lastly, yet foremost in the concerns of healthcare teams are the patients. Medical care teams comprised of oncologists, nurses, patient navigators, lab techs, imaging techs, and clerical workers want the best outcomes for their patients through

specialized input on treatment planning and roundtable discussions about prognosis. A lack of multidisciplinary care significantly impacts patient outcomes, experience, and satisfaction (Hickman et al., 2105; Soukup et al., 2018).

Variables

This researcher conducted the quantitative casual-comparative study within the healthcare organizations of Ackerville Regional Healthcare and Pinkerton Medical Center, two health systems in Southeastern Kentucky, each having multiple outreach clinics. Having worked in management in both of these organizations, this researcher observerd a lack of organized multidisciplinary care with administration, physicians, and staff. The feedback primarily demonstrated an interest in this quantitative study to understand the problem further (Sukamolson, 2007).

Independent variables for the study included partnership, cooperation, and coordination (Orchard, 2015; Soukup et al., 2018). The dependent variable of providing quality patient care was assessed based on responses to survey questions that collectively addressed each of the constructs. The assessment section focused on partnership related mainly to the patients working with doctors and care staff to determine their treatment routines (Orchard, 2015). The questions related to whether patients were involved in decisions, informed about upcoming treatment steps, and whether clear and consistent communication occurs with the patient. Cooperation relates to the cooperative dynamic between members of the care staff and was assessed based on responses to questions about how well the staff worked together. The final dependent variable was coordination, which relateed to how well members of the care team coordinated their activities and managed conflict (Orchard, 2015).

Relationships Between Concepts, Theory, Actors, Constructs, and Variables

It is crucial to demonstrate the relationships between the concepts, theory, actors, constructs, and variables in research. The concepts--organized scheduling, specialist access, and timely test results--are central to the impact of organized, comprehensive multidisciplinary care. This quantitative research operated within the framework of a prevalent theory recurrent in the literature. Social systems theory relates to how individuals are a product of their environment, and their actions and beliefs are partially dictated by their environment rather than spontaneously arising internally (Jackson, 1984). The concepts and theory related clearly to the identified problem. The actors in this quantitative casual-comparative study included the healthcare organizations, Ackerville Regional Healthcare and Pinkerton Medical Center, administration, clinic managers, and medical teams. Independent variables for the study included partnership, cooperation, and coordination. The actors, constructs, and variables were connected to the chosen concepts and theory and complemented one another.

Summary of the Research Framework.

Organized scheduling, specialist access, and timely test results were the concepts for this quantitative casual comparative study, which are rooted in the benefits of organized, comprehensive multidisciplinary care. This research relied upon a prevalent theory recurrent in the literature: Social Systems Theory. The actors in this quantitative casual-comparative study included the healthcare organizations, Ackerville Regional Healthcare and Pinkerton Medical Center, administration, clinic managers, and medical teams. Independent variables for the study included partnership, cooperation, and coordination.

Definition of Terms

Cooperation. Medical staff work together to make patient decisions and include other doctors in decision-making (Ghrairi et al., 2019).

Coordination. When doctors keep other medical staff informed of their decision-making and scheduling, they best treat the patient with corresponding treatments or well-planned treatments (Ghrairi et al., 2019).

Interdisciplinary (Multidisciplinary) Care. The philosophy of converging multiple specialties and technologies to establish a diagnosis or effect a therapy (Soukup et al., 2018).

Multidisciplinary Team (MDT). The union of care professionals from varying disciplines determines the best treatment plan for patients based on the current scientific evidence (Horlait et al., 2019).

Partnership. When doctors include patients in discussions and considerations to determine their care routines (Pomey et al., 2015).

Virtual Multidisciplinary Care: The philosophy of converging multiple specialties and technologies via virtual (remote online) meetings to establish a diagnosis or effect a therapy (Soukup et al., 2018).

Virtual Multidisciplinary Team (VMDT). The union of care professionals via virtual (remote online) meetings from varying disciplines determines the best treatment plan for patients based on the current scientific evidence (Horlait et al., 2019).

Assumptions, Limitations, Delimitations

In research, one has certain assumptions, limitations, and delimitations. For clarity, these can be organized based on the researcher's level of control over these elements. Delimitations

refer to the boundary or scope of the study, and the researcher has a degree of control concerning limits (Taylor et al., 2019). Delimitations should challenge the assumptions of the researchers and aim to expose shortcomings. In some respects, a limitation is an imposed restriction resulting from the chosen research design, making limitations essentially beyond the researcher's control (Theofanidis & Fountouki, 2018). Assumptions are considered valid but not verified or wholly controlled. They exist to make the study relevant. Research assumptions are issues, ideas, or positions found in the research and considered reasonable and widely accepted (Theofanidis & Fountouki, 2018). Researchers should include a risk mitigation discussion for each assumption. Limitations and delimitations are situations or circumstances that might have influenced or restricted the methods and analysis of the collected data (Taylor et al., 2019).

Assumptions

Assumptions exist in the context of the entire study. Assumptions and limitations may be grouped and used interchangeably (Taylor et al., 2019). Assumptions are the self-evident truths that are the basis for the other decisions and choices the researcher makes. Research should justify the assumptions made. If findings are only applicable to a particular population through a sample, or if the uniqueness of the setting could impact participant responses, then the research results should not be considered relevant to a broader population in other settings. The researcher assumed that those involved in this quantitative study were truthful and forthcoming regarding the practice and perceived value of multidisciplinary care related to oncology patients in rural Southeastern Kentucky. There is also an assumption that individual-level data collected from self-report surveys garnered information that could improve multidisciplinary care teams, especially oncology teams. Additionally, it is assumed that the data collected and analyzed in this

study has the potential to inform practice recommendations and enhance patient care and organizational performance (Theofanidis & Fountouki, 2018).

Limitations

Researchers are limited in their research in many ways. These limitations should be clearly stated (Theofanidis & Fountouki, 2018). Limitations come from assumptions based on selected theories, population or sample, collected and analyzed data, interpretation of results, and subsequent conclusions (Taylor et al., 2019). Limitations are the shortcomings, conditions, or influences that restrict the researcher's methodology and findings. Research should describe how the limitations influenced the analysis of findings (Tanhueco-Tumapon, 2016).

This study had various limitations. The use of self-report data limited this research. As such, any bias or deception from participants may be reflected in the findings (Taylor et al., 2019). However, all participants were told about the importance of being truthful during data collection. Additionally, this study was limited to the views and experiences of those involved in delivering care or treatment for oncological cases in Southeastern Kentucky. These cases require input from multiple specialists. However, the sample was selected without prejudice to ensure equal representation of specialists, gender, and ethnic backgrounds, improving the applicability of findings (Tanhueco-Tumapon, 2016).

Delimitations

Delimitations are the limitations deliberately set by researchers (Theofanidis & Fountouki, 2018). The researchers' definitions of boundaries or limits set to achieve the research objectives determine the delimitations (Theofanidis & Fountouki, 2018). In this way, delimitations are in the author's control. Delimitations are primarily concerned with the study's theoretical background, objectives, and variables. Researchers should report limitations,

delimitations, and assumptions to improve the quality of findings and interpretations of the presented evidence (Taylor et al., 2019). The researcher deliberately imposes limitations to explain the established boundaries determined by the research design (Tanhueco-Tumapon, 2016). Delimitations are applied to variables and the target population so that the scope of the research is manageable. Delimitations for this quantitative study included the host entities, Ackerville Regional Healthcare and Pinkerton Medical Center. The participants were those in administration and management, and the medical providers in these rural establishments where multidisciplinary care has yet to become the standard of care.

Significance of the Study

This quantitative study is significant as it pertains to the body of knowledge to implement and manage multidisciplinary care (Kaushik & Walsh, 2019). The goal was to reduce the disparities in literature, view the problem through a biblical worldview, and add value to the business practice of interdisciplinary team disease management (Kelly et al., 2018). This study can benefit the business practice of managerial and administrative organization and management of multidisciplinary teams. As it relates to the researcher's cognate of healthcare management, the role of organizing these teams and their function in healthcare settings were studied. Goals included reducing gaps in the existing literature and contributing to the body of knowledge related to healthcare delivery.

Reduction of Gaps in the Literature

This quantitative research aimed to reduce gaps in the literature related to multidisciplinary care and its use in rural healthcare settings. A secondary goal was to add to the understanding and effective practice of multidisciplinary team leadership and the existing body of knowledge about the value and use of such patient care models. The literature shows that

intra-professional boundaries and other mitigating limitations within the medical community often inhibit multidisciplinary approaches to patient care (Muddiman et al., 2019). However, sufficient studies have not occurred to examine the implementation and impact of multidisciplinary care teams, especially on the individual level (Soukup et al., 2018).

Researchers suggested that further studies were warranted to examine the relationship between generalism and specialism, focusing less on the dichotomy and more on a continuum that joins primary and secondary care to foster interdisciplinary cooperation (Muddiman et al., 2019). Additionally, Soukup et al. (2018) argued that more data is needed at the individual level to understand the challenges and strengths of multidisciplinary oncology teams. The significance of values is evident in multidisciplinary care literature and practice (Kelly et al., 2018). However, despite the growing focus on integrated care in the literature, there exists a lack of information about the value and impact of interdisciplinary care from the individual perspective that can be used to help improve patient outcomes and organizational performance (Zonneveld et al., 2018).

Implications for Biblical Integration

Research has shown the critical role that spirituality plays in finding meaning. The inclusion of religious beliefs is evident in the literature about the study of meaning-making. Therefore, it is essential to trace the ontological, anthropological, axiological, and praxiological assumptions in worldviews and understand the implications for research (Hall et al., 2019). Every worldview is a set of beliefs that includes limiting statements and assumptions concerning what exists and does not; a personal worldview defines what goals one should pursue in research (Robson & McCartan, 2016). Worldviews include assumptions that may be unproven, yet they provide the epistemic and ontological foundations of a belief system. For example, a Christian

worldview focuses on the character and nature of God, which is integral to the Christian understanding of goodness.

In any philosophical worldview, faith in the premise must exist. Understanding the connection between philosophical worldviews and research methodology benefits one's approach to research (Hall et al., 2019). The pragmatic approach is one of interest in practical matters instead of theory. A pragmatist uses the philosophy or method that works best for the research at hand. With the pragmatic approach, knowledge is created and based upon the reality of the world we inhabit (Robson & McCartan, 2016). Contrary to some assertions, doctrines of pragmatism serve a researcher well and are not contradictory to a Christian worldview. Research focuses on meanings and situations that exist from the observer's perspective (Hall et al., 2019).

One may conduct research utilizing tenets of these worldviews without compromising one's Christian values and beliefs. Researching in this way could illuminate God's creation in ways previously unseen. Pragmatism can be a tool for shining light on the Christian worldview (Hall et al., 2019). This quantitative study was conducted from a pragmatic viewpoint, focusing on the Biblical perspective. It is the mission of the Christian observer to understand the ideologies of the day to meet the challenges of the study. Looking at the world through a quantitative lens, one can draw meaning from God's work.

Benefit to Business Practice and Relationship to Cognate

Current research shows that the business practice of implementing a multidisciplinary team care model involves new resources and participation across sectors within a healthcare organization (Blaschke et al., 2019). Research examined the challenges encountered and lessons learned from integrating this type of model for patients in a large cancer center. Oncology

patients expressed a preference for an individualized needs assessment and care planning at the time of cancer diagnosis (Presley et al., 2020).

The study examined the complexity of implementing and assessing a multidisciplinary team for cancer patients. The research indicated the need for managed coordination of the multidisciplinary care team approach to improve complex care plans. An investment in cross-sector partnerships for comprehensive patient care coordination is necessary for successful implementation (Blaschke et al., 2019). This quantitative study aimed to examine the implementation and measure the success of oncological multidisciplinary teams in organizations in Southeastern Kentucky.

Geriatric oncology treatment implements evidence-based business practices (Presley et al., 2020). National initiatives focus on the need for interdisciplinary care to improve health outcomes for older cancer patients. Older adults with cancer have unique needs independent of routine oncology care. However, disparities remain between knowledge and practice concerning implementation (Taylor et al., 2019). Researchers detailed the methodology of a multidisciplinary approach for providing care for older adults with cancer in a particular institution. Within this model, the multidisciplinary team assessed and delivered a comprehensive set of care recommendations, all provided in one clinic visit, to increase proficiency and lessen travel for the patient (Blaschke et al., 2019).

This approach integrates oncology subspecialties in healthcare delivery and delivers coordinated assessments and interventions to improve health outcomes (Presley et al., 2020). If not effectively addressed, geriatric health conditions can lead to expensive, uncoordinated care that diminishes the quality of life for the patients and their caregivers. The multidisciplinary approach addresses unmet needs and risk factors, implements interventions, provides healthy

lifestyle recommendations, and streamlines care in conjunction with standard oncology treatment (Blaschke et al., 2019). This quantitative study endeavored to evaluate the effectiveness and comprehensiveness of oncology care delivery to Southeastern Kentucky patients, many of whom are elderly.

Summary of the Significance of the Study.

The literature demonstrates that intra-professional boundaries and other extenuating constraints within the medical community often impede multidisciplinary approaches to patient care (Muddiman et al., 2019). Researchers suggested that further studies were needed to examine the relationship between generalism and specialism, examining the dichotomy concerning a continuum that joins primary and secondary care to promote interdisciplinary teamwork (Taylor et al., 2019). Multidisciplinary care literature and practice recognize the importance of values. However, there exists a lack of information about the realized patient values in interdisciplinary care (Zonneveld et al., 2018). This quantitative study was conducted from a pragmatic perspective, focusing on the Biblical worldview. This quantitative research was significant as it pertains to the body of knowledge to implement and manage multidisciplinary care. The goal was to reduce the disparities in literature, view the problem through a biblical worldview, and add value to the business practice of interdisciplinary team disease management.

A Review of the Professional and Academic Literature

This researcher conducted a thorough review of the professional and academic literature related to the practice and implementation of multidisciplinary care. Extensive literature on the subject informed the direction and goals of the proposed quantitative study. The literature review revealed recurrent themes and gaps in the existing literature. The research aims to reduce gaps in the literature, inform business practices, and suggest further research.

Business Practices

Implementation. Provider education is an essential aspect of multidisciplinary care model implementation. Some physicians were unaware of the concept or existence of multidisciplinary care in their organization (Kedia et al., 2020). According to a recent study, providers recognized the need for increased education and awareness for physicians and staff regarding the availability of the multidisciplinary model in their institution. Anticipating a lack of provider buy-in, physicians suggested that the education about the multidisciplinary model focus on timely care (Taylor et al., 2019). The model should include guidance on multidisciplinary consultations and information for managing referrals to bring patients into the multidisciplinary clinic (Soukup et al., 2018). Organizations where multidisciplinary care can be suitably co-located need to be supportive in creating infrastructure, educating providers, and promoting multidisciplinary care for successful implementation and utilization.

Physician surrogates can also play a vital role in multidisciplinary care. Physicians who are not able to contribute directly to a multidisciplinary care team suggested that other providers could represent them. Physician assistants and nurse practitioners could act as surrogates for those physicians. Another solution for busy clinicians is technology. Physicians indicated that available time to participate in multidisciplinary care might be a problem. The use of technology could resolve the issue and provide a means for patients to participate in the decision-making process (Kedia et al., 2020). Ordinarily, multidisciplinary methods are considered in-person meetings that consist of various specialists gathering to discuss clinical cases (Berardi et al., 2020). However, virtual meetings are also often employed, granting distant providers access to confer with each other and determine the appropriate diagnostic and therapeutic course of treatment (Berardi et al., 2020). Successful implementation is a crucial step in offering

multidisciplinary care, but barriers to implementation must also be considered and remedied (Soukup et al., 2018).

The introduction of the multidisciplinary approach to the practice of healthcare delivery has helped providers meet the evolving needs of cancer patients. Care teams coordinate through multidisciplinary clinics, breast units, and multidisciplinary tumor boards, sometimes called multidisciplinary meetings (Berardi et al., 2020). Research in the form of a literature review analyzed the interdisciplinary approach to cancer care, focusing on clinical guidelines adherence, treatment outcomes, and the impact on decision-making processes (Taylor et al., 2019).

A tumor board (or review) is a coordinated treatment planning team where multiple physicians in different specialties (disciplines) review and discuss the diagnosis and treatment options of several complex patient cases (Berardi et al., 2020). Tumor boards meet regularly to discuss the management and progress of cancer patients. The collective input helps provide the best care and most current treatment options (Williams & Kamat, 2017). Often, resident hospital treatment teams do not have access to all the necessary data to make the best decision for complex patients. This lack of access led to the creation of mini tumor boards to allow a small number of specialists to participate in treatment planning (Berardi et al., 2020).

The first multidisciplinary care teams appeared roughly 50 years ago (Berardi et al., 2020). Although primary care providers are not an integral part of the specialty-focused teams, they can have a crucial role in the early identification of cancer (Williams & Kamat, 2017). They are the starting point for introducing patients to the multidisciplinary team, and they provide follow-up care after hospital discharge. Primary care physicians manage additional comorbidities along with disease management and symptoms treatment for the patient. These doctors are often

the providers that identify treatment-related side effects the patient may experience upon hospital discharge (Berardi et al., 2020).

A recent study showed that healthcare providers were concerned about barriers to implementing the multidisciplinary model in a healthcare organizational setting. These concerns included integration challenges, financial obstacles, time constraints, and doubts about final care decisions (Kedia et al., 2020). The current healthcare environment makes implementing a multidisciplinary care model difficult, partly due to structural impediments; logistically, requiring providers to be in the same location presents challenges (Williams & Kamat, 2017). The complicated referral process adds to the barriers to implementation. For instance, emergency room doctors typically make one phone call per patient. Having to call the primary care provider to get permission to call a specialist would likely be problematic.

Decision-making difficulty is also considered a barrier to implementation. Some providers were concerned about possible physician-group alliances that might impact multidisciplinary decision-making. The concern was rooted in the notion that outside opinions would not have the same weight as those within the groups. In the multidisciplinary care model, physicians provide treatment recommendations without the patient being there. Providers gather and review the facts of the case, including imaging and test results. Many doctors expressed that they would want to consult the patient before providing recommendations (Williams & Kamat, 2017). Another noted issue was the possibility that referring providers might disagree with multidisciplinary recommendations because those physicians could not consider patient nuances (Kedia et al., 2020).

Physicians believed that the multidisciplinary care model would have limited value for advanced cancer cases. Despite optimism regarding improved outcomes, some providers were

skeptical whether this model would benefit patients with advanced disease (Kedia et al., 2020). Physicians had questions concerning the role of the primary facilitator in multidisciplinary care. Providers wanted to know who would coordinate patient care after physician recommendations. Once the multidisciplinary care team received the referrals, providers felt that they might lose patient access. Providers expressed the fear of losing patients. This scenario was considered possible due to patient preference or the multidisciplinary team assuming sole responsibility going forward (Halcomb, 2018).

Other concerns were related to time constraints, reimbursement, and referrals. Physicians expressed uneasiness about the increased time commitment required of multidisciplinary care (Kedia et al., 2020). The increased involvement needed for the model raised concerns about jeopardizing providers' already limited time. Physicians voiced concern about reimbursement related to multidisciplinary care. Since involvement is not salary or incentive-based, the time commitment might jeopardize potential income from individual practices. Most physicians have referral lines with other providers and believe the multidisciplinary care model might jeopardize those connections (Halcomb, 2018).

Evidence-based business practices play a significant role in geriatric oncology treatment (Presley et al., 2020). National initiatives focus on the need for interdisciplinary care to improve health outcomes for older cancer patients. Older adults with cancer have unique needs independent of routine oncology care (Halcomb, 2018). However, disparities remain between knowledge and practice concerning implementation. Researchers detailed the methodology of a multidisciplinary approach for providing care for older adults with cancer in a particular institution (Soukup et al., 2018).

Within this model, the multidisciplinary team assessed and delivered a comprehensive set of care recommendations, all provided in one clinic visit, to increase proficiency and lessen travel for the patient (Presley et al., 2020). This approach integrates oncology subspecialties in healthcare delivery and delivers coordinated assessments and interventions to improve health outcomes (Soukup et al., 2018). If not effectively addressed, Geriatric health conditions can lead to expensive, uncoordinated care that diminishes the quality of life for the patients and their caregivers. The multidisciplinary approach addresses unmet needs and risk factors, implements interventions, provides healthy lifestyle recommendations, and streamlines care in conjunction with standard oncology treatment (Presley et al., 2020).

Technology. Recent research showed that an essential component of health care delivery is the Multidisciplinary teams (MDT). Nevertheless, the needed specialists are not always physically present in a given institution (Janssen et al., 2018). Using health information systems and technology are fundamental factors for building the capability of MDTs to conduct improvement and implementation projects (Soukup et al., 2018). However, there is minimal research on how MDTs make use of technology and information systems. More studies are needed to determine the kinds of systems necessary for technology improvement and implementation. The need for further research is particularly evident in cancer care delivery, as multidisciplinary teams are the internationally preferred method for service delivery. This research showed findings on how seven MDTs in cancer care utilized technological and information systems. It also identified the barriers and enabling factors that impacted their utilization.

MDTs used technology in weekly meetings and document the perceived impact of technology (Janssen et al., 2018). Three common themes emerged: the utilization of MDTs and

how data was collected, the technological impact on the MDT meeting environment, and the impact of technology and information systems on clinical decision-making. The study demonstrated that real-time data collection and imaging might improve patient-centered care coordination. However, information communication technologies (ICTs) can be used unsuccessfully by teams not adequately trained in collecting data. Additional research is warranted to identify the enabling factors that support a more accurate collection of information and utilization of outcome data from ICT (Soukup et al., 2018).

The literature reflects how current and emerging ICT affects the health care sector for both patients and healthcare providers. Within a short period of time, ICTs are beginning to change the way patients take part in their own health (Janssen et al., 2018). ICT improves clinical processes by bolstering data-driven care, thus letting patient outcomes be measured and compared with benchmark performance metrics. The established data collection system is being revolutionized in the healthcare sector by evolving improvements in ICTs (Soukup et al., 2018). Through advances in technology, health data becomes more accessible, making it possible for health care providers to change their practices. It is apparent from the literature collected that the prevalent use of current and emerging technologies is reshaping the healthcare industry (Janssen et al., 2018).

However, there are inconsistencies in the awareness and application of technology to better comprehend the patient experience (Janssen et al., 2018). Healthcare professionals must understand better how technology in areas such as cancer care can enhance patient-centered models of care. The literature reveals a noticeable lack of understanding of how implementing ICTs can support the delivery of quality care for patients and enable connections across various applications and data sets (Kelly et al., 2018). The application of ICT in the health sector exists

more often when the functionality of the technology offers financial benefits along with quality and safety components.

MDTs have become a significant component in the delivery of cancer care. The central function of MDT meetings is to establish a team of healthcare professionals to discuss a patient's treatment plan (Janssen et al., 2018). Much of Europe has employed these meetings in their healthcare facilities and accepted them as the favored delivery methods at a policy level. MDT meetings are also becoming more commonly used in America. MDTs are not just a component of cancer care delivery but are a vital aspect of healthcare delivery across sectors (Kelly et al., 2018). Team-based approaches can significantly improve many aspects of the quality of care delivered to patients (Janssen et al., 2018). Multidisciplinary care establishes a line of communication between specialists and primary care providers. Team-based care also positively impacts health professionals by improving the overall professional climate.

Although MDTs have become a standard practice in cancer care in many countries, there remains a general lack of information about technology and information systems regarding their integration into these teams (Kelly et al., 2018). There is insufficient research analyzing how ICTs can be integrated into MDTs This lack of data concerns the importance of adequately implemented ICTs for coordination of care of health professionals. Many MDTs have used ICTs in the form of clinical decision support systems and clinical dashboards, and the process improves care and patient outcomes. ICT programs used to facilitate multidisciplinary symptom management between treatment teams and patients can improve symptom management and control (Janssen et al., 2018).

Patients in rural and remote locations can benefit, according to recent literature. A study concluded that the successful implementation of ICTs in multidisciplinary care could enable

universally accessible, cost-effective, and high-quality care, particularly for patients in these locations (Janssen et al., 2018). Patient imaging is the most frequently used form of technology. Patient scans and imaging displayed at the front of most meeting rooms allow experts to discuss their interpretation of the results and findings. These displays of patient imaging and scans generate discussions across specialties, particularly between oncologists and pathologists. The displayed imaging and scans are regularly the prompts for a discussion among those in attendance as more senior specialists pose questions to new providers. The questions are related to treatment options and prognosis (Zonneveld et al., 2018).

Relying on imaging equipment can become a challenge when imaging or imaging reports are not available. Older images are often not accessible through the new technology, hindering the ability of team members to assess disease progression (Zonneveld et al., 2018). This incompatibility can result in poor access to patient databases or gaps in the available data. Imaging might be unavailable due to either the challenge of integrating digital systems or because results have not arrived from external imaging providers promptly. A dedicated meeting coordinator plays an essential role in ensuring timely access to imaging and scan. This meeting coordinator ensures the dissemination of agendas, patient lists, and reminders, which helps assure that all relevant results are available for the multidisciplinary team meeting (MDTM) (Janssen et al., 2018). In meetings with dedicated administrative support agendas, patient lists, and reminders, including all relevant results and materials, are available to the healthcare providers. In MDT tumor stream meetings, the chair will often ask junior doctors to participate in the discussion. The meeting coordinator instructs them to conduct internet searches for literature to support specific diagnoses.

MDTMs often employ teleconferencing equipment to support a satellite MDT in rural locations. Even when facilities have the capacity to link with rural and remote locations, this technology is typically only employed as required or when requested by a specialist (Janssen et al., 2018). In many MDTMs, new doctors are encouraged to deliver a PowerPoint presentation of a relevant clinical case study for discussion with the team. MDTMs also allow research-focused members to present their findings (Zonneveld et al., 2018). Smartphones are regularly the source of information regarding treatment options and diagnoses at the request of the MDTM chair. Teams can enter real-time data during meetings, a process often led by a registrar undertaking a local healthcare improvement project (Berardi et al., 2020).

Participating team members unanimously agreed that health information systems and imaging are essential in supporting clinical decision-making. The use of imaging profoundly impacts a meeting's environment and helps stimulate positive team discussion (Janssen et al., 2018). Teams can utilize information systems to enter real-time data or teleconferencing technology (Zonneveld et al., 2018). The information gathered from observations in the MDTMs confirmed the importance of imaging equipment to diagnose and discuss treatment options. These observations firmly validate the role of imaging in promoting discussions about disease staging, treatment, and prognosis among team members (Berardi et al., 2020).

Delays in receiving patient scans can result in the interruption of treatment and treatment decisions. These delays prompted some study participants to express the need for external imaging companies to make scans results available online. Physicians suggested that referring patients to only those companies could ensure access to timely treatment (Janssen et al., 2018). Prompt access to imaging and scans is to be critical in helping to identify discrepancies in previous diagnoses and enhance the ability to compare and have discussions about individual

treatment plans. Participants were all in agreement that the use of imaging technology and real-time data collection promoted clinical discussions during MDTMs (Zonneveld et al., 2018).

There is widespread use of technology in the healthcare sector, and findings from this study indicate that MDTs are using a wide variety of ICT for support throughout their meetings. The new technology is changing the delivery of care profoundly (Janssen et al., 2018). The groundbreaking use of ICTs has many possibilities for developing aspects of healthcare, and they are employed in innovative ways in the healthcare sector. Despite the positive acceptance of the MDT meetings, evidence of the impact of these innovations is incomplete, and there are many obstacles to overcome. Research from this study reinforces the existing literature by suggesting that MDTs do not currently make optimal use of health information and technology (Janssen et al., 2018). There are several obstacles to overcome before optimal use of ICT during MDT meetings is optimal, including ICT abilities of individual team members, physical environment, and time. Participant responses indicate that the perception of the new technology is burdensome and increases the workload of meeting participants. These barriers are consistent with the findings of this study (Berardi et al., 2020).

This study predominantly focused on the use of ICT in MDTs. However, the use of real-time clinical data and collection was a priority for many participants. MDT leaders and champions expressed the desire to collect meaningful patient-centered data (such as quality of life) as a means of attaining information to advise treatment choices and end-of-life care (Janssen et al., 2018). This suggestion is consistent with findings that show acute and long-term physical and psychosocial comorbidities are associated with cancer treatment, indicating an increasing need for supported self-management and shared care. Furthermore, the quality-of-service indicators come from patient experience or patient-reported outcomes (Berardi et al., 2020).

There needs to be an acknowledgment that MDTs have an essential role in improving decision-making in the treatment process and improving the quality of care for patients. MDTs identify the key outcomes and analyze data related to patient experience (Janssen et al., 2018). Adequately implemented ICTs for data collection have the potential to improve the coordination of cancer care in MDTs, as has been demonstrated in other health arenas (Janssen et al., 2018). The findings in this study concur with clinical data research acknowledging the increasing use of technologies like electronic medical records. These advances have made information more accessible to clinicians by increasing the opportunities to access patient data for various uses, from clinical processes to quality improvement (Berardi et al., 2020).

However, many study participants expressed concerns that some health services collect a plethora of information, but much of it is not beneficial or accessible. Most participants believed that ICT could make more accurate use of clinical data collection and allow for a more straightforward assessment of MDTs for a range of applications. Nevertheless, the existing literature has indicated that the widespread use of ICTs for clinical data collection has, in effect, gathered a substantial amount of unnecessary or inaccurate data (Halcomb, 2018). Clinicians have indicated that they are aware of the risk of collecting large amounts of data that have little to no value (Janssen et al., 2018). The challenge moving forward will be to identify which data collected is valuable and which is not. This identification could be achieved by engaging end-users, such as health professionals, in designing and implementing data collection for ICTs (Berardi et al., 2020).

Even though the ICT process can collect unnecessary clinical data, the findings from this study indicate that high-quality clinical data collection has the potential to improve the use of new technology. It can make data input a more straightforward process and participation easier

for clinical teams (Janssen et al., 2018). A demonstration of the new ICT that enabled efficient clinical data collection revealed how it used technology to incorporate real-time data collection into MDTMs. The study participants agreed that this process was efficient, and the team's data collection was more meaningful with adequately implemented ICT. Patient-centered data helps inform clinical decision-making and end-of-life care. This finding is in line with the existing literature indicating close-to-the-source data increases the quality of collected information (Janssen et al., 2018). Therefore, the data collection process becomes a dimension of service quality and an indicator of optimal standards of care. Through identifying key outcomes and data, MDTs have an essential role in this process of improving treatment decisions and follow-up care. MDTs (Halcomb, 2018).

Assuring that specialists, as a group, see the importance and the usefulness of collecting patient-reported outcomes (PROMs) is an integral part of making the best use of technology (Janssen et al., 2018). ICTs data collection systems can include integrating PROMs into MDTMs, though additional research into enabling this process into cancer care is imperative (Halcomb, 2018). Indeed, there is a need to identify a classification of core PROM domains and dimensions in cancer care and treatment. Clinical practice seldom implements these classifications despite the widely known importance of capturing the patients' experiences with treatment and care (Berardi et al., 2020).

Awareness of implementing ICTs to improve aspects of MDTs, such as collecting information, is vital. However, the outcome from this study advises that the use of ICTs alone is inadequate in improving MDT dynamics and improving the delivery of care (Janssen et al., 2018). ICT is a tool that enhances MDTs, but human and organizational factors have the most significant impact on the successful use of technologies in health care. In particular, having

access to specialists is an essential factor. (Zonneveld et al., 2018). Specialists who understand how to interpret and use the technologies and data systems, experts who can design clinical databases for a team, or even analyze clinical data sets during meetings, are necessary (Janssen et al., 2018).

Staff members will need sufficient training to use the technologies and implement the ICT successfully (Janssen et al., 2018). Also, complex new technologies often require that institutions contribute to individual training to ensure that users possess the skills needed in specific programming that supports the ICT usage in MDTs. The cost of training and teaching new and existing staff or engaging staff with specialized ICT training may be exponential but necessary to ensure ICTs are supported (Janssen et al., 2018). This finding is not consistent with current literature, which maintains that ICTs are a cost-effective solution for improving the quality of healthcare (Zonneveld et al., 2018).

Even though the literature acknowledges the advantage of multidisciplinary care for both patients and healthcare professionals, there remains an overall lack of understanding of how best to support this type of care (Janssen et al., 2018). This confusion stems from the challenges of implementing innovations in MDTs, such as adequate assimilation and cost-effectiveness. Findings from this study show that to overcome the challenge of implementing innovations such as ICT within MDTs, both individuals and organizations need to recognize when and how to use it to benefit practice (Zonneveld et al., 2018). This recognition is critical in rapidly evolving data collection and feedback for clinical and research purposes. Effectively collecting this information requires information technology experts, implementation researchers, and clinical teams to work together to develop a practical approach for using ICTs. This teamwork is a means to achieve a

behavior change. Corporate leadership should acknowledge and support the need for resourcing to utilize emerging technologies in optimal ways (Janssen et al., 2018).

It has become customary practice to use ICTS in MDTMs, especially in those meetings with technology that displays patient imaging and other information about patient history (Janssen et al., 2018). Regardless, ICTs are not utilized optimally for real-time data collection and feedback, a practice that is of importance to healthcare professionals. Making improvements in the real-time collection and feedback process can enhance quality, care coordination, and patient-centered models of care. This potential does not always come to a realization. There is value in identifying enabling factors that facilitate the better collection, use of collected data and other health information systems (Zonneveld et al., 2018).

Admittedly there are difficulties in implementing ICT effectively in healthcare. However, several factors may increase the probability of successful integration (Janssen et al., 2018). From an organizational perspective, it is essential that adequate resourcing is available so that MDTs have access to the right technologies at the right time and place (Kelly et al., 2018). From the assessment of MDTs, effective implementation of ICTs can involve engaging members who have been educated and trained in how to use specific technologies effectively so that programs can work together with improving the existing structure of the MDTM.

Virtual Meetings. Chronic disease management has become more successful with the implementation of MDTs. Experts increasingly regard MDTs as a best practice form of healthcare management (Taylor et al., 2019). However, there is often no appropriate specialty panel for patients with undiagnosed disease, multiple interacting comorbidities, or other complex issues. Often, cases fall outside the remit of disease-specific MDTs or the scope of expertise of

individual clinicians (Kelly et al., 2018). Specialists benefit from a panel to discuss patient care and develop an integrated plan for management (Aston et al., 2018).

Researchers developed and piloted a new extraordinary virtual MDT. This forum will allow for inter-specialty discussion and collaboration to allow specialists to organize an urgent union of all involved parties in response to challenging clinical scenarios (Aston et al., 2018). In a recent study, researchers share experiences implementing this innovation and advise how this could further develop the multidisciplinary forum to improve the quality of healthcare delivery for patients with chronic healthcare needs, timelessness, and integration (Kelly et al., 2018).

In the 1990s, healthcare providers in the UK saw a need for equality of access to standardized, high-quality care (Aston et al., 2018). Organizations introduced MDTMs for cancer care during this time, and organizations soon adopted the practice as a mandatory component of cancer case management (Taylor et al., 2019). Patients managed via MDTs were more satisfied, received treatment in a timelier manner, and had a greater chance of survival for some tumor types. Over the next decade, MDTs in other specialties multiplied, and most hospitals or regions had regular MDT meetings.

MDT meetings typically involve a predefined group of clinicians having regular meetings. Usually, the sessions are face-face and generally at a recurring fixed time to discuss patients with a specific condition (Aston et al., 2018). However, for some patients without an apparent diagnosis, complex conditions, or multiple interacting co-diagnosis, there is often no appropriate routine MDT to discuss their care. Patients with these complex needs could benefit from the collaborative approach of an MDT format but are often subject to multiple sequential reviews from multiple specialist teams and are often at risk of experiencing delayed and

fragmented care (Taylor et al., 2019). The absence of an organized, collaborative forum that brings together numerous physicians can negatively affect patient care (Aston et al., 2018).

Researchers believe that patients with complex conditions require some form of MDT that can convene quickly to develop coordinated management plans (Taylor et al., 2019). Patients with multiple illnesses will likely fall outside the scope of individual physicians who are experts in their field (Aston et al., 2018). The progression of increased life expectancy, the enhanced risk of accumulating multiple chronic illnesses, and the drive towards centralization of healthcare services will mean patients will receive fragmented care without adequate mechanisms for inter-specialty working. These are but a few of the many values of the use of MDTs.

Researchers created the concept of a special MDT for patients with complex conditions in which a principal clinician responsible for a patient's care could quickly arrange a meeting of all connected parties in response to a challenging clinical scenario like a diagnostic dilemma or need for a coordinated treatment plan. Researchers conceived that face-to-face meetings would be difficult because clinicians could be from various specialties and spread across different sites making discussions of complex patients challenging to arrange at short notice. Therefore, researchers improvised a way for attendees to participate remotely by developing technological and logistical mechanisms (Aston et al., 2018). Although virtual MDTs have occurred in community settings, this combination of an ad hoc multispecialty forum for organized case management expedited by a virtual platform had not been reported previously in a secondary care setting (Taylor et al., 2019).

Members of the MDT team thought that it was a beneficial process that allowed them to participate in clear discussions between each specialty team. Essentially, this allowed them to

proceed with planning discharge, and the patient, having been in the hospital for six months, was discharged within ten days to neuro-rehab (Aston et al., 2018). This expedited process worked because of the use of MDTMs. Researchers asked patients to provide feedback, and those who replied saw the benefit of using MDTs. One patient remarked that the care was excellent and well-coordinated after the implementation of the MDT (Berardi et al., 2020).

Everybody seemed organized and knowledgeable. The patient always felt that they knew what was going on, and representatives of the MDT drafted the follow-up letter in a language they could understand (Berardi et al., 2020). Another remarked that before MDT implementation, there were occasions when various teams had to wait until they could meet with other groups such as infection specialists, urology teams, or nephrologists. This process took much longer. With virtual MDTMs, the specialist did not even have to be in the same room (Aston et al., 2018).

Even though setting up the virtual system was delayed significantly by the time taken to receive local information governance approval, it only took six months to complete (Berardi et al., 2020). Organizers expressed concern about discussing confidential information using video-conferencing software from an external provider (Aston et al., 2018). Federal approval and procurement of appropriate software could eliminate the need for similarly protracted approval processes in other hospitals. To adequately take of advantage of MDTs, sufficient virtual systems are a must (Berardi et al., 2020).

Clinicians sometimes working across multiple sites found it difficult to establish and agree to a suitable time and date for the meetings(Berardi et al., 2020). This conflict proved to be a significant logistical challenge; sometimes, even recognizing an appropriate clinician within each specialty proved difficult. The unpredictable nature of the workload of On-call clinicians

often made them unable to commit to a scheduled meeting (Aston et al., 2018). These issues are among the problems that must be addressed for implementation (Berardi et al., 2020)

Successful strategies of MDTs are an essential consideration: if the team is too small, it can lack the broadness of expertise required to deal with complex problems; if the group is too large, communication can be inhibited, and reaching a unanimous plan can be more difficult (Berardi et al., 2020). In this pilot, researchers left the decision of the invitees to the requesting clinician. In 40% of the meetings conducted, numerous essential parties failed to attend. Researchers recommended that to facilitate timely scheduling, referring clinicians restrict participation to critical members (Aston et al., 2018).

As with any MDT meeting, the effectiveness of the virtual system is dependent on leadership. The active involvement of the lead clinician or administrator in facilitating, planning, and conducting the virtual meeting is vital. However, researchers were able to support the MDT coordinator for logistical and technological issues (Aston et al., 2018). MDT coordinators eased the meeting planning by using direct communication between the lead clinician and invitees ahead of the meeting (Zonneveld et al., 2018).

Specialists did not universally welcome the virtual system even though many clinicians widely regarded it as a potentially helpful innovation. Several clinicians raised the concern of getting overrun with requests to join such meetings (Aston et al., 2018). Specialists were not reimbursed for their contributions because there were no mechanisms in place for compensation. The activity of virtual meetings would need to provide an incentive if used widely. This forum, which supports simultaneous group discussion in real-time, offers genuine added value to patient care over these existing methods of communication. Many clinicians may have already used informal virtual networks of case discussion via email to discuss complex clinical scenarios with

colleagues in other specialties. For the virtual format to be widely adopted, administrators must make changes and convince physicians of the value of the effort (Zonneveld et al., 2018).

Some clinicians' lack of familiarity with audiovisual-conferencing technology might have contributed to their hesitation to participate (Aston et al., 2018). The use of virtual conferencing technologies or other virtual communication methods is already widespread in healthcare and will likely increase as technology advances (Zonneveld et al., 2018). Sufficient training and support packages for all those involved are needed to overcome this barrier. Some colleges and universities have already incorporated practical case-based teaching programs on virtual teams working into their undergraduate curricula. Similar virtual systems could greatly facilitate coordinated care for patients with special needs.

Although the initial objective of the virtual meeting was to improve care coordination between specialties within secondary care, several of the patients discussed had complex needs that required input from primary care and mental health services (Zonneveld et al., 2018). The lack of communication between care providers in different sectors, such as physical and mental health services, is a crucial barrier to delivering effective integrated care for patients with complex needs (Aston et al., 2018).

Case management has the potential for shortcomings with the lack of direct patient participation with the MDT program (Aston et al., 2018). Administrators and clinicians should develop a system to promote shared decision-making if the virtual format is widely adopted (Aston et al., 2018). This work is an excellent opportunity to improve inter-specialty collaboration and enhance healthcare delivery integration, timeliness, and quality for patients with complex needs with available, versatile, and affordable digital conferencing technologies (Zonneveld et al., 2018).

The Politics of Implementation. Healthcare organizations are complicated social entities composed of multiple stakeholders with differing priorities, roles, and expectations about delivering care (Taylor et al., 2019). To implement an effective multidisciplinary team and provide reliable, cost-effective patient care, healthcare employees must operate within the micropolitical context of the health service. A recent study examined the use of power, authority, and influence on healthcare team goals, vision, and decision-making processes in a micropolitical system. Although these concepts are influential when cultivating change, there is a shortage of literature examining the mechanisms through which micropolitics influences implementation processes among teams. This study examined this gap by exploring the role of power, authority, and influence when implementing a collective leadership intervention in two multidisciplinary healthcare teams (Rogers et al., 2020).

The research revealed that implementing MDTs in healthcare systems is an innately political process influenced by controlling power structures (Taylor et al., 2019). Two key themes emerged showing the dynamic role of this concept throughout implementation: Exerting hierarchical influence for implementation and conventional power structures stifling MDT implementation. Obtaining support across various levels of leadership is instrumental to implementation progress as the influence exercised by these individuals persuades participant commitment. However, each healthcare group's traditional dynamics determine how this influence impacts the additions of MDTS, which can negatively affect some existing team members' process experiences (Rogers et al., 2020).

Healthcare organizations are complex, intrinsically political systems (Rogers et al., 2020). Although often viewed as one large assemblage, healthcare institutions are social businesses incorporating shifting combinations of interest groups. Healthcare delivery has grown

from care by one all-knowing provider to the provision of care by MDTs. Numerous healthcare professionals (HCPs) from several disciplines make up MDTs. They interact in highly unpredictable environments to optimize patient care (Taylor et al., 2019). Healthcare teams can achieve holistic patient-centered care by utilizing the skills and knowledge of each discipline. However, interprofessional collaboration is challenging.

Each healthcare group has a unique perspective that corresponds to their discipline-specific training and clinical experience (Rogers et al., 2020). Even though these various providers share the corresponding goal of bettering patient outcomes, HCPs have differing priorities, roles, and expectations about delivering care. These conflicting interests frequently cause HCPs to operate within discipline-specific silos such as nursing, medicine, and allied health. Moreover, hospital administrators represent another stakeholder group with divergent priorities. To achieve financial and efficient targets, these individuals guide strategic planning and regulate the resources available to HCPs (Taylor et al., 2019).

To reach an agreement among these various stakeholders and deliver safe, cost-effective patient care, navigating the micropolitical environment of healthcare is a universal experience for MDTs (Soukup et al., 2018). Politics has an unfavorable reputation consisting of self-serving behaviors, and natural organizational processes are inherently political. For this discussion, politics is the use of power, authority, and influence that directly impacts healthcare team goals, vision, and decision-making processes (Rogers et al., 2020). The appropriate use of power occurs through skillful political tactics and the ability to exercise political influence to achieve desired outcomes. Thus, power and politics are intertwined concepts that play essential roles during interpersonal interactions within organizations.

As opposed to seeing power as a possession, as in exercising power over others, this research adopted a post-modernist perspective, describing power as a relational force between two or more people (Rogers et al., 2020). By adopting this viewpoint, power can be wielded by all. This perception is evident in implementation science literature, with peers cited as an accessible and convincing influence to persuade staff enthusiasm for change (Rogers et al., 2020). However, traditional standards of organizations reinforce staff identities, meaning some team members' opinions are valued more than others (Rogers et al., 2020). A hierarchical power structure has traditionally existed within healthcare, with medical providers ordinarily assuming dominant roles(Soukup et al., 2018).

This power dynamic leads to other professionals encountering challenges establishing the status of their patient-care decisions (Rogers et al., 2020). The status of a discipline within a team hierarchy determines how team members experience emotions such as fear. Although the dynamic between nurses and doctors has changed over the years, nurses still strive for autonomy, with physicians remaining the primary decision-makers (Soukup et al., 2018). The emergence of allied healthcare professionals like physiotherapists, occupational therapists, social workers, dietitians, speech and language therapists, and pharmacists has improved the range of services available to patients. However, these professions have historically assumed subordinate positions within MDTs, with their roles allocated as allied to medicine. Nevertheless, despite controlling clinical decision-making, the addition of healthcare managers has challenged physician autonomy. Management authority in hospital decision-making has reduced physician capacity to ensure strategic decisions benefit their professional interests.

The micropolitics encompassing healthcare teams are influential mechanisms for promoting change. Each profession's diverse values imply that the implementation outcomes

may not be consistently positive for all disciplines (Rogers et al., 2020). This threat to existing standards often sparks resistance among staff. However, political skill empowers change agents to consider diverse professional interests and efficiently exercise their influence to negotiate collective action (Soukup et al., 2018). Therefore, politics can be a mechanism for establishing order. Employing political power gives meaning to a change effort and improves staff trust in the new reform.

Consequently, political skill decreases the uncertainty linked to change, improving the likelihood of successful implementation (Soukup et al., 2018). Despite the significance of the micropolitical setting, the concepts of power, authority, and influence have received inadequate theoretical or empirical consideration in implementation approaches. Additionally, although teams are central to the organizational structure of healthcare, there is a poor understanding of team-level contextual determinants within the field (Rogers et al., 2020). This research examines these gaps by investigating the mechanisms through which micropolitics affects the implementation of a team-based leadership intervention.

Throughout this investigation, the researcher affected a peripheral membership role, establishing a rapport with each team but staying detached enough to maintain an outsider perspective (Halcomb, 2018). They noted participants' dialogue, interactions, and physical surroundings. Following the MTDs implementation, the researchers conducted semi-structured interviews with staff at two organizations in February and March 2019 (Rogers et al., 2020). By extracting a greater comprehension of participant experience, these data aided in identifying contextual determinants affecting successful implementation from the viewpoints of those involved (Rogers et al., 2020). The final dataset included this pilot interview. All interviews were audio-recorded and transcribed verbatim.

The inductive analysis showed that implementing MDTs in healthcare facilities is an intrinsically political process controlled by prevailing power structures (Rogers et al., 2020). A traditional hierarchical system exemplified by leaders' downward influence on followers through formal authority was evident in both cases. However, the impact of this hierarchy on implementation differed across settings. The data generated two themes for consideration: exerting hierarchical influence for MDT implementation and traditional power structures constraining implementation (Halcomb, 2018). Senior leaders and managers play a fundamental role in implementing the collective leadership (CL) intervention (Taylor et al., 2019). By exerting their authority, these staff stimulated engagement and endorsed the relevance of the intervention among team members (Berardi et al., 2020). It is essential to consider the influence of senior physicians, senior managers, and middle managers on implementation (Rogers et al., 2020).

The study examined physician rule and revealed an explicit hierarchy within the focus organization characterized by silo working, authoritarian leadership, and fear (Rogers et al., 2020). Within this setting, staff associated fear with their inability to speak up, which was often related to their interpersonal interactions with some senior physicians within the team. Senior physicians were acknowledged as the most potent influence on the team, and participants described them as *next to God, a step above management*, and *untouchable* ((Berardi et al., 2020). One participant implied that physician power was due to the organization's rural location and the associated challenges of retaining staff. Others related this influence to senior physicians' central role in patient care delivery, characterizing them as *ultimately responsible* (Zonneveld et al., 2018).

But in another organization, the senior physicians appeared to establish team culture. This institution was remarkable for its inclusive approach (Rogers et al., 2020). Some participants proposed that this cultural difference was related to senior physician specialties. Staff within both sites associated a hierarchical approach to decision-making with the surgical team. The locus is so profoundly on surgery and the surgical physicians that a kind of God complex exists that is difficult to break down. The power dynamics had a significant impact on the intervention's implementation. Reflecting their authority, participants acknowledged senior physician support as crucial for ensuring the intervention's adoption (Zonneveld et al., 2018). Within this organization, senior physician support for the intervention was intense and evident. One senior physician was heavily involved with implementation, organizing, and delivering intervention sessions and exhorting the value of attendance.

Given the influence of this senior physician, participants acknowledged their commitment as essential for enhancing engagement by establishing the intervention's relevance (Rogers et al., 2020). Although another senior physician attended and contributed to intervention sessions, this support also served to reinforce the intervention's legitimacy. These providers exhibited role model behavior as opposed to dictating the situation without staff input. In contrast, the other organization's senior physicians failed to engage throughout implementation, with only one of the four senior physicians attending intervention sessions. Participants suggested workload, competing priorities, and a perceived intolerance for the CL intervention as potential reasons for their ineffectual participation (Zonneveld et al., 2018).

Senior management authority is a vital component of MDT implementation. The first organization's senior management strongly supported the intervention (Rogers et al., 2020). Without this top-down support organizing and facilitating the intervention, participants believed

the intervention would have failed. However, compared to senior physicians, The first organization's senior managers were perceived to have less influence in ensuring staff engagement. Attendance at the intervention appeared to vary under senior physician support; greater staff engagement occurred when senior physicians were present. Conversely, senior management needed to continually reach out to team members throughout implementation to guarantee participation (Soukup et al., 2018).

As implementation proceeded, the challenges of engaging staff became discouraging for senior management, which lessened the probability of sustaining the intervention. Administrative personnel voiced frustration in the repeated efforts to get people to participate (Rogers et al., 2020). For senior staff in the second institution, organizational support promoted the importance of the intervention and empowered staff to recognize that they were a team worthy of support. Like The first organization, senior management of the second organization selected frontline staff for participation in the MDT implementation. These employees included doctors, nurses, and AHPs working on the wards (Soukup et al., 2018).

However, in the second organization, staff seemed to have less familiarity with their organization's management (Rogers et al., 2020). This distant relationship was evident by frontline staff perceptions of senior management support during MST implementation. Most participants equated senior managerial support simply to providing refreshments during the intervention, while others were unaware of any senior management engagement (Rogers et al., 2020). Most team members felt the remote support was appropriate due to the ward-based nature of the intervention. However, for one participant, this distant engagement was disappointing as this gap diminished the perceived value of the intervention because the team was left to work alone (Berardi et al., 2020).

Middle manager influence is also consequential for MDT implementation. Clinical nurse managers (CNMs) played a significant role in achieving the CL intervention at both sites (Rogers et al., 2020). CNMs alluded to using their typical role as the middle-man to transfer the project information across professional groups. Other fundamental responsibilities of CNMs entailed directing people to attend the intervention and organizing sessions. However, throughout implementation, the CNM of one ward in one organization did not engage with the intervention (Soukup et al., 2020). This lack of support led to the inadequate dissemination of information about the intervention and its outputs among nursing staff. This lack of information impacted the staff's understanding of the project, which consequently influenced the intervention's acceptability and adoption among those nurses (Berardi et al., 2020).

This research demonstrates the need to account for the micropolitical context when implementing change (Rogers et al., 2020). Garnering support across multiple levels of management is paramount for implementation success. The influence exerted by these individuals prompted team member engagement. However, the traditional context of each team and organization determined how power was perceived and negotiated. This perception, in turn, negatively shaped experiences of the implementation, impacting implementation outcomes. Team micropolitics is interdependent with other levels of the health system. The interaction between political constructs will either drive or impede an MDT implementation effort. Although the influence of hospital administration would likely support the adoption of change, if rigid professional boundaries exist within a team and if an intervention contradicts staff values, implementation effort will likely fail (Berardi et al., 2020).

From a critical perspective, leadership is the art of persuading people to work towards a common goal. The current literature also describes politics as a mechanism for resolving conflict

through a process of bargaining, negotiation, and compromise (Rogers et al., 2020). These procedures are frequently characterized as management activities, meaning political behavior is an unseen, unacknowledged characteristic of effective leadership. The findings also present new insight into the impact of this influence when introducing change within healthcare systems (Berardi et al., 2020). This study supports the extant literature which identifies senior physician engagement as a critical feature of implementation success. Implementation success depends on the initiative's compatibility with physician values and whether these physicians perceive a need for change (Rogers et al., 2020).

This study reinforces that senior doctor attitudes toward an approaching implementation will determine whether the team accepts and adopt an innovation. Within the first organization's hierarchical context, the CL intervention, which challenges traditional power structures, was ignored by most physicians (Rogers et al., 2020). However, due to their more team-based effort, the specialists of the second organization were highly supportive of this inclusive innovation. The hierarchical authority of these senior physicians allowed them to advance their values and arrange a response from each team that aligned with their interests. Therefore, senior practitioners operate as sentries to innovation, influencing the engagement and widespread adoption of interventions across MDTs. This study also confirms the critical role of management throughout implementation. Management promotes the organization's values, which means their support is influential in normalizing a new practice among staff (Berardi et al., 2020).

Both cases received organizational support. However, the intensity of this support and its influence on implementation diverged across settings (Rogers et al., 2020). Within the second institution, although senior management involvement with MDT implementation was minimal, their remote support enhanced the commitment of senior MDT members. Within the first

facility, senior management engagement with implementation was strong. Through leading by example, most frontline staff found the intervention credible, which enhanced engagement with the intervention. However, despite active managerial support, the first organization's senior physicians remained reluctant to implement the intervention. This reluctance may reflect senior physician resistance to engage in management-initiated improvement initiatives due to a perceived threat to autonomy. Recognizing these power dynamics is central in determining the level of involvement required by each stakeholder throughout implementation (Kelly et al., 2018).

Obtaining middle management support was also considered fundamental, with staff primarily looking to their supervisors for guidance on responding to change (Rogers et al., 2020). The network centrality of these managers unites the operational core of an organization with senior management. Due to this particular position, middle managers mediate stakeholders' conflicting needs, demands, and priorities above, like senior management, and below, such as frontline staff, their place in the team hierarchy. However, this position also performs as a tool for change (Kelly et al., 2018).

By understanding multiple stakeholders' strategic and clinical priorities, middle managers can gather, synthesize, and adapt information received from senior management and disseminate it appropriately to assure its utility across interest groups (Rogers et al., 2020). Therefore, middle managers shape the team's collective understanding of the intervention, which stimulates or discourages initiatives for change. While the role of the CNM during MDT implementation is traditionally passive, this research illustrates that CNMs' support for implementation is vital to promote information about the intervention. CNMs are constant points of communication and dissemination for all professions. This research demonstrates the boundary-spanning role of

CNMs and highlights their influence on collective sensemaking within MDTs (Kelly et al., 2018).

Although the impact of senior leaders positively influenced implementation, the dominant power structures also produced varying MDT responses to the intervention (Rogers et al., 2020). The power disparities observed at both organizations enhanced the commitment of some staff to implementation. Staff perceived the intervention as an opportunity to improve their position within the team. However, researchers did not universally observe enthusiasm for the intervention among participants. Support staff, such as healthcare assistants from each site, perceived the intervention as irrelevant to their professional role (Rogers et al., 2020). This opinion likely indicates their position within the team hierarchy. Healthcare assistants have reported feeling undervalued in their role and viewed as workhorses for the team (Kelly et al., 2018).

Therefore, factors such as a person's job responsibilities and interpretation of their position in the hierarchy will affect their understanding of workplace politics (Rogers et al., 2020). Researchers listed job satisfaction, organizational commitment, and job performance as consequences of political perceptions. However, this study presents a unique insight into the influence of political perceptions on implementation success. Stakeholders' perceptual and behavioral responses to implementation depend on where staff position themselves within the team hierarchy; the intervention's perceived acceptability is contingent on staff's role within the team, which promotes or limits the intervention's perceived utility and subsequent adoption (Taylor et al., 2019).

The findings also demonstrate how silo working in MDTs can affect staff implementation perceptions (Rogers et al., 2020). The study forwards the notion that knowledge and power are

linked concepts. Within healthcare, staff use discipline-specific information to create boundaries around their professional identity, strengthening their voice within the MDT. However, the historical power dynamics between professions determine whether other MDT members value professional opinions (Rogers et al., 2020). Existing literature has recognized professional tribalism as a hindrance to effective communication, inhibiting the delivery of optimum patient care (Taylor et al., 2019).

This study demonstrates that staff dependence on intra-professional communication hinders implementation by restricting staff understanding of the action, impacting adoption (Rogers et al., 2020). Social identity theory could explain this failure to impart information inter-professionally. Social identity theory proposes that people establish teams based on compatible social factors such as professional affiliation. Members of the same group tend to promote the views of fellow group members while devaluing the opinions of those outside the group (Taylor et al., 2019). This research additionally shows how ingroup cohesion and outgroup bias can influence the progress and adoption of an intervention across professional boundaries (Halcomb, 2018).

Power, authority, and influence have received inadequate empirical consideration in implementation research, and this study shows the mechanisms by which these micropolitical contextual characteristics affect successful implementation (Rogers et al., 2020). Because of their impact, attaining support across multiple leadership tiers is essential to distribute broadly and strengthen the importance of intervention among staff. However, the hierarchical structure of MDTs will impact how team members perceive the intervention. Therefore, future research should engage each discipline in discussions about implementation and adjust communication to

ensure all interest groups understand the value and benefit of the intervention relative to their function (Halcomb, 2018).

By promoting an understanding of these power dynamics, future researchers can generate appropriate implementation strategies to consider the micropolitical circumstances, increasing staff engagement in innovation efforts (Halcomb, 2018). The exclusion of micropolitics from implementation theories may reveal why the contextual determinants of power, authority, and influence are widely absent from the existing literature. Approaches within implementation science are invaluable for identifying contextual influences and predicting how implementation may progress (Rogers et al., 2020). Even though the application of theory in implementation science has expanded, engagement with theoretical information remains a one-way process (Rogers et al., 2020).

Innovation in Care Delivery

Multidisciplinary teams often encounter resistance and other organizational challenges despite their usefulness for developing complex healthcare innovations (Atkinson & Singer, 2021). How these teams react and manage external constraints as they endeavor to enhance quality care delivery is not fully understood. Research examined how organizational conditions impact multidisciplinary teams as they develop health delivery innovations. The study showed that teams faced hierarchical constraints that hindered team progress over time. These constraints created challenges in the implementation stages of innovation. Interdisciplinary teams utilize various tactics to maintain innovation progress (Soukup et al., 2018).

The organizational environment often presents constraints that can impede team progress at multiple innovations and medical care delivery stages. Teams must collectively endeavor to manage or circumvent these challenges to achieve team goals. (Atkinson & Singer, 2021). Over

time, structural and regulatory modifications have influenced U.S. healthcare resulting in a significant increase in the need for multidisciplinary care. The expanding rate of chronically ill patients has caused healthcare organizations to contemplate new methods of utilizing limited resources. Also, the progressively active role of patients in their care plans has placed demands on improving delivery models. Despite these endeavors toward innovation, U.S. healthcare costs have soared to levels twice the amount of other developed countries, while medical errors have become the third leading cause of death among Americans (Soukup et al., 2018).

Healthcare organizations are aiming to expand their capacity for innovation through multidisciplinary teams. Research has revealed the value of interdisciplinary teams in implementing innovations that improve organizational performance and enhance patient care delivery (Soukup et al., 2018). The collective perspectives and expertise of multidisciplinary teams, primarily when they work together to improve patient outcomes through innovative techniques, make their value clear and expose them to barriers to progress through the bureaucracy of organizational constraints. Interdisciplinary teams engaged in healthcare innovation, improvement projects, and care delivery are likely to experience obstacles within the organization (Atkinson & Singer, 2021).

The study indicated that teams employed boundary-spanning roles and influence strategies to handle challenges originating from the organizational environment in which they work (Atkinson & Singer, 2021). Nevertheless, little information exists in the current literature related to administrative hurdles encountered by interdisciplinary teams and the skills required to overcome these challenges. Through policy and operational limitations, healthcare organizations often impose challenges on the effectiveness of multidisciplinary teams operating within their

confines. The research sought to examine how these teams manage challenges that typically stem from inherent organizational constraints (Soukup et al., 2018).

More research is warranted to reveal how multidisciplinary teams rooted in healthcare organizations experience and react to constraints within their organization as they aim to make progress (Atkinson & Singer, 2021). This study evaluated how circumstances in the organizational context, such as inherent constraints, might inhibit team progress at multiple innovation and care delivery stages. The collective efforts and tactics multidisciplinary teams utilized to work and progress under these constraints varied in technique and effectiveness. Interdisciplinary teams need to employ efforts to adapt to organizational change, possible external conflicts, and implementation of innovation and care delivery across organizational levels. Teams need to be aware of constraints and consider preemptive measures to mitigate such challenges as they occur (Williams & Kamat, 2017).

The mutual reliance between healthcare organizations and multidisciplinary teams operating within them is increasingly evident in today's medical care delivery system (Williams & Kamat, 2017). It is a complex and dynamic partnership where the specialization of staff and resources continue to increase. Teams seldom work in isolation in today's delivery systems, and team boundaries are not always clearly defined. This lack of defined limitations requires a greater focus on boundary-spanning actions. Tactics can be employed by teams, not only individuals, to span boundaries and limit the impact of constraints. This constraint limitation is accomplished, in part, by managing exchanges with upper-level and other stakeholders. Multidisciplinary teams need to utilize tactics to manage constraints by identifying, understanding, and engaging with the healthcare organization's stakeholders early in the team's

endeavors. Enabling team members to work together constructively and sustain momentum can help keep team morale high (Atkinson & Singer, 2021).

Research showed that successful interdisciplinary teams met their goals with members across disciplines that were resolutely determined to make progress by working around or overcoming the constraint they encountered (Atkinson & Singer, 2021). Interdisciplinary teams will experience inevitable hierarchical constraints, and without a consistent and cohesive tactical approach, they will likely be unable to implement the team's initiatives. Intense personal stress resulting from organizational constraints can cause gifted, well-intentioned team members to have a shift in priorities, resulting in a breakdown in team cohesiveness. Further studies of cases in which teams were unsuccessful in overcoming constraints at various stages of innovation in care delivery using the described tactics could further develop the findings of this research (Williams & Kamat, 2017).

The focus on multidisciplinary teams reveals the demands for intricate healthcare delivery systems and the need for innovation in those systems. Though these teams boost innovation in healthcare delivery, such teams make constraints more prominent due to their diversity in expertise and perspectives (Williams & Kamat, 2017). Conversely, this diversity can offer a powerful tool for responding to organizational constraints. Multidisciplinary teams are of growing importance in healthcare organizations seeking to foster innovation, and they can make employ many tactics to mitigate the impacts of organizational constraints (Atkinson & Singer, 2021).

The Problem

Treating a single cancer patient requires input from many physicians, specialists, administrators, and departments (Ringstrom et al., 2018). Cancer patients work with registration

staff, billing personnel, imagining technologists, various clinical staff, and multiple oncology specialists. Ongoing cancer treatment requires travel to multiple locations for many consecutive days (Ringstrom et al., 2018). Patients will need labs, imaging, follow-up care, and regular checkups to ensure they tolerate the treatment well enough. These activities often occur in different facilities and with different personnel. Staff from various organizations manage appointments, testing and imaging, physician schedules, and other areas of the process (Soukup et al., 2018). This disorganization leads to delays and an overall lack of continuity, leading to potentially harmful health implications (Shakib et al., 2016). A multidisciplinary approach refers to the philosophy of converging multiple specialties and technologies to establish a diagnosis or effect a therapy.

The general problem is a lack of information regarding the successful functioning of multidisciplinary care teams for cancer patients (Williams & Kamat, 2017; Soukup et al., 2018; Taylor et al., 2019). In a report by the American Hospital Association ([AHA]; 2019), 20% of Americans use rural hospitals for primary and specialized healthcare. However, there is a decreased ability of rural healthcare to provide specialized care (AHA, 2019). Though medical practice guidelines often recommend multidisciplinary care teams for the treatment of cancer patients, there is little information on the strengths, weaknesses, and roadblocks to effective multidisciplinary care team utilization (Selby et al., 2019; Shao et al., 2019). Poor communication and unnecessary referrals lead to compromised quality of care (Williams & Kamat, 2017). Although many community hospitals have local tumor boards, many providers in smaller institutions have no access to boards specializing in a particular type of cancer, demonstrating the lack of options and expertise (Soukup et al., 2018). Ineffective or absent care teams inhibit engagement across specialties and slow test results' return (Taylor et al., 2019).

The specific problem to be addressed is the lack of data on the relationship between a multidisciplinary care team and oncology staff partnerships, collaboration, and coordination in an Eastern Kentucky hospital. Lack of communication and teamwork potentially result in quality-of-care issues for particular oncology patients (Bhattacharyya & Lichtman, 2017). Therefore, gaining additional insight into the relationship between care team effectiveness, communication, and teamwork could improve patient outcomes in rural hospital settings (Bhattacharyya & Lichtman, 2017; Hickman et al., 2015; Jung et al., 2018).

Theories

Systems theory operates in natural sciences as part of research on biology and technology. This research seeks to work within the framework of social systems theory (Jackson, 1984). Like systems theory, which aims to understand how components in a system work together and how the more significant system operations influence them, social systems theory posits that individuals are products of their environment (Talcott, 1951). Systems theory generally holds that the whole system is greater than the sum of its parts (Jackson, 1984). Similarly, social systems theory explains that the root of functioning in individuals relates to the individual's environment, rather than holy a product of their responsibility (Jackson, 1984).

Numerous individuals have contributed to forming social systems theory, including Talcott Parsons. Parsons integrated action theory into the social science framework to explain why groups or societies maintain cohesion or take actions, such as the formation of new governments or uprisings. When applied to social sciences, action theory relates to how groups make decisions and individuals' roles in groups (Jackson, 1984). Talcott's (1951) theory included four tenants that all groups must consist of to function properly. The tenants are adaptation, goal attainment, integration, and latency. Adaption addresses whether the group can obtain sufficient

resources to continue. Goal attainment relates to whether the group can set and implement goals. Integration refers to cohesion between the individual components of the group. Finally, latency relates to the ability of the group to create a specific culture or value set and transmit it to the particular group components (Talcott, 1951).

Variables

This researcher conducted the quantitative casual-comparative study within the healthcare organizations of Ackerville Regional Healthcare and Pinkerton Medical Center, two systems in Southeastern Kentucky, each having multiple outreach clinics. Having worked in management in both of these organizations, this researcher observerd a lack of organized multidisciplinary care with administration, physicians, and staff. The feedback primarily demonstrated an interest in this quantitative study to understand the problem further (Sukamolson, 2007).

Independent variables for the study included partnership, cooperation, and coordination (Orchard, 2015; Soukup et al., 2018). The dependent variable of providing quality patient care was assessed based on responses to survey questions that collectively addressed each of the constructs. The assessment section focused on partnership related mainly to the patients working with doctors and care staff to determine their treatment routines (Orchard, 2015). The questions related to whether patients were involved in decisions, informed about upcoming treatment steps, and if clear and consistent communication occured with the patient. Cooperation related to the cooperative dynamic between members of the care staff and was assessed based on responses to questions about how well the staff worked together. The final independent variable is coordination, which relateed to how well members of the care team coordinated their activities and managed conflict (Sukamolson, 2007).

Related Studies

Studies analyzed the need for and impact of multidisciplinary care. The concept is the same across specialties: the organized multidisciplinary care team approach improves patient outcomes and strengthens patient confidence in the care they are receiving (Berkowitz et al., 2019). A study examined the patient perspective on organized, coordinated multidisciplinary team care. The study group consisted of socioeconomically diverse adults. Most participants stated that coordinated multidisciplinary team care was a necessary approach, feeling that complex illnesses were too complicated for any one care team member to manage (Sukamolson, 2007).

Physicians were perceived as too busy to manage care alone. Patients were satisfied being treated by other team members, mainly if there was a single point of contact and coordinated care (Berkowitz et al., 2019). Patients suggested that the ideal multidisciplinary care approach would include support for issues outside of standard care, such as managing socioeconomic challenges; participants felt that these elements were missing from the existing approach to multidisciplinary care (Taylor et al., 2019). Coordinated, multidisciplinary team care is accepted and understood by patients. Research noted several perceived advantages of multidisciplinary care. Providers observed that many facets of multidisciplinary care are clearly beneficial for both their practice and their patients. In terms of care coordination, the multidisciplinary model would facilitate more efficient referrals than with the current system, especially through the use of a single patient and provider point of contact (Kedia et al., 2020). Enhanced access to care enabled by this single contact, usually a nurse navigator, would increase communication and access between providers and promote timelier patient treatment (Taylor et al., 2019).

Another goal of multidisciplinary care is an efficient use of time. Cancer patients often experience delays waiting for diagnosis and treatment. The multidisciplinary approach would reduce lag time between phases in care delivery (Kedia et al., 2020). Also, expert opinions from various specialists promote collaboration and encourage conversations. This raises providers' confidence for inconclusive or complicated cases, improves patients' level of comfort, and enhances quality of care. Physicians tended to approve of the innovation of multidisciplinary care as a shift in the medical paradigm for the future of medicine. As evidence mounts on its efficiency, providers see the multidisciplinary model as an imminent method to enhance healthcare delivery (Taylor et al., 2019).

As providers see a rise in patients with multiple comorbidities requiring complex care management, it is becoming increasingly imperative for physicians from varying specialty concentrations to work together. The standard of providing quality patient-centered care is evolving into a process of working with other members of a multidisciplinary team (Muddiman et al., 2019). However, intra-professional boundaries and other mitigating limitations within the medical community often inhibit these holistic approaches to patient care (Muddiman et al., 2019). Research examined how postgraduates of differing specialty programs could be grouped based on their assessment of what it means to be a good doctor.

The researchers noted distinct perspectives based on the themes of generalism (breadth) and specialism (depth), interdisciplinarity and multidisciplinary team working, patient-centeredness, and managing complex care needs. Although certain viewpoints were common, three groups presented clear, distinct perspectives on being a good doctor: Generalists were team-players with a collegial, patient-centered approach to care, general specialists approached care within their specialty area, and specialists, distinguished in their approach from the first two

groups, had a more concentrated focus on how their specialty can best serve patients (Muddiman et al., 2019). The researchers suggested that further studies were warranted to examine the relationship between generalism and specialism, focusing less on the dichotomy and more on a continuum that joins primary and secondary care to foster interdisciplinary cooperation (Taylor et al., 2019).

A study examined the strengths, impediments to implementation, and suggestions for implementation of a multidisciplinary model from the perspective of physicians treating cancer patients. Most study participants concurred that the multidisciplinary model was beneficial patients by delivering high quality, efficient, and well-coordinated care (Kedia et al., 2020). According to the perception of the doctors in the study, attributes of multidisciplinary teams included better patient-centered care coordination, collaborative decision-making, and access to expert opinions. The various specialty providers agreed that multidisciplinary care could benefit cancer patients and could become the new paradigm for complex patient care and treatment (Zonneveld et al., 2018).

Anticipated and Discovered Themes

The current literature related to multidisciplinary patient care reveals specific themes. A study achieved thematic saturation related to patients' perspectives on multidisciplinary teams. Data were analyzed using content analysis. The results indicated that most patients believed that coordinated multidisciplinary team care was a good approach (Berkowitz et al., 2019). They believed that complicated illnesses were too tricky for any one care team member to manage alone (Zonneveld et al., 2018). Patients said they did not mind being treated by other care team members, mainly if there was a consistent point of contact and coordinated care (Berkowitz et

al., 2019). The recurrent theme was that coordinated, multidisciplinary team care is valued and welcomed by patients.

However, although patients value multidisciplinary care, it is not always available. Geographical and socioeconomic factors contribute to a lack of multidisciplinary offerings (Delman, 2020). Notably, many rural hospitals lack the option of organized specialty boards and multidisciplinary teams (Delman, 2020). Also, silos within the medical community are often a hindrance to multispecialty teams (Muddiman et al., 2019). Intra-professional boundaries and provider perspectives often impede a holistic approach to patient care (Muddiman et al., 2019). Recurrent themes in the literature denote the gaps between knowledge and application concerning the use of multidisciplinary teams (Presley et al., 2020).

According to a recent study, significant impediments to full implementation a multidisciplinary approach include multiple locations, financial disincentives, and time constraints. Other noted obstacles are the integration of a multidisciplinary care model into existing organizational structures, maintenance of referral systems, and the determination of the provider primarily responsible for the patient's treatment (Kedia et al., 2020). Successful implementation of the multidisciplinary model should include considerations such as educating providers about the availability of a multidisciplinary team, establishing efficient processes for patients' initial consultations, incorporating technology for virtual meetings, and using a nurse navigator with a reliable communication network that links all involved providers and practices (Zonneveld et al., 2018). Providers largely agreed that the multidisciplinary model could enhance cancer care and treatment, however they noted considerable personal, organizational, and system-level obstructions that require attention for successful implementation in healthcare settings. This quantitative research further examined these themes.

Summary of the Literature Review.

Evidence-based business practices improve patient outcomes. These practices include the use of multidisciplinary teams. An organized, well-managed approach integrates subspecialties and coordinates assessments in healthcare delivery. Implementing an interdisciplinary team care model involves new resources and participation across sectors within a healthcare organization. (Presley et al., 2020; Blaschke et al., 2019). The literature identified instances of poorly organized multidisciplinary care resulting in quality concerns for patients and providers (Williams & Kamat, 2017; Soukup et al., 2018; Taylor et al., 2019).

Studies analyzed the impact of multidisciplinary care. The organized multidisciplinary care team approach improves patient outcomes and strengthens patient confidence in the care they are receiving (Berkowitz et al., 2019). The current literature related to interdisciplinary patient care reveals specific themes. Coordinated multidisciplinary team care is accepted and understood by patients (Berkowitz et al., 2019). Intra-professional boundaries within the medical community, coupled with external limitations, often inhibit practical multidisciplinary approaches to patient care (Muddiman et al., 2019).

Summary of Section 1 and Transition

The problem addressed by this study is a lack of information regarding the relationship between multidisciplinary care teams and essential metrics for staff teamwork. By understanding how multidisciplinary care teams impact staff teamwork, hospitals will be better able to make decisions regarding staff teamwork and optimize care teams to achieve objectives. The study research questions sought to understand if a relationship existed between staff coordination, partnership, and collaboration when caring for cancer patients in two rural Kentucky hospitals. The questions then asked how organizations failed to manage multidisciplinary care in rural

healthcare settings effectively. Quality-of-care issues might arise from a lack of organized multidisciplinary care, particularly in rural settings. The study utilized the pragmatism paradigm to focus on the problem rather than the view of reality. This study was conducted with a fixed design using quantitative methods, specifically, a casual-comparative design.

This research worked within the framework of a well-established theory prevalent in the pertinent literature: Social Systems Theory. The actors in this casual comparative study included the healthcare organizations, Ackerville Regional Healthcare and Pinkerton Medical Center, administration, clinic managers, and medical teams. Independent variables for the study included partnership, cooperation, and coordination. The dependent variable of delivering quality patient care was assessed based on responses to survey questions that collectively addressed each of the constructs. This study operated from a Biblical perspective. The next portion of this work will focus on the research, including a review of the participants, population, sampling, data collection, and analysis.

Section 2: The Project

The general problem addressed was a lack of information regarding the successful functioning of multidisciplinary care teams for cancer patients (Williams & Kamat, 2017; Soukup et al., 2018; Taylor et al., 2019). The specific problem addressed was the lack of data on the relationship between a multidisciplinary care team and oncology staff partnerships, collaboration, and coordination in two Eastern Kentucky hospitals. Lack of communication and teamwork potentially result in quality-of-care issues for particular oncology patients (Bhattacharyya & Lichtman, 2017). In particular, although guidelines often indicate that multidisciplinary teams should treat cancer patients, research has not adequately explored the strengths, weaknesses, and roadblocks to effective multidisciplinary care team utilization (Selby et al., 2019; Shao et al., 2019). Hence, this quantitative study aimed to address this research gap. Section 1 of the study presented various aspects, including the research questions and background, and a comprehensive literature review. Section 2 expands upon the methodological summary presented in Section 1, fully detailing the quantitative study's methods.

This section begins with a re-presentation of the research purpose. Next is a discussion of the role of the researcher. Following this is the research methodology section, which addresses the research method and research design. Next, the participants and sampling will be addressed, including who participated and how they were sampled. Next, is the portion laying out data collection for the study, followed by the data analysis. Finally, Section 2 concludes with reliability, validity, and an overall summary.

Purpose Statement

The purpose of this fixed design quantitative casual-comparative study was to examine the relationship between multidisciplinary approaches to provider partnerships, collaborations,

and coordination in two healthcare organizations in Eastern Kentucky (Kelly et al., 2018). Though multidisciplinary care teams are often considered the standard of care for treating cancer patients, the effectiveness of such teams can be highly dependent on the teamwork and coordination of the staff involved (Selby et al., 2019). Although many community hospitals have local tumor boards of various specialists, these institutions often lack access to rare specialists and struggle with implementing and managing multidisciplinary care.

The results of this research revealed data that may improve interdisciplinary care for patients and examined ways to organize that process (Goldkuhl, 2017). In addition, research suggests that staff metrics, such as collaboration, partnerships, and coordination, impact cancer patients' quality of care. By gaining a deeper understanding of the role that multidisciplinary care teams play in establishing these essential metrics, this study provided critical information for hospitals to assess the structure of their care teams (Lamprell et al., 2019; Selby et al., 2019; Shao et al., 2019).

Role of the Researcher

Within the present study, the role of the researcher is that of an observer. In quantitative research, the researcher strives to study the research subjects impartially, without personal biases or direct involvement (Rutberg & Bouikidis, 2018). In addition, quantitative data are typically collected anonymously to ensure the researcher is not aware of which participant provided each response (Creswell & Creswell, 2017). This type of data collection helps avoid the risk of bias. Although bias can never be entirely eliminated, many aspects of quantitative research, including the closed-ended, anonymous data collection and the use of objective statistical analyses serve to significantly minimize its incidence (Rutberg & Bouikidis, 2018). Such was the case in this study. However, despite this impartial role, this researcher had a previous position in the

institutions in which the research was conducted. In this capacity, the researcher worked with multidisciplinary teams in rural Kentucky. While this positionality potentially introduced bias, it also provided a vested interest in conducting the research and learning the conclusions.

Research Methodology

The research methodology is reflective of the ways in which the quantitative study operated. This section addresses three critical aspects of the methodology. First is the decision to adopt a fixed design. The first section will explain the justification for utilizing a fixed design. Then comes the decision to use a quantitative research methodology. A discussion will be presented on the applicability of quantitative methods and the appropriateness of their use within this study. Finally, there is a summary of the overall methodological choices for the research.

Discussion of Fixed Design

Within research, there are two primary design paradigms the researcher must consider. These two paradigms are fixed and flexible designs. Fixed designs entail the usage of a specific, well-defined approach to research (Creswell & Creswell, 2017). Fixed designs are largely theoretical, as the researcher often understands the basics of the respective phenomenon of interest. Fixed designs are also suitable when variables can be easily quantifiable, and the researcher has an understanding of how the variables may be related. Additionally, all aspects of the research are determined prior to initiating the data collection phase (Kampenes et al., 2008).

Conversely, the other design paradigm is a flexible design. Flexible designs are ideal when the researcher cannot quantify variables or are interested in phenomena that cannot be measured (Creswell & Creswell, 2017; Kampenes et al., 2008). In addition, flexible designs allow the researcher to let the data guide them and provide the flexibility to modify aspects of the research design as the study continues. Thus, if researchers encounter issues, they can modify

aspects of data collection, data analysis, or recruitment as necessary (Creswell & Creswell, 2017).

Between the two research design approaches, a fixed design or a flexible design, the present study employed a fixed design. A fixed design was appropriate to the present study because the fundamental ideas forming the underlying theoretical landscape are already understood and well known (Creswell & Creswell, 2017; Rutberg & Bouikidis, 2018). Whereas a flexible design is appropriate in approaching novel and unpredictable subject matter, it cannot be as well planned out in advance. Adopting a fixed design, by contrast, allows the researcher to carefully plan out the study in advance, including how key concepts will be instrumentalized and the breadth of what will be studied (Rutberg & Bouikidis, 2018).

Discussion of Quantitative Methods

The research method for the study was quantitative. Quantitative research is specific, empirical, and relational (Creswell & Creswell, 2017). A quantitative researcher focuses on specific variables of interest and the relationships between those variables (Rutberg & Bouikidis, 2018). Quantitative inquiry is, as the name implies, closed-ended and numerical, considering variables that are either inherently numerical or those that can be made so (Nardi, 2018). Quantifying key ideas in this fashion relies on well-established theory and existing, validated instrumentation (Rutberg & Bouikidis, 2018). In exchange, quantitative research offers significant statistical power and generality compared to qualitative research (Creswell & Creswell, 2017; Nardi, 2018). Hence, when the conditions for quantitative research are satisfied, it is typically preferable.

The researcher also considered qualitative methods when developing this study. Qualitative methodology is used to explore how or why a phenomenon of interest occurs (Basias

& Pollalis, 2018). Further, qualitative researchers collect data that is not easily measured, including participants' perceptions and the lived experiences of individuals that have encountered a particular phenomenon (Creswell & Creswell, 2017). Thus, qualitative methods are appropriate when the researcher wishes to collect rich, robust data from participants, fostering a deeper understanding of the phenomenon of interest (Basias & Pollalis, 2018). Although useful in some research, qualitative methods did not align with the objectives of this current research and were therefore excluded from use.

First and foremost, this research was concerned with the relationships between specific variables, namely relationship between multidisciplinary approaches to provider partnerships, collaborations, and coordination in a healthcare organization. The quantitative method was well-suited to this study. The research questions reflected this method by inquiring about the nature of the relationship between key variables. The study was also firmly grounded in the framework of social systems theory, meaning it was theoretically supported. As clarified in later sections, the key concepts and variables were quantitatively operationalized.

Within the quantitative research method, there are various research designs. The most pronounced division is between experimental and non-experimental designs (Creswell & Creswell, 2017). Experimental research is significantly more robust in terms of results and requires much more stringent conditions (Rutberg & Bouikidis, 2018). For example, experimental designs often include separating participants into groups and delivering treatment to one group (Nardi, 2018). However, such conditions are not and cannot feasibly occur in this study. Hence, it is necessary to employ a non-experimental design. Within the realm of non-experimental designs, a causal-comparative research design is most appropriate. A causal-comparative research design serves to compare the outcomes across two or more diverging

outcomes using real-world data (Creswell & Creswell, 2017; Nardi, 2018). This study compared results when using multidisciplinary teams versus when not.

Hypotheses and Variables

The study was guided by the following research questions and hypotheses.

para

In all three hypotheses, the independent variable is multidisciplinary care teams. For H_1, the dependent variable is staff collaboration. For H_2, the dependent variable is staff partnership. For H_3, the dependent variable is staff coordination. The three dependent variables were measured using the Assessment of Interprofessional Team Collaboration Scale II (AITCS-II), a 23-item scale with three subscales corresponding to the key variables. The independent variable was measured as a yes or no value based on whether participants were in a multidisciplinary team. For all three hypotheses, whether or not there is a significant difference between multidisciplinary teams, or no such teams were tested using an independent sample *t*-test to test for statistically significant differences. The table below (Table 1.) outlines the variables for the quantitative casual-comparative study.

Table 1:

Variables and Measurement Levels for This Proposed Casual -Comparative Study

Variable	Type	Source	Measurement Level
Multidisciplinary care teams	Independent	Direct measurement item	Dichotomous
Staff collaboration	Dependent (RQ1)	AITCS-II	Continuous (Likert scale)
Staff partnership	Dependent (RQ2)	AITCS-II	Continuous (Likert scale)
Staff coordination	Dependent (RQ3)	AITCS-II	Continuous (Likert scale)

Table 1. Variables. Adams (2021).

Summary of Research Methodology

The general problem addressed was a lack of information regarding the successful functioning of multidisciplinary care teams for cancer patients (Williams & Kamat, 2017; Soukup et al., 2018; Taylor et al., 2019). The research aimed to address this research gap employing a fixed design. The research method was quantitative, specifically, a causal-comparative design to focus on specific variables of interest and the relationships between those variables (Rutberg & Bouikidis, 2018). The study was primarily concerned with the relationships between the specific variables of multidisciplinary care approaches to provider partnerships, collaborations, and coordination in a healthcare organization. The research questions specifically addressed the nature of the relationship between key variables. The quantitative study was also firmly grounded in the framework of social systems theory, meaning it was theoretically supported. The specific research design was that of a non-experimental, correlational study. Data for the study was collected using an online survey questionnaire. Data analysis to answer the research questions occured through independent sample t-tests.

Participants, Population, and Sampling

This study was conducted with a fixed design using quantitative methods, specifically, causal-comparative. In addition, quality-of-care issues might arise from a lack of data on organized multidisciplinary care, particularly in rural settings (Soukup et al., 2018). The general problem addressed was a lack of information regarding the successful functioning of multidisciplinary care teams for cancer patients (Soukup et al., 2018; Taylor et al., 2019; Williams & Kamat, 2017). The specific problem addressed was the lack of data on the relationship between a multidisciplinary care team and oncology staff partnerships, collaboration, and coordination in two Eastern Kentucky hospitals. By gaining a greater

understanding of the strengths, weaknesses, and roadblocks to multidisciplinary care teams, the researcher, in this quantitative study, examined the opinions of members of multidisciplinary care teams on factors such as partnership, cooperation, and coordination to improve care team practices and enhance patient care through more effective collaboration.

As stated previously, the researcher utilized the pragmatism paradigm to focus on the problem rather than the view of reality. Lack of communication and teamwork potentially result in quality-of-care issues for particular oncology patients (Bhattacharyya & Lichtman, 2017). Further, Selby et al. (2019) stated that healthcare organizations often struggle with maximizing the effectiveness of care teams. The absence of an optimized implementation of multidisciplinary care teams adversely impacts patient care (Selby et al., 2019). This researcher addressed the key issues of methodology and design in previous sections of this study. In this section, the researcher will discuss more critical components of the study methodology: the population and the sample. Hence, within this section, the researcher will address the critical aspects of the research, beginning with the central issue of participants. Following information about the participants, the researcher will discuss the population. Finally, the researcher will detail how the sampling procedures for the specific sample occured in the quantitative study.

Participants

The purpose of this fixed design quantitative casual-comparative study was to examine the relationship between multidisciplinary approaches provider partnerships, collaborations, and coordination in healthcare organizations in Eastern Kentucky. In the present study, the researcher examined the independent variable of multidisciplinary care teams. This researcher assessed how that independent variable impacted the independent variables of partnership, cooperation, and coordination. Accordingly, the study participants were medical professionals treating cancer at

Ackerville Regional Healthcare and Pinkerton Medical Center in Eastern Kentucky. All participants were employees at either the Ackerville Regional Healthcare or Pinkerton Medical Center in Eastern Kentucky for at least one year. They were at least 18 years of age and involved directly in patient oncological care as part of their job.

This researcher also provided exclusion criteria for potential participants. Some potential study participants met the inclusion criteria but had extenuating circumstances that could interfere with the study's success. Individuals employed less than one year in either Ackerville Regional Healthcare or Pinkerton Medical Center in Eastern Kentucky were not eligible to participate in this quantitative research. Similarly, a person that was not at least 18 years of age could not participate. Employees not involved directly in patient oncological care as part of their job were considered ineligible for this research. Finally, all participants consented to participate in this study. If individuals did not consent to participate, they were unable to take part in this study.

The researcher will present information on the sampling later in this section, but one point should be clarified now: Once study participants are selected, this researcher assigned each team member to two groups, multidisciplinary teams, and non-multidisciplinary teams. Participants classified as CMA, CNA, and LPN were not multidisciplinary team members, so this researcher selected them for the non-multidisciplinary group. The remaining classifications of Dosim, Med Onc, Med Phys, NP, PA, Rad Onc, Reg Diet, RN, RRT, RT, and Surg Onc were all considered multidisciplinary and placed into the interdisciplinary group (abbreviations spelled out in descriptive statistics in Section 3). The grouping created a dichotomous, independent variable, which provided comparable groups to be used in the analysis.

Population and Sample

The research population reflects the overall group under study. The population is not always a number of people as it can also mean a total quantity of things or cases that relate to the subject of the study (Etikan et al., 2016). However, for the purposes of this research, population and sample represent a more concrete and precise discussion of who participated in the study (Etikan et al., 2016). The researcher selected the population sample from two different healthcare facilities in Eastern Kentucky. Participants of the study provided care to cancer patients at either Pinkerton Medical Center or Ackerville Regional Healthcare. Pinkerton Medical Center had 41 participants, and Ackerville Regional Healthcare had 41 participants used in the study. This process ensured that data analysis was consistent throughout the dataset as each location had the same number of participants (Etikan et al., 2016).

Discussion of Population.

When discussing the population for the study, it is essential to delineate between the overall population and the population of interest (Creswell & Báez, 2020). The overall population can be thought of as the entirety of the cases or population under consideration (Creswell & Creswell, 2017). Conversely, the target population included only the sect of the population from which this researcher sampled (Creswell & Creswell, 2017). The overall population is all medical practitioners in the United States. This population is the focus of the study because the research intended to determine the efficacy of multidisciplinary teams and, therefore, addressed all cancer physicians, including those on multidisciplinary teams and those not (Bhattacharyya & Lichtman, 2017; Selby, 2018). According to the American Society of Clinical Oncology ([ASCO]; 2022), 12,673 persons work in oncology within the United States. These professionals treat cancer in approximately 1700 facilities.

Racial diversity within oncology is relatively low. The ASCO (2022) estimates that only 33% of oncologists or oncology-related professionals are women. Additionally, only 3% of professionals are African American, and 4% are Hispanic. These findings are consistent with Lang (2021), who emphasized that racial diversity among oncology professionals is low but expected to increase over time. Concerning age, most of the population of interest is older. According to Lang (2021) and ASCO (2022), most oncology professionals, nearly 20%, are 65 or older, indicating they are likely to retire soon (Lang, 2021). Similarly, roughly 65% of oncologist professionals are over the age of 40 (ASCO, 2022). Thus, only approximately 15% of the population of interest is under 40 years of age.

Finally, Lang (2021) and ASCO (2022) found that oncology professional distribution is not uniform. The majority of oncology care occurs in urban areas, as urban areas boast 20x the professionals, as do rural areas (ASCO, 2022). Also, only about 12% of oncology professionals practice in urban areas, further increasing healthcare disparities for rural residents (ASCO, 2022; Lang, 2021). Although the population of interest is oncology professionals, within this quantitative study, the researcher sampled oncology professionals from Kentucky, as they were the population of interest. The population of interest was oncology professionals from two specific medical centers. Within this overall population, the target population was all doctors treating cancer at two specific eastern Kentucky hospitals, Ackerville Regional Healthcare and Pinkerton Medical Center. Focusing on these two hospitals centralized data collection in useful ways.

The researcher could not locate any information on the population of interest or the target population. As a result of this lack of data, this researcher collected demographic information to determine more about these populations as part of the survey. However, with national data as the

source used to describe the overall population, it is expected that the trends will continue within both the population of interest and the target population (ASCO, 2022; Lang, 2021). The focus was on Kentucky to address these issues in a rural hospital context. These hospitals will have particular gains to make from multidisciplinary teams since such teams were shown to be beneficial. Moreover, showing the benefits of multidisciplinary teams could spur significant investment in such teams or rural hospitals at the state or national level (Bhattacharyya & Lichtman, 2017).

Discussion of Sample.

As stated previously, the researcher selected the sample from the targeted population of interest. The sample for the quantitative study required both medical professionals working on multidisciplinary teams and medical professionals not on such teams. Specifically, the researcher selected all participants from Ackerville Regional Healthcare and Pinkerton Medical Center. In quantitative research, determining the correct sample size is imperative for study reliability (Mweshi & Sakyi, 2020). According to Mweshi and Sakyi (2020) and Creswell and Creswell (2017), argued that sample size should align with research methodology. For valid results, quantitative researchers should employ larger sample sizes, whereas qualitative research utilizes smaller sample sizes (Mweshi & Sakyi, 2020). Further, Creswell and Creswell (2017) opined that quantitative sample sizes should be determined by calculations using statistical power, effect size, and significance level (Etikan et al., 2016).

This researcher calculated the sample size using the standard parameters of 80% statistical power, a medium effect size ($f2(V) = 0.0625$), and a significance level of 0.05. Based on a sample size calculation, the total sample size required for this research was 75 participants (Etikan et al., 2016). However, to account for participant attrition, 82 persons were surveyed, per

the suggestion of Creswell and Creswell (2017). The researcher identified a sample using purposive sampling. Purposive sampling involves specifically seeking participants with relevant characteristics to answer the research questions (Etikan et al., 2016). Thus, the researcher developed inclusion and exclusion criteria to determine the eligibility of individuals interested in participating in this quantitative research.

The researcher established that one criterion for participant inclusion was employment at either the Ackerville Regional Healthcare or Pinkerton Medical Center in Eastern Kentucky for at least one year. They also hat to be at least 18 years of age and involved directly in patient oncological care as part of their job. Additionally, all participants constented to participate in this study. The researcher also established exclusion criteria for potential participants. Any individual not employed at the Ackerville Regional Healthcare or Pinkerton Medical Center in Eastern Kentucky for at least one year were not eligible to participate in this quantitative research. Moreover, a person not at least 18 years of age or involved directly in patient oncological care did not qualify for study participation. Finally, if individuals did not consent to participate in this study, they were summarily excluded from partaking in this research.

According to Creswell and Báez (2020), participants' rights are imperative for a researcher to consider when developing a study. When interested persons began the survey, the researcher ensured that participants understand their rights by including this information in writing on the recruitment post and the survey link. Additionally, verbiage included the right of participants to cease participation at any time, for any reason, without fear of retribution. Additionally, all participants understood that survey responses were anonymous. If the initial purposive sampling proved insufficient to achieve the desired sample size, this researcher would have employed snowball sampling in which existing participants refer other participants. This

was not necessary, as the initial sampling was sufficient. Sampling continued until the minimum sample size has been met (Etikan et al., 2016). To sample participants, this researcher acquired permission to recruit participants from the two organizations and then posted survey links on internal electronic platforms. The online postings included a box to consent to participate. Then, once they provided consent, they were directed to the online survey. Next, data collection began.

Summary of Population and Sampling.

In summary, the participants for the quantitative study were medical professionals treating cancer at Ackerville Regional Healthcare and Pinkerton Medical Center in Eastern Kentucky. The overall population consisted of medical practitioners in the state of Kentucky who treat cancer. The target population were medical providers treating cancer at two specific eastern Kentucky hospitals, Ackerville Regional Healthcare and Pinkerton Medical Center. A sample of 82 participants were recruited purposively from this target population. One criterion for participant inclusion was employment at either the Ackerville Regional Healthcare or Pinkerton Medical Center in Eastern Kentucky for at least one year. Participants were at least 18 years of age and involved directly in patient oncological care as part of their job. Additionally, all participants consented to participate in this study. Purposive sampling provided a sufficient sample size, so snowball sampling was not substituted.

Data Collection and Organization

This section addresses how data was collected and organized for the quantitative study. The section begins with a discussion of data collection and organization in terms of the data collection plan, the research instrument, and the data organization plan. Then, this section will address the variables, descriptive statistics, hypothesis testing, and hypothesis testing alternatives, the use of Morgan and Leech SPSS for Introductory Statistics, and a discussion of

how the hypotheses individually and collectively addressed the research questions in this study. The final aspect of this section is related to how this researcher ensured reliability in this study.

Data Collection Plan

Data collection for the quantitative study involved the recruitment of participants and the participants completing a survey questionnaire using an online survey platform. This section addresses how the researcher collected data, including the instruments and the organization plan. The data collection was quantitative in alignment with the study design. The researcher recruited participants through the online platforms used by their hospitals (Darmawan et al., 2020). Before recruiting any participants, the researcher obtained IRB approval to conduct the research. In addition, this researcher obtained site authorization from the two hospitals from which the researcher recruited participants. Once the hospitals had given site access authorization, the researcher recruited participants through a posting on the hospitals' online platforms. This researcher directed interested parties to click a link, bringing them to the survey hosted on a survey platform.

According to Nayak and Narayan (2019), when completing an online survey, consent procedures should be separate from the online survey itself. Thus, once they had reached the survey, the researcher presented participants with an informed consent cover page. Proceeding from the cover page to the survey represented acceptance of the informed consent information. Participants then proceeded to the survey itself, which involved the two sections discussed below. Participants had the option to withdraw from participation at any point prior to submission by failing to complete any section or failing to submit. This researcher included only fully completed responses in the study. Data collection continued until achieving the minimum necessary sample size (Nayak & Narayan, 2019).

Instruments

The study instrument contained two sections. The first section pertained to participant demographics. Crucially, the demographics section contained the group assignment questions about whether the participants are members of a multidisciplinary team. In addition, it collect data on age, gender, race/ethnicity, job title, and tenure. This researcher used these other data to contextualize the study. The second section of the data collection involved the Interprofessional Team Collaboration Scale-II (AITCS-II) assessment. This instrument is a 23-item scale measuring the outcome variable of staff collaboration developed by Orchard et al. (2012). The AITSC-II had three subscales of coordination, cooperation, and partnership. A five-point Likert scale ranging from "Never" (1) to "Always" (5) measures all items on the AITSC-II.

Data Organization Plan

This researcher organized data using an online survey platform. The online system anonymously recorded the participants' responses without collecting any identifying information. Each participant's response was assigned a unique number. Once the data collection concluded, the researcher downloaded all data from the online survey service into a Microsoft Excel file (Baker, 2013). This researcher then imported the data into SPSS software for data analysis. Though anonymous, the researcher has store data securely in a password-protected folder on the researcher's personal computer.

Summary of Data Collection & Organization

In summary, data collection for the quantitative study involved recruiting participants through the healthcare organizations of Ackerville Regional Healthcare and Pinkerton Medical Center. This researcher directed them to complete the online survey. The primary data collection instrument was the Assessment of Interprofessional Team Collaboration Scale-II (AITCS-II),

which measures team cooperation. This researcher organized the data using the online survey service and Microsoft Excel software. Preserving anonymity is a top priority.

Data Analysis

Data analysis for the quantitative study involved descriptive statistics and MANOVA. This researcher used the MANOVA analysis to test the hypotheses and answer the research questions. The researcher decided on MANOVA, as this test is commonly used when research questions have multiple independent and dependent variables (Emerson, 2018). Thus, MANOVA returned a result regarding whether each of the three dependent variables was significantly different for various values of the dependent variables (Emerson, 2018). The researcher carried out data analyses using the latest version of SPSS statistical analysis software. Because only complete responses were accepted, data cleaning was not necessary within individuals' respective survey responses. To this point, all incomplete surveys were removed prior to data analysis.

This study utilized a fixed quantitative method to address whether a relationship existed between multidisciplinary care teams and staff collaboration, partnership, and coordination when providing care to cancer patients. Data analysis featured descriptive statistics on multidisciplinary teams for gender, age, employment status, education level, discipline, tenure, time within the team, and location. Further analysis utilized hypotheses testing to answer the research questions, where MANOVA acted as the primary testing method. This researcher used the Multiple Kruskal Wallis test when MANOVA violated assumptions testing.

The independent variable was multidisciplinary teams that provided treatment to cancer patients. This researcher assigned each team member to two groups, multidisciplinary teams and non-multidisciplinary teams. Participants classified as CMA, CNA, and LPN were not

multidisciplinary team members, so this researcher selected them for the non-multidisciplinary group. The remaining classifications of Dosim, Med Onc, Med Phys, NP, PA, Rad Onc, Reg Diet, RN, RRT, RT, and Surg Onc were all considered multidisciplinary and placed into the interdisciplinary group (abbreviations spelled out in descriptive statistics). The grouping created a dichotomous, independent variable, which provided comparable groups to be used in the analysis.

The Variables

The quantitative study had one independent variable, the dichotomous variable of whether participants are on a multidisciplinary team. The study also had three dependent variables: collaboration, coordination, and partnership. The MANOVA analysis addressed the extent to which the independent variable determined the difference for each of the three dependent variables in one analysis (Morgan et al., 2004). The assumptions of MANOVA were tested, including the categorical nature of the independent variable, the continuous and normal distribution of the outcome variables, and the homoscedasticity of the outcomes. When violations existed for the assumptions of MANOVA, the non-parametric multiple-Kruskal-Wallis test was substituted for the MANOVA analysis. The results of a Kruskal-Wallis Test revealed statistical significance in multidisciplinary care teams between collaboration score (Kruskal-Wallis = 26.34, $p < .001$), partnership score (Kruskal-Wallis = 37.67, $p < .001$), and coordination score (Kruskal-Wallis = 24.95, $p < .001$). Multidisciplinary teams support patient outcomes through coordination in ways that use the resources of time, tools, and skills more effectively.

Descriptive Statistics

The data analysis began with descriptive statistics. This analysis included the use of the demographic data to paint a picture of the sample vis-à-vis the various demographic characteristics collected. In addition, for the independent and dependent variables, statistical properties such as mean, frequency, and range were tabulated and reported. Once the descriptive analysis was complete, MANOVA was used to answer the research questions. This researcher used the Multiple Kruskal Wallis test when MANOVA violated assumptions testing (Kruskal-Wallis = 26.34, $p < .001$). To recall, the research questions are:

RQ1: What is the relationship between multidisciplinary care teams and staff collaboration in providing care to cancer patients?

RQ2: What is the relationship between multidisciplinary care teams and staff partnership in providing care to cancer patients?

RQ3: What is the relationship between multidisciplinary care teams and staff coordination in providing care to cancer patients?

Hypothesis Testing

Then, the researcher conducted the analysis. The MANOVA analysis returned a result regarding whether each of the three dependent variables was significantly different for different values of the dependent values. If this statistic was significantly different from zero for a given dependent variable, the researcher rejected the associated null hypothesis (Morgan et al., 2004). Hence, the analysis answered each research question. Data analysis began by characterizing the sample and the data using descriptive analysis. Then, the MANOVA was used to answer the research questions by testing the associated hypotheses. This researcher used the Multiple Kruskal Wallis test when MANOVA violated assumptions testing (Kruskal-Wallis = 26.34, $p < .001$).

Hypothesis Testing Alternative

This researcher used a nonparametric alternative when the MANOVA test's assumptions were not met. As stated previously, when the assumptions of the MANOVA were not upheld, then the nonparametric multiple-Kruskal-Wallis (mKW) test was substituted for the MANOVA analysis. The mKW is a rank-based nonparametric test that researchers often use to determine if there are statistically significant differences among two or more groupings of a given independent variable, provided that the dependent variables are continuous or ordinal level (Knapp, 2018). As in MANOVA, there are assumptions that need to be met to ensure that the mKW is appropriate for use within the study. Specifically, there are four separate assumptions.

The first assumption is that the dependent variable is measured on an ordinal or continuous scale, such as the Likert scale used in the Orchard (2018) AITCS-II. The second assumption is that there exist two or more independent variables which occur within this study. The third assumption is that there is a difference between groups of independent variables, which is also true. The fourth and final assumption is that the data distribution has the same shape. As all the assumptions for the mKW tests are assumed true in this current study, the mKW made an appropriate substitution when MANOVA was not feasible. Thus, when MANOVA could not be used, the mKW was used instead, using SPSS software. Then, the null hypothesis was either rejected or upheld, depending on the outcome of the mKW testing.

Summary of Data Analysis

This researcher removed incomplete survey responses from the data set then began data analysis. Data analysis first involved descriptive statistics to provide details about the sample and data. Then, using SPSS software, the researcher began hypothesis testing using MANOVA. The researcher used the MANOVA analysis to test the hypotheses and answer the research questions.

However, when any assumptions of MANOVA are violated, an mKW test was used to test the hypotheses instead.

Reliability and Validity

Reliability and validity are essential in research (LoBiondo-Wood & Haber, 2014). Reliability refers to how well a study's results can be repeated (Creswell & Creswell, 2017). Validity has two components: external and internal. External validity refers to generalizability, whereas internal validity refers to internal coherence (LoBiondo-Wood & Haber, 2014). The researcher carefully addressed all these elements in this quantitative study.

Reliability

Reliability is the measure of how well a study's result could be replicated in the future under the same conditions (Creswell & Creswell, 2017). *Cronbach's alpha score* is a value that measures reliability (Creswell & Creswell, 2017). This score is between 0 and 1, with 0 being the least reliable instrument. Specifically, an instrument with a reliability measure of 0 would not be considered reliable at all, while an instrument with a reliability measure of 1 would be considered highly reliable (Creswell & Creswell, 2017; Lobiondo-Wood & Haber, 2014). Thus, researchers strive to use previously tested instruments with high Cronbach alpha coefficients.

Within this study, reliability was generated primarily by the reliability of the instrumentation. Specifically, within this study, the researcher established reliability through two interrelated ways concerning the AITCS-II. The researcher first bolstered reliability by ensuring that all items within the AITCS-II are appropriate for use within this research. The independent variable was measured directly by asking participants if they were part of a multidisciplinary team. This aspect has perfect reliability as it is a direct measure that would change only if the participant's circumstances changed (or found unreliable, making all their answers suspect).

The second way this researcher ensured reliability was to choose a survey instrument with high reliability. Established reliability in the survey instruments is essential for readers, and the researcher needed to ensure that the survey instrument could reliably gauge what it is supposed to measure (Creswell & Creswell, 2017). The AITCS-II is an existing instrument with good reliability. According to Orchard et al. (2018), the instrument has above a .075 Cronbach's alpha for the overall instrument and each of the three subscales, indicating good reliability.

Validity

This researcher addressed internal validity in two ways. Per Orchard et al. (2018), the AITSC-II instrument also demonstrates good validity as a measure of the indicated variables. Every other aspect of the study was carefully aligned with the variables. The study problem gave rise to the purpose of the research and the purpose of the research questions. In turn, the research questions gave rise to the choice of variables and the selection of the AITSC-II as an appropriate instrument to measure them. The researcher also addressed external validity in two ways. The sample size calculation performed helped ensure the results had sufficient statistical power. Secondly, the purposive recruitment of participants from two hospitals helped ensure that the sample was representative of the underlying population, albeit with the possibility of self-selection bias (See Creswell & Creswell, 2017). Together, these two measures assured external validity.

Summary of Reliability and Validity

In summary, the quantitative study was reliable and valid. This researcher achieved reliability for the research through the reliability of the instruments, which have been previously validated and therefore have established good reliability. The researcher derived internal validity from the validity of the instruments and study alignment. This researcher obtained external

validity from the sample size calculation and the recruitment strategy involving sampling from two healthcare facilities.

Summary of Section 2 and Transition

This section provided the information relevant for data collection and data analysis procedures. Once participants were recruited and had provided consent, data was collected online using the prevalidated survey the Assessment of Interprofessional Team Collaboration Scale-II (AITCS-II). This survey is a 23-item scale used to measure the outcome variable of staff collaboration. Once all data was collected, this researcher discarded any incomplete surveys. The researcher also compiled the completed survey and uploaded it into SPSS software. Then, this researcher completed descriptive statistics, using MANOVA or the Multiple Kruskal Wallis test to answer the research questions.

The reliability of this study was upheld by using validated instruments and ensuring alignment among each component of this quantitative research. Similarly, validity was bolstered by sampling from two healthcare facilities and using a predetermined sample size calculation to ensure significant results. This section provided an explanation of the methodology the researcher used in this research. Section 3 will detail the results of the data analysis, provide an overview of the study, a presentation of the findings, application to professional practice, recommendations for further study, and reflections. Finally, the last section will provide a conclusion of critical findings.

Section 3: Application to Professional Practice

Overview of the Study

The problem addressed in this study is the lack of individual-level data on the effectiveness of multidisciplinary care teams for cancer patients in rural hospitals. The research questions sought to evaluate the strengths and weaknesses of multidisciplinary care teams for cancer patients in rural hospitals and the roadblocks to successful implementation. The study utilized the pragmatism paradigm to focus on the problem rather than the view of reality. This study was conducted with a fixed design using quantitative methods, specifically causal comparative. In addition, quality-of-care issues arise from a lack of data on organized multidisciplinary care, particularly in rural settings. To gain a greater understanding of the strengths, weaknesses, and roadblocks to multidisciplinary care teams, this study examined the opinions of members of multidisciplinary care teams on factors such as partnership, cooperation, and coordination to improve care team practices and enhance patient care through more effective collaboration.

This research worked within the framework of a well-established theory prevalent in the pertinent literature: Social Systems Theory (Sales et al., 2022). The actors in this casual comparative study included the healthcare organizations, Ackerville Regional Healthcare and Pinkerton Medical Center, administration, clinic managers, and medical teams. This study operated from a Biblical perspective. This research examined whether a relationship existed between multidisciplinary care teams and staff collaboration, partnership, and coordination when providing care to cancer patients (Williams & Kamat, 2017; Soukup et al., 2018; Taylor et al., 2019). Data analysis featured descriptive statistics on multidisciplinary teams for gender, age, employment status, education level, discipline, tenure, time within the team, and location.

Further analysis utilized hypotheses testing to answer the research questions, where MANOVA acted as the primary testing method. This researcher used the Multiple Kruskal Wallis test when MANOVA violated assumptions testing (Kruskal-Wallis = 26.34, $p < .001$).

The independent variable was multidisciplinary teams that provided treatment to cancer patients (Kedia et al., 2020). This researcher assigned each team member to two groups, multidisciplinary teams, and non-multidisciplinary teams. Participants classified as CMA, CNA, and LPN were not multidisciplinary team members, so this researcher selected them for the non-multidisciplinary group. The remaining classifications of Dosim, Med Onc, Med Phys, NP, PA, Rad Onc, Reg Diet, RN, RRT, RT, and Surg Onc were all considered multidisciplinary and placed into the interdisciplinary group (abbreviations spelled out in descriptive statistics). The grouping created a dichotomous, independent variable, which provided comparable groups to be used in the analysis.

The dependent variables were collaboration, partnership, and coordination among team members when providing care to cancer patients. Each variable was determined by the respective scores using the AITCS-II survey. The survey consisted of three sections that correlated to collaboration, partnership, and coordination. Each section's answers were calculated to give a total score and expressed as Collaboration, Partnership, and Coordination scores. The newly created dependent variables were used alongside the independent variable to address the research questions in hypotheses testing.

Presentation of the Findings

Introduction

This study utilized a fixed quantitative method to address whether a relationship existed between multidisciplinary care teams and staff collaboration, partnership, and coordination when

providing care to cancer patients. Data analysis featured descriptive statistics on multidisciplinary teams for gender, age, employment status, education level, discipline, tenure, time within the team, and location. Further analysis utilized hypotheses testing to answer the research questions, where MANOVA acted as the primary testing method. This researcher used the Multiple Kruskal Wallis test when MANOVA violated assumptions testing.

The independent variable was multidisciplinary teams that provided treatment to cancer patients. This researcher assigned each team member to two groups, multidisciplinary teams and non-multidisciplinary teams. Participants classified as CMA, CNA, and LPN were not multidisciplinary team members, so this researcher selected them for the non-multidisciplinary group. The remaining classifications of Dosim, Med Onc, Med Phys, NP, PA, Rad Onc, Reg Diet, RN, RRT, RT, and Surg Onc were all considered multidisciplinary and placed into the interdisciplinary group (abbreviations spelled out in descriptive statistics). The grouping created a dichotomous, independent variable, which provided comparable groups to be used in the analysis.

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Descriptive Statistics

The researcher selected the population sample from two different care facilities in Eastern Kentucky. Participants of the study provided care to cancer patients at either Pinkerton Medical Center (Site A) or Ackerville Regional Healthcare (Site B). Table 2 shows that Pinkerton Medical Center (Site A) has 41 participants, and Ackerville Regional Healthcare (Site B) has 41 participants used in the study. This process ensured that data analysis would be consistent throughout the dataset as each location had the same number of participants.

Table 2

Location

	Frequency	Percent	Valid percent	Cumulative percent
Site A	41	50.0	50.0	50.0
Site B	41	50.0	50.0	100.0
Total	82	100.0	100.0	

This quantitative study analyzed participants' gender to assess the demographic makeup of the sample population. Table 3 shows gender demographics within the care teams. The analysis showed that 47 participants were female (57.3%), and 35 participants were male (42.7%).

Table 3

Gender

	Frequency	Percent	Valid percent	Cumulative percent
F	47	57.3	57.3	57.3
M	35	42.7	42.7	100.0
Total	82	100.0	100.0	

This research also analyzed participants' age to further assess the demographic makeup of the study. Table 4 shows age demographics within the care teams. The analysis showed a

mean age of 37.02, with a range of 45 years. The minimum age was 20 years old, and maximum age was 65 years old.

Table 4

Age

Age	Statistics
Mean	37.02
Median	35.00
Mode	33
Range	45
Minimum	20
Maximum	65

Note. $N = 82$.

This researcher defined employment status by whether the participants were full-time (FT) or part-time (PT) employees. Table 5 shows the employment status of multidisciplinary team members. The analysis showed that 76 participants were full-time employees (92.7%), and six participants were part-time employees (7.3%).

Table 5

Employment

	Frequency	Percent	Valid percent	Cumulative percent
FT	76	92.7	92.7	92.7
PT	6	7.3	7.3	100.0
Total	82	100.0	100.0	

This quantitative study assessed the education level of each multidisciplinary team member. Education levels were as follows:

- Associate degree (AD)
- Associate Degree in Nursing (ADN)
- Bachelor's degree (BD)
- Bachelor of Science (BS)
- Bachelor of Science in Nursing (BSN)

- High school diploma (D)
- Doctor of Nursing Practice (DNP)
- Master's degree (MAS)
- Medical Doctor (MD)
- Master of Science (MS)
- Master of Science in Nursing (MSN)

Table 6 shows the results of each participant's level of education. The analysis showed that 17 participants earned a BS level of education (20.7%), 16 participants earned an MD level of education (19.5%), 13 participants earned an AD level of education (15.9%), and 11 participants earned a BSN level of education (13.4%).

Table 6

Education

	Frequency	Percent	Valid percent	Cumulative percent
AD	13	15.9	15.9	15.9
ADN	6	7.3	7.3	23.2
BD	5	6.1	6.1	29.3
BS	17	20.7	20.7	50.0
BSN	11	13.4	13.4	63.4
D	4	4.9	4.9	68.3
DNP	4	4.9	4.9	73.2
MAS	3	3.7	3.7	76.8
MD	16	19.5	19.5	96.3
MS	2	2.4	2.4	98.8
MSN	1	1.2	1.2	100.0
Total	82	100.0	100.0	

This study classified participants by their discipline within their respective care teams. Disciplines were as follows:

- Certified Medical Assistant (CMA)
- Certified Nurse Aid/Assistant (CAN
- Dosimetrist (Dosim)
- Licensed Practical Nurse (LPN)
- Medical Oncologist (Med Onc)
- Medical Physicist (Med Phys)

- Nurse Practitioner (NP)
- Physician Assistant (PA)
- Radiation Oncologist (Rad Onc)
- Registered Dietician (Reg Diet)
- Registered Nurse (RN)
- Registered Respiratory Therapist (RRT)
- Radiation Therapist (RT)
- Surgical Oncologist (Surg Onc)

Table 7 shows participants' disciplines within their multidisciplinary team. The analysis showed that 17 participants were RNs (20.7%), 12 participants were RTs (14.6%), eight participants were Med Oncs (9.8%), six were Rad Oncs (7.3%), and three were Surg Oncs (3.7%). 17 participants were classified as either CMA (6.1%), CNA (7.3%), or LPN (7.3%) and were considered non-multidisciplinary care team members.

Table 7

Discipline

	Frequency	Percent	Valid percent	Cumulative percent
CMA	5	6.1	6.1	6.1
CNA	6	7.3	7.3	13.4
Dosim	3	3.7	3.7	17.1
LPN	6	7.3	7.3	24.4
Med Onc	8	9.8	9.8	34.1
Med Phys	3	3.7	3.7	37.8
NP	5	6.1	6.1	43.9
PA	2	2.4	2.4	46.3
Rad Onc	6	7.3	7.3	53.7
Reg Diet	1	1.2	1.2	54.9
Reg Diet	2	2.4	2.4	57.3
RN	17	20.7	20.7	78.0
RRT	3	3.7	3.7	81.7
RT	12	14.6	14.6	96.3
Surg Onc	3	3.7	3.7	100.0
Total	82	100.0	100.0	

This research analyzed participants' tenure to assess the demographic makeup of the study. This study defined tenure by the number of years a participant has worked in their field or discipline. Table 8 shows tenure in discipline demographics. The analysis showed a mean tenure of 10.17 years, with the minimum tenure being two years and the maximum tenure being 23 years. Participants in the study had a range of 21 years between them.

Table 8

Years in Discipline

Years	Statistics
Mean	10.17
Median	9.50
Mode	10
Range	21
Minimum	2
Maximum	23

Note. $N = 82$.

This research analyzed participants' tenure within a multidisciplinary team to further assess the demographic makeup of the study. The study defined tenure within a multidisciplinary team by the number of years a participant has worked within their respective teams. Table 9 shows tenure within multidisciplinary care teams. Analysis shows a mean tenure within the teams of 6.77 years with a minimum tenure with a team of one year, and a maximum tenure with a team of 19 years. Participants in the study saw a range of 18 years of experience within the teams.

Table 9

Years with Team

With team	Statistics
Mean	6.77
Median	6.00
Mode	5
Range	18
Minimum	1
Maximum	19

The study utilized descriptive statistics in this section. The research included eighty-two (82) care providers from Pinkerton Medical Center (Site A, *n* = 41) and Ackerville Regional Healthcare (Site B, *n* = 41). 47 participants identified as female (57.3%), and 35 participants identified as male (42.7%). Care providers had a mean age of 37.02, with the youngest provider being 20 and the oldest provider being 65. The highest percentage of education level among care providers was BS (*n* = 17, 20.7%), followed by MD (*n* = 16, 19.5%) and AD (*n* = 13, 15.9%).

17 care providers had the discipline of RN (20.7%), 12 had the discipline of RT (14.6%), and eight had the discipline of Med Onc (9.8%). Participants of the study had a mean tenure of 10.17 years in their field or discipline, with the least experienced participant working for two years, and the most experienced participant working for 23 years. Within their multidisciplinary teams, participants had a mean tenure of 6.77 years, with the least experienced participant working for one year, and the most experienced participant working for 19 years. The following section contains hypotheses testing.

Hypotheses Testing

Many quantitative researchers utilize null-hypothesis significance testing (NHST), also called classical frequentist statistics or error-based statistics, to analyze research results (Malone & Coyne, 2020). Healthcare professionals often depend on empirical evidence and statistical interpretation to develop healthcare policies and protocols. This way, research results inform healthcare practice. A P-value is the probability of acquiring results at least as extreme as those observed in the research data, given that the null hypothesis is true. Researchers reject the null hypothesis if the P-value is less than the pre-set error rate (Malone & Coyne, 2020). The purpose of this fixed-design quantitative casual-comparative study was to examine the relationship between multidisciplinary approaches, provider partnerships, collaborations, and coordination in healthcare organizations in Eastern Kentucky.

Multivariate analysis of variance (MANOVA) is a statistical procedure commonly used in multiple fields of study. MANOVA was the primary testing method for hypotheses testing to answer the research questions. MANOVA tested assumptions to assess whether violations existed in the data. The MANOVA analysis returns a result regarding whether each of the three dependent variables is significantly different for different dependent values. If this statistic significantly differs from zero for a given dependent variable, researchers should reject the associated null hypothesis (Morgan et al., 2004). Hence, the analysis answers each research question. Data analysis begins by characterizing the sample and the data using descriptive analysis. Then, the MANOVA answers the research questions by testing the associated hypotheses.

When violations existed for the assumptions of MANOVA, then the researcher employed a Multiple Kruskal Wallis test to answer the research questions instead. Often with quantitative

data hypotheses testing, researchers substitute the nonparametric multiple-Kruskal-Wallis (mKW) test for the MANOVA analysis when the assumptions of the MANOVA are not upheld. The mKW is a rank-based nonparametric test that researchers often use to determine if there are statistically significant differences among two or more groupings of a given independent variable, provided that the dependent variables are continuous or ordinal level (Knapp, 2018). As in MANOVA, there are assumptions that need to be met to ensure that the mKW is appropriate for use within the study.

Specifically, there are four separate assumptions. The first assumption is that the dependent variable is measured on an ordinal or continuous scale, such as the Likert scale used in the Orchard (2018) AITCS-II. The second assumption is that there exist two or more independent variables which occur within this study. The third assumption is that there is a difference between groups of independent variables, which is also true. The fourth and final assumption is that the data distribution has the same shape. As all the assumptions for the mKW tests are assumed true in this current study, the mKW makes an appropriate substitution should MANOVA not be feasible. Thus, when MANOVA cannot be used, the mKW is employed instead (Knapp, 2018).

Assumptions

When testing for MANOVA, the assumptions included the categorical nature of the independent variable, the homoscedasticity of the outcomes, and the continuous and normal distribution of the outcome variables. The independent variable was created by assigning participants into two groups. Participants were either a part of a multidisciplinary team (Yes) or not a part of a multidisciplinary team (No). Due to the binary creation method of the independent variable, the assumption of categorical natured data was met.

The assumption of homoscedasticity was tested using Levene's Test of Equality of Errors Variances. Table 10 shows homoscedasticity testing using Levene's Test. Results showed that Partnership Score (Levene's = 2.44, p = .122), Collaboration Score (Levene's = .161, p = .689), and Coordination Score (Levene's = .1.680, p = .199) were not significant due to their p-values being greater than the assumed alpha value (p = .05). Thus, the assumption of homoscedasticity was met.

Table 10

Levene's Test of Equality of Error Variances[a]

		Levene statistic	df1	df2	Sig.
Partnership Score	Based on Mean	2.444	1	80	.122
	Based on Median	1.800	1	80	.183
	Based on Median and with adjusted df	1.800	1	77.743	.184
	Based on trimmed mean	2.407	1	80	.125
Cooperation Score	Based on Mean	.161	1	80	.689
	Based on Median	.170	1	80	.681
	Based on Median and with adjusted df	.170	1	77.420	.681
	Based on trimmed mean	.140	1	80	.709
Coordination Score	Based on Mean	1.680	1	80	.199
	Based on Median	1.677	1	80	.199
	Based on Median and with adjusted df	1.677	1	79.995	.199
	Based on trimmed mean	1.686	1	80	.198

Note. Tests the null hypothesis that the error variance of the dependent variable is equal across groups; [a] Design: Intercept + Multidisciplinary Group.

This researcher tested the assumption of normal distribution of outcomes using Shapiro-Wilk Tests of Normality. This researcher tested each interval variable independently to assess normal distribution of outcomes. Table 11 shows normality results for multidisciplinary groups and collaboration scores. The analysis showed collaboration scores within non-multidisciplinary

groups were normally distributed (Shapiro-Wilk = .947, p = .410). However, collaboration scores within multidisciplinary groups were not normally distributed (Shapiro-Wilk = .763, p < .001).

Table 11

Tests of Normality Collaboration Score

	Multidisciplinary Group	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	*df*	Sig.	Statistic	*df*	Sig.
Collaboration Score	No	.147	17	.200*	.947	17	.410
	Yes	.232	65	<.001	.763	65	<.001

Note. *. This is a lower bound of the true significance; [a].Lilliefors Significance Correction

Table 12 shows normality results for multidisciplinary groups and partnership scores. The analysis showed partnership scores within non-multidisciplinary groups were normally distributed (Shapiro-Wilk = .919, p = .143). Partnership scores within multidisciplinary groups were not normally distributed (Shapiro-Wilk = .946, p = .006).

Table 12

Tests of Normality Partnership Score

	Multidisciplinary Group	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	*df*	Sig.	Statistic	*df*	Sig.
Partnership Score	No	.159	17	.200*	.919	17	.143
	Yes	.199	65	<.001	.946	65	.006

Table 13 shows normality results for multidisciplinary groups and coordination scores. The analysis showed coordination scores within non-multidisciplinary groups were normally distributed (Shapiro-Wilk = .953, p = .512). Coordination scores within multidisciplinary groups were not normally distributed (Shapiro-Wilk = .955, p = .019). Because the results of the multidisciplinary groups had non-normal distribution, the assumption of normality was violated. Thus, the Multiple Kruskal Wallace Test was utilized to answer the research questions.

Table 13

Tests of Normality

	Multidisciplinary Group	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	*df*	Sig.	Statistic	*df*	Sig.
Coordination Score	No	.194	17	.090	.953	17	.512
	Yes	.153	65	<.001	.955	65	.019

[a.] Lilliefors Significance Correction.

The Kruskal-Wallis Test was used to answer the research questions due to assumptions testing violations for MANOVA. Table 14 shows the Kruskal-Wallis Test results. The analysis showed a statistically significant difference in multidisciplinary groups between collaboration score, partnership score, and coordination scores. The results were used to answer the research questions. Therefore, the following section is organized by research questions.

Table 14

Test Statistics[a,b]

	Partnership Score	Collaboration Score	Coordination Score
Kruskal-Wallis H	37.672	26.341	24.948
df	1	1	1
Asymp. Sig.	<.001	<.001	<.001

[a.] Kruskal Wallis Test

[b.] Grouping Variable: Multidisciplinary Group

Research Question 1

RQ1: What is the relationship between multidisciplinary care teams and staff collaboration in providing care to cancer patients?

$H1_0$: There is no statistically significant relationship between multidisciplinary care teams and staff collaboration in providing care to cancer patients.

$H1_a$: There is a statistically significant relationship between multidisciplinary care teams and staff collaboration in providing care to cancer patients.

The analysis of a Kruskal-Wallis test showed a statistically significant difference in multidisciplinary care teams and staff collaboration in providing care to cancer patients (Kruskal-Wallis = 26.34, $p < .001$). Non-multidisciplinary groups had a mean rank score of 15.56, and multidisciplinary groups had a mean rank score of 48.28. Due to these findings, the null hypothesis that there was no statically significant relationship between multidisciplinary care teams and staff collaboration in providing care to cancer patients was rejected. Table 15 shows rank scores for Collaboration Score calculated from the Kruskal-Wallis Test.

Table 15

Collaboration Score Ranks

Multidisciplinary Group	*N*	Mean rank
No	17	15.56
Yes	65	48.28
Total	82	

Research Question 2

RQ2: What is the relationship between multidisciplinary care teams and staff partnership in providing care to cancer patients?

$H2_0$: There is no statistically significant relationship between multidisciplinary care teams and staff partnership in providing care to cancer patients.

$H2_a$: There is a statistically significant relationship between multidisciplinary care teams and staff partnership in providing care to cancer patients.

The analysis of a Kruskal-Wallis test showed a statistically significant difference in multidisciplinary care teams and staff partnership in providing care to cancer patients (Kruskal-Wallis = 37.67, $p < .001$). Non-multidisciplinary groups had a mean rank score of 10.35, and multidisciplinary groups had a mean rank score of 49.65. Due to these findings, the null

hypothesis that there was no statically significant relationship between multidisciplinary care teams and staff partnership in providing care to cancer patients was rejected. Table 16 shows rank scores for Partnership Score calculated from the Kruskal-Wallis Test.

Table 16

Partnership Score Ranks

Multidisciplinary Group	*N*	Mean rank
No	17	10.35
Yes	65	49.65
Total	82	

Research Question 3

RQ3: What is the relationship between multidisciplinary care teams and staff and coordination in providing care to cancer patients.

$H3_0$: There is no statistically significant relationship between multidisciplinary care teams and staff coordination in providing care to cancer patients.

$H3_a$: There is a statistically significant relationship between multidisciplinary care teams and staff coordination in providing care to cancer patients.

The analysis of a Kruskal-Wallis test showed a statistically significant difference in multidisciplinary care teams and staff coordination in providing care to cancer patients (Kruskal-Wallis = 24.95, $p < .001$). Non-multidisciplinary groups had a mean rank score of 15.97, and multidisciplinary groups had a mean rank score of 48.18. Due to these findings, the null hypothesis that there was no statically significant relationship between multidisciplinary care teams and staff coordination in providing care to cancer patients was rejected. Table 17 shows rank scores for the coordination scores calculated from the Kruskal-Wallis Test.

Table 17

Coordination Score Ranks

Multidisciplinary Group	*N*	Mean rank
No	17	15.97
Yes	65	48.18
Total	82	

Summary of Hypotheses Testing

Data analysis began with descriptive statistics used to determine more about the survey population. Demographic information of location (Sites A and B), age, gender, employment status (FT and PT), education, discipline, tenure, and tenure with team were provided with details. Hypothesis testing was utilized in the study to help address the research questions. Initially, MANOVA was to serve as the main testing method used in the study. Assumptions testing showed that independent variable data was categorical in nature. Variable outcomes were homoscedastic, as shown by Levene's Test. However, the analysis of Shapiro-Wilks Test of Normality showed data was not normally distributed. Due to this assumption's violation, a Kruskal-Wallis non-parametric test was utilized instead of MANOVA.

Results of a Kruskal-Wallis Test revealed statistical significance in multidisciplinary care teams between collaboration score (Kruskal-Wallis = 26.34, $p < .001$), partnership score (Kruskal-Wallis = 37.67, $p < .001$), and coordination score (Kruskal-Wallis = 24.95, $p < .001$). Participants classified as non-multidisciplinary had mean rank scores of 15.56 for collaboration, 10.35 for partnership, and 15.97 for coordination. Participants classified as multidisciplinary had mean rank scores of 48.28 for collaboration, 49.65 for partnership, and 48.18 for coordination. Thus, results from a Kruskal-Wallis Test used in the study rejected the null hypothesis for Research Questions 1, 2, and 3.

Relationship of the Findings

The general problem addressed in this fixed design quantitative casual-comparative study was a lack of information regarding the successful functioning of multidisciplinary care teams for cancer patients (Williams & Kamat, 2017; Soukup et al., 2018; Taylor et al., 2019). The specific problem addressed in this study was the lack of data on the relationship between a multidisciplinary care team and oncology staff partnerships, collaboration, and coordination in two Eastern Kentucky hospitals. The results of a Kruskal-Wallis Test revealed statistical significance in multidisciplinary care teams between collaboration score (Kruskal-Wallis = 26.34, $p < .001$), partnership score (Kruskal-Wallis = 37.67, $p < .001$), and coordination score (Kruskal-Wallis = 24.95, $p < .001$). The following discussion will show how these findings relate to the research questions, theoretical foundation, the literature, and the problem.

The Research Questions

The research questions were designed to uncover the relationship between multidisciplinary care teams and staff collaboration, staff partnership, and staff coordination.

RQ1: What is the relationship between multidisciplinary care teams and staff collaboration in providing care to cancer patients?

Regarding RQ1, the analysis of a Kruskal-Wallis test showed a statistically significant difference in multidisciplinary care teams and staff collaboration in providing care to cancer patients. This finding forced a rejection of the null hypothesis, $H1_{0,}$ while $H1_{a}$ was supported. Collaboration is one of the best means of supporting patient outcomes, as shown in this model whereby the multidisciplinary team assessed and delivered a comprehensive set of care recommendations, all provided in one clinic visit, to increase proficiency and lessen travel for the patient (Presley et al., 2020). Without such collaboration, geriatric health requirements can lead

to expensive, uncoordinated care that diminishes the quality of life for the patients (Presley et al., 2020). One of the benefits of collaboration is the ability to problem solve and troubleshoot while in action through the multi-skilled background of the multidisciplinary team (Atkinson & Singer, 2021). This research question illustrated how multidisciplinary collaboration addresses unmet needs and risk factors, implements interventions, provides healthy lifestyle recommendations, and streamlines care.

RQ2: What is the relationship between multidisciplinary care teams and staff partnership in providing care to cancer patients?

Regarding RQ2, the analysis of a Kruskal-Wallis test showed a statistically significant difference in multidisciplinary care teams and staff partnerships in providing care to cancer patients. This finding forced a rejection of the null hypothesis, $H1_{0,}$ while $H1_{a}$ was supported. One of the challenges of increased staff partnership is how financial incentives are involved in the referral lines with other providers, and physicians were concerned that the multidisciplinary care model might jeopardize those connections (Kedia et al., 2020). Organizations need to address these concerns to get full partnership support from physicians. The literature emphasized the mutual reliance between healthcare organizations and multidisciplinary teams as essential partners in the current medical care delivery system (Atkinson & Singer, 2021). However, these partnerships have been found to lack clear boundaries, which inhibits coordination and can lead to waste and miscommunication. Though these teams boost innovation in healthcare delivery, such teams make constraints more evident due to their diversity in expertise and perspectives (Atkinson & Singer, 2021). Administrative partnership support is needed to turn these challenges into sustained momentum.

This research question emphasizes the need for partnerships that utilize strategies to manage challenges by identifying, understanding, and engaging with the healthcare organization's stakeholder partners early. Enabling multidisciplinary partnerships to collaborate constructively and sustain momentum can help keep team morale high when working with cancer patients (Atkinson & Singer, 2021). The aspect of partnership was one of the least discussed aspects of the multidisciplinary teams' success in the literature. This may be because the concept of partnership entails shared responsibility and accountability. Considering the many crossed lines and conflicts associated with finances in health care, a partnership can be challenging for providers. However, if a partnership is emphasized as accessible through the non-local means of information technology tools it may be better embraced by possible partners (Janssen et al., 2018).

RQ3: What is the relationship between multidisciplinary care teams and staff and coordination in providing care to cancer patients.

Regarding RQ3, the analysis of a Kruskal-Wallis test showed a statistically significant difference in multidisciplinary care teams and staff coordination in providing care to cancer patients. This finding forced a rejection of the null hypothesis, $H1_{0,}$ while $H1_{a}$ was supported. Staff coordination entails making sure the multidisciplinary team has the type of specialized members the patient care needs. However, when specialized doctors are unavailable, the literature suggests physician assistants and nurse practitioners could act as coordinated surrogates to fill out the needs of the team (Kedia et al., 2020). The literature also suggests the use of technology to help manage coordination issues and provide a means for patients to participate in the decision-making process (Kedia et al., 2020). With effective collaborative

support from administrative leaders, the process of coordinating staff in the multidisciplinary team can be organized more effectively.

This research question investigated how care teams coordinate through multidisciplinary clinics, breast units, and multidisciplinary tumor boards, which are referred to as multidisciplinary meetings (Berardi et al., 2020). These meetings are active coordination, helping to strengthen the communication and education of the multidisciplinary teams. Coordination is advanced through the utilization of health information systems and technology as effective means of overcoming challenges of implementation and building the capability of MDTs (Janssen et al., 2018). This research question emphasized how coordination between administration and staff is supported by emerging technologies. However, there are inconsistencies in the awareness and application of technology to improve patient outcomes (Janssen et al., 2018). These inconsistencies are present in the geriatric population who are the least familiar with these technologies. Physicians who are unfamiliar with coordination through information technology must educate themselves and their patients to improve patient outcomes.

The Theoretical Framework

Social systems theory supported this study, which operates in natural sciences as part of research on biology and technology (Jackson, 1984). Social systems theory posits that individuals are products of their environment (Jackson, 1984). Understanding how individuals act as products of their environment will help provide insight into how to improve multidisciplinary care teams' success of care between collaboration, partnership, and coordination. Each of the aspects of collaboration, partnership, and coordination relates to individuals working within the larger social system in all its complexity. Systems theory

generally holds that the whole system is greater than the sum of its parts, but the whole must be managed in part to improve patient outcomes (Jackson, 1984).

The theory of social systems suggests that society is not composed of individuals but of communications. The theory further maintains that communication is the fundamental element of social systems, and that society is appropriately defined as the encompassing system of all communication (Sales et al., 2022). These aspects of the social systems theory further justify its use in the study of cooperation, collaboration, and partnership in multidisciplinary teams. How all the benefits of the larger system can be leveraged to support the needs of the individual is one of the points of focus of this study. As such the study analyzed how the individual actors move within the larger system in general.

The actors in this quantitative casual-comparative study include the healthcare organizations, Ackerville Regional Healthcare and Pinkerton Medical Center (in Hinton and Pinkerton, respectively, in Litton County, Kentucky), administration, clinic managers, medical teams, and patients (Bhattacharyya & Lichtman, 2017; Jung et al., 2018; Soukup et al., 2018). Social systems theory emphasizes the role of the immediate environment as a prime mover in individual action (Jackson, 1984). This element must be understood when considering how to leverage virtual technologies to improve collaboration, coordination, and partnership in healthcare. This study was supported by Talcott's (1951) four tenants that all groups must consist of to function properly. The tenants are adaptation, goal attainment, integration, and latency. These tenants are closely linked to how collaboration, coordination, and partnership are maintained through education and communication. The findings of this study revealed statistical significance in multidisciplinary care teams between staff collaboration, partnership, and

coordination. The aspects of adaptation, goal attainment, integration, and latency can help teams address challenges in implementation through strategic planning using each aspect.

In this light of this study's findings, latency relates to how the healthcare organization can create and sustain a culture of coordination, collaboration, and partnership (Talcott, 1951). Latency can be supported with the education of staff that encourages coordinated collaboration that expands the resources and knowledge available to local cancer patients (Talcott, 1951). Goal attainment is an increased adoption of multidisciplinary teams to improve patient outcomes. Goal attainment is supported by staff education that helps each member hold the vision of organizational improvement. The aspect of integration is central to the success of the multidisciplinary model as integration is another expression of a collaborative effort (Talcott, 1951). This theory helps provide a strong foundation for how to overcome the challenges of implementation for the multidisciplinary model.

The Literature

This researcher conducted a thorough review of the professional and academic literature related to the practice and implementation of multidisciplinary care. Extensive literature on the subject informed the direction and goals of the proposed quantitative study. The literature review revealed recurrent themes and gaps in the existing literature as related to the metrics of collaboration, partnership, and coordination. This quantitative study sought to reduce these gaps in the literature, inform business practices, and suggest further research.

The existing body of knowledge suggests that staff metrics, such as collaboration, partnerships, and coordination, impact cancer patients' quality of care (Lamprell et al., 2019; Selby et al., 2019; Shao et al., 2019). The findings of this quantitative study supported this hypothesis in which a statistical significance existed in multidisciplinary care teams' success of

care between collaboration score (Kruskal-Wallis = 26.34, $p < .001$), partnership score (Kruskal-Wallis = 37.67, $p < .001$), and coordination score (Kruskal-Wallis = 24.95, $p < .001$). With the understanding that some providers may be overwhelmed by the trifecta of collaboration/partnership/coordination, physicians suggested that education about the multidisciplinary model should focus on timely care (Kedia et al., 2020). While correct and clear communication may be the most important aspect impacting this issue, framing it within the focus on timely care will help multidimensional teams not over-complicate the process.

While many providers were unaware of the concept, existence, or availability of the multidisciplinary care model within their own organization, recent studies have shown that informed providers recognized that provider education is an essential part of the implementation of a multidisciplinary model of care. Anticipating lackluster provider buy-in, physicians supporting a multidisciplinary care model recommended that the model focuses on timely care and include guidance on consultations and referral management to increase patient engagement with a multidisciplinary clinic (Kedia et al., 2020). Successful implementation of multidisciplinary models of care would require physician education and the support of suitably situated organizations with regard to creating adequate infrastructure to accommodate multidisciplinary care providers (Zonneveld et al., 2018).

The literature highlighted that multidisciplinary care teams are often considered the best-evidenced-based standard of care for treating cancer patients. However, the effectiveness of such teams can be highly dependent on the teamwork and coordination of the localized staff (Selby et al., 2019). Highlighting the challenge of applying best-evidenced-based practices across all localities was one of the aims of this study. Achieving consistency of standardized care will improve the likelihood that patients in rural locations receive a quality of care consistent with

urban locations (AHA, 2019). Community hospitals, like the healthcare organization in Eastern Kentucky, often struggle with access to the precision staff of a multidisciplinary care team. However, if best-evidenced-based practices of improved communication and the utilization of information technologies are applied consistently, the lack of specialty staff may not be as threatening to patient safety.

Identifying potential obstacles and preventive measures and remedies for the same is a crucial step in implementing multidisciplinary care (Kedia et al., 2020). For example, multidisciplinary care customarily involves a face-to-face meeting where various specialists discuss clinical cases (Berardi et al., 2020). However, time and distance may make coordination of a face-to-face collaboration difficult, if not impossible. In these instances, virtual meetings may be employed, granting distant providers access to confer with each other and determine the appropriate diagnostic and therapeutic course of treatment. Moreover, the use of technology could provide a means for patients to participate in the decision-making process. Further remedies to the concerns of physicians that available time to participate in multidisciplinary care might be a problem is the use of physician surrogates. Physicians who are not able to contribute directly to a multidisciplinary care team suggested that other providers, such as physician assistants and nurse practitioners, could represent them (Kedia et al., 2020).

National initiatives focus on the need for interdisciplinary care to improve health outcomes for older cancer patients who have unique needs independent of routine oncology care. Evidence-based business practices play a significant role in geriatric oncology treatment (Presley et al., 2020). However, disparities remain between knowledge and practice concerning implementation. Researchers detailed the methodology of a multidisciplinary approach to providing care for older adults with cancer in a particular institution.

Aware that geriatric health conditions not effectively addressed can lead to expensive, uncoordinated care that diminishes the quality of life for the patients and their caregivers, the multidisciplinary team assessed and delivered a comprehensive set of care recommendations, all provided in one clinic visit to increase proficiency and lessen travel for the patient (Kedia et al., 2020). This coordination of caregivers addressed unmet needs and risk factors, implemented interventions, provided healthy lifestyle recommendations, and streamlined care in conjunction with standard oncology treatment. This approach integrates oncology subspecialties in healthcare delivery and delivers coordinated assessments and interventions to improve health outcomes (Presley et al., 2020).

Recent research shows that while multidisciplinary teams (MDT) are an essential component of healthcare delivery, the crucial specialists may not be physically present in a single facility (Janssen et al., 2018). Said research showed findings on how seven MDTs in cancer care employed the use of technology and information systems and identified the barriers and enabling factors that impacted their utilization (Janssen et al., 2018). More studies are needed to determine the kinds of systems necessary for technology improvement and implementation for MDTs, particularly in cancer care delivery, where MTDs are the internationally preferred method for service delivery (Kedia et al., 2020)..

MDTs have become a significant component in the delivery of cancer care. The central function of MDT meetings is to establish a team of healthcare professionals to discuss a patient's treatment plan (Janssen et al., 2018). Much of Europe has employed these meetings in their healthcare facilities and accepted them as the favored delivery methods at a policy level. MDT meetings are also becoming more commonly used in America. MDTs are not just a component of cancer care delivery but are a vital aspect of healthcare delivery across sectors (Kedia et al.,

2020). Team-based approaches can significantly improve many aspects of the quality of care delivered to patients. Multidisciplinary care establishes a line of communication between specialists and primary care providers. Team-based care also positively impacts health professionals by improving the overall professional climate (Kedia et al., 2020).

Although MDTs have become a standard practice in cancer care in many countries, there remains a general lack of information about technology and information systems regarding their integration into these teams (Janssen et al., 2018). There is insufficient research analyzing how ICTs can be integrated into MDTs. This lack of data concerns the importance of adequately implemented ICTs for the coordination of care of health professionals. Many MDTs have used ICTs in the form of clinical decision support systems and clinical dashboards, and the process improves care and patient outcomes (Janssen et al., 2018). ICT programs used to facilitate multidisciplinary symptom management between treatment teams and patients can improve symptom management and control (Janssen et al., 2018).

Three common themes emerged when MDTs documented the perceived impact of technology used in weekly meetings; the utilization of MDTs and how data was collected, the technological impact on the MDT meeting environment, and the impact of technology and information systems on clinical decision-making. The study demonstrated that real-time data collection and imaging might improve patient-centered care coordination (Kedia et al., 2020). However, information communication technologies (ICTs) can be used unsuccessfully by teams not adequately trained in collecting data. Additional research is warranted to identify the enabling factors that support a more accurate collection of information and utilization of outcome data from ICT (Janssen et al., 2018).

The literature reflects how the increasingly prevalent use of current and emerging technologies are reshaping the healthcare industry for both patients and healthcare providers. ICTs are quickly beginning to change the way patients take part in their own health care, as well as improving clinical processes by bolstering data-driven care, thus letting patient outcomes be measured and compared with benchmark performance metrics (Janssen et al., 2018). Through continuing advances in technology, health data becomes more accessible, making it possible for healthcare providers to change and improve their practices (Presley et al., 2020).

However, the literature reveals a notable lack of understanding by healthcare professionals as to how implementing ITCs can support the delivery of care for patients and enable connections across various applications and data sets (Janssen et al,2018). Currently, the application of ICT in the health sector exists more often when the functionality of the technology offers financial benefits along with quality and safety components. It is vital that healthcare professionals better comprehend how technology in areas such as cancer care allows collaboration and coordination of care, thereby enhancing patient-centered models of care (Janssen et al., 2018).

Further, literature shows that Patients in rural and remote locations can benefit also benefit from provider coordination through information technology. One recent study concluded that the successful implementation of ICTs in multidisciplinary care could enable universally accessible, cost-effective, and high-quality care, particularly for patients in remote locations (Presley et al., 2020). For instance, patient imaging is the most frequently used form of technology. Patient scans and imaging displayed at the front of most meeting rooms allow experts to discuss their interpretation of the results and findings. These displays of patient imaging and scans generate discussions across specialties, particularly between oncologists and

pathologists. The displayed imaging and scans are regularly the prompts for a discussion among those in attendance as more senior specialists pose questions related to treatment options and prognosis to new providers. This accessibility can greatly benefit remotely located patients who may otherwise have to travel extensively to coordinate healthcare among various specialists and providers (Janssen et al., 2018).

Delays in receiving patient scans can result in the interruption of treatment and treatment decisions. These delays prompted some study participants to express the need for external imaging companies to make scan results available online. Physicians suggested that referring patients to only those companies could ensure access to timely treatment (Janssen et al., 2018). Prompt access to imaging and scans is critical in helping to identify discrepancies in previous diagnoses and enhance the ability to compare and have discussions about individual treatment plans. Participants were all in agreement that the use of imaging technology and real-time data collection promoted clinical discussions during MDTMs (Presley et al., 2020).

A dedicated meeting coordinator plays an essential role in ensuring timely access to imaging and scans. This meeting coordinator uses appropriate technology to ensure the dissemination of agendas, patient lists, and reminders, which helps ensure that all relevant results are available for the multidisciplinary team meeting (MDTM) (Janssen et al., 2018). In meetings with dedicated administrative support agendas, patient lists, and reminders, including all relevant results and materials, are available to collaborating or partnering healthcare providers. In MDT tumor stream meetings, the chair will often ask junior doctors to participate in the discussion. The meeting coordinator instructs them to conduct internet searches for literature to support specific diagnoses (Janssen et al., 2018).

MDTMs often employ teleconferencing equipment to support a satellite MDT in rural locations. Even when facilities have the capacity to link with rural and remote locations, this technology is typically only employed as required or when requested by a specialist (Janssen et al., 2018). In many MDTMs, new doctors are encouraged to deliver a PowerPoint presentation of a relevant clinical case study for discussion with the team. MDTMs also allow research-focused members to present their findings (Janssen et al., 2018). Smartphones are regularly the source of information regarding treatment options and diagnoses at the request of the MDTM chair. Teams can enter real-time data during meetings, a process often led by a registrar undertaking a local healthcare improvement project (Janssen et al., 2018).

Findings from this study indicate that MDTs are using a wide variety of ICTs for support throughout their meetings as the use of technology in the healthcare sector becomes more widespread. Access to new technology is changing the delivery of care profoundly (Janssen et al., 2018). The groundbreaking use of ICTs has many possibilities for developing various aspects of healthcare, and they are being employed in innovative ways industry wide. Yet despite the positive acceptance of the MDT meetings, evidence of the impact of these innovations is incomplete, and many obstacles remain. Research reinforces the findings of existing literature by suggesting that MDTs do not currently make optimal use of health information and technology (Janssen et al., 2018). Obstacles to optimal use of ICT during MDT meetings include ICT aptitudes of individual team members, physical environment, and time. Participant responses indicate that the perception of the new technology is burdensome and increases the workload of meeting participants. These barriers are consistent with the findings of this study (Janssen et al., 2018).

While the herein contemplated study predominantly focused on the use of ICT in MDTs, the use of real-time clinical data and collection was a priority for many participants. MDT leaders and champions expressed the desire to collect meaningful patient-centered data (such as quality of life) as a means of attaining information to advise treatment choices and end-of-life care (Janssen et al., 2018). This suggestion is consistent with findings that show acute and long-term physical and psychosocial comorbidities are associated with cancer treatment, indicating an increasing need for supported self-management and shared care. Furthermore, the quality-of-service indicators come from patient experience or patient-reported outcomes (Janssen et al., 2018).

It should be acknowledged that MDTs have an essential role in improving decision-making in the treatment process and improving the quality of care for patients through collaboration and coordination of care, as MDTs identify the key outcomes and analyze data related to patient experience (Presley et al., 2020). Adequately implemented ICTs for data collection have the potential to improve the coordination of cancer care in MDTs, as has been demonstrated in other health arenas (Janssen et al., 2018). The findings in this study concur with clinical data research acknowledging the increasing use of technologies like electronic medical records. These advances have made information more accessible to clinicians by increasing the opportunities to access patient data for various uses, from clinical processes to quality improvement (Janssen et al., 2018).

Even though the ICT process can collect unnecessary clinical data, the findings from this study indicate that high-quality clinical data collection has the potential to improve the use of new technology. It can make data input a more straightforward process and participation easier for clinical teams (Presley et al., 2020). A demonstration of the new ICT that enabled efficient

clinical data collection revealed how it used technology to incorporate real-time data collection into MDTMs. The study participants agreed that this process was efficient, and the team's data collection was more meaningful with adequately implemented ICT. Accessible patient-centered data helps inform clinical decision-making and end-of-life care. This finding aligns with the existing literature indicating that close-to-the-source data increases the quality of collected information (Janssen et al., 2018). Therefore, the data collection process becomes a dimension of service quality and an indicator of optimal standards of care. Through identifying key outcomes and data, MDTs have an essential role in this process of improving treatment decisions and follow-up care (Janssen et al., 2018).

It is crucial that healthcare specialists, as a group, see the value and the efficacy of collecting patient-reported outcomes (PROMs) as an integral part of making the best use of technology (Janssen et al., 2018). ICTs data collection systems can include integrating PROMs into MDTMs, though additional research into enabling this process in cancer care is imperative for ideal utilization (Janssen et al., 2018). Indeed, there is a need to identify a classification of core PROM domains and dimensions in cancer care and treatment. Clinical practice seldom implements these classifications despite the widely known importance of capturing the patients' experiences with treatment and care (Aston et al., 2018).

Awareness of implementing ICTs to improve aspects of MDTs, such as collecting information, is vital. However, the outcome of this study advises that the use of ICTs alone is inadequate in improving MDT dynamics and improving the delivery of care (Janssen et al., 2018). ICT is a tool that enhances MDTs, yet human and organizational factors have the most significant impact on the successful use of technologies in health care. In particular, having access to diverse specialists is an indispensable factor. According to Janssen et al. (2018),

specialists who understand how to use the technologies and data systems and interpret the information provided thereby, as well as experts who can design clinical databases for a team or even analyze clinical data sets during meetings, are essential.

Proper training for staff members is an important factor in utilizing the use of new technologies and implementing ICT successfully (Janssen et al., 2018). Moreover, many complex new technologies may require that institutions contribute to individual training to ensure that users possess the skills needed in specific programming supporting ICT usage in MDTs. The cost of training and teaching new and existing staff or engaging staff with specialized ICT training may be exponential, but necessary to ensure ICTs are supported (Aston et al., 2018). This finding is not consistent with the current literature, which maintains that ICTs are a cost-effective solution for improving the quality of healthcare (Janssen et al., 2018).

Even though the literature acknowledges the advantage of multidisciplinary care for both patients and healthcare professionals, there remains an overall lack of insight into how best to support this type of care and the challenges of implementing innovations such as adequate assimilation and cost-effectiveness into MDTs. The herein subject study finds that to overcome the challenge of implementing innovations such as ICT within MDTs, both individuals and organizations need to recognize when and how it can most effectively be used to benefit practice (Aston et al., 2018). This recognition is critical in rapidly evolving data collection and feedback for clinical and research purposes. Effectively collecting this information requires information technology experts, implementation researchers, and clinical teams to work together to develop a practical approach to using ICTs. Corporate leadership should acknowledge and support the need for resourcing to optimize the utilization of emerging technologies (Janssen et al., 2018).

Experts increasingly regard MDTs as a best-practice form of healthcare management, and research supports that chronic disease management has become more successful with the implementation of MDTs (Aston et al., 2018). However, there is often no appropriate specialty panel for patients with undiagnosed disease, multiple interacting comorbidities, or other complex issues. Often, such cases fall outside the remit of disease-specific MDTs or the scope of expertise of individual clinicians. Specialists benefit from a panel to discuss patient care and develop an integrated plan for management (Muddiman et al., 2019).

Researchers developed and piloted a new extraordinary virtual MDT allowing for inter-specialty discussion and collaboration to allow specialists to organize an urgent union of all involved parties in response to challenging clinical scenarios. In a recent study, they share experiences implementing this innovation and advise how this could further develop the multidisciplinary forum to improve the quality of healthcare delivery for patients with chronic healthcare needs, timelessness, and integration (Aston et al., 2018).

In the 1990s, healthcare providers in the UK saw a need for equality of access to standardized, high-quality care (Aston et al., 2018). Organizations introduced MDTMs for cancer care during this time, and many facilities soon adopted the practice as a mandatory component of cancer case management. Patients managed via MDTs were more satisfied, received treatment in a timelier manner, and had a greater chance of survival for some tumor types. Over the next decade, MDTs in other specialties multiplied, and most hospitals or regions implemented such collaboration through regular MDT meetings (Muddiman et al., 2019).

MDT meetings typically involve a predefined group of clinicians conferring in regular face-face sessions and generally at a recurring fixed time to discuss patients with a specific condition (Aston et al., 2018). However, for some patients without an apparent diagnosis,

complex conditions, or multiple interacting co-diagnosis, there is often no appropriate or established routine MDT to discuss their care. Patients with these complex needs could benefit from the collaborative approach of an MDT format but are often subject to multiple sequential reviews from multiple specialist teams and are often at risk of experiencing delayed and fragmented care. The absence of an organized, collaborative forum that brings together numerous physicians can negatively affect patient care (Aston et al., 2018).

Researchers believe that patients with complex conditions require some form of MDT that can convene quickly to develop coordinated management plans (Aston et al., 2018). Patients with multiple illnesses will likely fall outside the scope of individual physicians who are experts in their field. The progression of increased life expectancy, the enhanced risk of accumulating multiple chronic illnesses, and the drive towards centralization of healthcare services will mean patients will receive fragmented care without adequate mechanisms for inter-specialty working (Muddiman et al., 2019).

Understanding that face-to-face meetings may be difficult for clinicians of various specialties and located across different sites upon short notice, researchers created the concept of a special MDT for patients with complex conditions in which a principal clinician responsible for a patient's care could quickly arrange a meeting of all connected parties in response to a challenging clinical scenario like a diagnostic dilemma or need for a coordinated treatment plan (Aston et al., 2018). Therefore, researchers improvised a way for attendees to participate remotely by developing technological and logistical mechanisms. Although virtual MDTs have occurred in community settings, this combination of an ad hoc multispecialty forum for organized case management expedited by a virtual platform had not been reported previously in a secondary care setting (Muddiman et al., 2019).

Members of the MDT team found that the process was beneficial and allowed them to participate in clear discussions with caregivers in various specialties. Essentially, this allowed caregivers to collaborate regarding discharge; and one subject patient, having been in the hospital for six months, was discharged within ten days to neuro-rehab (Aston et al., 2018). In this instance, the use of an MTD successfully expedited the process. Researchers asked patients to provide feedback, and those who replied recognized the benefit of using MDTs. One patient remarked that the care was excellent and well-coordinated after the implementation of the MDT, noting that all involved seemed organized and knowledgeable (Muddiman et al., 2019).

Moreover, the patient always felt informed and aware of what was going on, and representatives of the MDT drafted the follow-up letter in a language they could understand (Zonneveld et al., 2018). Another remarked that before MDT implementation, there were occasions when various teams had to wait until they could meet with other groups, such as infection specialists, urology teams, or nephrologists. This process took much longer. With virtual MDTMs, the specialist did not even have to be in the same room (Aston et al., 2018).

However, challenges remain evident. Clinicians sometimes working across multiple sites found it difficult to establish and agree to a suitable time and date for the meetings. This conflict proved to be a significant logistical challenge; sometimes, even recognizing an appropriate clinician within each specialty proved difficult. The unpredictable nature of the workload of on-call clinicians often made them unable to commit to a scheduled meeting (Aston et al., 2018). Setting up the virtual system was delayed significantly by the time taken to receive local information governance approval, taking six months to complete. Organizers expressed concern about discussing confidential information using video-conferencing software from an external

provider (Zonneveld et al., 2018). However, federal approval and procurement of appropriate software could eliminate the need for similarly protracted approval processes in other hospitals.

Successful strategies of MDTs are an essential consideration: if the team is too small, it can lack the broadness of expertise required to deal with complex problems; if the group is too large, communication can be inhibited, and reaching a unanimous plan can be more difficult (Aston et al., 2018). In this pilot, researchers left the decision of the invitees to the requesting clinician. In 40% of the meetings conducted, numerous essential parties failed to attend. Researchers recommended that to facilitate timely scheduling, referring clinicians should restrict participation to critical members (Aston et al., 2018).

While many clinicians regarded the virtual system as a potentially helpful innovation, it was not universally welcomed by specialists. Several clinicians raised the concern of getting overrun with requests to join such meetings (Aston et al., 2018). Specialists were not reimbursed for their contributions because there were no mechanisms in place for compensation. The activity of virtual meetings would need to provide an incentive if used widely. This forum, which supports simultaneous group discussion in real-time, offers genuine added value to patient care over these existing methods of communication. Many clinicians may have already used informal virtual networks of case discussion via email to discuss complex clinical scenarios with colleagues in other specialties. For the virtual format to be widely adopted, administrators must make changes and convince physicians of the value of the effort (Zonneveld et al., 2018).

Some clinicians' lack of familiarity with audiovisual-conferencing technology might have contributed to their hesitation to participate (Aston et al., 2018). The use of virtual conferencing technologies or other virtual communication methods is already widespread in healthcare and will likely increase as technology advances. Sufficient training and support packages for all those

involved are needed to overcome this barrier; some colleges and universities have already incorporated practical case-based teaching programs on virtual teams working into their undergraduate curricula. Similar virtual systems could greatly facilitate coordinated care for patients with special needs (Aston et al., 2018).

As discussed above, although the initial objective of the virtual meeting was to improve care coordination between specialties within secondary care, several of the patients considered had complex needs that required input from primary care and mental health services (Zonneveld et al., 2018). The lack of communication between care providers in different sectors, such as physical and mental health services, is a crucial barrier to delivering effective integrated care for patients with complex needs; and there is a potential for shortcomings due to a lack of direct patient participation with MDT programs. Still, this work is an excellent opportunity to improve inter-specialty collaboration and enhance healthcare delivery integration, timeliness, and quality for patients with complex needs with available, versatile, and affordable digital conferencing technologies. Administrators and clinicians should develop a system to promote shared decision-making if the virtual format is widely adopted (Aston et al., 2018).

Multidisciplinary teams often encounter resistance and other organizational challenges despite their usefulness for developing complex healthcare innovations (Atkinson & Singer, 2021). The research examined how organizational conditions impact multidisciplinary teams as they develop health delivery innovations. The study showed that teams faced hierarchical constraints that hindered team progress over time, creating challenges in the implementation stages of innovation. Interdisciplinary teams utilize various tactics to maintain innovation progress despite these challenges (Zonneveld et al., 2018).

The organizational environment often presents constraints that can impede team progress at multiple innovations and medical care delivery stages. Teams must collectively endeavor to manage or circumvent these challenges to achieve team goals (Atkinson & Singer, 2021). Over time, structural and regulatory modifications have influenced U.S. healthcare resulting in a significant increase in the need for multidisciplinary care. The expanding rate of chronically ill patients has caused healthcare organizations to contemplate new methods of utilizing limited resources. Also, the progressively active role of patients in their care plans has placed demands on improving delivery models. Despite these endeavors toward innovation, U.S. healthcare costs have soared to levels twice the amount of other developed countries, while medical errors have become the third leading cause of death among Americans (Atkinson & Singer, 2021).

Healthcare organizations are aiming to expand their capacity for innovation through multidisciplinary teams. Research has revealed the value of interdisciplinary teams in implementing innovations that improve organizational performance and enhance patient care delivery (Atkinson & Singer, 2021). The collective perspectives and expertise of multidisciplinary teams make their value clear but expose them to barriers to progress through the bureaucracy of organizational constraints (Atkinson & Singer, 2021).

The study indicated that teams employed boundary-spanning roles and influence strategies to handle challenges originating from the organizational environment in which they work (Atkinson & Singer, 2021). Through policy and operational limitations, healthcare organizations often impose challenges on the effectiveness of multidisciplinary teams operating within their confines. The research sought to examine how these teams manage challenges that typically stem from inherent organizational constraints (Atkinson & Singer, 2021).

The research evaluated how circumstances in the organizational context, such as inherent constraints, might inhibit team progress at multiple innovation and care delivery stages. The collective efforts and tactics multidisciplinary teams utilized to work and progress under these constraints varied in technique and effectiveness. Interdisciplinary teams need to employ efforts to adapt to organizational change, possible external conflicts, and implementation of innovation and care delivery across organizational levels and consider preemptive measures to mitigate such challenges as they occur (Atkinson & Singer, 2021).

The mutual reliance between healthcare organizations and the multidisciplinary teams operating within them is increasingly evident in today's medical care delivery system (Atkinson & Singer, 2021). It is a complex and dynamic partnership where the specialization of staff and resources continues to increase. Teams seldom work in isolation in today's delivery systems, and team boundaries are not always clearly defined, requiring a greater focus on boundary-spanning actions. Tactics can be employed by teams and individuals to span boundaries and limit the impact of constraints in part by managing exchanges with upper-level and other stakeholders. Enabling team members to work together constructively and sustain momentum can help keep team morale high (Atkinson & Singer, 2021).

Research determined that successful interdisciplinary teams met their goals with members across disciplines that were resolutely determined to make progress by working around or overcoming the constraint they encountered (Atkinson & Singer, 2021). Interdisciplinary teams will experience inevitable hierarchical constraints, and without a consistent and cohesive tactical approach, they will likely be unable to implement the team's initiatives. Intense personal stress resulting from organizational constraints can cause gifted, well-intentioned team members to have a shift in priorities, resulting in a breakdown in team cohesiveness. Further studies of

cases in which teams were unsuccessful in overcoming constraints at various stages of innovation in care delivery using the described tactics could further develop the findings of this research (Atkinson & Singer, 2021).

The focus on multidisciplinary teams reveals the demands for intricate healthcare delivery systems and the need for innovation in those systems. Though these teams boost innovation in healthcare delivery, such teams make limitations more prominent due to their diversity in expertise and perspectives (Atkinson & Singer, 2021). Conversely, this diversity can offer a powerful tool for responding to organizational constraints. Multidisciplinary teams are of growing importance in healthcare organizations seeking to foster innovation; employment of varied techniques to mitigate the impacts of organizational constraints is essential to their success (Atkinson & Singer, 2021).

The coordination of communication and action in the multidisciplinary care model can be assisted with the use of a nurse navigator to coordinate the collaboration between the team and the patient (Kedia et al., 2020). Findings from the literature indicate that patients perceive the complex illness of cancer as too complicated for any one care team member to manage (Berkowitz et al., 2019). Patients with cancer desire intensive care and may perceive physicians as too busy to manage care alone. With support from a multidisciplinary team, patients perceive they have more support for issues outside of standard care, such as managing socioeconomic challenges, lifestyle needs, and support for caregivers (Berkowitz et al., 2019).

Inherent in the collaborative aspect of multidisciplinary care teams and staff collaboration, staff partnership, and staff coordination is the organizational support needed to support successful implementation and utilization (Kedia et al., 2020). The literature emphasizes that the role of primary care physicians in this process is the early identification of cancer and

directing patients to the multidisciplinary team (Berardi et al., 2020). Having administrative oversight for the process of organizing multidisciplinary care teams and staff collaboration, staff partnership, and staff coordination is essential for teams to avoid being overwhelmed by minutia. The collective input inherent in the coordination of the multidisciplinary team helps provide the best care and the most current treatment options (Berardi et al., 2020). The collaborative aspect of this process enables specialists who are not able to participate in person to contribute to treatment planning virtually (Berardi et al., 2020). Collaboration has many levels and aspects. Emphasizing its flexible nature will empower multidisciplinary teams to make the most of their networks of support.

Barriers to the utilization of multidisciplinary teams include decision-making, communication, time invested in patients, physician's locality, and financial challenges (Kedia et al., 2020). Another barrier was physicians' belief that the multidisciplinary care model would have limited value for advanced cancer cases (Kedia et al., 2020). This is a case where collaborative administrative support and continuing partnership with education are essential to spread awareness of the best-evidenced-based value of multidisciplinary care. The findings of this study emphasize that a culture of staff coordination, collaboration, and partnership improves patient outcomes. Physicians must not be left out of the larger loop when they perceive a patient's case as hopeless. This is precisely the time to seek out larger collaborative opinions, as no one provider should be expected to account for all knowledge.

The Problem

The primary problem in the relationship between multidisciplinary care teams and staff collaboration, staff partnership, and staff coordination relates to a lack of communication and a general lack of information (Williams & Kamat, 2017; Soukup et al., 2018; Taylor et al., 2019).

Central to patient safety, a lack of communication and teamwork potentially results in quality-of-care issues for at-risk oncology patients (Bhattacharyya & Lichtman, 2017). This study addressed a gap in the scholarly research that has not adequately explored the strengths, weaknesses, and roadblocks to effective multidisciplinary care team utilization (Selby et al., 2019; Shao et al., 2019). Central to the success of this project was addressing a lack of education in health care, as some physicians were unaware of the concept of multidisciplinary care in their organization (Kedia et al., 2020). Expanding awareness of the problem of lack of quality communication and utilization of the multidisciplinary care model is the first step towards organizing the application of evidenced-based solutions for improved population outcomes in cancer treatment.

This study addressed the lack of information on the strengths, weaknesses, and roadblocks to effective multidisciplinary care team utilization (Selby et al., 2019; Shao et al., 2019). Medical practice guidelines often recommend multidisciplinary care teams for the treatment of cancer patients, and this study emphasized the need for increased collaboration, coordination, and partnerships to effectively utilize this approach. Many providers in smaller institutions and rural locations have no access to boards specializing in a particular type of cancer, which reveals the lack of options and expertise (Soukup et al., 2018). However, collaboration with multidisciplinary teams can be achieved virtually through the utilization of information technology systems. Once providers are made aware of the value and availability of partnering with multidisciplinary teams virtually, they are most likely to take the time to coordinate and collaborate. Providers must become aware of the larger team they are a part of nationally to overcome local limitations (Bhattacharyya & Lichtman, 2017). Thus, educating

providers on this best evidence-based collaborative approach is the first necessary step towards improved implementation that has the power to improve patient outcomes.

Summary of the Findings

The multidisciplinary care model is the best-evidenced based method for supporting cancer patients. However, this approach is under-utilized and often less than effective. This study sought to fill gaps in the information of why this phenomenon persists. The results of a Kruskal-Wallis Test revealed statistical significance in multidisciplinary care teams between collaboration score (Kruskal-Wallis = 26.34, $p < .001$), partnership score (Kruskal-Wallis = 37.67, $p < .001$), and coordination score (Kruskal-Wallis = 24.95, $p < .001$). Multidisciplinary teams support patient outcomes through coordination in ways that use the resources of time, tools, and skills more effectively. Challenges found to multidisciplinary team success are lack of education, lack of belief in patients' prospects, lack of communication, lack of awareness, financial constraints, lack of adaptation, lack of strategy, and lack of technology adoption (Atkinson & Singer, 2021; Janssen et al., 2018; Kedia et al., 2020). These challenges can be overcome with education, planning, and passion. The aspects of coordination, collaboration, and partnership are methods of implementing the process of education and planning that will be a vehicle for providers' passion.

Coordination helps strengthen communication by simplifying the process and does justice to the timely nature of caring for cancer patients (Kedia et al., 2020). Multidisciplinary teams support patient outcomes through collaboration with those providers who have the skills patients need to achieve a better quality of life. The more multidisciplinary teams can collaborate with administrative aspects of the organization, the more their approach will be aligned in ways that emphasize coordination and partnership (Berardi et al., 2020). When administrators are active

collaborators, multidisciplinary teams will have greater access to the timely tools and specialized support they need to improve patient outcomes (Berardi et al., 2020). Collaboration thrives with a flexible approach that maximizes the elements of partnership invested in it. The multidisciplinary care model provides the most comprehensive support for cancer patients.

Application to Professional Practice

Introduction

This study examined the impact, implementation, and application of multidisciplinary care in the professional practice of healthcare delivery. Current research shows that the business practice of implementing a multidisciplinary team care model involves new resources and participation across sectors within a healthcare organization. Research examined the challenges encountered and lessons learned from integrating this type of model for patients in a large cancer center. Oncology patients expressed a preference for an individualized needs assessment and care at the time of cancer diagnosis (Blaschke et al., 2019).

Improving General Business Practice

This quantitative study endeavored to evaluate the effectiveness and comprehensiveness of multidisciplinary care to improve the general practice of oncology care delivery for Southeastern Kentucky patients, many of whom are elderly. Research examined the complexity of implementing and assessing a multidisciplinary team for cancer patients. The research indicated the need for managed coordination of the multidisciplinary care team approach to improve complex care plans. An investment in cross-sector partnerships for comprehensive patient care coordination is necessary for successful implementation (Blaschke et al., 2019). This quantitative study aims to examine the implementation and measure the success of oncological multidisciplinary teams in organizations in Southeastern Kentucky.

Oncology treatment implements evidence-based business practices (Presley et al., 2020). National initiatives focus on the need for interdisciplinary care to improve health outcomes for older cancer patients. Older adults with cancer have unique needs independent of routine oncology care. However, disparities remain between knowledge and practice concerning implementation. Researchers detailed the methodology of a multidisciplinary approach to providing care for older adults with cancer in a particular institution. Within this model, the multidisciplinary team assessed and delivered a comprehensive set of care recommendations, all provided in one clinic visit, to increase proficiency and lessen travel for the patient (Zonneveld et al., 2018).

This approach integrates oncology subspecialties in healthcare delivery and delivers coordinated assessments and interventions to improve health outcomes and enhance the general practice of treatment management (Berardi et al., 2020). If not effectively addressed, geriatric health conditions can lead to expensive, uncoordinated care that diminishes the quality of life for the patients and their caregivers. The multidisciplinary approach addresses unmet needs and risk factors, implements interventions, provides healthy lifestyle recommendations, and streamlines care in conjunction with standard oncology treatment (Presley et al., 2020).

Evidence-based business practices play a significant role in geriatric oncology treatment. National initiatives focus on the need for interdisciplinary care to improve health outcomes for older cancer patients. Older adults with cancer have unique needs independent of routine oncology care (Presley et al., 2020). However, disparities remain between knowledge and practice concerning application. Researchers detailed the methodology of a multidisciplinary approach to providing care for older adults with cancer in a particular institution (Aston et al., 2018).

With an effectively managed model, interdisciplinary care teams evaluate and provide a more comprehensive diagnostic treatment plan, thus increasing proficiency that improves the patient experience through satisfaction and convenience. This method combines oncology specialties in treatment provision and provides coordinated evaluations to enhance patient results (Presley et al., 2020). If care is not efficiently delivered, deteriorating patient health often leads to cost-prohibitive treatments and undue maladies that reduce the quality of life for the patients and their families (Kedia et al., 2020). The interspecialty method delivers relevant care while reducing risk factors. Timely interventions combined with organized care dramatically improve oncology treatment delivery (Zonneveld et al., 2018).

A tumor board (or review) is a coordinated treatment planning team where multiple physicians in different specialties (disciplines) review and discuss the diagnosis and treatment options of several complex patient cases. Tumor boards meet regularly to discuss the management and progress of cancer patients. The collective input helps provide the best care and most current treatment options (Kedia et al., 2020). Often, resident hospital treatment teams do not have access to all the necessary data to make the best decision for complex patients. This lack of access led to the creation of mini tumor boards to allow a small number of specialists to participate in treatment planning (Berardi et al., 2020).

The first multidisciplinary care teams appeared roughly 50 years ago (Janssen et al., 2018). Although primary care providers are not an integral part of specialty-focused teams, they can have a crucial role in the early identification of cancer. They are the starting point for introducing patients to the multidisciplinary team, and they provide follow-up care after hospital discharge. Primary care physicians manage additional comorbidities along with disease management and symptom treatment for the patient. These doctors are often the providers that

identify treatment-related side effects the patient may experience upon hospital discharge (Berardi et al., 2020).

Potential Application Strategies

Provider education is an essential aspect of the multidisciplinary care model application. Some physicians were unaware of the concept or existence of multidisciplinary care in their organization. According to a recent study, providers recognized the need for increased education and awareness for physicians and staff regarding the availability of the multidisciplinary model in their institution. Anticipating a lack of provider buy-in, physicians suggested that the education about the multidisciplinary model focus on timely care. The model should include guidance on multidisciplinary consultations and information for managing referrals to bring patients into the multidisciplinary clinic (Kedia et al., 2020). Organizations where multidisciplinary care can be suitably co-located need to be supportive in creating infrastructure, educating providers, and promoting multidisciplinary care for successful application and utilization (Janssen et al., 2018).

Physician surrogates can also play a vital role in multidisciplinary care application strategies. Physicians who are not able to contribute directly to a multidisciplinary care team suggested that other providers could represent them. Physician assistants and nurse practitioners could act as surrogates for those physicians. Another solution for busy clinicians is technology. Physicians indicated that available time to participate in multidisciplinary care might be a problem. The use of technology could resolve the issue and provide a means for patients to participate in the decision-making process (Kedia et al., 2020). Ordinarily, multidisciplinary methods are considered in-person meetings that consist of various specialists gathering to discuss clinical cases (Berardi et al., 2020). However, virtual meetings are also often employed, granting

distant providers access to confer with each other and determine the appropriate diagnostic and therapeutic course of treatment (Janssen et al., 2018).

The introduction of the multidisciplinary approach to the practice of healthcare delivery has helped providers meet the evolving needs of cancer patients through various application strategies. Care teams coordinate through multidisciplinary clinics, breast units, and multidisciplinary tumor boards sometimes called multidisciplinary meetings (Aston et al., 2018). Research in the form of a literature review analyzed the interdisciplinary approach to cancer care, focusing on clinical guidelines adherence, treatment outcomes, and the impact on decision-making processes (Berardi et al., 2020). Successful implementation is a crucial step in offering multidisciplinary care, but barriers to implementation must also be considered and remedied (Kedia et al., 2020).

A recent study showed that healthcare providers were concerned about barriers to applying the multidisciplinary model in a healthcare organizational setting. These concerns included integration challenges, financial obstacles, time constraints, and doubts about final care decisions (Janssen et al., 2018). The current healthcare environment makes implementing a multidisciplinary care model difficult, partly due to structural impediments; logistically, requiring providers to be in the same location presents challenges. The complicated referral process adds to the barriers to implementation. For instance, emergency room doctors typically make one phone call per patient. Having to call the primary care provider to get permission to call a specialist would likely be problematic (Kedia et al., 2020).

Decision-making difficulty is also considered a barrier to implementation. Some providers were concerned about possible physician-group alliances that might impact multidisciplinary decision-making (Zonneveld et al., 2018). The concern was rooted in the

notion that outside opinions would not have the same weight as those within the groups. In the multidisciplinary care model, physicians provide treatment recommendations without the patient being there. Providers gather and review the facts of the case, including imaging and test results. Many doctors expressed that they would want to consult the patient before providing recommendations (Janssen et al., 2018). Another noted issue was the possibility that referring providers might disagree with multidisciplinary recommendations because those physicians could not consider patient nuances (Aston et al., 2018).

Physicians believed that the multidisciplinary care model would have limited value for advanced cancer cases. Despite optimism regarding improved outcomes, some providers were skeptical about whether this model would benefit patients with advanced disease (Kedia et al., 2020). Physicians had questions concerning the role of the primary facilitator in multidisciplinary care. Providers wanted to know who would coordinate patient care after physician recommendations. Once the multidisciplinary care team received the referrals, providers felt that they might lose patient access. Providers expressed the fear of losing patients. This scenario was considered possible due to patient preference or the multidisciplinary team assuming sole responsibility going forward (Aston et al., 2018).

Other concerns were related to time constraints, reimbursement, and referrals. Physicians expressed uneasiness about the increased time commitment required for multidisciplinary care (Kedia et al., 2020). The increased involvement needed for the model raised concerns about jeopardizing providers' already limited time. Physicians voiced concern about reimbursement related to multidisciplinary care. Since involvement is not salary or incentive-based, the time commitment might jeopardize potential income from individual practices. Most physicians have

referral lines with other providers and believe the multidisciplinary care model might jeopardize those connections (Zonneveld et al., 2018).

Recommendations for Further Study

The literature demonstrates that intra-professional boundaries and other extenuating constraints within the medical community often impede multidisciplinary approaches to patient care (Muddiman et al., 2019). Researchers suggested that further studies were needed to examine the relationship between generalism and specialism, examining the dichotomy concerning a continuum that joins primary and secondary care to promote interdisciplinary teamwork (Aston et al., 2018). Multidisciplinary care literature and practice recognize the importance of values. The quantitative research methodology allows the researcher to collect measurable data and discern the relationship between the independent and dependent variables. However, there exists a lack of information about the realized patient values in interdisciplinary care (Zonneveld et al., 2018).

This study aimed to fill gaps in why this phenomenon persists. The results of this research revealed statistical significance in multidisciplinary care teams between collaboration score, partnership score, and coordination score. Multidisciplinary teams support patient outcomes through coordination in ways that use the resources of time, tools, and skills more effectively. Based on the findings from this study, this researcher would suggest additional research into the practice of multidisciplinary care from the patient's perspective. The findings would be valuable in managing care teams better. Also, more research is needed to focus on additional supporting staff working with patients and care teams. This study and its results suggest a need for additional research in these areas of study. The need for further research is

particularly evident in cancer care delivery, as multidisciplinary teams are the internationally preferred method for service delivery, yet the practice is not widely applied.

Reflections

Personal & Professional Growth

This study found that conducting this project has provided for personal and professional growth. The study not only allowed for the consideration of a spiritual foundation as it applies to conducting research, but it proved to be an exercise in time management, perseverance, and persistence. A thorough review of the existing literature and data analysis aided this researcher in expanding personal knowledge and understanding of multidisciplinary care management and overall team organization in the healthcare profession. Having never taken on a project of this magnitude, this researcher quickly found the need to outline and carefully plan steps to be successful in this endeavor.

Conducting a massive study is daunting, to say the least. Challenges immediately present themselves in gaps of knowledge and process uncertainty. Combined with full-time work as a healthcare administration faculty and program coordination, along with committee duties and student advising, this researcher discovered that the process was anything but seamless. Some weeks were productive, with much evident progress, while others were frustrating, with minimal trudging advancement. Through guidance and encouragement from the program dissertation chair and professional colleagues, this researcher ultimately developed a process that was manageable and practical. Though slower than preferred, the project began to take shape. Relying on one’s spirituality and personal support system is paramount to completing such a monumental undertaking.

Professionally, the research was invaluable in multiple ways. It is revealing and informative to conduct a thorough literature review related to the topic of multidisciplinary care. Many preconceived notions and misinformation are dispelled through the process, and a sound knowledge base is established. Professional growth is achieved by an openness to available information and a willingness to regularly review current findings. A thorough understanding of best practices requires diligence. Conducting the research was an opportunity to receive the input of professionals in the field and analyze data to ultimately improve the body of knowledge and contribute to the profession.

Biblical Perspective

Throughout life, each person has unique experiences that define and shape them and create that person's perceptions. These perceptions become a person's beliefs and define how he or she sees the world. These beliefs and fundamental assumptions also determine one's natural approach to research. Beliefs are nuanced and person-specific. One must seek truth as one understands it. Although the entirety of the truth may not be revealed in the work, one can take solace in the fact that the search was pure. All knowing requires faith, as faith precedes reason. Therefore, every worldview has its origins in a basic assumption regarding the nature of reality. This is the foundation of a comprehensive view of life (Myers & Noebel, 2015). The Christian philosophy embraces the meaningful, purposeful life shaped by beliefs founded upon a coherent, reasonable, truthful worldview (Myers & Noebel, 2015).

Research has shown the critical role that spirituality plays in the process of finding meaning. The inclusion of religious beliefs has been advocated in the literature pertaining to the study of meaning-making. It is important to trace the ontological, anthropological, axiological, and praxiological assumptions in worldviews and understand the implications for research (Hall

et al., 2019). Every worldview is a set of beliefs that includes limiting statements and assumptions concerning what exists and what does not. A personal worldview defines what goals one should pursue in research. Worldviews include assumptions that may be unproven or even unprovable, yet they provide the epistemic and ontological foundations for other beliefs within a belief system. A Christian worldview focuses on the character and nature of God, which is integral to the Christian understanding of goodness (Hall et al., 2019). When asked what the greatest commandment is, Jesus said, "Love the Lord your God with all your heart and with all your soul and with all your mind and with all your strength. The second is this: Love your neighbor as yourself. There is no commandment greater than these" (Mark 12:30–31, New International Version).

In any philosophical worldview, faith in the premise must exist. Understanding the connection between philosophical worldviews and research methodology is a great benefit to one's approach to research. The pragmatic approach is one of interest in practical matters as opposed to theory. A pragmatist uses the philosophy or method that works best for the research at hand (Robson & McCartan, 2016). With the pragmatic approach, knowledge is viewed as being both created and based upon the reality of the world we inhabit. Doctrines of pragmatism serve a researcher well and, contrary to some assertions, are not contradictory to a Christian worldview. Research focuses on meanings, and situations are identified from the perspective of the observer. One may conduct research utilizing tenets of these worldviews without compromising one's Christian values and beliefs. In fact, researching in this way could illuminate God's creation in ways previously unseen. Pragmatism can be a tool for shining light on the Christian worldview.

One develops ways of seeing the world based on life experiences. Over time, people develop core values and beliefs, and these perspectives filter the way the world is seen. Part of the nature of the human condition is the search for meaning. Whatever one seeks in the work, it is there. One may only uncover a bit of God's work and may not be able to view it clearly, but it is, indeed, there. One should seek, in their work, to add value to human life; the goal of work should be to reveal the truth, not to make a profit or gain recognition (Keller & Alsdorf, 2014). This study will be conducted from a pragmatic perspective with a focus on the Biblical perspective. It is the mission of the Christian observer to understand the ideologies of the day to meet the challenges of the study (Myers & Noebel, 2015). Looking at the world through a quantitative lens, one is able to draw meaning from God's work.

Summary of Section 3

The problem addressed by this study is a lack of information regarding the relationship between multidisciplinary care teams and essential metrics for staff teamwork. The study research questions sought to understand if a relationship existed between staff coordination, partnership, and collaboration when caring for cancer patients in two rural Kentucky hospitals. The study utilized the pragmatism paradigm to focus on the problem rather than the view of reality. This study was conducted with a fixed design using quantitative methods, specifically, a casual-comparative design. This research worked within the framework of a well-established theory prevalent in the pertinent literature: Social Systems Theory. The actors in this casual comparative study included the healthcare organizations, Ackerville Regional Healthcare and Pinkerton Medical Center, administration, clinic managers, and medical teams. Independent variables for the study included partnership, cooperation, and coordination. The dependent variable of delivering quality patient care were assessed based on responses to survey questions

that collectively addressed each of the constructs. This study operated from a Biblical perspective.

This study sought to fill gaps in the information of why this phenomenon persists. The results of a Kruskal-Wallis Test revealed statistical significance in multidisciplinary care teams between collaboration score (Kruskal-Wallis = 26.34, $p < .001$), partnership score (Kruskal-Wallis = 37.67, $p < .001$), and coordination score (Kruskal-Wallis = 24.95, $p < .001$). Multidisciplinary teams support patient outcomes through coordination in ways that use the resources of time, tools, and skills more effectively.

This research examined the impact, implementation, and application of multidisciplinary care in the professional practice of healthcare delivery. This quantitative study endeavored to evaluate the effectiveness and comprehensiveness of multidisciplinary care to improve the general business practice of oncology care delivery for Southeastern Kentucky patients. Potential application strategies include provider education as an essential aspect of the multidisciplinary care model. Physician surrogates can also play a crucial role in multidisciplinary care application strategies. Based on the findings from this study, this researcher would suggest additional research into the practice of multidisciplinary care from the patient's perspective. The findings would be valuable in managing care teams better. Also, more research is needed to focus on additional supporting staff working with patients and care teams. This study and its results suggest a need for additional research in these areas of study.

This researcher found that conducting this project has provided for personal and professional growth. The study not only allowed for the consideration of a spiritual foundation as it applies to conducting research, but it proved to be an exercise in time management, perseverance, and persistence. A personal worldview defines what goals one should pursue in

research. Research has shown the critical role that spirituality plays in the process of finding meaning. It is the mission of the Christian observer to understand the ideologies of the day to meet the challenges of the study (Myers & Noebel, 2015). In looking at the world through a quantitative lens, one is able to draw meaning from God's work.

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Appendix A: AITCS-II

Assessment of Interprofessional Team Collaboration Scale II (AITCS-II)

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The AITCS is a diagnostic instrument that is designed to measure the interprofessional collaboration among team members. It consists of 23 statements considered characteristic of interprofessional collaboration (how team works and acts). Scale items represent three elements that are considered to be key to collaborative practice. These subscales are: (1) Partnership— 8 items, (2) Cooperation—8 items, and (3) Coordination—7 items.

Scoring AITCS

Respondents indicate their general level of agreement with items on a 5-point rating scale that ranges from 1 = "Never"; 2 = "Rarely"; 3 = "Occasionally"; 4 = "Most of the time"; to 5 = "Always".

These ratings produce scores from 23 to 115. It takes approximately 10 minutes to complete.

Demographic Information

Please enter the last four digits of your employee ID number in these boxes:

□□□□

Please check □ the category you belong to:

Gender: □ Male □ Female A**ge:** ____years

Employment Status: □ FT □ PT □ Casual

Educational Preparation

□ Certificate
□ Diploma
□ Other (specify): _____
□ Bachelor Degree
□ Masters Degree

Please check one of the following discipline categories:

□ Audiologist
□ Clinical Kinesiologist
□ Clinical Psychologist
□ Dental Assistant
□ Dentist
□ Dietary Aid
□ Dietitian (Nutritionist)
□ Imaging Technologist
□ Laboratory Technologist
□ Nursing: Registered Nurse
□ Nursing: Practical Nurse
□ Occupational Therapist
□ Physical Therapist (Physiotherapist)
□ Pharmacy
□ Paramedics
□ Physician (Medicine)
□ Personal Support Worker
□ Speech Language Pathologist
□ Social Worker
□ Spiritual/Pastoral Care
□ Recreational Therapist
□ Respiratory Therapist
□ Therapy Assistant
□ Other (please specify) _____

Please indicate:
Years in practice (*since achieving license to practice*):_____; Years with your current team: _____

Assessment of Interprofessional Team Collaboration Scale
Instructions:
Note: Several terms are used for the person who is the recipient of health and social services. For the purpose of this assessment, the term 'patient' will be used. While acknowledging other terms such as 'client' 'consumer' and 'service user' are preferred in some disciplines/jurisdictions.

*Please **circle the value** which best reflects how you currently feel your team and you, as a member of the team, work or act within the team.*

| ---------- | ---------- | ---------- | ---------- | ----------

1 2 3 4 5
Never Rarely Occasionally Most of the time Always

Section 1: PARTNERSHIP

When we are working as a **team**[1] all of my team members…..

1	include patients in setting goals for their care	1	2	3	4	5
2	listen to the wishes of their patients when determining the process of care chosen by the team	1	2	3	4	5
3.	meet and discuss patient care on a regular basis	1	2	3	4	5
4.	coordinate health and social services (e.g. financial, occupation, housing, connections with community, spiritual) based upon patient care needs	1	2	3	4	5
5.	Use consistent communication with all team members to discuss patient care	1	2	3	4	5
6.	Are involved in goal setting for each patient	1	2	3	4	5
7.	encourage each other and patients and their families to use the	1	2	3	4	5

[1] A team can be defined as any interactions between one or more health professionals on a regular basis for the purposes of providing patient care.

	knowledge and skills that each of us can bring in developing plans of care	
8.	work with the patient and his/her relatives in adjusting care plans	1 2 3 4 5

Section 2: COOPERATION

When we are working as a **team** all of my team members…..

9.	share power with each other	1 2 3 4 5
10.	respect and trust each other	1 2 3 4 5
11.	are open and honest with each other	1 2 3 4 5
12.	make changes to their team functioning based on reflective reviews	1 2 3 4 5
13.	strive to achieve mutually satisfying resolution for differences of opinions	1 2 3 4 5
14.	understand the boundaries of what each other can do	1 2 3 4 5
15.	understand that there are shared knowledge and skills between health providers on the team	1 2 3 4 5
16.	establish a sense of trust among the team members	1 2 3 4 5

Section 3: COORDINATION

When we are working as a **team** all of my team members…..

17.	apply a unique definition of ***Interprofessional collaborative practice*** to the practice setting	1 2 3 4 5
18.	equally divide agreed upon goals amongst the team	1 2 3 4 5
19.	encourage and support open communication, including the	

	patients and their relatives during team meetings	1	2	3	4	5
20.	use an agreed upon process to resolve conflicts	1	2	3	4	5
21.	support the leader for the team varying depending on the needs of our patients	1	2	3	4	5
22.	together select the leader for our team	1	2	3	4	5
23.	openly support inclusion of the patient in our team meetings	1	2	3	4	5

Revised version November 16, 2015

Thank you for completion of this questionnaire!

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Appendix B: IRB Approval Letter

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

September 13, 2022

Terry Adams
Terrance Duncan

Re: IRB Exemption - IRB-FY22-23-24 The Use of Multidisciplinary Care Teams in Diagnosing and Managing Care of Cancer Patients

Dear Terry Adams, Terrance Duncan,

The Liberty University Institutional Review Board (IRB) has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and no further IRB oversight is required.

Your study falls under the following exemption category, which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:104(d):

Category 2.(i). Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording).
The information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subjects.

Your stamped consent form(s) and final versions of your study documents can be found under the Attachments tab within the Submission Details section of your study on Cayuse IRB. Your stamped consent form(s) should be copied and used to gain the consent of your research participants. If you plan to provide your consent information electronically, the contents of the attached consent document(s) should be made available without alteration.

Please note that this exemption only applies to your current research application, and any modifications to your protocol must be reported to the Liberty University IRB for verification of continued exemption status. You may report these changes by completing a modification submission through your Cayuse IRB account.

If you have any questions about this exemption or need assistance in determining whether possible modifications to your protocol would change your exemption status, please email us at irb@liberty.edu.

Sincerely,
G. Michele Baker, MA, CIP
Administrative Chair of Institutional Research
Research Ethics Office

Appendix C: Detailed Tables

Table 1:

Variables and Measurement Levels for This Proposed Casual -Comparative Study

Variable	Type	Source	Measurement Level
Multidisciplinary care teams	Independent	Direct measurement item	Dichotomous
Staff collaboration	Dependent (RQ1)	AITCS-II	Continuous (Likert scale)
Staff partnership	Dependent (RQ2)	AITCS-II	Continuous (Likert scale)
Staff coordination	Dependent (RQ3)	AITCS-II	Continuous (Likert scale)

Table 2

Location

	Frequency	Percent	Valid percent	Cumulative percent
Site A	41	50.0	50.0	50.0
Site B	41	50.0	50.0	100.0
Total	82	100.0	100.0	

Table 3

Gender

	Frequency	Percent	Valid percent	Cumulative percent
F	47	57.3	57.3	57.3
M	35	42.7	42.7	100.0
Total	82	100.0	100.0	

Table 4

Age

Age	Statistics
Mean	37.02
Median	35.00
Mode	33
Range	45
Minimum	20
Maximum	65

Note. *N* = 82.

Table 5

Employment

	Frequency	Percent	Valid percent	Cumulative percent
FT	76	92.7	92.7	92.7
PT	6	7.3	7.3	100.0
Total	82	100.0	100.0	

Table 6

Education

	Frequency	Percent	Valid percent	Cumulative percent
AD	13	15.9	15.9	15.9
ADN	6	7.3	7.3	23.2
BD	5	6.1	6.1	29.3
BS	17	20.7	20.7	50.0
BSN	11	13.4	13.4	63.4
D	4	4.9	4.9	68.3
DNP	4	4.9	4.9	73.2
MAS	3	3.7	3.7	76.8
MD	16	19.5	19.5	96.3

MS	2	2.4	2.4	98.8
MSN	1	1.2	1.2	100.0
Total	82	100.0	100.0	

Table 7

Discipline

	Frequency	Percent	Valid percent	Cumulative percent
CMA	5	6.1	6.1	6.1
CNA	6	7.3	7.3	13.4
Dosim	3	3.7	3.7	17.1
LPN	6	7.3	7.3	24.4
Med Onc	8	9.8	9.8	34.1
Med Phys	3	3.7	3.7	37.8
NP	5	6.1	6.1	43.9
PA	2	2.4	2.4	46.3
Rad Onc	6	7.3	7.3	53.7
Reg Diet	1	1.2	1.2	54.9
Reg Diet	2	2.4	2.4	57.3
RN	17	20.7	20.7	78.0
RRT	3	3.7	3.7	81.7
RT	12	14.6	14.6	96.3
Surg Onc	3	3.7	3.7	100.0
Total	82	100.0	100.0	

Table 8

Years in Discipline

Years	Statistics
Mean	10.17
Median	9.50
Mode	10
Range	21
Minimum	2
Maximum	23

Note. $N = 82$.

Table 9

Years with Team

With team	Statistics
Mean	6.77
Median	6.00
Mode	5
Range	18
Minimum	1
Maximum	19

Table 10

Levene's Test of Equality of Error Variances[a]

		Levene statistic	df1	df2	Sig.
Partnership Score	Based on Mean	2.444	1	80	.122
	Based on Median	1.800	1	80	.183
	Based on Median and with adjusted df	1.800	1	77.743	.184
	Based on trimmed mean	2.407	1	80	.125
Cooperation Score	Based on Mean	.161	1	80	.689
	Based on Median	.170	1	80	.681
	Based on Median and with adjusted df	.170	1	77.420	.681
	Based on trimmed mean	.140	1	80	.709
Coordination	Based on Mean	1.680	1	80	.199
Score	Based on Median	1.677	1	80	.199
	Based on Median and with adjusted df	1.677	1	79.995	.199
	Based on trimmed mean	1.686	1	80	.198

Note. Tests the null hypothesis that the error variance of the dependent variable is equal across groups; [a] Design: Intercept + Multidisciplinary Group.

Table 11

Tests of Normality Collaboration Score

	Multidisciplinary Group	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	*df*	Sig.	Statistic	*df*	Sig.
Collaboration Score	No	.147	17	.200*	.947	17	.410
	Yes	.232	65	<.001	.763	65	<.001

Note. *. This is a lower bound of the true significance; [a.]Lilliefors Significance Correction

Table 12

Tests of Normality Partnership Score

	Multidisciplinary Group	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	*df*	Sig.	Statistic	*df*	Sig.
Partnership Score	No	.159	17	.200*	.919	17	.143
	Yes	.199	65	<.001	.946	65	.006

Table 13

Tests of Normality

	Multidisciplinary Group	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	*df*	Sig.	Statistic	*df*	Sig.
Coordination Score	No	.194	17	.090	.953	17	.512
	Yes	.153	65	<.001	.955	65	.019

[a.] Lilliefors Significance Correction.

Table 14

Test Statistics[a,b]

	Partnership Score	Collaboration Score	Coordination Score
Kruskal-Wallis H	37.672	26.341	24.948
df	1	1	1

Asymp. Sig.	<.001	<.001	<.001

[a.] Kruskal Wallis Test

[b.] Grouping Variable: Multidisciplinary Group

Table 15

Collaboration Score Ranks

Multidisciplinary Group	*N*	Mean rank
No	17	15.56
Yes	65	48.28
Total	82	

Table 16

Partnership Score Ranks

Multidisciplinary Group	*N*	Mean rank
No	17	10.35
Yes	65	49.65
Total	82	

Table 17

Coordination Score Ranks

Multidisciplinary Group	*N*	Mean rank
No	17	15.97
Yes	65	48.18
Total	82	