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Exploring Colorectal Cancer Research and its Connection to Occupational Therapy: A Critical Review

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Abstract

Objectives: This article aims to critically review the current literature related to occupational therapy and colorectal cancer.
Methods: The Grand Valley State University electronic library system was used to identify articles using keywords and MeSH terms related to colorectal cancer and occupational therapy. Articles were analyzed for key variables related to the occupational therapy scope of practice and were evaluated for quality using the Physiotherapy Evidence Database (PEDro) scale.
Results: 34 articles were critically reviewed. Findings show that colorectal cancer was referenced in 76.47% of the articles, occupational therapy in 20.59%, activities of daily living in 50%, with toileting being the most frequent followed by sexual functioning. Pain and quality of life were explicitly measured in 17.65% of the articles. Of the reviewed articles, 52.94% scored a 0 on the PEDro scale, and no articles scored higher than a 5.
Conclusions: A significant literature gap exists between the representation of occupational therapy and colorectal cancer, although evidence shows the overlap between client challenges and the OT scope of practice. Pain and quality of life are marginally addressed in the literature, and the quality-levels of current research are inadequate. Future research should address these gaps through conducting quality-driven, client-centered studies.

Keywords: activities of daily living, occupations, oncology, PEDro Scale

Cancer is classified as a chronic condition because individuals who are diagnosed are living longer and the period between recurrence or death is increasing (Movsas et al., 2003). In the United States, approximately 1.5 million adults (Center for Disease Control and Prevention, 2011) are diagnosed with cancer each year (National Cancer Institute, 2015). This number continues to grow due to an increase in the aging population, higher levels of obesity, and lifestyle habits including smoking and inactivity. Although cancer's diagnosis rate is increasing, it is suggested that the mortality rate is decreasing due to early prevention and detection interventions and new and improved therapy techniques and treatments (Friedan, 2010; Ganz et al., 2004). The trend of declining mortality rates suggests that there should be a shift in focus from diagnosis to long-term care and rehabilitation to maximize function and quality of life (QOL) in survivors (Grunfeld & Earle, 2010; Movsas et al., 2003).

Colorectal Cancer (CRC) is the third most common cancer in the United States and the fourth most common cause of cancer-death globally (Ferlay et al., 2014). Approximately 50,630 Americans die of CRC each year, equating to nearly eight percent of all cancer-related deaths (Macrae, 2019). Within the United States, the lifetime risk of acquiring CRC is approximately 25% greater for men than for women (ACS, 2018), and nearly 20% greater for African Americans than in non-Hispanic whites (Macrae, 2019). Individuals who are black face a 40% greater mortality rate compared to individuals who classify as non-Hispanic whites, a health disparity often attributed to racial socioeconomic disparities (ACS, 2018). Additionally, studies have shown that individuals who have lower education levels are 40% more likely to acquire a CRC diagnosis compared to those who have the highest education levels (Doubeni et al., 2012). Furthermore, behavioral patterns such as physical inactivity, obesity, diet, smoking, and alcohol consumption contribute to one's risk of acquiring CRC (ACS, 2018).

Several factors contribute to an individual's ability to live and actively pursue a meaningful life. A person's body system, the environments in which they interact, and their occupational routines are such contributing factors (Law et al., 1996). Their interdependency with one another impacts one's ability to achieve, pursue, and or maintain their desired level of QOL. Disruption to any one of these attributing components has the potential to challenge the dynamic equilibrium of the person and impact their occupational performance (Law et al., 1996). CRC is a disruption; therefore, while it manifests within the physiological system, it can create dysfunction within all aspects of the individual's life.

The Occupational Therapy Practice Framework (OTPF) was created by the American Occupational Therapy Association (AOTA) and defined the occupational therapy (OT) scope of practice. It describes OT as a way of enhancing participation in meaningful roles and

occupations through various interventions (AOTA, 2020). OT has been identified to promote an improved functional status, decrease fall risks, improve social participation, promote sensory, intellectual, and psychological functioning, and positively influence the overall QOL for a patient (Clark et al., 1997; WHO, 2013). The ability to provide holistic, client-centered care derives from the specialized training occupational therapy practitioners receive in both evaluating and treating all aspects of the client within multiple contexts and environments, with the intent to maximize function and QOL (AOTA, 2020). Therefore, OT has the opportunity to benefit most CRC clients during and/or after treatment by promoting health and wellness through client-centered home exercise programs and participation in meaningful activities. Although evidence supports the benefits that OT can provide to individuals with cancer, there is a gap in research to support the benefits OT can provide to the CRC population.

As CRC clients are removed from their typical routines and environments during treatment, studies that examine occupation-based interventions are needed in order to explore occupational engagement in meaningful tasks (Hunter et al., 2017). Research regarding returning to meaningful activities and occupations, during and following cancer treatments, is currently underdeveloped. Specialized training in both evaluating and treating the whole client within their context and environment allows the occupational therapy practitioner to provide holistic, client-centered care with the intent to maximize function and QOL (AOTA, 2020). OT can potentially limit cancer-related disabilities amongst oncology clients, yet it remains extraordinarily underused within adult oncology (Pergolotti et al., 2016). This article aims to critically review the current state of literature related to OT and CRC.

Methods

A literature search was done using Grand Valley State University's (GVSU) electronic library to obtain English-language research articles related to the physical and emotional implications of CRC, the respective rehabilitative process for those undergoing treatment, and CRC's subsequent connection to OT. The following keywords and MeSH terms were used: colorectal cancer; colorectal cancer AND discharge; colorectal cancer AND rehabilitation; cancer AND prehabilitation; cancer employment work; cancer fatigue diarrhea; cancer AND OT; cancer AND quality of life; cancer AND psychosocial factors; cancer AND survivorship; patient satisfaction; treatment outcomes. The researchers completed a comprehensive search under the guidance of the Health Professions Liaison Librarian at GVSU to ensure saturation. The data search for these articles was during 10/6/2019/ and 10/7/2020. Articles that met the study's inclusion criteria, were divided among the four Masters of Science Occupational Therapy graduate students who comprised the research team for chart review and data extraction. Inclusion criteria for the articles was as follows:

- Article found using keywords in GVSU library database
- Article publication date after the year 2000
- Article references "cancer" or "oncology"
- Article discussed topics within OT scope of practice
- Article written in, or translated to, the English language

Exclusion criteria for the articles was as follows:

- Articles that did not meet the inclusion criteria were excluded from this study

Two graduate students reviewed eight articles, and two reviewed nine. In order to enhance the internal reliability, the research team and faculty research advisor convened at least

once a week to discuss articles and ensure agreement throughout the data extraction and review process. An excel spreadsheet was created to chart key variables found through the groups' literature review that connected to the OT scope of practice using terminology outlined in the Occupational Therapy Practice Framework; Domain and Process, 4th Edition that were relevant to the CRC population (AOTA, 2020).

Each of the thirty-four articles that met the inclusion criteria were reviewed and quantifiably coded as a "0" for no, and "1" for yes in regards to referencing the following variables: OT, CRC (colon cancer and rectal cancer were also coded as "1"), explicit measurement of pain, explicit measurement of QOL, activities of daily living (ADLs), instrumental activities of daily living (IADLs), health management, rest and sleep, education, work, play, leisure, and social participation. When considering the occupation of rest and sleep, it is important to note that the OTPF does not use the word fatigue within this occupational area; therefore, articles that used the word fatigue were not coded as 1 for the purposes of our research (AOTA, 2020). Similarly, when assigning a reference value of 1 to a study, the word "education," refers to the OTPF's concept of education as an occupation - not education as a form of intervention techniques (i.e. education for energy conservation or sexual functioning).

In addition to the occupation-based variables listed above, the research team decided it was important to utilize a reliable and valid scale to objectively determine the level of evidence for each of the thirty-four articles. The Physiotherapy Evidence Database's (PEDro) 11-point scale was used to determine a single quality score ranging from 0 (low-quality) to 10 (high-quality.) The score is determined based on the number of "yes" responses on the PEDro Scale. A similar coding system was used for each of the PEDro scale items where "0=no; 1= yes." The PEDro Scale is commonly used in the physical therapy profession, which works closely with the

OT profession, and evidence supports its face validity, content validity, and reproducibility (Olivo, et al., 2008).

Results

Thirty-four articles matched the study's inclusion criteria and were analyzed for variables relevant to the field of OT, summarized in Table 1. Researchers found that of the thirty-four articles identified, 26 (76.47%) mentioned CRC, and only 7 (20.59%) referenced OT. There were 18 (52.94%) articles that referenced activities that would be categorized as Instrumental Activities of Daily Living within the OTPF (AOTA, 2020). Data extraction revealed that the literature also discussed the occupations of work (11, 32.35%); rest and sleep (9, 26.47%); education (6, 17.65%); and leisure (6, 17.65%). Interestingly, 17 (50%) articles mentioned activities that would be categorized as an Activity of Daily Living within the OTPF (AOTA, 2020). When specifically examining these 17 articles, toileting (9, 52.9%), and sexual functioning (7, 41.18%) were found to be most frequently mentioned (Figure1).

The research team also identified pain and QOL outcome measures as pertinent variables. Therefore, articles were examined for their use of pain and/or QOL assessment tools. Table 1 shows that of the thirty-four identified articles, pain was explicitly measured in 6 (17.65%); likewise, QOL was explicitly measured in 6 (17.65%).

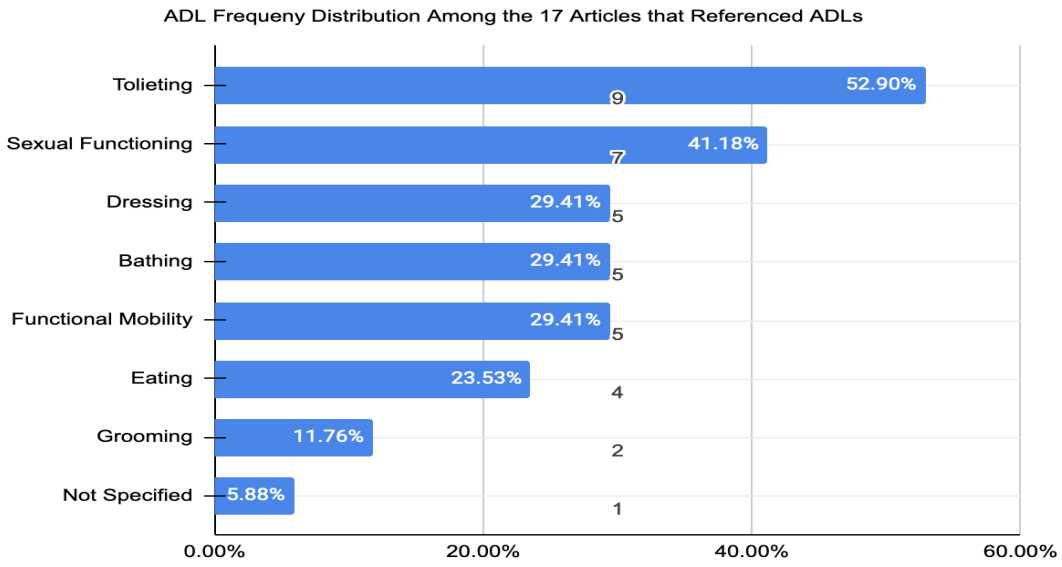
Table 1

Frequency Distribution of Occupational Variables

	n	%
Occupational Therapy Referenced	7	20.59%
Colorectal Cancer Referenced	26	76.47%
Activities of Daily Living Referenced	17	50.00%
Instrumental Activities of Daily Living Referenced	18	52.94%
Rest and Sleep Referenced	9	26.47%
Education Referenced	6	17.65%
Work Referenced	11	32.35%
Leisure Referenced	6	17.65%
Pain Measured	6	17.65%
Quality of Life Measured	6	17.65%

Figure 1

Frequency Distribution of Activities of Daily Living Variables

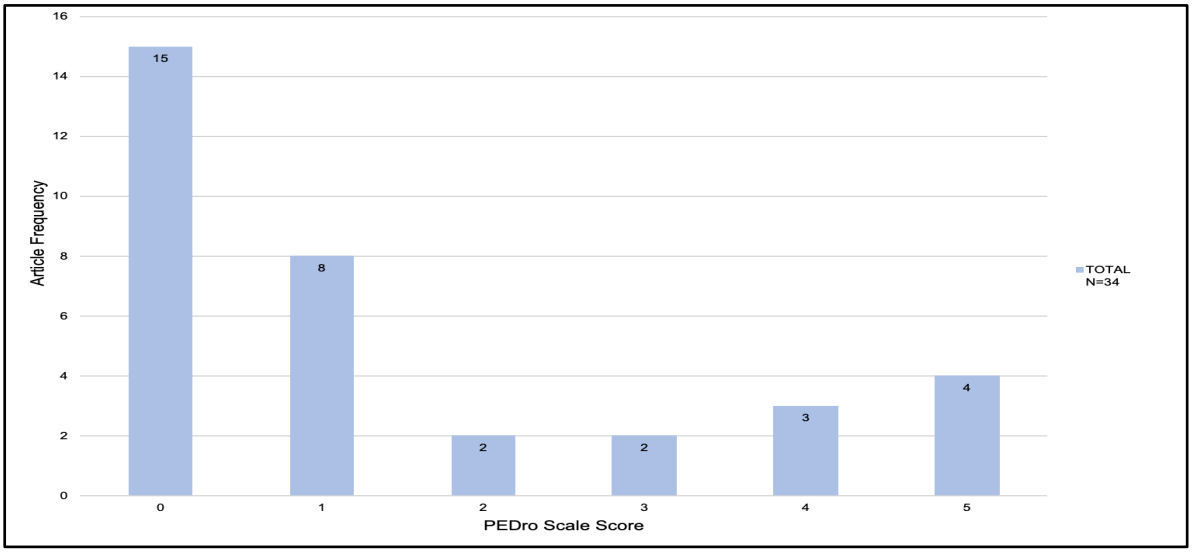


*Metrics were derived from the total number of articles that referenced ADLs (n=17) instead of N=34.

In addition to coding the occupational variables outlined in Table 1 and Figure 1, the researchers used the PEDro Scale to summarize the level of quality within each of the thirty-four research articles. The frequency distribution of total scores on the PEDro scale is outlined in Figure 2. The highest possible total score on the PEDro scale is 10 (high-quality), whereas the lowest possible score is 0. Articles that scored a 0 failed to satisfy any of the quality requirements that composed each of the 10 PEDro scale's sub-items. The researchers found there were no included articles that satisfied a PEDro score of 6 and above. Four articles received a PEDro total score of 5, indicating that half of the quality items were satisfied. Conversely, 15 articles had a total PEDro score of 0, indicating that the majority of the reviewed literature failed to satisfy a single quality item.

Figure 2

Distribution Summary of PEDro Scale Total Scores: Level of Quality-Research Among Articles



The highest possible PEDro Scale score is a 10 (highest-quality research level), and the lowest possible score is a 0 (no quality item criterion was satisfied; lowest quality score.)

Discussion

Throughout the research process, it was evident that a general lack of CRC-specific literature existed. To overcome this, researchers expanded their inclusion criteria from "CRC" to oncology and reviewed a decade of research in hopes to incorporate more occupation-based data. Nevertheless, saturation was met with only 34 articles. Of the included articles, only 26 referenced CRC, and 67.65% had a PEDro quality score of 0 or 1 out of 10, reflecting low-quality evidence. This finding suggests that CRC's impact on occupations is marginally represented in the literature, although it remains the third most common type of cancer in the U.S. (Ferlay et al., 2014).

The researchers found that there is a disproportionate representation of the OT profession in the CRC literature as it pertains to occupations. The OT profession was referenced in only 20.59 % of the articles, yet ADLs were discussed in 50%, IADLs in 52.94%, Work in 32.35%,

and Sleep in 26.47%. This illuminates that there is a need for OT within the CRC rehabilitation journey, yet the profession's unique skill set and scope of practice may be underutilized within this population. In the current rehabilitation setting, OT services must be deemed medically necessary in order to qualify for most insurance coverages. For a service to be deemed medically necessary, it must be considered both reasonable and necessary to treat a client's medical condition. The literature revealed that pain and QOL, two variables that are not considered "medically necessary," were only explicitly measured as patient outcomes in 17.65% of the articles. This marginalized representation suggests that pain and QOL are not presently prioritized in CRC research. However, both variables impact a client's ability to meaningfully engage in his or her daily life and are significantly impacted by cancer, and as such should be included as a patient outcome in future CRC research to ensure a holistic representation of CRC effects.

Holistic care refers to the enhancement of the whole person using a mind-body connection and meaningful occupations whereas rehabilitation focuses on mechanical enhancement and functional restoration. A holistic lens allows researchers and practitioners to critically evaluate and skillfully intervene in a clients' physical, mental, social, spiritual, and environmental contexts. OT recognizes the interdependency of each clients' context, and therefore should be valued within literature and researched accordingly rather than reducing literature to only medically necessary variables. The goal of skilled OT services is to enable patients so that they may meaningfully, and functionally, engage in activities and roles that they need to do, are expected to do, or would like to do. OT's scope expands beyond the rehabilitation parameters to address clients' goals and needs that are not always deemed medically necessary.

There is a significant gap in literature on the association of rehabilitation and maximizing function and QOL that supports the next steps in the journey of CRC survivors. Existing research is specifically limited when searching for an understanding of the client's unique experience. Future direction of CRC research would benefit from using a combination of methodologies, particularly focus groups, to measure and explore a more holistic view of CRC's impact on the population. These next steps should aim to limit CRC's negative occupational effects from a client's perspective. Future research should aim to both understand the narrative behind patient perspectives as well as aim to be of higher quality. Producing higher quality research studies and publishing subsequent evidence to address the present literature gaps may have economic benefits to the CRC population and OT profession.

By demonstrating the occupational challenges in which CRC clients face, combined with the evidence to support OT's role to support these challenges, opportunities for funding to relieve this gap between client needs and services may occur. This can be done by conducting rigorous studies that would receive a high score on the PEDro scale (or a similar critically appraised rating scale).

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