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The Association Between Self-Efficacy, Patient Health Education, and Self-Management in Patients With Rheumatoid Arthritis

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Abstract

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MS, California University of Pennsylvania, 2006

BS, State University of New York, 1989

Dissertation Submitted in Partial Fulfillment
of the Requirements for the Degree of
Doctor of Philosophy
Health Education and Promotion

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Abstract

Although previous researchers have studied education for patients with chronic conditions, they have not adequately considered the relationship between self-efficacy (SE), patient health education, and perception of self-management (SM) in patients with rheumatoid arthritis (RA). Educating a patient can empower them to better SM. The purpose this study was to examine these associations in this patient population. This quantitative research study featured a descriptive, nonexperimental cross-sectional survey design using nonprobability convenience sampling. The theoretical framework was the social cognitive theory. The independent variables were SE and patient health education. SM was the dependent variable. Patients with RA from a rheumatology clinic and members of a RA Facebook group (n=81) were administered a questionnaire using the SurveyMonkey platform. The questionnaire included the valid and reliable scales Self-Care Behaviors Scale (SCBS), the Arthritis Self-Efficacy Scale (ASES), the Behavioral Risk Factor Surveillance System Questionnaire, and the Educational Needs Assessment Tool (ENAT). Descriptive statistics and the chi-square test were used to analyze the data. Results showed that the association between ASES and SCBS was not statistically significant ($p = .594$). Four out of seven domains of the ENAT showed statistically significant association with SCBS. More than half of the 81 participants indicated that patient health education was important to them. The results of this study may have a positive social change impact by informing patient health educators, physicians and policy makers of strategies that could be used to increase an RA patients' health-related quality of life. RA patients want and need patient health education.

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Dedication

I dedicate this dissertation to my mom. She was my biggest fan and cheered me on right to her last days. She inspired my topic of research as I cared for her and my sister; I witnessed the frustrations they had navigating the health care system. She would say "you go girl." I know she will be pleased—even from heaven—that I have accomplished this goal. I also want to thank my husband, Richard, for always supporting the time it has taken to achieve this PhD and for encouraging me through it. I also want to dedicate this to my children! They are grown and married and have children of their own, which I am so blessed by. They have encouraged me to keep going, even in the midst of many adversities, now, then, and always. They are the wind beneath my wings! Lastly, to my grandchildren: I want to inspire you to accept challenges, stretch your comfort zone, reach for the stars, never give up, and accept rejection as an inspiration to learn and grow but never stay down. Climb back up even further and believe in yourself and all that you want to be!

Acknowledgments

Thank you to Dr. Long-White, Dr. Gibble, and Dr. Kraft for supporting me as my dissertation committee. I also want to thank Dr. Kim Kato-Howard for her encouragement. Thank you to Dr. Douglas McCoy for inspiring boldness. Thank you to all the Walden instructors who have guided me along the way. Thank you again to my family who loves me unconditionally every day of my life. Last, thank you to my Lord and savior for giving the strength to keep moving forward despite being diagnosed with rheumatoid arthritis and scleroderma during this process, as well as losing my mom, my dad, and my sister. It is because of Him that I live.

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Chapter 1: Introduction to the Study

There are a growing number of rheumatoid arthritis (RA) patients in the United States and worldwide (Centers for Disease Control and Prevention [CDC], 2018). By 2040, at least 26-28% (approximately 78 million) of Americans will have some form of debilitating arthritis (CDC, 2018). The Arthritis Foundation (2019) stated that RA increases the U.S. human and economic burden. RA patients have an increased mortality rate of 60-70% (Arthritis Foundation, 2019). The AF noted that patients with RA will often have increased comorbidities, such as cardiovascular disease, but also increased chances of depression and other mental health issues. In addition, patients with RA have an increased risk of falls and hospitalization, which has a direct and indirect economic impact due to loss of work capabilities and increased medical burden on society due to increased insurance claims and Medicaid/Medicare expenditures (Fleischmann, 2020; McMahon, 2019).

One in four physicians in the United States spends less than 10 minutes with each patient (Mobius MD, 2019). The Samueli Foundation Integrative Health Programs (2019) noted that many health care providers (HCPs) do not have time to educate their patients on chronic conditions or diseases or the knowledge of how to educate their patients effectively, which can leave the patients feeling scared and wondering how to manage their disease process. This has created a large gap in care within the U.S. health care system and is a problem for the management of chronic health conditions (Samueli Foundation Integrative Health Programs, 2019). Educating patients with chronic conditions on disease management has been shown to improve health-related quality of life (HRQOL) and health outcomes (Claassen et al., 2018; Coskun Benlidayi, 2018; Fertelli, 2020; Lineker et al., 2019; Naqvi et al., 2017; Nessen et al., 2018; Samiei Siboni et al., 2019; Pot-Vaucel et al., 2016). Given the limited time that an HCP has with a patient, a specialized practitioner, such as a health educator, could focus their attention on the patient and provide educational information and services. These patient health education activities can increase the patient's self-efficacy to self-manage their diagnosis and thus improve their quality of life (QoL; Center for Excellence in Primary Care, 2014; Michalik & Spratek, 2018; Ndosi et al., 2016; Senara et al., 2019).

I conducted this quantitative study to explore RA patients' self-efficacy in self-management of their disease and the patient health education that they may have received to help with this process. *Self-management* and *self-care* are often used interchangeably (CDC, 2020c; Grady & Gough, 2014), and both appear in this study. The positive social change implications could be a greater understanding of RA patients' needs and how health education could assist them in achieving a better QoL through self-management of their disease. Additionally, positive social change could come from informing physicians about these needs and possibly impacting policy changes within health care offices to incorporate a health educator to help comanage RA patients' cases.

In Chapter 1, I provide background information regarding RA. The study's problem statement and purpose of the study, along with the research questions (RQs) and hypotheses, are presented. Chapter 1 also includes an introduction to the study's theoretical framework, the nature of the study, and definitions of key terminology.

Chapter 1 concludes with a discussion of the positive social change implications of the research and a preview of Chapter 2.

Background

According to the CDC (2020b), RA is defined as an inflammatory, autoimmune disease where healthy cells in the body are mistaken for harmful cells and attacked by the immune system causing inflammation systemically and damage to the organs and joints of the body. The exact cause of RA is unknown, which can make it difficult to diagnose and treat (Arthritis.org, n.d.; CDC, 2020b). Women are 2 to 3 times more likely to be at a greater risk for RA than men (Obrzud & Gronek, 2018). RA can begin insidiously and at any age; however, it is more common for individuals over the age of 60 (Taylor, 2020). Issues with joint pain and swelling may appear early in the disease process with only a few joints and progressively extend into other joints of the body (Taylor, 2020). HCPs will access the number of swollen joints using a validated formula and may have x-rays taken to observe synovial thickening, or joint deformation (Taylor, 2020). Anticyclic citrullinated protein antibody and/or immunoglobin M rheumatoid factor may or may not show up in the RA patients' blood work (Taylor, 2020). The diagnosis is primarily based on the HCP's observation and clinical judgment (Taylor, 2020).

The CDC (2020b) listed symptoms associated with RA, which could include stiffness in more than one joint, tenderness and swelling in more than one joint, pain or aching in more than one joint, the same symptoms on both sides of the body (such as in both hands or both knees), fatigue or tiredness, weakness, weight loss, and fever. Petrovská et al. (2021) noted that genetic factors, such as the presence of shared epitope or non- human leukocyte antigen loci, and environmental factors, such as smoking, can also be known risk factors for RA. Previously, patients diagnosed with RA might all receive similar treatment (Arthritis.org, n.d.), but today can receive different treatments based on the type of RA that they have. Researchers have identified two broad types of RQ: seropositive RA, which is indicated by the presence of anticyclic citrullinated protein antibodies, and seronegative, which indicates that the patient presents with RA symptoms, but antibodies do not show up in the blood work (Arthritis.org, n.d.).

The American College of Rheumatology gives recommendations for the treatment of RA (Fraenkel et al., 2021). Disease-modifying antirheumatic drugs, such as methotrexate, can be used for treating RA (Fraenkel et al., 2021). Other treatments could include nonsteroidal antiinflammatory agents and/or corticosteroids, reduction of joint stress through physical and occupational therapy, and surgical intervention (Johns Hopkins Arthritis Center, 2021). The goal of HCPs in the treatment of RA is to begin treatment early in the disease process to prevent disability and improve patient outcomes, to have the lowest level of disease activity in the hope of possible remission of RA symptoms and activity (Johns Hopkins Arthritis Center, 2021). The Johns Hopkins Arthritis Center (2021) stated that RA patients and their families must be educated about the nature of RA, disease progression possibilities, treatment options, and self-management of the disease process itself.

Educational interventions with RA patients can improve HRQoL and self-management of disease conditions (de Almeida Ribeiro Fernandes da Rocha et al., 2020). There is a gap in knowledge about the level of education RA patients receive, and further research should be conducted on educational interventions to improve HRQoL in RA patients (Demmelmaier & Iversen, 2018). Lack of knowledge and motivation can be barriers to good QoL in RA patients (Gwinnutt et al., 2020). Without educational interventions, RA patients' HRQoL can be diminished by increased disability from the disease, thereby limiting daily functioning and activities (Michalik & Spratek, 2018). This study was needed because it may increase awareness around the barriers RA patients may be facing, thus allowing health educators to construct educational tools that could help improve patient's self-efficacy and HRQoL to self-manage their diagnosis (see Brady, 2011; de Almeida Ribeiro Fernandes da Rocha, 2020; Demmelmaier & Iversen, 2018; Gwinnutt et al. 2020; ICT&health, 2017; Michalik & Spratek, 2018; Ndosi et al., 2016; Senara et al., 2019).

Problem Statement

The literature reflects that health education with patients who have chronic conditions should be initiated within not only primary care offices but also chronic condition specialties (Claassen et al., 2018; Fertelli, 2020; Lineker et al., 2019; Lööf & Johansson, 2019; Naqvi et al., 2017; Nessen et al., 2018; Pot-Vaucel et al., 2016; Samueli Foundation Integrative Health Programs, 2019). Current literature on health education interventions with RA patients is limited, however. Health coaching/education has been shown to strengthen the feeling of social support for patients, with the potential to act as a bridge of communication between patients and practitioners (Thom et al., 2016). The researchers who made that findings noted that more research should be done on the incorporation of health education as a means of engaging patients with chronic conditions (Thom et al., 2016).

Although previous researchers (Allegrante, 2018; CDC, 2019d; Dunet & Butterfoss, 2005; Flora et al., 2016; U.S. Department of Health and Human Services, 2015) have studied education for patients with chronic conditions, there is scarce research regarding the relationship between self-efficacy, patient health education, and perception of self-management.(Bearne et al., 2017; Beauvais et al., 2019; Denneson et al., 2019; Ndosi et al., 2016; Nessen et al., 2019; Samueli Foundation Integrative Health Programs, 2019; Senara et al., 2019; Thom et al., 2016). This study addressed this gap by building on the historical research done on RA patients' self-efficacy and their ability to self-manage their disease state. I assessed patient health education after diagnosis and baseline self-efficacy.

Purpose of the Study

The purpose of this quantitative study was to examine the association between self-efficacy, patient health education, and self-management in patients with RA. Knowledge gained from this study concerning RA patients, self-efficacy, patient health education, and self-management could shed light on barriers for patients that could impair daily activities. Using the results of the study, health care professionals could develop patient health education to increase RA patients' QoL. The independent variables of this study were self-efficacy and patient health education. Self-management was the dependent variable in this study.

Research Questions and Hypotheses

I used the social cognitive theory (SCT), which includes the concept of self-efficacy, as the theoretical framework for this study. Following are the RQs and hypotheses for the current study:

RQ1. What is the association between self-efficacy and self-management?

$H_0 1$: There is no association between self-efficacy and self-management.

RQ2. What is the association between patient health education and self-management?

$H_0 2$: There is no association between patient health education and self-management.

RQ3: What patient health education do RA patients want or need?

$H_0 3$: RA patients do not need patient health education.

Theoretical Framework

The theoretical framework for this study was the SCT, specifically the construct of self-efficacy (Glanz et al., 2015). The SCT was developed as an extension of Albert Bandura's social learning theory and has the basic premise that humans learn and behave based upon their experiences and observations of others (Glanz et al., 2015; Grim & Hortz, 2017). Bandura's SCT posits that a person's behaviors are influenced by three determinants: personal (self-perception, beliefs, and goals), behavioral (self-efficacy, skills), and environmental (circumstances that surround a person; Glanz et al., 2015). Grim and Hortz (2017) noted that self-efficacy is the predominant construct in the SCT and is defined as a person's belief (or perception) that they have control over their actions. This is a primary motivator to behavior change.

Demmelmaier and Iversen (2018) conducted a systematic review of peer-reviewed articles concerning physical activity (PA) interventions with RA patients that were published between 1980 and 2015. Demmelmaier and Iversen reviewed 11 out of the 245 articles found and stated that behavioral theories were rarely used, indicating the need to base PA interventions with RA patients on evidence-based theories. The SCT was the most widely used theory in Demmelmaier and Iversen's systematic review with the emphasis on the key construct of self-efficacy. Shamizadeh et al. (2019) noted that the constructs of the SCT, such as self-efficacy, goal setting, and outcome expectations, were predictors of PA levels. Joseph et al. (2017) utilized the SCT for a PA intervention with African American women to understand the cultural relevance of the constructs of the SCT in increasing levels of PA and found that the SCT was a successful theoretical framework to use in the intervention.

Numerous researchers who have studied chronic condition management have used the SCT and identified the importance of self-efficacy (Allegrante, 2018; Bearne et al., 2017; Demmelmaier & Iversen, 2018; Joseph et al., 2017; Shamizadeh et al., 2019). Because of the extensive research and support for the SCT, most notably self-efficacy (Glanz et al., 2015), I consider it appropriate for the study's theoretical framework. The logical connections between the framework presented and the nature of this study include Glanz et al. (2015) noted that Bandura's SCT posits that a person's behaviors are influenced by three determinants: personal (self-perception, beliefs, and goals), behavioral (self-efficacy, skills), and environmental (circumstances that surround a person). One of the tools I used for my investigation was a valid and reliable questionnaire rooted in the SCT, the Arthritis Self-Efficacy Scale (ASES; Stanford Patient Education Research Center, n.d). I used ASES to evaluate RA patients’ current level of self-efficacy. Grim and Hortz (2017) noted that self-efficacy is the predominant construct in the SCT and is defined as a person’s belief (or perception) that they have control over their actions, and this is a primary motivator to behavior change. Understanding an RA patients' level of self-efficacy may help a health educator know what tools to utilize and/or type of intervention to incorporate to have better patient outcomes (Jackson et al., 2020; U.S. Department of Health and Human Services, 2015).

Nature of the Study

I used a quantitative framework. This quantitative, nonexperimental cross-sectional survey design study was conducted using a convenience sample of patients with RA from rheumatology clinics, other physician offices, and an RA Facebook group with 68,000 members. To be eligible for the study, individuals had to be (a) a person who had been diagnosed with RA, (b) an adult 18 years of age or older, (c) currently seeing a practitioner for RA, (d) English speaking, and (e) a U.S. citizen.

I used the SCT as the theoretical framework (Glanz et al., 2015). The independent variables included self-efficacy and patient health education received. The dependent variable was self-management. An online questionnaire was designed using reliable and valid tools and scales, in particular the ASES, which was developed to measure a patient's belief/self-efficacy that they could manage daily activities despite possible pain

(Brady, 2011; Lorig et al., 2004; Stanford Patient Education Research Center, n.d.). Demographics, such as race, age, geographical location, education level, and marital status, were collected using items from Section 8 of the 2020 Behavioral Risk Factor Surveillance System (BRFSS; CDC, 2021b). The Self-Care Behaviors Scale (SCBS; Nadrian et al., 2019) was used to measure the dependent variable, self-management. In addition, items on RA from Section 7 of the 2019 BRFSS (CDC, 2019b) were included referring to possible patient health education received by the RA patient. Additionally, questions from the Educational Needs Assessment Tool (ENAT; Edworthy et al., 1995) were used to investigate patient health education received by the RA patient and/or the patient health education desired. A copy of the questionnaire is included in Appendix A.

I housed the online survey on the platform SurveyMonkey. Potential participants were provided with a link to the survey via the recruitment flyer (see Appendix B). Participants were informed that the survey was optional. A screening question at the beginning of the survey asked if they had previously completed the survey. In addition to descriptive analysis, the nonparametric chi-square test was used for the analysis of the data using the Statistical Package for the Social Sciences (SPSS) software Version 28.

Definitions

Auto-immune disease: A disease that occurs when a healthy immune system, whose purpose is to protect the human against foreign bodies that can be dangerous or deadly by causing disease or infections, is not working properly; it can attack the body's healthy organs, tissues, and/or cells causing a weakening or damage to the healthy functions of the body (National Institute of Environmental Health Sciences, 2021).

Chronic conditions or diseases: A condition lasting 1 year or more that limits daily activities or requires ongoing medical attention (CDC, 2021a).

Comorbidities: The existence of more than one condition or disease state within a person at the same time (CDC, 2019a).

Health-related quality of life (*HRQoL*): An individual's perception of their mental and physical health over time (CDC, 2021c; Samiei Siboni et al., 2019).

Patient health education: Education and information regarding a patient's chronic condition or disease that emphasizes their understanding of how to self-manage their disease and the benefits and risks about treatments and decision-making process (Pellisé et al., 2009).

Rheumatoid arthritis (*RA*): An inflammatory auto-immune disease that is chronic and can impact multiple systems within the body, including joints, the heart, lungs, eyes, tissues, and blood vessels; the disease causes a person's immune system to mistake healthy tissue and cells for unhealthy tissue and cells and attack the own body's systems (CDC, 2020b; Mayo Clinic, 2021).

Self-efficacy: The ability of an individual to have the confidence to perform a certain task or activity (The American Psychological Association, 2020).

Self-management: The ability of an individual to manage daily living skills of a chronic disease or illness that improve daily QoL and health outcomes (Grady & Gough, 2014). *Self-management* and *self-care* are often used interchangeably (CDC, 2020c; Grady & Gough, 2014). I use both terms in the study.

Self-management education: Strategies to help a person learn how to improve their health-related quality of life by learning skills that can assist with daily living (CDC, 2019d).

Social determinants of health (*SDOH*): Any condition in a person's environment that impacts their health risks and outcomes (Agency for Healthcare Research and Quality [AHRQ], 2013).

Quality of life (*QoL*): A broad term that includes HRQoL as well other subjective measures such as one's values, spirituality, environment, jobs, family, and so forth (CDC, 2021c).

Assumptions

I assumed that the anonymous nature of the online questionnaire would invoke honest and truthful answers to the questions as opposed to answers that participants thought would be socially desirable. It was also assumed that participants would volunteer and have no pressure or coercion from me or a HCP to complete the survey. Another assumption was that the population surveyed would have active RA and be active in treatment for RA (per the answer to Survey Question 3 in Appendix A).

Scope and Delimitations

This study had several delimitations. One delimitation of this study was its generalizability. The target sample was limited to U.S. citizens who have active RA, who are patients of the physician's office, and/or are members of the Facebook page named Rheumatoid Arthritis Group. Therefore, the study may not accurately assess whether individuals with RA who live in other countries experience the study phenomenon in the same way. I limited the study to the constructs of the SCT due to the literature indicating the importance of self-efficacy in HRQoL (Joseph et al., 2017; Shamizadeh et al., 2019). Further, the ASES (Stanford Patient Education Research Center, n.d.) was chosen as a tool of assessment to measure levels of self-efficacy. Section 8 of the 2020 BRFSS (CDC, 2021b), in addition to items on RA from Section 7 of the 2019 BRFSS (CDC, 2019b), were included to obtain demographics of the participants and possible health education received by the RA patient. The SCBS was used to measure the dependent variable, self-management (Nadrian et al., 2019). The ENAT was used to investigate patient health education received by the RA patient and/or the patient health education desired (Edworthy et al., 1995). A copy of the questionnaire is included in Appendix A. Finally, the inclusion of participants who were a part of the RA Facebook page may not reflect the experience of the general population.

Limitations

The study had several limitations. The COVID-19 pandemic began in the U.S. January 3, 2020 and is still ongoing (World Health Organization, 2022). I began data collection in April, 2022. This may have impacted the sample size taken from the RA clinics or other physician offices due to patients limiting their access to care during the pandemic (Carter et al., 2022). Patient recruitment and data collection may have been impacted by these circumstances and the COVID-19 restrictions at certain HCP offices. Another factor that may have impacted sample size was that several practitioners needed to refer patients to yield the desired sample size. Participants from the RA Facebook page may have been limited by participation requirements. Recruitment was to continue until the desired number of participants for the sample size calculation was achieved. I took care to protect the personally identifiable information) of participants. Patients were informed that their responses would not be linked to them. Given the impact of COVID-19 and the potential issues with patient recruitment, this may have impacted the generalizability of the sample size to the overall RA population.

Another limitation was response bias in the form of social desirability. Respondents may have answered the questions the way they thought I might have wanted them to answer instead of what was true for them. Last, a limitation was that only those who had access to the internet were able to participate in the study. According to the Pew Research Center (2021), in 2021 approximately 7% of the adult population in the United States did not use the internet. Individuals aged 65 and older were more likely to report never using the internet or going online (Pew Research Center, 2021). Older individuals, men, African Americans, individuals with less than are high school education, individuals at lower-income levels, and rural residents were also more likely to be among the non-internet user group (Pew Research Center, 2021).

Significance

This study has significance because when a patient is diagnosed with a chronic condition such as RA, most often the HCP does not have time or often the skill to educate the patient on how to manage their diagnosis (Samueli Foundation Integrative Health Programs, 2019). Research indicates that educating a patient can empower them to better self-management (Beniamin et al., 2019; Burghardt, 2019; Griffiths et al., 2018; Forsyth et al., 2018; Hagen et al., 2020; Küçükdeveci, 2019; Sparks, n.d.). Health education is an opportunity to build a trusting relationship with the patient, and techniques such as motivational interviewing can be incorporated to allow the patient to self-identify SDOH that can be barriers to a good QoL (Van Horn et al., 2021). Health education can also encourage positive reinforcement of the knowledge that patients have acquired during the educational sessions, as well as set appropriate SMART (specific, measurable, attainable, relevant, time-bound) goals (Arthritis Foundation, n.d.; Rodrigues et al., 2019).

The positive social change implications of this study stem from the knowledge it yields regarding the levels of self-efficacy of RA patients, the education they have received, and their ability to carry out self-management activities with their RA symptoms. The information obtained from the study could help close the gap between patients leaving the HCP office without the proper education and/or the comprehension of the education by understanding the barriers the patients are experiencing. The outcome of the study can help practitioners and educators to gain an understanding of the patients' needs. Furthermore, the positive social change implications could also involve changing policies within the physician's office or medical schools regarding partnerships between educators and HCPs. Standard operating procedures could be added, changed, or implemented for how chronic condition management is taught within medical schools and handled in real-world offices, which could positively impact the HRQoL of the RA patient. Health education in every physician's office could close the gap in the U.S. health care system of patients walking out of an office fearful and wondering how to cope with their new (or previous) diagnosis.

Summary

Chapter 1 provided a foundation for exploring the level of self-efficacy and education an RA patient receives and/or may need to improve or sustain their HRQoL and self-management of their RA. There currently exists a gap in the health care system between a patient being diagnosed with RA and the patient being given the education and tools for improved daily living. RA self-management courses and education exists, but there is a gap in the literature concerning the level of education being given within the providers' offices (CDC, 2019c, 2020b). The goal of the study was to gain a greater understanding of the needs of the RA patient to better serve them within a primary care office or RA clinic. The results may indicate areas of health education that the patient needs to improve self-efficacy, self-management, and HRQoL. In Chapter 2, I review the literature on RA, self-efficacy, self-management, and HRQoL, as well as provide more detailed information about the theoretical framework of the study.

Chapter 2: Literature Review

Introduction

Educating a patient about their chronic condition (in this case, their RA) has been shown to improve the patient's feeling of social support and open up the lines of communication with their educator and possibly their physician (Thom et al., 2016). Yet there is scarce research regarding the type of patient health education RA patients receive and how that impacts their ability to self-manage their disease. The purpose of this study was to address this problem and gap in the literature by investigating the patient health education received by the RA patient within their practitioner's office and how that impacts self-management. I used Bandura's concept of self-efficacy within SCT as the theoretical framework for this study because it focuses on the patients' ability to have the confidence to self-manage their condition. The positive social change implications of the study include providing knowledge that can potentially be used to shape the patient health education that RA patients receive from their HCPs and overcome the barriers that RA patients experience that impair obtaining a successful HRQoL. The findings may also inform potential policy changes for how patient health education is handled within health care practices and medical school training.

In this chapter, I discuss the theoretical framework of the SCT and how it related to the study. The strategy for the literature search is also discussed. Last, I discuss the key variables associated with this study and provide a synthesis of the associated literature.

Literature Search Strategy

I began the literature search by investigating the Health Sciences Research Page along with the databases ProQuest Health & Medical, Embase, and EBSCOhost. I used SAGE Knowledge for theory searches and SAGE Research Methods Online for methodology searches. Keywords such as *health** OR *health education* AND *rheumatoid arthritis*; *social cognitive theory* OR *self-efficacy* OR *self-management*; *patient education* OR *patient counseling*; *quantitative*; *Likert scales* OR *self-efficacy scales* OR *self-management scales* OR *perception of pain scales*. I used the advanced search feature to access Walden dissertations and doctoral studies. I did not find any dissertations related to arthritis or RA from 2019 to 2021 using *quantitative study* as a search term. I searched for literature from peer-reviewed journals that was published within the past 5 years. I found limited literature surrounding the patient health education of patients with RA.

Theoretical Foundation

I drew from Bandura's SCT (Glanz et al., 2015). The SCT was developed in the 1960s by Albert Bandura when he originally conducted experiments to study human behavior, and as he continued to study, his theory evolved from the social learning theory into the SCT. Bandura theorized that cognitive processes were more involved than he thought in the development of certain behaviors (Glanz et al., 2015). Eventually, Bandura's theory developed into a triadic, dynamic model called *reciprocal determinism*, which theorized that human behavior was a combination of socioenvironmental, cognitive, and personal behaviors all interacting together (Glanz et al., 2015). Glanz et al. (2015) noted that the SCT is one of the most highly used theories in clinical and nonclinical settings for motivating and understanding health behavior change and is a valuable public health tool.

According to Bandura's SCT, behavior change and the prediction of behavior change involve a personal sense of control, with cognitive influences of self-efficacy, knowledge, and outcome expectations (Glanz et al., 2015). A personal cognitive factor of the SCT is the ability of a person to self-regulate or self-determine their behavior, to reflect upon that behavior, and to analyze their behavior (Glanz et al., 2015). A component of this action is the ability of a person to feel confident in performing a behavior (which is defined as self-efficacy; Glanz et al., 2015). Self-care is a component of self-efficacy and can be defined as one's confidence to master or control behavior. Additionally, the SCT identifies constructs that influence human behavior such as outcome expectations, perceived barriers, and social support (Smith et al., 2019).

These additional constructs are important in maintaining a behavior change along with how RA patients can self-manage their disease daily. These were not measured in this study, but merit further examination in future studies. The SCT is particularly interesting as it is one of the only theories used in health promotion and patient health education that considers how behavior can be maintained over time, versus just the initiation of a behavior (Boston University School of Public Health, 2019). Reciprocal determinism is a central construct of the SCT. The RA patient can be influenced by the responses that they have in their environment, which could mean the social support they receive from family and friends (Boston University School of Public Health, 2019). The RA patient's behavioral capability (a construct of the SCT) can be influenced by not only the patient health education they receive but their understanding of how to apply that education in their day-to-day lives (Boston University School of Public Health, 2019). Therefore, it is a logical conclusion that RA patients must not only have patient health education provided to them, but they also must understand how to apply that education to their daily lifestyle and feel confident that they can practice those learned behaviors (Boston University School of Public Health, 2019). Self-efficacy is an important construct of the SCT due to the importance of an RA patient's ability to feel confident that they can self-manage their disease.

The SCT, along with a major construct of the SCT-self-efficacy, was the theoretical foundation for this study. Mastery of self-efficacy may not change the RA patient's physical condition but may lead to a better perception of self-management of their disease. The SCT considers the individuals' experiences, social, personal, and environmental, and the impact of those experiences on how they perform a behavior and/or actions (Boston University School of Public Health, 2019). The importance of maintaining a level of confidence to perform daily activities for the RA patient was the basis for the selection of the SCT as the theoretical foundation.

Literature Review Related to Key Variables

Rheumatoid Arthritis (RA)

RA is an auto-immune condition in which a person's body/immune system attacks healthy joints causing swollen (inflamed), stiff, and painful joints (CDC, 2020b). RA over time can cause permanent damage and/or deformity to all the joints of the body, attacking mostly the hands and the feet. RA can lead to fatigue, headaches, body aches (flu-like symptoms), and mild fever (CDC, 2020b). Nodules may form under the skin on the spine, knuckles, pressure points, elbows, hands, feet, and legs causing pain. RA can also attack the organs of the body including the eyes, heart, and lungs. A condition called dysphagia, which is a swallowing disorder, is common in RA patients (Roy et al., 2018). Roy et al. (2018) conducted a study with 100 RA patients and found that 41% of the participants had long-standing dysphagia. This condition can severely impair an RA patients' QoL (Roy et al., 2018). Unfortunately, many of the medications used to treat RA increase the risks of infections, lymphoma, abnormal body composition, heart disease, and lung disease (Mayo Clinic, 2021).

Normally a person's immune system protects against infections and other invaders (Mayo Clinic, 2021). However, with RA, the immune system attacks itself (Mayo Clinic, 2021). Researchers and physicians do not fully understand the cause of RA, although genetics may play a role in RA, making one more susceptible to environmental factors such as viruses, infections, and bacteria (Mayo Clinic, 2021). The environmental factor of smoking is known to cause inflammation in the lungs, and scientists have shown that this inflammation can lead to protein citrullination, which can induce the production of anti- cyclic citrullinated peptide antibodies, causing the onset of RA in genetically susceptible individuals (Arthritis.org, n.d.).

RA is most often diagnosed between the ages of 40-60 but can occur at any age (Arthritis Foundation, 2019; Mayo Clinic, 2021). Women are about 3 more times likely to get RA than men for reasons that are still unclear to researchers (Mayo Clinic, 2021). One in 12 women and one in 20 men will get some form of rheumatic inflammatory disease in their lifetime (Arthritis Foundation, 2019). It has been suggested that women's immune systems, and hormones such as estrogen, may play a role (Mayo Clinic, 2021). RA is difficult to diagnose as it can mimic many other diseases-Lyme disease for example (Mayo Clinic, 2021). An elevated erythrocyte sedimentation rate (ESR, also known as sed rate) or C-reactive protein (CRP) level, in blood work, could be an indication of systemic inflammation but is not the only factor that comes into play with diagnosis (Mayo Clinic, 2021). The physician will conduct a thorough physical exam including checking for swollen, red, or inflamed joints (Mayo Clinic, 2021). Imaging, such as x-rays and MRI's can be done to keep track of joint integrity over time (Mayo Clinic, 2021).

There is currently no cure for RA (Mayo Clinic, 2021). Research has indicated that remission is possible in some cases when treatment begins for the patient with the use of disease-modifying antirheumatic drugs (Mayo Clinic, 2021). Many of the medications used to treat RA have damaging side effects and must be tracked by a physician, such as permanent eye damage, cancer susceptibility, and lowered immune reaction to infections and viruses (Mayo Clinic, 2021). Other treatments can include physical therapy, counseling, support groups, and on occasion surgery to replace a joint or joints (Mayo Clinic, 2021). Bearne et al. (2017) note that treatment decisions should be based on good communication between the RA patient and their HCP. Knowledge of RA is essential for the patient during treatment so the patient can self-manage their RA and have concise conversations with their practitioners about their disease process (Bearne et al., 2017; Beauvais et al., 2019). Ideally, a holistic approach to the treatment of RA involves a team of practitioners working with the RA patient, including HCP, pain management, physical therapist/physiotherapist, nutritionist, and pharmacist (not inclusive) (Beniamin Szmelcer et al., 2019). Gwinnutt et al. (2020) note that for patients to be successful in self-managing and/or treatment of their RA, their barriers to success must be addressed, such as lack of patient health education or knowledge, lifestyle choices, or changes, levels of pain, self-efficacy, and pain.

Self-Efficacy

Self-efficacy was a key variable in this study as it is a core construct in the SCT (Glanz et al., 2015). Self-efficacy is defined as a person's level of confidence that they have to execute a behavior(s) for a desirable outcome (Glanz et al., 2015). Brady (2011) conducted a review of self-efficacy measurement tools, such as the ASES, Rheumatoid Arthritis Self-Efficacy Scale, Children's Self-Efficacy Scale, Parent's Arthritis Self-Efficacy Scale, and the Chronic Disease Self-Efficacy Scale). Brady noted that patients with higher levels of self-efficacy were correlated with greater medication adherence, positive changes in pain perception and depression. This review is informative as to the validity, reliability, strengths, and weaknesses of each of these scales. Brady found a significant correlation between the ASES and the Rheumatoid Arthritis Self-Efficacy Scale.

Sessford et al. (2019) conducted a quasi-experimental study with 86 patients to investigate the impact that the SCT had on arthritis patients overcoming barriers by having a high level of self-efficacy. Patients with lower levels of self-efficacy had a greater perception of barriers to exercise adherence to improve their RA symptoms than those with a higher level of self-efficacy (Sessford et al., 2019). Furthermore, Sessford et al. (2019) suggested that further research be conducted on assessing levels of self-efficacy in the RA patient early in the diagnosis to address potential barriers.

Joseph et al. (2017) investigated the cultural relevance of the SCT and PA among 25 African American women using the SCT constructs of self-efficacy and self-regulation. This study confirms that the use of the SCT was pertinent in understanding the barriers to regular PA and that further patient health education around social/cultural norms and PA, in general, could help alleviate hesitation of the women in this study to participate in PA due to a lack of knowledge of the benefits of regular exercise despite prior conceptual thinking around the topic (Joseph et al., 2017). Joseph et al. (2017) found that some of the results obtained were relevant to all women regardless of race or ethnicity and that having shared testimonies and success stories of women gaining self-efficacy from a PA program could help with alleviating barriers.

In support of the use of the SCT and the construct of self-efficacy in this study, Jackson et al. (2020) conducted a meta-analysis of studies concerning the use of the ASES among RA and osteoarthritis patients. Initially, 1658 studies met the selection criteria, and 47 studies with 9222 patients were included in the examination (Jackson et al., 2020). Jackson et al. (2020) concluded that patients with higher self-efficacy had less suffering and had a better QoL. Conversely, Jackson et al. (2020) found that lower levels of self-efficacy did not demonstrate the ability to self-manage their disease and were discouraged about their QoL.

Gilkey and Garcia (2010) interviewed a prominent and prolific researcher in the area of self-efficacy and self-management of chronic diseases, Dr. Katie Lorig. Dr. Lorig candidly revealed that physicians and nurses do not have the time to spend educating a patient on their chronic condition and that this lack of patient health education leads to lower levels of self-efficacy thereby causing a lack of self-management of chronic conditions (Gilkey & Garcia, 2010). Dr. Lorig also pointed out the lack of patient health education that health education students may have in how to interact one on one with patients and their families educating them on self-management of their chronic condition (Gilkey & Garcia, 2010). Dr. Lorig felt there was a gap in policy implementation to institute the education of health education students, physicians, and nurses in how to educate the patient (Gilkey & Garcia, 2010). Gilkey and Garcia (2010) state that to accomplish an effective increase in self-efficacy leading to self-management, one must access the current state of the patient's self-efficacy, and knowledge.

Ndosi et al. (2016) conducted a multi-center randomized control study with two groups of RA patients (N=132); one group was given patient health education based on an assessment they took using the ENAT tool and the second group was given general education that was non-specific to their needs. Ndosi et al. (2016) concluded that the purpose of understanding a patient's level of self-efficacy gives understanding as to their level of self-management. Patient health education specific to the level of self-management needs to be done to accomplish a reduction in disease activity and increase a patient's QoL. My study addressed this gap in literature and knowledge by accessing self-efficacy levels of the RA patient and level of patient health education as a foundational step to understanding what patient health education could help improve the RA patient's self-management and QoL.

Self-Management

Holman and Lorig (2004) state that chronic disease is most likely to continue over a person's lifetime, not to be cured, and must be self-managed by the patient over the patient's lifetime to avoid potentially negative consequences to their condition and their daily life. The AHRQ (2013) defined self-management as the patient's ability to deal with everything that having a chronic condition entails, including symptoms, treatment, emotional impact, physical and social consequences, and lifestyle changes. This also includes the interaction with HCP's and the health care system, in general, to effectively manage a chronic condition (AHRQ, 2013). It is noted that barriers to successful self-management could involve cultural norms, lack of health literacy, lack of health care coverage, access to care, lack of education, and other SDOH (AHRQ, 2013). During the early days of the concept of self-management, it was thought that providing general education/health information would improve self-management, but the AHRQ (2013) notes that this has not been shown to improve self-care. Self-efficacy levels, barriers, and educational needs assessment should be investigated to provide the most impactful increase in patient self-management (AHRQ, 2013). Chronic diseases require chronic disease self-management, the definition of which has evolved over the past several decades leading to the inclusion of the control of one's disease process and a patient's HRQOL primarily obtained by an increase in self-efficacy (Miller et al., 2015).

Dineen-Griffin et al. (2019) examined self-management interventions by conducting a systematic review of randomized controlled trials with a total of 58 studies from 18 countries. Specifically, Dineen-Griffin et al. (2019), investigated the involvement of HCPs in the support of self-management with their patients. The study highlighted the importance of self-management in HRQoL as well as the importance of patient/doctor communication (Dineen-Griffin et al., 2019). The study found that HCPs had several barriers to implementing self-management programs, such as time, confidence in the implementation itself, and knowledge required to create a successful self-management outcome (Dineen-Griffin et al., 2019). The authors reflected on the importance of the self-management programs and felt there could be further research on how to create strategic processes for creating successful self-management programs for patients with chronic conditions (Dineen-Griffin et al., 2019).

Garnett et al. (2018) conducted a systematic review of 30 articles published between 2000 and 2017 investigating self-management in community-dwelling older adults, in terms of financial resources needed, acquiring patient health education, involvement of the health care system, and disease management. The authors recalled how self-management began with the development of the SCT and Bandura’s construct of self-efficacy and how health care principles have shifted from a model of illness care to a model of promoting health and sustaining health (Garnett et al., 2018). They concluded that policies need to be changed to incorporate self-management programs within primary care (Garnett et al., 2018), but that better guidelines need to be developed on how to access the creation of these programs.

Van de Velde et al. (2019) looked at ten attributes of self-management conducting a systematic review of the literature in which it was concluded that a more workable definition must be created for self-management (which the authors give an example of) and that the key factors to gaps in literature were that patient health education was needed for the patients and the training that is needed for the HCP. Van de Velde et al. (2019) noted the shift in the World Health Organizations' definition of health from *a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity; to the ability to adapt to one's environment.* They concurred with other scholars that the addition to that definition that should be included is *the ability to adapt and self-manage in the face of social, physical, and emotional challenges (*Van de Velde et al., 2019). Interventions directed towards self-management have been shown to have a positive impact on patient outcomes, however, consensus on the meaning of self-management and how to achieve it is still debatable (Van de Velde et al., 2019).

Health-Related Quality of Life (HRQoL)

The World Health Organization a half a century ago broadly defined health by using mortality or morbidity as a measure of a country's health status (CDC 2021c). Since that time, health scientists and health educators define health as a multidimensional process integrating one's physical, mental, and social health (CDC 2021c). A person's quality of life (QoL) can include health but is much broader in meaning and can include anything from one's environment, relationships, occupation, income, education, etc. (CDC 2021c).

Health-related quality of life (HRQoL) has had an expanded definition since around the 1980's-it included aspects of QoL that impact someone's health (CDC, 2021c). For the RA patient, HRQoL is the umbrella that may include factors such as how well they self-manage their RA, the amount of knowledge they have regarding their disease, and the level of self-efficacy they possess (CDC, 2021b). Samiei et al. (2019) noted that chronic disease contributes to 80% of the global burden of disease and that most of these diseases impaired a patient's HRQoL. Samiei et al. (2019) conducted a cross-sectional study with 625 participants to investigate the QoL (the researcher used Qol and HRQoL interchangeably in this study) of patients with chronic diseases and found that HRQoL should be evaluated as part of the patient's ability to self-manage their disease. Interventions and patient health education should be created and planned based on the results of understanding the barriers and limitations a patient may encounter (Samiei et al., 2019).

Coskun (2018) conducted a literature review on barriers to HRQoL of RA patients' sleep quality. The author noted that proinflammatory cytokines impact the gene function of the regulation of sleep patterns (Coskun, 2018). Decreased sleep can lead to a decreased HRQoL due to fatigue, mood disorders, and increased perception of pain (Coskun, 2018). It was noted that barriers impacting HRQoL for the RA patient, including quality of sleep, should be reviewed by practitioners when assessing an RA patient (Coskun, 2018).

De Almeida Ribeiro Fernandes da Rocha et al. (2020) conducted a systematic review of randomized control studies of interactive digital interventions used for PA and

HRQoL in patients with inflammatory RA. A total of 7056 titles and abstracts were screened for eligibility along with 25 studies (de Almeida Ribeiro Fernandes da Rocha et al., 2020). PA interactive digital interventions did not show success in increased levels of exercise or HRQoL but researchers noted that the studies did not investigate self-efficacy in the patients-which is a gap in the literature and should be investigated further (de Almeida Ribeiro Fernandes da Rocha et al., 2020).

Wang et al. (2021) conducted a study with 191 Chinese patients who had RA using the Brief Illness Perceptions Questionnaire (BIPQ) to measure an RA patient's cognition and perception of their RA. The authors noted that an RA patient's HRQoL is impacted by the patient's illness perception and perceptions of symptoms (Wang et al., 2021). As illness perception decreased, HRQoL measurements decreased (Wang et al., 2021). The authors noted that further study must be done on the many factors that comprise an RA patient's HRQoL, namely a patient's perception of their illness (Wang et al., 2021).

Patient Education

Although pharmacological treatments are used with patients who have RA, patient health education is imperative for an RA patient's HRQoL (Pérez et al., 2020). Pérez et al. (2020) noted that past research has shown that non-directed educational efforts do not positively impact an RA patient's HRQoL, that practitioners should use a tool, such as the ENAT to assess patient health educational needs. Pérez et al. (2020) conducted a multicenter, observational, analytical, cross-sectional study with 496 patients across Spain to assess the needs of the RA patients and utilized the Spanish version of the

ENAT (SpENAT) as one of the assessment tools. Other tools utilized were the disease activity measured by the DAS28, and the functional capacity measured through the health assessment questionnaire-HAQ-A. Pérez et al. (2020) found that higher patient health educational needs were the result of RA patients with higher levels of disease activity, especially in women compared to men ($p = .0023$, $p = .0041$, and $p = .0437$, respectively). However, no difference in emotional needs was found between earlier RA and established RA in pain management (Pérez et al., 2020). In addition, Pérez et al. (2020) noted that RA patients were found to seek after patient health education primarily from their Rheumatologist.

Paterick et al. (2017) found that to have better patient outcomes, physicians must spend more time educating their patients. It has been thought for many years that inadequate health literacy has led to inadequate understanding of patient health education (Paterick et al., 2017). However, Paterick et al. (2017) noted that it is the responsibility of the physicians to put into place the most effective methods of educating patients within their practices. The detriment of patients' low level of health literacy and impaired or inadequate patient health education is critical to patient outcomes, long-term health consequences, and patient self-management (Paterick et al., 2017). Physicians have limited time to spend educating patients and Pérez et al. (2020) stated that RA patients have emotional needs that require a holistic approach to care which should include other health specialists (such as health educators) in their offices to educate patients. Both Paterick et al. (2017) and Ndosi et al. (2016) studies investigated the effects of patient health education based on patient needs and highlighted that there was a reduction in emotional needs with patients who were informed. This gap was addressed in the present study by understanding what the patient health educational needs are of RA patients that participated in the study and what their level of self-efficacy was, in self-managing their RA.

Farley et al. (2019) conducted a study that examined patient health education and shared decision-making between the RA patient and practitioner. The qualitative study was conducted at a rheumatology and clinical immunology clinic at the University of Vermont using a treat-to-target approach with nurses conducting telephonic patient health education with 26 patients (Farley et al., 2019). The researchers found that RA patients benefited from the telephonic calls, however, the study found that RA patients must be given tailored patient health education and that there is a gap in the literature about the type of patient health education to disseminate to RA patients for better patient outcomes (Farley et al, 2019). The current study examined this gap in care by investigating RA patients' current level of patient health education and how that relates to their self-efficacy to self-manage their RA disease daily.

Taibanguay et al. (2019) conducted a 12-week patient health educational intervention with 185 Thai RA patients to improve medication adherence. The 185 participants were divided into two groups; one group received 30-minute directed counseling and a disease information pamphlet about medication adherence, and the other group received the pamphlet alone (Taibanguay et al., 2019). All participants were required to complete a medication-taking behavior (MTB) questionnaire (Taibanguay et al., 2019). At the end of the 12 weeks, both groups showed significant improvement in medication adherence, however only the counseled group showed improvement in their MTB score. The difference in the MTB scores was not significant. Taibanguay et al. (2019) concluded that the reason for this outcome could be that the study did not consider the patient's previous knowledge or level of beliefs (self-efficacy) of their disease state and that a more successful outcome could be obtained by furthering the understanding of the patient's emotional needs and a relationship between practitioner and the patient.

Lineker et al. (2019) conducted an online needs assessment with 333 practitioners in Canada to improve primary care providers' recommendations/adherence to arthritis best practices and increase confidence and satisfaction with their ability to manage arthritis since Canada has difficulty in reaching providers in remote areas of the country. It was noted by Lineker et al. (2019) that providers felt a lack of confidence in how to properly educate and treat their patients, which inspired the development of the Getting a Grip on Arthritis (GRIP). Furthermore, clinical practice guidelines (CPGs) were developed to address the issue of the continual updating of arthritis medical information that can be used by practitioners to deliver optimal care to the RA patient (Lineker et al., 2019). Lineker et al. (2019) reported that arthritis care showed improvement from the health education that the survey and guidelines provided the practitioners, and that learning modules would be updated as new information is received in a web-based medical education program to HCPs across Canada (Lineker et al., 2019).

Beauvais et al. (2019) conducted a multi-centric survey involving both a literature review and second distributing a survey among patients with RA, spondylarthritis, psoriatic arthritis to investigate which knowledge is considered essential for patients to manage their arthritis. Beauvais et al. (2019) found that general knowledge is important, but more research should be done on a patients' decision-making skills and having a multidisciplinary team that can deliver specified directed patient health education. Furthermore, Beauvais et al. (2019) stated that patient health education is an essential part of an RA patient's ability to self-manage their disease, however, a gap in the literature exists on "which" knowledge/patient health education a patient may need. The current study addressed this gap in the literature.

Summary and Conclusions

The literature reviewed showed that patient health education can increase the level of self-efficacy of an RA patient along with more positive health outcomes such as pain reduction and medication adherence. However, the literature also points out that there are gaps in the research and the authors recommend further study in patient health education of RA patients. The current study examined this gap in care by investigating RA patients' current level of patient health education and how that relates to their self-efficacy to self-manage their RA disease daily.

Chapter 3 discusses the methodology of the study, including the research design, sample size, and recruitment procedures. The chapter also outlines the instrumentation and data analysis plan. It concludes with a discussion on threats to validity and ethical concerns.

Chapter 3: Research Method

Introduction

The purpose of this quantitative study was to investigate RA patients' current level of patient health education and how that relates to their self-efficacy to self-manage their RA disease daily. The study may provide knowledge concerning an RA patient's health education that they have received to self-manage their RA and their levels of self-efficacy. This knowledge could shed light on barriers that could impair patients' daily activities. Health educators could develop patient health education from the results of the study that could be used to increase RA patients' QoL.

In Chapter 3, I provide detailed information about the methodology and design of this study. The variables, the connection of the RQs to the research design, the target population, and the population size are discussed. I address the sampling criteria and power analysis along with the tool used for determining the sample size. A thorough discussion about recruitment procedures, informed consent, and how the data were collected is presented. The chapter concluded with a summary of the information presented in it.

Research Design and Rationale

This quantitative descriptive research study featured a nonexperimental cross-sectional survey design using an online survey (see Appendix A). The independent variables were self-efficacy and patient health education. Self-management was the dependent variable. Survey design is appropriate for quantitative research, and this study in particular, due to access to patients from a rheumatology clinic and the Facebook page named Rheumatoid Arthritis Group (see Burkholder et al., 2016). Researchers often use a survey design to collect data concerning attitudes or perceptions (Burkholder et al., 2016). Using a survey design, I explored the relationship between RA patients' self-efficacy, patient health education received, and self-management. A survey design is also appropriate for quickly and inexpensively obtaining information (Burkholder et al., 2016). Quantitative survey researchers can advance the field of social science by obtaining data concerning a specific population to improve the HRQoL of that population (see Burkholder et al., 2016).

Methodology

Population

I conducted this research using a convenience sample of patients with RA from rheumatology clinics and other physician offices as well as the Facebook group named Rheumatoid Arthritis Group. To be eligible, an individual had to be (a) a person who had been diagnosed with RA, (b) an adult 18 years of age or older, (c) currently seeing a practitioner for RA, (d) English speaking, and (e) a U.S. citizen. I performed an a priori power analysis using G*Power Version 3.1 to determine the minimum sample size required. The power analysis showed that a minimum sample size of 80 was adequate to test the hypotheses. Therefore, a sample size of 100 was the goal for the sample size.

Sampling and Sampling Procedures

This quantitative descriptive research study featured a nonexperimental cross-sectional survey design using nonprobability convenience sampling. I used the nonprobabilistic convenience sampling technique because the sample of participants was convenient and available through patients at doctors' offices and the Facebook page called Rheumatoid Arthritis Group (see Lavrakas, 2008). Convenience samples have less clear generalizability relative to probability samples, but they are inexpensive and easy to implement (Jager et al., 2017). The inherent bias of a convenient sample is that it may not be representative of the larger population (Laerd Dissertation, 2012). An a priori analysis was conducted using G*Power to estimate the sample size for the number of participants for this research study. In G*Power, the goodness-of-fit test-contingency tables were used for the chi-square test with an effect size of 0.5, error probability of 0.05, and power of 0.95. The G*Power analysis revealed that a minimum sample size of 80 was adequate for this study. However, I sought to obtain a sample size of 100.

Procedures for Recruitment, Participation, and Data Collection

I recruited participants using a flyer (see Appendix B) that was distributed to the rheumatology clinic, other physicians' offices, and the Facebook group Rheumatoid Arthritis Group. The recruitment flyer was distributed to the patients in the rheumatology clinic and other physicians' offices as they checked out from their office visit by the receptionist. The flyer was also posted within the physicians' offices on bulletin boards approved by the office managers. The flyer contained a link to the online survey, which included the consent form to participate. The recruitment flyer was also posted on the Facebook page for the Rheumatoid Arthritis Group with the embedded survey link. A screening question at the beginning of the survey asked if potential participants had previously completed the survey. The recruitment goal was a sample size of 100 participants. Walden University Institutional Review Board’s approval number for this study was 04-26-22-0730978, with an expiration date of April 25, 2023.

I designed the online questionnaire using reliable and valid tools/scales, most especially the ASES, which was developed to measure a patient's belief/self-efficacy that they could manage daily activities despite possible pain (Brady, 2011; Lorig et al., 2004; Stanford Patient Education Research Center, n.d). Demographics, such as race, age, geographical location, education level, and marital status of participants, were collected using items from Section 8 of the 2020 BRFSS (CDC, 2021b). The SCBS was used to measure the dependent variable, self-management (Nadrian et al., 2019). In addition, items on RA from Section 7 of the 2019 BRFSS were included referring to possible patient health education received by the RA patient (CDC, 2019b). Additionally, questions from the ENAT were used to investigate patient health education received by the RA patient and/or the patient health education desired (Pérez et al., 2020). A copy of the questionnaire is included in Appendix A. The online survey was housed in SurveyMonkey. Potential participants were provided with a link to the survey via the recruitment flyer (see Appendix B). A screening question at the beginning of the survey asked if they had previously completed the survey.

In addition to descriptive analysis, I used a chi-square test to analyze the research data. SPSS software Version 28 was used for analysis. The data were collected via the survey with no personally identifiable information of the participants. The participants were involved with the study for the survey only. Follow-up with the participants, the physicians' offices, and Facebook group occurred through the sending of a brief summary of the results and social implications of the research.

Instrumentation and Operationalization of Constructs

I used several instruments in the research study. These included the SCBS developed by Nadrian et al. (2019), the ASES developed by Lorig et al. (1989), the BRFSS developed by the CDC (2021b), and the ENAT developed by Ndosi et al. (2014). These scales were directly related to the variables in this research study. The independent variables were self-efficacy and patient health education. Self-management was the dependent variable. The survey was available online via the link provided to the participants and did not require any special requirements or tools. Instructions were provided to the participants, including the approximate time of 15 minutes to complete the survey.

Self-Care Behaviors Scale (SCBS)

The SCBS was developed by Nadrian et al. (2019) from an earlier version of a self-care behavior scale in 2011 that was invalidated with the concern that there was no valid and reliable instrument in the literature at that time, to assess self-care (self-management) among RA patients. Nadrian et al. (2019) conducted a 9-month study with 436 RA patients from a rheumatology clinic in Hamadan, Iran. A first draft was piloted with 30 questions to an expert panel and then a second draft to 41 RA patients with 25 questions. They performed Pearson's Correlation Coefficient, EFA, CFA, and Internal Consistency Reliability tests, and the level of significance was considered 0.05, a priori (Nadrian et al., 2019). The Cronbach's alpha coefficient of 0.7 or above was considered to be acceptable (0.85 and 0.74) (Nadrian et al., 2019). This SCBS was appropriate for this study as it was found to have an appropriate level of reliability, validity, simplicity, and functionality, as well as being noted as the only valid and reliable scale free to use specifically for self-care of RA patients (Nadrian et al., 2019). To measure the dependent variable, self-management, I converted the scoring of the SCSB scale to three levels of self-care—80 and above (managing well), 50-79 (moderately managing), and 49 and below (poorly managing)—using the chi-square test in SPSS (see Nadrian et al., 2019).

Arthritis Self-Efficacy Scale

The ASES was the first arthritis-specific scale to be developed to measure self-efficacy (Brady, 2011). Lorig et al. (1989) developed the ASES after evaluating the completion of an Arthritis Self- Management Course (ASMC), and upon first evaluation found participants who took the ASMC experienced less pain than the control groups. However, upon further evaluation looking at behavior change concerning health status, it was discovered that half of the participants felt that they could make behavior changes to decrease pain and the other half felt they had no control over the pain or circumstances (Lorig et al., 1989). Lorig et al. (1989) realized that the concept of self-efficacy played a role in the success of the participants in the ASMC courses, therefore they sought to develop a valid and reliable scale to measure self-efficacy. The ASES was appropriate for this research study as it is still the most widely used arthritis self-efficacy scale and was originally designed to measure changes in SE after receiving patient health education (Brady, 2011). The ASES is free to use without permission and can be found on the Stanford Patient Education Research Center website (n.d). The ASES's longer version has 20 items, however, the 8-item shorter version was utilized in this study (Brady, 2011; Stanford Patient Education Research Center, n.d). The 8- item ASES is a Likert scale and is scored using a 1-10 range with a higher score correlating with higher self-efficacy (Brady, 2011; Stanford Patient Education Research Center, n.d). The ASES was analyzed using the chi-square test to investigate the association of the independent variable self-efficacy to the dependent variable self-management (SCBS scale), with a conversion of the scoring of the ASES scale to three levels: low self-efficacy (1, 2, 3, 4), moderate self-efficacy (5, 6), and high self-efficacy (7, 8, 9, 10). Wilcox et al. (2014) examined the psychometric properties of the eight-item English version of the ASES (ASES-8) with 401 participants who had been diagnosed with arthritis and concluded that the ASES was a valid and reliable research tool with an internal consistency which was high for measures of Cronbach's alpha (0.87 to 0.94).

Behavioral Risk Factor Surveillance System (BRFSS) Questionnaire

During the 1980s scientists began realizing the impact health behaviors had on chronic disease prevalence, morbidity, and mortality (CDC, 2014). By 1993, the BRFSS became a nationwide telephone survey surveillance system (CDC, 2014). By 2011, cell phone surveys were included for people who did not have landlines available (CDC, 2014). In public health, the BRFSS remains the *gold standard* for data collection and occurs monthly in all 50 states (CDC, 2014). The BRFSS is available for free public use (CDC, 2014). In 2019, 418,268 non-institutionalized adult individuals ages 18 years of age and older were surveyed, and in 2020 over 400,000 participants were surveyed (CDC, 2020a). Questions from the 2019 BRFSS in the Core Section 7: Arthritis, such as;

Have you (as written in BRFSS) (Ever told) (you had) ever been told that you have some form of arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia? And have you ever taken an educational course or class to teach you how to manage problems related to your arthritis or joint symptoms? (CDC, 2019b). Core section 8 of the 2020 BRFSS were used for demographic information, such as; Are you 18 years of age or older? Are you male or female? (CDC, 2021b). The BRFSS scale for age was converted from seven categories to two categories: 54 or younger and 55 and above-due to the limited sample size. The BRFSS scale for race was converted to three categories: White, Black or brown, and another race. The BRFSS scale for education level was converted to three categories: less than high school, high school, and college. Lastly, the BRFSS scale was converted into two categories: U.S. mainland and U.S. territory.

Educational Needs Assessment Tool (ENAT)

I received permission from the University of Leeds on October 27, 2021, to use the ENAT tool (see Appendix C). The ENAT was developed in the United Kingdom and was designed to measure the educational needs of rheumatic patients and contains 39 questions rated on a Likert scale from *not at all important to extremely important* (Ackerman, 2016; The University of Leeds, 2021). Scientists and researchers have begun to realize the importance of understanding a patient’s health educational needs for a variety of reasons, including rising medical costs; but mostly due to the research supporting the fact that patients with RA need help coping with the many changes the body undergoes in this disease (Ndosi & Adebajo, 2015). Ndosi and Adebajo (2015) note that RA patients have a range of patient health educational needs which could be dependent on a multitude of factors, such as stage of the disease. Some RA patients may need patient health education on medication management, for example, and others may need patient health education on self-management and self-efficacy concepts of behaviors, attitudes, or perceptions- for these reasons, this tool was appropriate for this study (Ndosi & Adebajo, 2015). Ndosi et al. (2014) tested the validity of the ENAT in a large sample (3015) of European Rheumatic patients and found a high level of internal consistency (Person Separation Index above 0.90), validity, and reliability of the ENAT. Sung (2021) studied the validity of the ENAT and found that the *internal consistency was high (Cronbach's alpha, 0.92), and unidimensionality was confirmed (person separation index, 3.4; reliability index, 0.92/item separation index, 16.82; reliability index, 1.00*). The ENAT has been translated into at least 9 languages with strong cross-cultural validation (Ackerman, 2016). Some examples of the questions that were included in the ENAT section are; how important is it for you to know more about the following: What might have caused your arthritis? Why am I taking medications? How might appliances help me (splints, adaptations, collars)? Ways to deal with stress? The ENAT was scored using descriptive statistics and scored as described by The University of Leeds (2021); with the scoring of each of the seven domains of patient health education into levels of importance: Not at all important/little importance and important.

Data Analysis Plan

This quantitative, non-experimental cross-sectional survey design study was conducted using a convenience sample of patients with RA from rheumatology clinics, other physician offices, and an RA Facebook group with 68,000 members. The selection criteria were 1) individuals who have been diagnosed with RA, 2) adults 18 years of age or older, 3) adults receiving current RA treatment, 4) English-speaking only, 5) Facebook participants must be a member of the RA Facebook group, and 6) must be a U.S. citizen. An a priori analysis was conducted using G*POWER to estimate the sample size for the number of participants for this research study. In G*POWER, the goodness-of-fit test-contingency tables were used for the Chi-Square test (X^2) with an effect size of 0.5, error probability of 0.05, with the power= 0.95. The G*POWER analysis revealed a minimum sample size of 80 for this study. Therefore, the student researcher had a goal to achieve a sample size of 100. The non-parametric chi-square test was used to test the association between self-efficacy and self-management as well as the association between patient health education and self-management. Descriptive statistics were used to identify the patient health education needs of RA patients. Data were analyzed using the SPSS Version 28 software.

The independent variables include self-efficacy, and patient health education received. The dependent variable was self-management. An online questionnaire was designed using reliable and valid tools/scales; the ASES-which was developed to measure a patient's belief/self-efficacy that they could manage daily activities despite possible pain (Brady, 2011; Lorig et al., 2004; Stanford Patient Education Research Center, n.d.). Demographics, such as race, age, and marital status of participants, were collected using items from Section 8 of the 2020 BRFSS (CDC, 2021b). The SCBS was used to measure the dependent variable, self-management, with a conversion of the scoring of the SCSB scale to 3 levels of self-care: 80 and above – Managing Well; 50-79

– Moderately Managing; 49 and below – Poorly Managing (Nadrian et al., 2019). In addition, items on RA from Section 7 of the 2019 BRFSS were included referring to possible patient health education received by the RA patient (CDC, 2019b). Additionally, questions from the ENAT were used to investigate patient health education received by the RA patient and/or the patient health education desired (Edworthy, Devins, & Watson, 1995). A copy of the questionnaire is included in Appendix A. The online survey was housed in SurveyMonkey.

Threats to Validity

This study was descriptive; the variables were not manipulated nor was their manipulation of the environment of the participants (Drummond & Murphy-Reyes, 2018). However, survey research can be weak in terms of validity as participants' answers may not fit into a category of strongly agree to strongly disagree (Babbie, 2015). Conversely, survey research can be strong in reliability with the elimination of researcher bias or inaccurate observations (Babbie, 2015). Another threat to validity would be a sample size too small or too large to make inferences about the population (Statistics Solutions, 2021). Recruitment was to continue until the target sample size of 100 was achieved.

Ethical Procedures

Ethical procedures were followed to ensure that the personally identifiable information) of participants was protected, scientific integrity was maintained, and the human rights of the participants were upheld. Patients were informed that their responses would not be linked to them. The risks to the participants were minimal and included in the informed consent at the beginning of the survey. The researcher did not have access to the participant's personally identifiable information or email addresses. The data will be stored on the researcher’s computer that is password protected and destroyed after Walden University’s required 5 years after the study. Only my committee chair, Walden University’s Institutional Review Board, and I will have access to the data. Participants were able to opt out of the study at any point. The study was 100% voluntary. Participants were given my email address should they have any questions regarding the instructions for the survey or the content therein. The phone number for Walden University’s research participant advocate was provided in the consent form.

Summary

This quantitative descriptive research study used a non-experimental cross-sectional survey design with an online survey (see Appendix A). The independent variables of this study were self-efficacy and patient health education. Self-management was the dependent variable. The target sample size for this study was 100, with a minimum sample size of 80. The survey was created using a combination of instruments/tools; the BRFSS (2015, 2019 and 2020), the ASES, and the ENAT. Recruitment for this study was to continue until the desired sample size was obtained.

Chapter 4 reports the results of this study, the time frame for data collection, recruitment and response rates, and any discrepancies in the collection of data compared to the outlined plan in Chapter 3. Chapter 4 also includes the descriptive demographic data of the sample, any adverse events that occurred with data collection, and statistical data in graphic form.

Chapter 4: Results

Introduction

The purpose of this quantitative study was to examine the association between self-efficacy, patient health education, and self-management among patients with RA. Knowledge gained from this study concerning RA patients, self-efficacy, patient health education, and self-management could shed light on barriers that could impair patients' daily activities. Health educators could develop patient health education from the results of the study that could be used to increase RA patients' QoL. The independent variables of this study were self-efficacy and patient health education. Self-management was the dependent variable. The following were the RQs and hypotheses for this study.

RQ1: What is the association between self-efficacy and self-management?

$H_0 1$: There is no association between self-efficacy and self-management.

RQ2: What is the association between patient health education and self-management?

$H_0 2$: There is no association between patient health education and self-management.

RQ3: What patient health education do RA patients want or need?

$H_0 3$: RA patients do not need patient health education.

In Chapter 4, I will discuss data collection and present results and a summary of the answers to the RQs.

Data Collection

This quantitative descriptive research study featured a nonexperimental cross-sectional survey design using nonprobability convenience sampling. I conducted this research using a convenience sample of patients with RA from rheumatology clinics and other physician offices as well as the Facebook group named Rheumatoid Arthritis Group. To be eligible, an individual needed to be (a) a person who had been diagnosed with RA, (b) an adult 18 years of age or older, (c) currently seeing a practitioner for RA, (d) English speaking, and (e) a U.S. citizen. I performed an a priori power analysis using G*Power Version 3.1 to determine the minimum sample size required. In G*Power, the goodness-of-fit test-contingency tables were used for the chi-square test with an effect size of 0.5, error probability of 0.05, power of 0.95. The G*Power analysis revealed that a minimum sample size of 80 was adequate for this study. A total sample size of 81 was achieved.

I recruited participants using a flyer (see Appendix B) that was distributed to the rheumatology clinic, other physicians' offices, and the Facebook group Rheumatoid Arthritis Group. The recruitment flyer was distributed to the patients in the rheumatology clinic and other physicians' offices as they checked out from their office visit by the receptionist. The flyer was also posted on a bulletin board in the physician's office. The flyer contained a link to the online survey. The survey was housed in SurveyMonkey and included the consent form to participate. The recruitment flyer was also posted on the Facebook page Rheumatoid Arthritis Group with the embedded survey link. A screening question at the beginning of the survey asked if the survey taker had previously completed the survey. The survey took an average of 11 minutes to complete. I shared a follow-up summary of the data results with the participants, the physicians' offices, and the Facebook group.

I collected demographics, such as gender, race, age, geographical location, and education level of participants, using items from Section 8 of the 2020 BRFSS (CDC, 2021b). Items from Section 7 of the 2019 BRFSS (CDC, 2019b) were included referring to possible patient health education received by the RA patient. The descriptive analysis, and the non-parametric chi-square test used for the analysis of the data, were analyzed using the SPSS software Version 28. Data collection took place over 6 weeks with a response of 81 surveys. This response rate fell short of the 100 surveys that I was hoping for, but it was within the allowable minimum sample size.

The overall demographics showed that a majority of the population were White (92.6%) women (93.8%) who were college-educated (86.4%), over the age of 55 (67.9%), and lived on the U.S. mainland (98.8%). This survey was distributed to all U.S. citizens who were members of the Rheumatoid Arthritis Facebook page; therefore it was not limited to one geographical area or demographic group. This overall demographic finding correlates with research indicating that women may have more dominant predisposing factors that enhance their chances of having RA (Laivoranta-Nyman et al., 2001). The Johns Hopkins Arthritis Center (2021) also reported that for late onset of RA (over the age of 55), the population is predominantly women.

Results

Statistical Assumptions

This nonparametric chi-square test was the appropriate test to use as it fulfills the two statistical assumptions for the chi-square test: The variables are nominal or categorical and have two or more independent groups (Laerd Statistics, 2018). I calculated the sample size using G*Power analysis, which revealed that a minimum sample size of 80 was adequate for this study. I achieved a sample size of 81. The chi-square test was appropriate because I was investigating the association between categorical variables (see Laerd Statistics, 2018).

Descriptive Statistics

I collected demographics, such as gender, race, age, geographical location, and education level of participants, using items from Section 8 of the 2020 BRFSS (CDC, 2021b) as seen in Table 1. Most of the 81 participants were women (75; 92.6%). There were 76 participants who were White (95%). The majority of participants were over the age of 55 (68.8%). Eighty participants (100%) were citizens of the United States. The majority of participants were college-educated (86.4%). In addition, items on RA from Section 7 of the 2019 BRFSS were included referring to possible patient health education received by the RA patient (CDC, 2019b). The outcome of this descriptive analysis was insightful as it showed that 70 participants (86.4%) had never taken a patient education course or class to teach them how to manage their RA. Table 1 provides a summary of the demographic characteristics of the participants.

Table 1

Descriptive Characteristics of Participants

Characteristic	*n*	%
Gender		
Male	6	7.4
Female	75	92.6
Total	81	100
Race		
White	76	95
Black/Brown	4	5
Total	81	100
Age		
54 or younger	25	31.3
55 and older	55	68.8
Total	81	100
U.S. residency		
U.S. mainland	80	100
Total	81	100
Education level		
Less than high school	3	3.7
High school	8	9.9
College	70	86.4
Total	81	100
Taken an educational course or class on how to manage arthritis		
Yes	11	13.6
No	70	86.4
Total	81	100

I analyzed RQ3 (What patient health education do RA patients want or need?) using descriptive frequency tables and were run for each of the seven domains of the ENAT (managing pain, movement, feelings, arthritis, treatments, self-help, and support (see Table 2). ENAT Domain 1 indicated that 55 out of the 81 (67.9%) participants felt that patient health education about managing pain was important. ENAT Domain 2 indicated that 49 out of the 81 (60.5%) participants felt that patient health education about movement was important. ENAT Domain 3 indicated that 45 out of the 81 (55.6%) participants felt that patient health education about feelings was important. ENAT Domain 4 indicated that 50 out of the 81 (61.7%) participants felt that patient health education about arthritis was important. ENAT Domain 5 indicated that 46 out of the 81

(56.8%) participants felt that patient health education about treatments was important. ENAT Domain 6 indicated that 46 out of the 81 (56.8) participants felt that patient health education about self-help was important. ENAT Domain 7 indicated that 42 out of the 81 (51.9%) participants felt that patient health education about support was important. In all seven domains, more than half of the 81 participants indicated that patient health education was important to them. This finding contains important information for the researcher and the HCP that over half of the participants in this study felt they needed or wanted more patient health education. Table 2 is a frequency table of the seven domains of the ENAT.

Table 2

Frequencies of the Seven Domains of the ENAT

ENAT domain	*n*	%
Domain 1: Managing Pain		
Not at all/Little importance	26	32.1
Important	55	67.9
Total	81	100
Domain 2: Movement		
Not at all/Little importance	32	39.5
Important	49	60.5
Total	81	100
Domain 3: Feelings		
Not at all/Little importance	36	44.4
Important	45	55.6
Total	81	100
Domain 4: Arthritis		
Not at all/Little importance	31	38.3
Important	50	61.7
Total	81	100
Domain 5: Treatments		
Not at all/Little importance	35	43.2
Important	46	56.8
Total	81	100
Domain 6: Self-Help		
Not at all/Little importance	35	43.2
Important	46	56.8
Total	81	100
Domain 7: Support		
Not at all/Little importance	39	48.1
Important	42	51.9
Total	81	100

Note. ENAT = Arthritis Educational Needs Assessment Tool.

Statistical Analysis for Chi-Square Test

I analyzed RQ1 (What is the association between self-efficacy and self-management) using the chi-square test, which I performed in SPSS. The association between these variables was not significant, X^2 (2, n = 81) = 1.04, p = .594 (see Table 3). One cell did not have the expected count (3.78) and the Cramers V value (.113) showed a weak association. The test did not show statistical significance, therefore I failed to reject the null hypothesis which was: *There is no association between self-efficacy and self-management.*

I also used SPSS to perform the chi-square test for RQ2 (What is the association between patient health education and self-management). To do this, patient education was divided up into the seven scoring sections/or domains for the ENAT scale: managing pain, movement, feelings, arthritis, treatment from health care providers, self-health/help measures, and support from others. Each of these domains was tested against the SCBS.

Domain 1 of the ENAT was managing pain. The Chi-Square results showed that all expected counts met the 5 or above count, with a Cramers V showing a weak association. The association between these variables was not statistically significant, X^2 (1, n = 81) = 2.215, p = .137. Therefore, I failed to reject the null hypothesis which was: *There is no association between patient health education and self-management (managing pain domain).*

Domain 2 of the ENAT was movement and the Chi-Square test showed that zero cells had the expected count of less than 5 with a Cramers V of .336-indicating a strong association. The association between these variables was statistically significant, X^2 (1, n

= 81) = 9.149, p = .002. Therefore, the null hypothesis was rejected. Participants (60.5%) indicated that learning more about movement patient education was important to them.

Domain 3 of the ENAT was feelings and the Chi-Square test showed that zero cells had the expected count of less than 5 with a Cramers V of .246-indicating a moderate association. The association between these variables was statistically significant, X^2 (1, n = 81) = 4.907, p = .027. Therefore, the null hypothesis was rejected. An important piece of data to look at in this analysis was that 68.9% of the participants that were poorly managing indicated that it was important to learn more about managing their feelings.

Domain 4 of the ENAT was arthritis and the Chi-Square test showed that zero cells had the expected count of less than 5 with a Cramers V of .102-indicating a weak association. The association between these variables was not statistically significant, X^2 (1, n = 81) = .848, p = .357. Therefore, I failed to reject the null hypothesis which was: There is no association between patient health education and self-management (arthritis).

Domain 5 of the ENAT was treatment options from their HCP, and the Chi-Square test showed that zero cells had the expected count of less than 5 with a Cramers V of .218-indicating a weak association. The association between these variables was statistically significant, X^2 (1, n = 81) = 3.835, p = .05. Therefore, the null hypothesis was rejected. Participants (67.4%) that were poorly managing indicated a desire to learn more about treatment options from the HCP.

Domain 6 of the ENAT was self-help/health and the Chi-Square test showed that zero cells had the expected count of less than 5 with a Cramers V of .218-indicating a weak association. The association between these variables was statistically significant, X^2 (1, *n* = 81) = .3.835, *p* = .05. Therefore, the null hypothesis was rejected. The majority of the participants (56.8%) indicated that it was important to have patient health education around learning more about self-care/self-health.

Domain 7 of the ENAT was support and the Chi-Square test showed that zero cells had the expected count of less than 5 with a Cramers V of .182-indicating a weak association. The association between these variables was not statistically significant**,** X^2 (1, *n* = 81) = 2.675, *p* = .102 (see Table 3). Therefore, I failed to reject the null hypothesis which was: There is no association between patient health education and self-management (support). Interestingly, about half of the participants felt that support from others was not important or had little importance (48.1%) and half indicated that having support from others was important (51.9%).

Table 3

Chi-Square Test Results

Domain (D no.)	Value	*df*	Cramers V	Significance
ASES > SCBS	1.04	2	.113	.594
ENAT > SCBS-D1	2.21	1	.165	.137
ENAT > SCBS-D2	9.149	1	.336	.002
ENAT > SCBS-D3	4.907	1	.246	.027
ENAT > SCBS-D4	.848	1	.102	.357
ENAT > SCBS-D5	3.835	1	.218	.05
ENAT > SCBS-D6	3.835	1	.218	.05
ENAT > SCBS-D7	2.675	1	.182	.102

Note. ASES = Arthritis Self-Efficacy Scale; SCBS = Self-Care Behaviors Scale; ENAT = Arthritis Educational Needs Assessment Tool.

Summary

The purpose of this study was to examine the association between self-efficacy, patient health education, and self-management. No association was found between self-efficacy and self-management (p = .594). Four out of the seven ENAT domains (2, 3, 5, and 6: movement, feelings, treatments, self-help) were statistically significant. Frequency tables were run in SPSS for each of the seven domains of the ENAT (managing pain, movement, feelings, arthritis, treatments, self-help, and support). In the seven domains, more than half of the 81 participants indicated that patient health education was important to them. Chapter 5 reiterates the purpose of this study, interpretation of the study findings, limitations of the study, recommendations for future research, and the social implications.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this quantitative study was to examine the association between self-efficacy, patient health education, and self-management among patients with RA. I conducted this nonexperimental cross-sectional survey design study using a convenience sample of patients with RA from a rheumatology clinic and an RA Facebook group with 68,000 members. To be eligible for the study, individuals had to be (a) person who had been diagnosed with RA, (b) an adult 18 years of age or older, (c) currently seeing a practitioner for RA, (d) English speaking, and (e) a U.S. citizen. The SCT was the theoretical framework (Glanz et al., 2015). The independent variables included self-efficacy and patient health education. The dependent variable was self-management. Knowledge gained from this study concerning RA patients' self-efficacy, patient health education, and self-management could shed light on barriers that impair patients' daily activities. With this knowledge, health care professionals may be able to devise better patient education that has a positive impact on their HRQoL.

To summarize the findings, RQ1 (What is the association between self-efficacy and self-management?) was not found to be statistically significant. RQ2 (What is the association between patient health education and self-management?) was divided into seven scoring domains with a separate chi-square test run for each of these domains. Four out of the seven domains (2, 3, 5, and 6: movement, feelings, treatments, self-help) were statistically significant. To answer RQ3 (What patient health education do RA patients want or need?), I ran frequency tables for each of the seven domains of the ENAT (managing pain, movement, feelings, arthritis, treatments, self-help, and support. In all seven domains, more than half of the 81 participants indicated that patient health education was important to them. In Chapter 5, I will interpret the study findings, discuss the limitations of the study, offer recommendations for future research, and consider the study's implications for positive social change.

Interpretation of the Findings

Although previous researchers (Allegrante, 2018; CDC, 2019d; Dunet & Butterfoss, 2005; Flora et al., 2016; U.S. Department of Health and Human Services, 2015) have studied education for patients with chronic conditions, there is scarce research regarding the relationship between self-efficacy, patient health education, and perception of self-management in RA patients.(Bearne et al., 2017; Beauvais et al., 2019; Denneson et al., 2019; Ndosi et al., 2016; Nessen et al., 2019; Samueli Foundation Integrative Health Programs, 2019; Senara et al., 2019; Thom et al., 2016). In this study, I addressed this gap by building on the historical research done on RA patients' self-efficacy and their ability to self-manage their disease state. Patient health education after diagnosis and baseline self-efficacy were the independent variables, and self-management was the dependent variable.

I collected demographics, such as gender, race, age, geographical location, and education level of participants, using items from Section 8 of the 2020 BRFSS (CDC, 2021b) as seen in Table 1 in Chapter 4. Of a total of 81 participants, 75 were women (92.6%), and 76 participants were White (95%). The majority of participants were over the age of 55 (68.8%). All participants were citizens of the United States. The majority of participants were college-educated (86.4%). In addition, items on RA from Section 7 of the 2019 BRFSS were included referring to possible patient health education received by the RA patient (CDC, 2019b). The outcome of this descriptive analysis was insightful as it showed that 70 participants (86.4%) had never taken a patient education course or class to teach them how to manage their RA. Table 1 provides a summary of the demographic characteristics of the participants.

Farley et al. (2019) conducted a study that examined patient health education and shared decision-making between the RA patient and practitioner. The study found that RA patient's desire tailored patient health education and that there is a gap in the literature about the type of patient health education to disseminate to RA patients for better patient outcomes. In the current study, RQ3 addressed this analysis and outcomes. The seven domains of the ENAT (managing pain, movement, feelings, arthritis, treatments, self-help, and support) were analyzed using descriptive statistics (see Table 2). Patient health education about managing pain (Domain 1) was the most important to the survey participants (67.9%). Patient health education about movement (Domain 2) was important to 60.5% of the participants. Domain 3 indicated that 55.6% of the participants felt that patient health education about feelings was important. Patient health education about arthritis (Domain 4) was important to 61.7% of the participants. Having options about treatments for RA patients was important to 56.8% (Domain 5) of the participants. Patient health education around self- help (Domain 6) was important to 56.8% of the survey participants. Last, having patient health education about support

(Domain 7) was important to 51.9% of the participants. In all seven domains, more than half of the 81 participants indicated that patient health education was important to them.

A majority of the population were White women who were college-educated and over the age of 55 and lived on the U.S. mainland. This survey was distributed to all U.S. citizens who were members of the Facebook page; therefore it was not limited to one geographical area or demographic group. This overall demographic finding correlates with research indicating that women may have more dominant predisposing factors that enhance their chances of having RA (Laivoranta-Nyman et al., 2001). Johns Hopkins Arthritis Center (2021) also reported that for late onset of RA (over the age of 55), the population is predominantly women.

Although RQ1 (What is the association between self-efficacy and self-management?) was not statistically significant, it yielded insightful findings. The findings from the current study are consistent with findings in the reviewed literature and the context of the SCT. Gilkey and Garcia (2010) stated that to accomplish an effective increase in self-efficacy leading to self-management, one must access the current state of the patient's self-efficacy, and knowledge. This survey was completed without a baseline knowledge of the participant's level of self-efficacy before they were diagnosed with RA. Sessford et al. (2019) conducted a quasi-experimental study with 86 patients to investigate the impact that the SCT had on arthritis patients overcoming barriers by having a high level of self-efficacy. Patients with lower levels of self-efficacy had a greater perception of barriers to exercise adherence to improve their RA symptoms than those with a higher level of self-efficacy. Furthermore, Sessford et al. suggested that further research be conducted on assessing levels of self-efficacy in the RA patient early in the diagnosis to address potential barriers. The current study showed that only 11.1% of the surveyed participants had high self-efficacy, and four out of the seven ENAT domains (2, 3, 5, and 6: movement, feelings, treatments, self-help) were statistically significant; one was movement. The participant results showed that the four statistically significant domains were areas of greatest interest in patient education desired. In future studies, researchers could look directly at the association between self-efficacy and patient education.

Regarding the dependent variable, self-management, it is noted that barriers to successful self-management could involve cultural norms, lack of health literacy, lack of health care coverage, access to care, lack of education, and other SDOH (AHRQ, 2013). Initially, researchers' conceptualized self-management as providing general education/health information would improve self-management, but the AHRQ (2013) noted that this has not been shown to improve self-care. Self-efficacy levels, barriers, and educational needs assessment should be investigated to provide the most impactful increase in patient self-management (AHRQ, 2013). Further research could be conducted on baseline SDOH when assessing self-efficacy, self-management, and patient health education.

I divided RQ2 (What is the association between patient health education and self-management?) into seven scoring domains with a separate chi-square test run for each of these domains. Four out of the seven domain (Domains 2, 3, 5, and 6: movement, feelings, treatments, self-help) were statistically significant. Interestingly, about half of the participants felt that support from others was not important or had little importance (48.1%), and half indicated that having support from others was important (51.9%).

The findings from the current study are consistent with findings in the reviewed literature and the context of the SCT. The RA patient's behavioral capability (a construct of the SCT) can be influenced by not only the patient health education they receive but their understanding of how to apply that education in their day-to-day lives (Boston University School of Public Health, 2019). Therefore, it is a logical conclusion that RA patients must not only have patient health education provided to them, but they also must understand how to apply that education to their daily lifestyle and feel confident that they can practice those learned behaviors (Boston University School of Public Health, 2019). Beauvais et al. (2019) stated that patient health education is an essential part of an RA patient's ability to self-manage their disease; however, a gap in the literature exists on "which" knowledge/patient health education a patient may need. The current study addressed this gap in the literature by assessing which type of patient education a RA patient would want or need the most (as follows in RQ3).

To answer RQ3 (What patient health education do RA patients want/need?), I ran frequency tables for each of the seven domains of the ENAT (managing pain, movement, feelings, arthritis, treatments, self-help, and support). In all seven domains, more than half of the 81 participants indicated that patient health education was important to them (as shown in Table 2). Patient health education could be developed from the results of this study that could be used to increase RA patients' HRQoL. This current study revealed that all of the areas of the ENAT (patient health education) were important to the participants and practitioners could use these domains as a starting point for creating patient health education materials. The study's purpose was to examine the association between self-efficacy, patient health education, and self-management and its results were more impactful on the need for patient health education and the type of education needed or wanted.

The findings from the current study are consistent with findings in the reviewed literature and the context of the SCT. Pérez et al. (2020) noted that past research has shown that non-directed educational efforts do not positively impact an RA patient's HRQoL and that practitioners should use a tool, such as the ENAT to assess patient health educational needs. The RA patient's behavioral capability (a construct of the SCT) can be influenced by not only the patient health education they receive but their understanding of how to apply that education in their day-to-day lives (Boston University School of Public Health, 2019). Therefore, it is a logical conclusion that RA patients must not only have patient health education provided to them, but they also must understand how to apply that education to their daily lifestyle and feel confident that they can practice those learned behaviors (Boston University School of Public Health, 2019).

Limitations of the Study

The study had several limitations. When conducting this study, COVID-19 may have impacted the sample size taken from the RA clinics or other physician offices due to patients limiting their access to care during the pandemic. Patient recruitment and data collection may have been impacted by these circumstances and the COVID-19 restrictions at certain HCP offices. Another factor that may have impacted the sample size was that several practitioners would need to participate to get the desired sample size. The researcher was only able to procure one physician's office to participate, even with the invitation to 5 offices. This researcher was limited by participation requirements in joining the Facebook group and what was allowed to be posted. The sample size minimum was 80 participants with the hope of achieving a sample of 100 participants. The researcher conducted the study with 81 participants. Patients were informed that their responses would not be linked to them. Given the impact of COVID-19 and the potential issues with patient recruitment, this may have impacted the generalizability of the sample size to the overall RA population.

Another limitation was response bias in the form of social desirability. Respondents may have answered the questions the way they thought the researcher might have wanted them to answer instead of what is true. Finally, another limitation was that only those who had access to the internet or cell phone service were able to participate in the study. According to the Pew Research Center (2021), approximately 7% of the adult population in the U.S. does not use the internet. Individuals aged 65 and older report never using the internet or going online (Pew Research Center, 2021). Older individuals, men, African Americans, individuals with less than a high school education, individuals in lower-income levels, and rural residents are more likely to be among the non-internet user group (Pew Research Center, 2021). The large majority (86.4%) of the participants were college-educated, creating potential issues of generalizability.

Recommendations

The purpose of this quantitative study was to examine the association between self-efficacy, patient health education, and self-management. The independent variables were self-efficacy and patient health education wanted or needed. The dependent variable was self-management. Knowledge gained from this study concerning RA patients, self-efficacy, patient health education, and self-management, could shed light on barriers for the patients that could impair their daily activities and have a positive impact on their HRQoL. This study was able to show the lack of patient education the participants had received, and the low level of self-management and self-efficacy the participants experienced. However, as suggested by Dr. Lorig; she felt there was a gap in policy implementation to institute the education of health education students, physicians, and nurses on how to educate the patient (Gilkey & Garcia, 2010). Gilkey and Garcia (2010) state that to accomplish an effective increase in self-efficacy leading to self-management, one must access the current state of the patient's self-efficacy, and knowledge.

This researcher recommends that further research be conducted on medical students' level of knowledge of patient health education strategies and/or medical school courses involving patient health education. Vijn et al. (2017) conducted a literature review from 1990 to 2015 on medical students' and pre-medical students' education on patient-centered outcomes and patient health education. Vijn et al. (2017) note that no reviews on this subject have been done up to that point. The conclusion of the study by Vijn et al. (2017) was that educating medical students on patient health education and patient outcomes can potentially have a positive impact on the quality of care patients are receiving.

It is also recommended that more research be conducted on other SDOH that could be barriers to self-management as found in the research from the U.S. Department of HHS (2013). It is noted that barriers to successful self-management could involve cultural norms, lack of health literacy, lack of health care coverage, access to care, lack of education, and other SDOH (AHRQ, 2013). I also recommend that further research could look directly at the association between self-efficacy and patient education. Since the majority of the participants of this study were white women and college educated, future studies could look at different demographics, such as people of color, men, and individuals with lower education levels. The survey was lengthy, and health literacy could have been an influence in who participated. Perhaps a study using each of the scales individually would bring higher participation rates.

Implications

Positive social change was the drive behind this study. During the process of this dissertation, I was the caregiver of my father, my mother, and my sister-who all passed away during the time I have been a student at this University. I am also a health educator working one on one with clients in a corporation on their health goals, concerns, and strategies. Between my trips to cancer centers, doctor’s offices, and listening to my clients-it became clear to me that patients are not being educated by their physicians. This could be for many known reasons-1) doctors have limited time with their patients and this may not allow sufficient time for education 2) doctors may not be trained to educate their patients 3) doctors may not be comfortable with the education of their patients. Nevertheless, patients can exit a doctor's office feeling scared, fearful, and uncertain about how to self-manage their disease or condition. The concept of making a difference and taking action for positive social change became my passion. I was excited to create this survey, and interact with physicians and Facebook members about RA. I was excited to see what story the data would tell. The data spoke to my passion-more patient health education needs to be done for patients to feel confident to self-manage their RA. As stated previously, my hope is that policy change would occur at the medical school level so that medical students would be allowed to gain knowledge about how to educate their patients. Additionally, I am passionate about the American Medical Association (AMA) creating a category I CPT code that health insurance companies will accept for health educators to be able to submit patient claims for health education sessions. Research, such as this study, will need to be done to support these requests and I am proud to now be a scholar-practitioner that can aid in this positive social change.

Conclusion

As a scholar-practitioner at Walden University, I desire to fulfill Walden's mission to *promote the worth, dignity, and development of individuals, communities, organizations, institutions, cultures, and societies.* This current study is a small step on the road to helping people in our society feel more in control of their bodies and how to manage not only RA but other chronic diseases. There is no reason patients should ever be fearful that they don't understand things like; their medications, why are they taking them, what can they do to improve their pain, and their social support or treatment options. I want to help individual’s live better lives. This will impact our society as a whole, as it could lower health care costs and the economic burden on society. Practically speaking, individuals with RA or any chronic condition, who were given patient health education could lead more confident lives and feel more in control to self-manage their disease and have a better HRQoL.

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Appendix A: Rheumatoid Arthritis Survey

You are invited to take part in this survey about Rheumatoid Arthritis (RA). The researcher is inviting people to participate in this survey if you are 1) A person who has been diagnosed with RA, 2) An adult 18 years of age or older, 3) Currently seeing a practitioner for RA, 4) English speaking, 5) A U.S. citizen.

The purpose of this survey is to understand Rheumatoid Arthritis (RA) patients' level of confidence (self-efficacy) and patient health education to self-manage their RA symptoms and daily living activities.

If you meet these criteria, you may take part in this one-time online survey that will take approximately 20-30 minutes to complete. Your personal identity is not available to the researcher and all information is kept confidential.

If you feel you understand the study well enough and want to participate, please CLICK AGREE on the survey.

1. **I agree to participate in this survey**
   - ○ Agree
   - ○ Disagree

2. **I will only take this survey one time**
   - ○ Agree
   - ○ Disagree

3. **In what state or U.S. territory do you live? ________________________**

4. **Are you 18 years of age or older?**
   - ○ Yes
   - ○ No

5. What is your age?

Under 18
18-24
25-34
35-44
45-54
55-64
65+

6. Are you male or female?

- ○ Male
- ○ Female

7. What is the highest level of education you have completed?

____

8. Has your Health Care Provider diagnosed you with Rheumatoid Arthritis?

- Yes
- No

9. Which one or more of the following would you say is your race?

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

10. Have you ever taken an educational course or class to teach you how to manage problems related to your arthritis or joint symptoms?

- Yes
- No

In the past year, how often have you done regularly the following activities for your arthritis? (By 'regularly' we mean roughly once a month.

11. Exercised (including water exercise)

- Not at all
- Rarely
- Sometimes
- Often
- Always

12. Replaced higher-intense exercises with lower-intense options, in the case of having a mild pain after exercise

- Not at all
- Rarely
- Sometimes
- Often
- Always

13. Stopped exercise when having severe joint pains after exercise

- Not at all
- Rarely
- Sometimes
- Often
- Always

14. Exercised weekly with moderate intensity

- ○ Not at all
- ○ Rarely
- ○ Sometimes
- ○ Often
- ○ Always

15. Balanced between rest and exercise periods, if needed

- ○ Not at all
- ○ Rarely
- ○ Sometimes
- ○ Often
- ○ Always

16. Exercised daily with moderate intensity

- ○ Not at all
- ○ Rarely
- ○ Sometimes
- ○ Often
- ○ Always

17. Changed the dosage of your drugs or the time of taking them without informing your physician

- ○ Not at all
- ○ Rarely
- ○ Sometimes
- ○ Often
- ○ Always

18. Taken your drugs regularly and based on your prescription

- ○ Not at all
- ○ Rarely
- ○ Sometimes
- ○ Often
- ○ Always

19. Visited your physician regularly

- ○ Not at all
- ○ Rarely
- ○ Sometimes
- ○ Often
- ○ Always

20. Used relaxation methods such as meditation

- ○ Not at all
- ○ Rarely
- ○ Sometimes
- ○ Often
- ○ Always

21. Used methods to help control stress

- Not at all
- Rarely
- Sometimes
- Often
- Always

22. Used larger joints instead of smaller joints (e.g. pushing in a table by the hip joint instead of wrist joint)

- Not at all
- Rarely
- Sometimes
- Often
- Always

23. Taken supplements containing fish oil or omega-3 without consulting your physician

- Not at all
- Rarely
- Sometimes
- Often
- Always

24. Avoided certain foods

- Not at all
- Rarely
- Sometimes
- Often
- Always

25. Used massage

- Not at all
- Rarely
- Sometimes
- Often
- Always

26. Taken food supplements, vitamins, or eaten special foods

- Not at all
- Rarely
- Sometimes
- Often
- Always

27. Used joint protection, bracing, or splinting

- Not at all
- Rarely
- Sometimes
- Often
- Always

28. Rested

- Not at all
- Rarely
- Sometimes
- Often
- Always

29. Adjusted your daily routine or work schedule

- Not at all
- Rarely
- Sometimes
- Often
- Always

30. Talked with persons who are sympathetic

- Not at all
- Rarely
- Sometimes
- Often
- Always

31. Used a heated pool, tub, or shower

- Not at all
- Rarely
- Sometimes
- Often
- Always

32. Applied heat to parts of your body

- Not at all
- Rarely
- Sometimes
- Often
- Always

33. Used some facilities (like handles, armchair and so on) in toilet, bed room and bathroom to ease the processes of sitting down, standing up and walking.

- Not at all
- Rarely
- Sometimes
- Often
- Always

34. Used substances, like opium, to control pain.

- Not at all
- Rarely
- Sometimes
- Often
- Always

35. Smoked cigarette or hookah

- ○ Not at all
- ○ Rarely
- ○ Sometimes
- ○ Often
- ○ Always

For each of the following questions, give a number that corresponds to how certain you are that you can do the following tasks regularly at the present time with (1) being very uncertain to (10) very certain

36. How certain are you that you can decrease your pain quite a bit?

- ○ 1-very uncertain
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6
- ○ 7
- ○ 8
- ○ 9
- ○ 10-very certain

37. How certain are you that you can keep your arthritis or fibromyalgia pain from interfering with your sleep?

- ○ 1-very uncertain
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6
- ○ 7
- ○ 8
- ○ 9
- ○ 10-very certain

38. How certain are you that you can keep your arthritis or fibromyalgia pain from interfering with the things you want to do?

- ○ 1-very uncertain
- ○ 2
- ○ 3
- ○ 4
- ○ 5

- 6
- 7
- 8
- 9
- 10-very certain

39. How certain are you that you can regulate your activity so as to be active without aggravating your arthritis or fibromyalgia?

- 1-very uncertain
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10-very certain

40. How certain are you that you can keep the fatigue caused by your arthritis or fibromyalgia from interfering with the things you want to do?

- 1-very uncertain
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10-very certain

41. How certain are you that you can do something to help yourself feel better if you are feeling blue?

- 1-very uncertain
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10-very certain

42. As compared with other people with arthritis or fibromyalgia like yours, how certain are you that you can manage pain during your daily activities?

- 1-very uncertain
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10-very certain

43. How certain are you that you can deal with the frustration of arthritis or fibromyalgia?

- 1-very uncertain
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10-very certain

How much do you need to know NOW about each of the following things? Describe how you feel from "not important at all" to "extremely important". The first section relates to managing pain.

44. How important is it for you to know more about: Taking the best medicine for me?

- Extremely important
- Very important
- Fairly important
- A little important
- Not at all important

45. How important is it for you to know more about: Using heat or cold on painful joints?

- Extremely important
- Very important
- Fairly important

- A little important
- Not at all important

46. How important is it for you to know more about: Ways to distract from pain

- Extremely important
- Very important
- Fairly important
- A little important
- Not at all important

47. How important is it for you to know more about: Using relaxation?

- Extremely important
- Very important
- Fairly important
- A little important
- Not at all important

48. How important is it for you to know more about: Using exercise?

- Extremely important
- Very important
- Fairly important
- A little important
- Not at all important

49. How important is it for you to know more about: Using acupuncture, ultrasound or hydrotherapy?

- Extremely important
- Very important
- Fairly important
- A little important
- Not at all important

This section relates to movement:

50. How important is it for you to know more about: Devices which would help me do practical things?

- Extremely important
- Very important
- Fairly important
- A little important
- Not at all important

51. How important is it for you to know more about: Ways to make lifting easier?

- ○ Extremely important
- ○ Very important
- ○ Fairly important
- ○ A little important
- ○ Not at all important

52. How important is it for you to know more about: Ways to save energy?

- ○ Extremely important
- ○ Very important
- ○ Fairly important
- ○ A little important
- ○ Not at all important

53. How important is it for you to know more about: Getting enough rest and sleep?

- ○ Extremely important
- ○ Very important
- ○ Fairly important
- ○ A little important
- ○ Not at all important

54. How important is it for you to know more about: Ways to do things which wear my joints less?

- ○ Extremely important
- ○ Very important
- ○ Fairly important
- ○ A little important
- ○ Not at all important

This section relates to your feelings:

55. How important is it for you to know more about: Ways to deal with stress?

- ○ Extremely important
- ○ Very important
- ○ Fairly important
- ○ A little important
- ○ Not at all important

56. How important is it for you to know more about: Ways to deal with moods or depression?

- ○ Extremely important
- ○ Very important
- ○ Fairly important
- ○ A little important
- ○ Not at all important

57. How important is it for you to know more about: Why I am feeling tired?

- Extremely important
- Very important
- Fairly important
- A little important
- Not at all important

58. How important is it for you to know more about: Why I am feeling down or depressed?

- Extremely important
- Very important
- Fairly important
- A little important
- Not at all important

This section relates to your arthritis:

59. How important is it for you to know more about: What might have caused my arthritis?

- Extremely important
- Very important
- Fairly important
- A little important
- Not at all important

60. How important is it for you to know more about: What type of arthritis I have?

- Extremely important
- Very important
- Fairly important
- A little important
- Not at all important

61. How important is it for you to know more about: How arthritis might affect my children or relatives?

- Extremely important
- Very important
- Fairly important
- A little important
- Not at all important

62. How important is it for you to know more about: Ways my arthritis can be treated?

- ○ Extremely important
- ○ Very important
- ○ Fairly important
- ○ A little important
- ○ Not at all important

63. How important is it for you to know more about: Ways my arthritis is affecting me?

- ○ Extremely important
- ○ Very important
- ○ Fairly important
- ○ A little important
- ○ Not at all important

64. How important is it for you to know more about: Why I can't do things I used to?

- ○ Extremely important
- ○ Very important
- ○ Fairly important
- ○ A little important
- ○ Not at all important

65. How important is it for you to know more about: What might happen in the future?

- ○ Extremely important
- ○ Very important
- ○ Fairly important
- ○ A little important
- ○ Not at all important

This section is about treatments you may be receiving from health professionals:

66. How important is it for you to know more about: Why I am taking medicines?

- ○ Extremely important
- ○ Very important
- ○ Fairly important
- ○ A little important
- ○ Not at all important

67. How important is it for you to know more about: How I should take my medicines?

- ○ Extremely important
- ○ Very important
- ○ Fairly important
- ○ A little important
- ○ Not at all important

68. How important is it for you to know more about: What the side-effects of my medicines are? 0

- ○ Extremely important
- ○ Very important
- ○ Fairly important
- ○ A little important
- ○ Not at all important

69. How important is it for you to know more about: Why I have blood tests?

- ○ Extremely important
- ○ Very important
- ○ Fairly important
- ○ A little important
- ○ Not at all important

70. How important is it for you to know more about: Why I have x-rays?

- ○ Extremely important
- ○ Very important
- ○ Fairly important
- ○ A little important
- ○ Not at all important

71. How important is it for you to know more about: How an operation might help me?

- ○ Extremely important
- ○ Very important
- ○ Fairly important
- ○ A little important
- ○ Not at all important

72. How important is it for you to know more about: How appliances might help me (splints, adaptations, collars)?

- ○ Extremely important
- ○ Very important
- ○ Fairly important
- ○ A little important
- ○ Not at all important

This section relates to treatments you may be doing for yourself:

73. How important is it for you to know more about: Alternative treatments or herbal remedies?

- ○ Extremely important
- ○ Very important
- ○ Fairly important
- ○ A little important
- ○ Not at all important

74. How important is it for you to know more about: Foods or vitamins that might help?

- ○ Extremely important
- ○ Very important
- ○ Fairly important
- ○ A little important
- ○ Not at all important

75. How important is it for you to know more about: Things I should avoid doing?

- ○ Extremely important
- ○ Very important
- ○ Fairly important
- ○ A little important
- ○ Not at all important

76. How important is it for you to know more about: Exercises I should be doing?

- ○ Extremely important
- ○ Very important
- ○ Fairly important
- ○ A little important
- ○ Not at all important

77. How important is it for you to know more about: How much exercise I should be doing?

- ○ Extremely important
- ○ Very important
- ○ Fairly important
- ○ A little important
- ○ Not at all important

78. How important is it for you to know more about: Times when I should call the doctor or nurse?

- Extremely important
- Very important
- Fairly important
- A little important
- Not at all important

The last section relates to support from other people:

79. How important is it for you to know more about: Organizations I can get in touch with about arthritis?

- Extremely important
- Very important
- Fairly important
- A little important
- Not at all important

80. How important is it for you to know more about: Who I can ask about financial help?

- Extremely important
- Very important
- Fairly important
- A little important
- Not at all important

81. How important is it for you to know more about: Where I can find groups who will help me to cope with arthritis?

- Extremely important
- Very important
- Fairly important
- A little important
- Not at all important

82. How important is it for you to know more about: How I can get the most out of seeing the doctor or nurse?

- Extremely important
- Very important
- Fairly important
- A little important
- Not at all important

Thank you for your participation in this survey!

Appendix B: Research Study Flyer

Volunteers Needed for a Research Study involving Rheumatoid Arthritis

ARE YOU: 1) A person who has been diagnosed with RA, 2) An adult 18 years of age or older, 3) Currently seeing a practitioner for RA 4) English speaking, 5) A U.S. citizen.

THEN: You are invited to take part in a research study about Rheumatoid Arthritis (RA) by completing an online survey that is completely anonymous and will only take around 20-30 minutes to complete!

PURPOSE: The purpose of the study is to understand RA patients' confidence (self-efficacy) and patient health education to self-manage RA symptoms and daily living activities.

CONDUCTED BY: This study is being conducted by a Ph.D. student at Walden University-Julie Vultaggio

IF YOU WOULD LIKE TO PARTICIPATE in the study, please go to the anonymous link https://www.surveymonkey.com/r/9FLPSMK to complete the study. Your information is HIPAA regulated and completed protected with personally identifiable information removed. Please RESPOND BY_____________.

IF YOU HAVE QUESTIONS about the study, please contact Julie at [email address redacted].

Please complete the survey one time only. Thank you so much for your assistance and participation.

Appendix C: Permission to Use the Arthritis Educational Needs Assessment Tool

UNIVERSITY OF LEEDS

Permission to Use The Arthritis Educational Needs Assessment Tool (ENAT)

Thank you for enquiring about the ENAT

With this letter The University of Leeds is pleased to grant you permission to use the Arthritis Educational Needs Assessment Tool (ENAT) for clinical and/or non-commercial purposes. In this instance, non-commercial purposes means that you agree not to use the ENAT in research or other work performed for a third party, funded by a commercial third party (e.g. clinical trial) or provide the questionnaire to a third party.

When reproducing the ENAT, please include an identifier as follows:

Arthritis Educational Needs Assessment Tool, © 2013,
The University of Leeds; All rights reserved

For purposes of standardization of content, scoring and labelling, we wish to assure users of the questionnaire and interpreters of its results that the designation "ENAT" refers to the identical instrument and scoring in all cases. This allows comparison of scores across projects and applications.

Therefore, if you add questions to or delete questions from the ENAT; or embed it into a larger questionnaire; or modify its layout or order of questions, please give the modified questionnaire its own name and indicate the following on the questionnaire form, including at its end:

Questionnaire includes portions of the Arthritis Educational Needs
Assessment Tool, © 2013, The University of Leeds;
All rights reserved

It is not permitted to create a non-English language version or culturally modified version of the ENAT without explicit prior permission, which will also require following an agreed adaptation protocol. For existing language versions see the web site at:

http://medhealth.leeds.ac.uk/info/732/psychometric_laboratory/1493/scales

In return for royalty free permission to use the ENAT, we request that:

a. you complete and **return The University of Leeds User's Profile** form describing the way in which you plan to use the ENAT; and

In addition if you intend to use the ENAT in a research study we request that

b. the study data not be used to develop another questionnaire with the same purpose as the ENAT.

If you agree to the terms of **this letter of permission to use the ENAT, please return a signed copy for my attention** along with the completed User's Profile Form, and I will email you a copy of the ENAT.

(Scale scoring guidance notes will also be included).

For **technical advice and consultation** regarding the use of the ENAT, please contact Dr Mwidimi Ndosi, m.e.ndosi@leeds.ac.uk or RehabMed@leeds.ac.uk

Respectfully,
The Scales Administrative Manager

Agreed to by:

Julie Vultaggio
Signature

Walden University Dissertation research student

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Title/organisation

Please complete and return this form (preferably by email) to The University of Leeds, Section of Rehabilitation Medicine, D Floor, Martin Wing, Leeds General Infirmary, Leeds, England, LS1 3EX. Email: RehabMed@leeds.ac.uk

ENAT

User Profile
(Please type or print clearly)

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Floor, Martin Wing, Leeds General Infirmary, Leeds, England, LS1 3EX. Email: RehabMed@leeds.ac.uk

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Principal Investigators/Project Directors Name: Julie Vultaggio	
Organisation/Department: Health Sciences	
Street Address: 100 South Washington Ave	
City: Minneapolis	**County/State:** MN **Postcode/Zip:** 55401
Country: United States	**E-mail:** **[redacted]**mailto:
Telephone: **[redacted]**	**Fax:**

Organisation Type

Indicate by placing a 'X' in the box next to the category that best describes the type or primary purpose of your organisation

	Primary Care Group		**NHS Hospital Trust**		**Insurance Company/Health Plan**
X	**University/College**		**Charity**		**Pharmaceutical Company**
	Government Agency		**Other NHS**		**Other:_____________________**

If you propose to use the ENAT as a Clinical Screening Tool Only (IE. Not for research purposes) please tick this box and ignore the remaining questions	

Briefly describe the project(s) for which you plan to use the ENAT (indicate aims, design and key sample characteristics):
Quantitative descriptive research design, non-experimental cross-sectional survey design
Project sample size: approx 100
Projects duration: 2. 5 months
Methods of measurement (e.g. Mail survey): survey
Other measurement tools included (e.g. SF-36):

from: hssrehab <RehabMed@leeds.ac.uk>
to: Julie Vultaggio <email address redacted>
cc: Mike Horton <email address redacted>,
Mwidimi Ndosi <email address redacted>
date: Oct 25, 2021, 9:11 AM
subject: RE: Permission to use ENAT for research-Julie Vultaggio
mailed-by: leeds.ac.uk
signed-by: leeds365.onmicrosoft.com

Dear Julie,
Thank you for returning the ENAT User Form, you're most welcome and we have now added your details to our User database. Please find attached the ENAT Scale and Scoring and we hope that this will be useful to you in your future studies and research.

With best wishes,

[redacted]

LIRMM Institute Secretary

Office: Chapel Allerton Hospital, 2nd Floor LIRMM, Chapeltown Road, Leeds LS7 4SA This copy of The Arthritis Educational Needs Assessment Tool (ENAT) has been reproduced with the permission of the Psychometric Laboratory for Health Sciences, University of Leeds, UK. The ENAT is a copyright of the University of Leeds, UK.
Kind regards,

Dr [redacted], Director,

Psychometric Laboratory for Health Sciences,

Academic Department of Rehabilitation Medicine,

Leeds Institute of Rheumatic and Musculoskeletal Medicine, University of Leeds