

4-22-2025

Complementary Self-Care Therapies to Self-Manage Endometriosis in Association with Health-Related Quality of Life

Sarah Cummins
Walden University

Follow this and additional works at: <https://scholarworks.waldenu.edu/dissertations>



Part of the [Psychology Commons](#)

This Dissertation is brought to you for free and open access by the Walden Dissertations and Doctoral Studies Collection at ScholarWorks. It has been accepted for inclusion in Walden Dissertations and Doctoral Studies by an authorized administrator of ScholarWorks. For more information, please contact ScholarWorks@waldenu.edu.

Walden University

College of Psychology and Community Services

This is to certify that the doctoral dissertation by

Sarah E. Cummins

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

Review Committee

Dr. Matthew Howren, Committee Chairperson, Psychology Faculty

Dr. Debra Wilson, Committee Member, Psychology Faculty

Chief Academic Officer and Provost

Sue Subocz, Ph.D.

Walden University

2025

Abstract

Complementary Self-Care Therapies to Self-Manage Endometriosis in Association with

Health-Related Quality of Life

by

Sarah E. Cummins

BS, Rasmussen College, 2016

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Psychology

Walden University

May 2025

Abstract

There is a lack of understanding within the psychological and medical communities on the extent to which endometriosis impacts the health-related quality of life (HRQoL) of people with endometriosis (PWE). This population is understudied in relation to the effects of endometriosis on HRQoL, the various methods used to treat and cope with endometriosis-related symptoms, the influence of self-managing endometriosis on PWE's HRQoL, or the HRQoL outcomes associated with using nontraditional methods to self-manage endometriosis. As such, there is a lack of knowledge on the extent to which the use of various types of complementary self-care therapies to self-manage endometriosis is associated with PWE's HRQoL. The theoretical framework for this study was Orem's self-care theory. The purpose of this quantitative cross-sectional study was to analyze correlations between using various types of complementary self-care therapies to self-manage endometriosis and PWE's HRQoL, as well as PWE's depressive symptomatology, controlling for sociodemographic variables. The participants comprised 136 individuals with self-reported endometriosis from online endometriosis support groups. Statistical significance for both research questions was found overall. This study can benefit PWE by promoting positive social change through the examination of the use of nontraditional methods in self-managing endometriosis that may be more readily accessible to PWE; help healthcare professionals provide PWE with enhanced support, guidance, and education to improve PWE's HRQoL; and encourage further research on self-managing endometriosis within the psychological and medical communities.

Complementary Self-Care Therapies to Self-Manage Endometriosis in Association with

Health-Related Quality of Life

by

Sarah E. Cummins

BS, Rasmussen College, 2016

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Psychology

Walden University

May 2025

Dedication

This work is one of love and compassion, dedicated to all who live with endocrine conditions and chronic inflammatory diseases such as endometriosis. To my family and loved ones, friends, coworkers, and those I have met who shared their vulnerabilities in living with chronic health conditions such as endometriosis, PCOS, PMDD, and Hashimoto's thyroiditis, you are the purpose behind all the research I conducted for this study and my inspiration for contributing to psychological and health research throughout my professional career. Learning to thrive and feel healthy while living with a chronic disease is the passion behind this project, and this starts with people feeling empowered and encouraged to self-manage their health and improve their well-being through insight and education. May these pages provide support and encouragement to people seeking improved mental and physical health while living with endometriosis and other chronic health conditions. Be empowered to trust the intuitive signals from your body to inform your self-management decisions. Your experiences are valid and a source of wisdom. Be curious about which complementary self-care therapies work well for you, knowing that your self-management strategies will evolve over time. Be resilient and kind to yourself on your life-long journey of cultivating healthy habits. Focus on self-care and self-love practices that positively impact your health and wellbeing. Choose to thrive in life by being authentically you and embracing the imperfect beauty of continual self-growth.

Acknowledgments

Throughout my academic career, I was surrounded by support and inspiration from the people I love most in this world. From adolescence, I spent hours chatting away to my mom about my aspirations for my future career, bouncing between dreams of becoming a physician, lawyer, journalist, and countless other fascinating occupations. Thank you, Mom, for being my sounding board and holding space for my young mind to freely explore the limitless opportunities of adulthood. My endless curiosity, love of deep and profound conversations, and desire to educate and empower those around me comes from you and the long line of brilliant minds in our ancestry. For a dozen years, I have been loved by my husband for being who I am and supported in all aspects of living life to the fullest. Matthew, thank you for being my best friend and the greatest source of grounding and stability I have ever experienced. I love you deeply and fiercely, and I am forever grateful for our beautiful relationship. To my daughter, Quinn, you lit a fire inside my soul to bloom into who I was destined to be. Your miraculous existence reminds me daily of the unexpected joys of life that can never be foreseen or understood until they magically transpire. You are the best gift of my life. To my sister, Daisy, and my brother, Jared, thank you for bringing a lifetime of laughter and playful banter into my life. To my entire family, the love, support, and encouragement we provide to each other as we journey through life is deeply meaningful to me. I love you, and I am thankful for the relationships I share with each of you individually. To Dr. Howren and Dr. Wilson, thank you both for your continual guidance, kindness, and encouragement as I navigated the long road to completing my doctorate. I am here because of each of you.

Table of Contents

List of Tables	iv
Chapter 1: Introduction to the Study.....	1
Introduction.....	1
Background.....	5
Problem Statement.....	10
Purpose of the Study.....	12
Research Questions and Hypotheses	14
Theoretical Framework for the Study.....	15
Nature of the Study.....	17
Definitions.....	18
Assumptions.....	20
Scope and Delimitations	21
Limitations	22
Significance.....	22
Summary.....	24
Chapter 2: Literature Review	26
Introduction.....	26
Literature Search Strategy.....	28
Theoretical Foundation.....	28
Literature Review Related to Key Variables and Concepts.....	34
The Impact of Endometriosis on PWE's HRQoL.....	34

Complementary Self-Care Therapies for Self-Managing Endometriosis	82
Summary and Conclusions	96
Increasing Knowledge and Awareness of Endometriosis.....	96
Further Studies Needed on Populations Affected by Endometriosis.....	98
Chapter 3: Research Method.....	100
Introduction.....	100
Research Design and Rationale	100
Methodology	102
Population	102
Sampling and Sampling Procedures	103
Procedures for Recruitment, Participation, and Data Collection.....	103
Instrumentation and Operationalization of Constructs	105
Data Analysis	112
Threats to Validity	114
Ethical Procedures	116
Summary	118
Chapter 4: Results	120
Introduction.....	120
Data Collection	121
Results.....	122
Descriptive Statistics of the Population	122
Mean Scores of Measures	126

Statistical Analysis of RQ1	128
Statistical Analysis of RQ2.....	140
Summary	143
Chapter 5: Discussion, Conclusions, and Recommendations	145
Introduction.....	145
Interpretation of the Findings.....	147
Chronic Pain.....	147
CP	149
EWB	152
SS	154
SI	155
Depressive Symptomatology	157
Limitations of the Study.....	159
Recommendations.....	163
Implications.....	169
Conclusion	178
References.....	181
Appendix A: Recruitment Invitation	195
Appendix B: RQ1 Tables.....	196
Appendix C: RQ2 Tables.....	200

List of Tables

Table 1. Frequencies of Participant Sociodemographic Variables	124
Table 2. Frequencies of CSCT Types Used by Participants	126
Table 3. EHP-30 Domain Sum Scores.....	127
Table 4. SASS-14 Total and Subscale Sum Scores	128
Table 5. CES-D Total and Subscale Sum Scores	128
Table 6. Hierarchical MLR Model Summary: EHP-30 Pain	132
Table 7. Hierarchal MLR Coefficients: EHP-30 Pain	133
Table 8. Hierarchical MLR Model Summary: EHP-30 CP	134
Table 9. Hierarchal MLR Coefficients: EHP-30 CP	135
Table 10. Hierarchal MLR Model Summary: EHP-30 EWB.....	136
Table 11. Hierarchal MLR Coefficients: EHP-30 EWB	137
Table 12. Hierarchal MLR Model Summary: EHP-30 SS	138
Table 13. Hierarchal MLR Coefficients: EHP-30 SS.....	138
Table 14. Hierarchical MLR Model Summary: EHP-30 S1.....	139
Table 15. Hierarchal MLR Coefficients: EHP-30 S1	140
Table 16. Hierarchical MLR Model Summary: CES-D Total Sum Score	143
Table 17. Hierarchal MLR Coefficients: CES-D Total Sum Score.....	143
Table B1. Correlations: EHP-30 Domain Sum Scores and Highest Education.....	196
Table B2. Correlations: EHP-30 Domain Sum Scores and Partner Status	196
Table B3. Correlations: EHP-30 Domain Sum Score and Years Since Endo Onset.....	197
Table B4. Correlations: EHP-30 Domain Sum Scores and # CSCT Used.....	198

Table B5. Correlations: EHP-30 Domain Sum Scores and Days Last Week CSCT Used	198
Table B6. Correlations: EHP-30 Domain Sum Scores and SASS-14 Total Sum Score.	199
Table C1. Correlations: CES-D Total Sum Score and Highest Education	200
Table C2. Correlations: CES-D Total Sum Score and Partner Status	200
Table C3. Correlations: CES-D Total Sum Score and Years Since Endo Onset.....	200
Table C4. Correlations: CES-D Total Sum Score and # CSCT Used	201
Table C5. Correlations: CES-D Total Sum Score and Days Last Week CSCT Used	201
Table C6. Correlations: CES-D Total Sum Score and SASS-14 Total Sum Score.....	201

Chapter 1: Introduction to the Study

Introduction

Endometriosis is a chronic inflammatory disease affecting the reproductive, endocrine, gastrointestinal, and immune systems of individuals when tissue like the lining of the uterus—the endometrium—grows in other areas of the body instead of solely in the uterus (The American College of Obstetricians and Gynecologists [ACOG], 2024; Endometriosis.org, 2024; Endometriosis Association, Inc., 2023; World Health Organization [WHO], 2023). The abnormal endometrial-like growths and related chronic inflammation characterizing endometriosis can cause chronic pain along with a spectrum of symptoms that negatively impact the mental and physical health of approximately 10% of people born with a uterus worldwide (ACOG, 2024; Endometriosis.org, 2024; WHO, 2023). In contrast to acute pain, which is the rapid onset of physical pain—such as from an injury or surgery—that typically resolves within a week but may linger for up to 30 days, chronic pain is characterized by persistent and recurring pain—such as from fibromyalgia or rheumatoid arthritis, among many other chronic health conditions—that continues for months or years (Chou et al., 2020). If an individual experiences acute pain for longer than a month, it might become chronic pain that requires multidisciplinary strategies for coping and treatment (Chou et al., 2020). With chronic pain negatively affecting the mental and physical health of countless people globally, the WHO (2023) has stated that managing chronic pain—such as that experienced by individuals suffering from endometriosis—is a public health priority. As such, the management of chronic pain to improve mental and physical health is a well-studied topic. However, the use of

nontraditional methods—such as complementary self-care therapies—to self-manage pain that stems from endometriosis and the influence of such methods on mental and physical health outcomes is understudied and largely unknown.

The estimated percentage of the population living with endometriosis fluctuates from one study to the next. The most recent studies on endometriosis reflect an increased rate of incidence of up to 15% of people born with a uterus having endometriosis (Schubert et al., 2022). Comparatively, the highest approximation listed in a recent study by Van Niekerk et al. (2022a) stated that endometriosis may afflict up to 45% of people born with a uterus, with the rate of incidence being higher in certain locations and populations. In contrast, other studies have reported the incidence rate of endometriosis to be as low as 2% (Van Poll et al., 2020), an average of 10% (Della Corte et al., 2020; Horne & Missmer, 2022; Kfoury et al., 2023; Lamvu et al., 2020; Mousa et al., 2021), between 5% to 15% (Schubert et al., 2022), or as high as 30% (Adoamnei et al., 2021) within the respective populations. Given these calculations, the number of individuals diagnosed with endometriosis globally is projected to be upwards of 190 million, with countless individuals seeking education, support, and medical care for endometriosis-related symptoms prior to receiving an official endometriosis diagnosis (Ellis et al., 2022; Horne & Missmer, 2022; WHO, 2023).

Typically, endometriosis is diagnosed through surgery by finding endometrial-like tissue outside of the uterus (WHO, 2023). However, the necessity of a surgical diagnosis is a significant cause of delayed diagnosis, with some individuals seeking a diagnosis for 11 years (Bonavina & Taylor, 2022; Ellis et al., 2022), which has prompted

some healthcare practitioners to informally diagnose endometriosis without surgery (Horne & Missmer, 2022; Márki et al., 2022; Van Niekerk et al., 2022a). The recurrence rate of endometriosis is high, even after the use of surgical and pharmaceutical interventions to remove and combat the growth of endometrial-like tissues outside of the uterus, resulting in harmful endometrial-like growths—including lesions, adhesions, scarring, and cysts—continuing to invade areas outside of the uterus after the implementation of traditional medical methods (Schubert et al., 2022). A meta-analysis by Lu et al. (2023) reported that 25-50% of PWE experience recurrence of endometriosis-related symptoms following medical interventions. Given the chronic nature of the disease and lack of a cure, endometriosis can cause individuals to suffer not only from experiencing endometriosis-related symptoms, but also from the anxiety and emotional burden of knowing endometriosis can recur at any time (Márki et al., 2022). The anticipation of endometriosis recurring is an extraordinary influence in decreasing the mental and physical health of those living with the disease, as the fear of recurrence can persist throughout the life course despite multiple interventions and treatments being utilized to minimize the effects of endometriosis (Lu et al., 2023; Márki et al., 2022).

Considering the devastating impact of endometriosis on a significant portion of the global population, this study focused on nontraditional methods of self-managing endometriosis and the associated influence on the mental and physical health of those living with the disease as part of an ongoing movement to spread awareness and increase knowledge of endometriosis within the research literature. The specific research problem addressed through this study was the lack of knowledge on the extent to which the use of

various types of complementary self-care therapies to self-manage endometriosis is associated with the health-related quality of life (HRQoL) of people with endometriosis (PWE). PWE is used throughout the study as an all-encompassing term for individuals born with a uterus and living with endometriosis. This study helps fill a gap in the research literature by examining the use of self-care practices—by way of complementary self-care therapies—as a multilayered strategy for self-managing endometriosis in association with PWE’s HRQoL. Furthermore, this study expands the understanding of the impact of endometriosis on PWE’s HRQoL through an inclusive sample of individuals with a medical or self-reported diagnosis of endometriosis, in contrast to most studies excluding individuals without an official medical diagnosis.

Surveying individuals with a self-reported diagnosis of endometriosis could enhance the knowledge of how endometriosis affects the life course of PWE, further filling a gap in the literature by considering their unique experiences. The need for research on this population is supported in the systematic review by Falconer et al. (2022), which underscores the importance of studying the effects of individuals suspected by healthcare practitioners to have endometriosis receiving interventions to manage endometriosis-related symptoms and improve their HRQoL. Positive social change needs to occur within the psychological, medical, and academic communities by increasing knowledge on endometriosis so that PWE’s HRQoL can be positively impacted by healthcare professionals providing PWE with improved support, guidance, and education on effectively managing endometriosis. By being inclusive of all individuals with medically diagnosed or self-reported endometriosis, this study helps promote positive

social change by examining the use of nontraditional methods in self-managing endometriosis that might be more readily accessible to PWE particularly prior to receiving an official medical diagnosis. Providing healthcare professionals, researchers, and individuals seeking information on managing endometriosis with studies such as this one might encourage further research on the topic, thus spreading positive social change one person at a time.

In Chapter 1, I provide the background details of this study, summarizing the current and relevant literature surrounding the topic of the study and pointing to the identified gap in knowledge within the field of psychology. I clarify the need for the study along with potential positive social change implications. I list the problem statement, describe the purpose of the study, state the research questions and hypotheses, and explain the meaningfulness of the identified gap in the literature. I discuss the theoretical framework, methodology, and design of the study, giving pertinent definitions to be used throughout the study. I comment on the assumptions, boundaries, limitations, and generalizability of the study. In conclusion, I identify the potential significance and contributions of the study to the psychology field followed by a summary of the chapter.

Background

Searching the research literature for relevant and current articles on the mental and physical health of individuals living with endometriosis revealed a broad range of studies focused on medical and pharmaceutical interventions traditionally used by healthcare practitioners to treat endometriosis, with many remarking on the inadequacy of traditional treatment methods for long-term improvements to PWE's HRQoL or quality

of life (QoL). Across the spectrum of studies on traditional interventions for endometriosis was a consensus that PWE's HRQoL, or QoL, is impaired by the complex endometriosis-related symptoms, with chronic pain and infertility being the two most discussed symptoms negatively impacting the lives of PWE. Some of the articles assessed PWE's HRQoL, but the majority assessed PWE's QoL in general. Narrowing the search criteria to nontraditional methods of managing endometriosis, with a focus on PWE self-managing their disease, exposed a vastly reduced assortment of articles that overwhelmingly stated a need for additional studies on the topic due to the insufficient knowledge, awareness, education, support, protocols, and treatment options related to improving the mental and physical health of PWE. The existing literature was reduced even further when limiting the scope to studies on PWE's HRQoL in particular.

Nearly all the articles reviewed on PWE's HRQoL and QoL provided statistics on endometriosis—such as the prevalence, recurrence, and diagnostic delay rates—and assessed the factors contributing to mental and physical health based on PWE's scores on verified QoL and HRQoL questionnaires or themes revealed during interviews with PWE. Within the limited number of articles looking at PWE's HRQoL and self-management practices, the consensus was that endometriosis-related symptoms negatively impact PWE's HRQoL, yet PWE typically are not aware of nontraditional methods of treating endometriosis or ways to self-manage endometriosis. Additionally, many of the articles noted a lack of support from PWE's healthcare practitioners and personal relationships related to managing endometriosis. When reviewing the minute number of studies converging on nontraditional treatment methods, self-managing

endometriosis, and PWE's HRQoL or QoL, it became clear that a gap in the literature exists, as none of the articles reviewed examined the extent to which the use of various types of complementary self-care therapies to self-manage endometriosis is associated with PWE's HRQoL.

Despite numerous studies citing the importance of providing PWE education on self-management strategies—with the studies by O'Hara et al. (2019, 2021), Farshi et al. (2020), and Márki et al. (2022) showing promising results for improving PWE's lives by lessening the symptom burden through utilizing such strategies—the use of complementary self-care therapies to self-manage endometriosis has not been studied in association with PWE's HRQoL overall. Many of the articles reviewed for the present study noted a need for further research on complementary methods of treating endometriosis, with some researchers commenting on the necessity of PWE having diverse treatment options to meet their specific needs while others emphasized the importance of improving PWE's mental and physical health through multifaceted approaches to endometriosis care. Across the plethora of studies incorporating quantitative analysis, there is a consensus that PWE have lower levels of overall HRQoL compared to people without endometriosis, based on the statistically significant findings of the studies (Adoamnei et al., 2021; Della Corte et al., 2020; Gete et al., 2023; Kalfas et al., 2022; Mousa et al., 2021; Schubert et al., 2022; Soliman et al., 2020; Van Niekerk et al., 2022a; Van Niekerk et al., 2022c; Van Niekerk et al., 2023). Despite this finding, there is a lack of conclusive research on how to effectively improve PWE's HRQoL. Overall, the review of the literature showed that PWE need self-management strategies

involving nontraditional treatment options—backed by extensive research—to potentially improve their mental and physical health, which calls for studies like this one that address such gaps in the literature.

As defined by Missmer et al. (2021), HRQoL means the extent of a person's ability to thrive in their life emotionally, relationally, socially, and professionally. For the purpose of this study, that definition was used. Examining the extent to which self-managing endometriosis is associated with PWE's HRQoL was a core component of this study, as studies on improving PWE's HRQoL—most notably, the randomized controlled trial by Farshi et al. (2020)—have emphasized the necessity of understanding the impact of self-management using nontraditional methods on the mental and physical health of PWE. Two studies by O'Hara et al. (2019, 2021) stated that there is a lack of consistency in defining self-management of endometriosis within the existing studies, with most not including a definition of the term. Using the lens of O'Hara et al. (2019, 2021) to define self-management of endometriosis as it applies to the present study, self-management is an individual taking ownership of their health by problem-solving the challenges related to living with endometriosis and creating a disease management plan that utilizes a variety of treatments, from self-care practices to collaborative care with healthcare professionals. The key goals are to help PWE understand what self-management looks like, how self-management might positively influence their health and well-being, and what might prevent or influence self-management. Studies contributing to these objectives are critical for improving PWE's HRQoL, as the literature on self-managing endometriosis using complementary approaches is sparse.

The existing literature on PWE's HRQoL largely consists of qualitative interview studies of PWE sharing their experiences of living with endometriosis and quantitative survey studies using versions of the Short Form and Endometriosis Health Profile questionnaires. Such studies are valuable for expanding the understanding of how various factors influence the mental and physical health of PWE and spreading awareness of endometriosis. Many studies found direct associations between decreased HRQoL and increased psychological distress, resulting from anxiety and depression, negatively impacting PWE's HRQoL (Della Corte et al., 2020; Farshi et al., 2020; Kalfas et al., 2022; Schubert et al., 2022; Soliman et al., 2020; Van Niekerk et al., 2022a; Van Niekerk et al., 2022c; Van Niekerk et al., 2023; Wang et al., 2021). Additionally, studies have consistently reported that chronic non-menstrual pelvic pain is the leading cause of lowered HRQoL in PWE and is a contributor to the prevalence of mental health comorbidities—most notably anxiety and depression—associated with endometriosis (Adoamnei et al., 2021; Gete et al., 2023; Kalfas et al., 2022; Lamvu et al., 2020; Mousa et al., 2021; Soliman et al., 2020; Van Niekerk et al., 2022b). As such, the cyclical relationship between psychological distress and chronic pain can contribute to poor HRQoL more than other factors. These critical factors affecting PWE's HRQoL are discussed in detail in Chapter 2.

This endometriosis study is relevant in that it addressed the unmet mental and physical health needs of an understudied population of people suffering from a chronic inflammatory disease that negatively impacts most aspects of PWE's daily lives. Most of the articles reviewed mentioned the inadequacy of medical treatment protocols for

helping PWE effectively manage a chronic inflammatory disease, understand the complexities of endometriosis, cope with endometriosis-related pain, address fertility issues, or thrive in life. To better assist PWE in self-managing endometriosis, healthcare practitioners need to receive enhanced education on endometriosis and the public awareness of endometriosis needs to increase. Researchers need to advance the current knowledge on treating endometriosis by publishing studies on implementing complementary treatment strategies that combine self-management and nontraditional methods of treating endometriosis to examine the association with PWE's HRQoL. These findings and recommendations were consistently found throughout the articles analyzed within this study's literature review, where they are comprehensively discussed. Therefore, the research literature linked to this study emphasized a crucial gap in knowledge within the psychology field related to examining the extent to which the use of various types of complementary self-care therapies to self-manage endometriosis is associated with PWE's HRQoL.

Problem Statement

There is a lack of understanding and education within the psychological and medical communities on the extent to which endometriosis impacts PWE's mental and physical health. This population is not well studied in relation to the effects of endometriosis on PWE's HRQoL, the various methods used to treat and cope with endometriosis-related symptoms, the influence of self-managing endometriosis on PWE's mental and physical health, or the HRQoL outcomes associated with using nontraditional methods to self-manage this chronic inflammatory disease. Endometriosis is

understudied, underdiagnosed, and prevalent, leading to PWE enduring the burden of the disease without adequate support or an understanding of how to improve HRQoL by self-managing endometriosis (Falconer et al., 2022; Farshi et al., 2020; Hudson et al., 2020; O'Hara et al., 2019; Rowe et al., 2021; Simonsen et al., 2020). As a result of approximately 10% of people born with a uterus having endometriosis, the financial burden of the disease impacts roughly 190 million PWE globally, with the per-person annual averages in the United States reaching \$12,118 in direct costs for medical care and \$16,000 in indirect costs for loss of income associated with the disease (Ellis et al., 2022; WHO, 2023). This amounts to nearly \$120 billion per year added to the national economic burden from endometriosis (Ellis et al., 2022; WHO, 2023). Despite these economic consequences, there is a lack of literature on nontraditional methods for self-managing endometriosis in association with PWE's HRQoL that might reduce financial costs. Aside from traditional medical treatments for endometriosis, an examination of various types of complementary self-care therapies is needed to increase knowledge on how PWE self-manage endometriosis to reduce endometriosis-related symptoms and improve PWE's HRQoL.

Studies on endometriosis care are lacking on the topic of the extent to which the use of self-care practices and complementary therapies to self-manage endometriosis is associated with PWE's HRQoL. PWE often receive traditional medical advice from healthcare professionals that does not include self-managing endometriosis with various types of complementary self-care therapies. As a result, many PWE are only aware of traditional medical treatment options for endometriosis, which largely consist of

pharmaceutical and surgical interventions. The literature has highlighted a lack of adequate support, guidance, and understanding given to PWE by the healthcare professionals treating them, which is tied to PWE having insufficient knowledge of the various types of self-care interventions to use to manage endometriosis; furthermore, PWE experience reduced HRQoL related to poor mental and physical health outcomes resulting from inadequate support and management of endometriosis (Falconer et al., 2022; Farshi et al., 2020; Hudson et al., 2020; Lamvu et al., 2020; Le Roux et al., 2022; O'Hara et al., 2019; Rea et al., 2020; Rowe et al., 2021; Simonsen et al., 2020). Studies have emphasized the negative impact of chronic pain, other endometriosis-related symptoms, and associated comorbidities on PWE's HRQoL or QoL, and the studies' findings have stressed the need for PWE to use various types of targeted self-care interventions to improve HRQoL or QoL (Falconer et al., 2022; Farshi et al., 2020; Hudson et al., 2020; Lamvu et al., 2020; Le Roux et al., 2022; Liakopoulou et al., 2022; O'Hara et al., 2019; Rea et al., 2020; Rowe et al., 2021; Simonsen et al., 2020). As such, the research problem addressed in this study was the lack of knowledge on the extent to which the use of various types of complementary self-care therapies to self-manage endometriosis is associated with PWE's HRQoL.

Purpose of the Study

The purpose of this quantitative study was to examine the extent to which the use of various types of complementary self-care therapies to self-manage endometriosis is associated with PWE's HRQoL. The intent of the study was to look at the associations between using various types of complementary self-care therapies to self-manage

endometriosis and PWE's HRQoL, as well as PWE's depressive symptomatology, controlling for sociodemographic variables. The independent variables were the use of various types of complementary self-care therapies to self-manage endometriosis (as a count and as categories), age, highest educational degree obtained, partner status, and time since the onset of endometriosis-related symptoms. The dependent variables were PWE's HRQoL and depressive symptomatology.

By examining the use of various types of complementary self-care therapies to self-manage endometriosis in association with PWE's HRQoL, this study aimed to encourage PWE to use effective complementary approaches for self-managing endometriosis that may positively impact their HRQoL. The research on this topic showed a consensus amongst experts that more studies are needed to spread knowledge and awareness of endometriosis to improve PWE's HRQoL and well-being, which includes suggesting the use of mind-body, self-compassion, body compassion, and other nontraditional physical and psychological interventions to potentially decrease the negative effects of endometriosis-related symptoms (Bonavina & Taylor, 2022; Calvi et al., 2023; Ellis et al., 2022; Farshi et al., 2020; Kalfas et al., 2022; Lamvu et al., 2020; Márki et al., 2022; Missmer et al., 2021; O'Hara et al., 2019; Rowe et al., 2021; Schubert et al., 2022; Van Niekerk et al., 2022b, 2022c, 2023; Van Poll et al., 2020; Wang et al., 2021). Improving PWE's HRQoL is contingent on reducing the symptom burden of endometriosis, promoting self-efficacy and autonomy, improving coping strategies, and enhancing well-being overall. In part, these objectives for effectively self-managing endometriosis can be addressed by providing education to PWE on the use of

complementary self-care therapies to increase PWE's sense of control in managing endometriosis-related symptoms, mitigate mental health comorbidities, reduce psychological distress, and thrive in life. As such, this study aimed to empower PWE with knowledge on the potential benefits of using nontraditional methods to improve their mental and physical health overall while living with endometriosis.

Research Questions and Hypotheses

The research questions (RQs) and hypotheses that directed this study are as follows:

RQ1: To what extent is the use of various types of complementary self-care therapies to self-manage endometriosis associated with PWE's HRQoL, controlling for sociodemographic variables?

H₀₁: The use of various types of complementary self-care therapies to self-manage endometriosis is not significantly associated with PWE's HRQoL, controlling for sociodemographic variables.

H_{a1}: The use of various types of complementary self-care therapies to self-manage endometriosis is significantly associated with PWE's HRQoL, controlling for sociodemographic variables.

RQ2: To what extent is the use of various types of complementary self-care therapies to self-manage endometriosis associated with PWE's depressive symptomatology, controlling for sociodemographic variables?

*H*₀₂: The use of various types of complementary self-care therapies to self-manage endometriosis is not significantly associated with PWE's depressive symptomatology, controlling for sociodemographic variables.

*H*_{a2}: The use of various types of complementary self-care therapies to self-manage endometriosis is significantly associated with PWE's depressive symptomatology, controlling for sociodemographic variables.

Theoretical Framework for the Study

The theoretical framework for this study was Orem's self-care theory (SCT). SCT is one of the three components of Orem's self-care deficit theory of nursing, which was created with the intention of nurses improving patient care by encouraging patients to be independent—when feasible—in self-care practices to manage their health conditions and diseases (Orem, 1985). Orem recognized the need for people to improve their health for long-term benefits and enriched outcomes by choosing to implement strategic self-care practices (Denyes et al., 2001; Orem, 1985). The theory has been used in various contexts stemming from the original intention of guiding nurses to help patients with long-term solutions to manage their health issues and improve their well-being (Denyes et al., 2001). As a multifaceted theory, it can be used by healthcare practitioners to educate patients on self-managing health conditions to improve their health outcomes and as a theory for researchers studying disease self-management. As such, the original theory was the overarching influence on countless healthcare studies and research articles within a plethora of fields and for diverse populations, from obstetrics to elderly care (Wagnild et al., 1987).

With the emphasis of this study being the use of complementary self-care therapies to self-manage endometriosis, SCT was a relevant and applicable theory to frame the study. Orem (1985) taught other healthcare practitioners, students, and patients about the importance of individuals learning how to self-manage their health conditions and diseases using strategic self-care practices. SCT focuses on giving control to patients to self-manage their health issues, instead of being dependent primarily on healthcare professionals, to empower patients to use complementary approaches to health management (Orem, 1985; Wagnild et al., 1987). The theory emphasizes the need for patients to receive meaningful support and understanding from healthcare professionals to foster collaborative care and use patient-led self-care practices to increase the individual's overall health and well-being (Orem, 1985). Recently, other researchers have used SCT in related studies, such as Farshi et al. (2020) studying the impact of self-care therapies in improving PWE's QoL by reducing depression and anxiety and de Carvalho et al. (2022) assessing the self-care behaviors of people with chronic noncommunicable diseases (CNCD) to promote independence in daily living activities by increasing self-care practices. Both studies stated a need to increase awareness and education on self-care practices to benefit the health and well-being of people living with chronic diseases. Similarly, SCT relates to this study's approach and RQs by providing a supporting structure for improving PWE's HRQoL using various types of complementary self-care therapies to self-manage endometriosis. In Chapter 2, more details on SCT are provided along with an analysis of the studies by Farshi et al. (2020) and de Carvalho et al. (2022) that used SCT as the theoretical foundation.

Nature of the Study

This study utilized a cross-sectional survey research design to examine the extent to which the use of various types of complementary self-care therapies to self-manage endometriosis is associated with PWE's HRQoL, as well as depressive symptomatology, controlling for sociodemographic variables. Participants were recruited to complete the survey by posting an ad for the study to online endometriosis support groups by way of endometriosis websites and social media platforms. The criteria for participating in the study included people between the ages of 18-69 years old who self-reported as having endometriosis. This included people who had been medically diagnosed with or were suspected to have endometriosis. Primary data were collected anonymously from a survey administered online to eligible individuals. The survey incorporated three verified questionnaires developed by experts: the Endometriosis Health Profile 30 Questionnaire (EHP-30), the Self-Care Activities Screening Scale (SASS-14), and the Center for Epidemiologic Studies Depression Scale (CES-D).

Featuring a combination of reliable and valid questionnaires in the survey was necessary to address the gap in the literature. The EHP-30 is the most widely used questionnaire for assessing PWE's HRQoL and was a vital component of this study's statistical analysis (see Hansen et al., 2022; Jones et al., 2001, 2024). The SASS-14 was also included to examine how HRQoL is impacted by PWE using self-care practices to self-manage endometriosis (see Martínez et al., 2021). Additionally, the CES-D was implemented in the survey to measure PWE's depressive symptomatology (see Radloff, 1977). Completed surveys were analyzed by entering the data into IBM SPSS Version 29

to quantitatively examine the associations between the independent variables—the use of various types of complementary self-care therapies to self-manage endometriosis, age, highest educational degree obtained, partner status, and time since the onset of endometriosis-related symptoms—and the dependent variables—PWE’s HRQoL and depressive symptomatology. Bivariate correlation and hierarchical multiple linear regression were the primary analytic strategies used in the study. The statistical findings were presented to help fill a gap in the literature related to examining the extent to which the use of various types of complementary self-care therapies to self-manage endometriosis is associated with PWE’s HRQoL.

Definitions

The following definitions are for important terms and key variables of the study:

Chronic health condition or disease: A health condition or disease that continues beyond 12 months, such as diabetes or heart disease, that negatively impacts an individual’s health and well-being due to persistent symptoms and impairment in various aspects of daily living (National Center for Chronic Disease Prevention and Health Promotion, 2022).

Comorbidities: The occurrence of multiple health conditions, disorders, or diseases affecting an individual at the same time (American Psychological Association [APA], 2018a).

Complementary self-care therapies: The nontraditional and complementary therapies, approaches, methods, and treatments an individual uses as a form of self-care in self-managing a chronic health condition or disease—either through collaboration with

healthcare practitioners or on their own—in addition to utilizing medical and pharmaceutical interventions (National Center for Complementary and Integrative Health [NCCIH], 2021).

Endometriosis: A chronic inflammatory disease of unknown pathology and etiology defined by the recurring growth of endometrial-like tissue outside of the uterus that can develop in people born with a uterus and cause physical, psychological, and emotional symptoms that negatively impact the mental and physical health of people with endometriosis (WHO, 2023).

Healthcare practitioner, professional, or provider: A licensed professional within the healthcare field—including, but not limited to, physicians, nurses, therapists, and chiropractors—providing healthcare services to patients in-person or remotely (The Office of the National Coordinator for Health Information Technology, 2013).

Health-related quality of life (HRQoL): The complex mental and physical health factors that contribute to an individual's ability to thrive in life, including psychological, physical, emotional, relational, social, sexual, intellectual, and professional factors that impact their perceptions of their health and well-being (Centers for Disease Control and Prevention, 2022; Missmer et al., 2021).

Mindfulness: An individual looking inward and reflecting on various aspects of their life to be introspective and open-minded while staying present in the moment (APA, 2018b).

Self-management of chronic health condition or disease: The extent to which an individual manages a chronic health condition or disease by taking ownership of their

health in the form of problem-solving the challenges related to living with the condition or disease and creating a disease management plan that utilizes a variety of treatments, from self-care practices to collaborative care with healthcare professionals (APA, 2023; O'Hara et al., 2021).

Quality of life (QoL): An individual's perception of their life satisfaction based on innumerable internal and external factors related to their thoughts, feelings, beliefs, expectations, experiences, and behaviors (WHO, 2024).

Assumptions

Inherent in research studies are aspects that are believed to be true despite the inability to demonstrate certainty. In this study, there were critical assumptions contributing to the meaningfulness of the topic that were necessary given the context of the study. One such assumption was that participants filling out the survey would be authentic and honest in answering the questions asked, especially with the assurance of their responses being anonymous and the intention of using their responses to contribute to a cause they presumably care enough about to complete the questionnaire. Participants were believed to communicate their feelings, behaviors, thoughts, and experiences accurately. Similarly, the assumption extended to presuming participants felt free to either complete or decline to complete the survey. As studies on this specific topic are limited, another assumption was that the measures to be used on this population would be applicable and suitable. Furthermore, it was assumed that SCT was an appropriate framework for this study given the theoretical premise and that other theories, although potentially appropriate, were not as applicable. Finally, it was assumed that the

participants who completed the survey have endometriosis and were eligible to participate based on the study's inclusion criteria.

Scope and Delimitations

This study was designed to examine the extent to which the use of various types of complementary self-care therapies to self-manage endometriosis is associated with PWE's HRQoL. As such, the methods and processes used were specific to the population of PWE and the generalizability was limited to that population. Moreover, the study's findings are not likely to be generalizable to the millions of PWE given the complex nature of endometriosis and the unique factors that contribute to PWE's HRQoL, self-management, and the use of various types of complementary self-care therapies. Although the survey was available on public websites and social media platforms with the hopes of including a pool of participants worldwide, there was no guarantee that the self-selected population sampled was diverse in sociodemographic factors. Due to the lack of clinical assessment and observation in this anonymous survey study, the results were bounded by self-reporting methods of data collection and analysis. SCT was chosen as the theoretical foundation of this study due to the applicability of the constructs of SCT for examining the use of various types of complementary self-care therapies to self-manage a chronic disease such as endometriosis. The EHP-30, SASS-14, and CES-D were consistent with the tenets of SCT and were used to measure the key variables. Other possible tools of assessment were not included. The study was limited to the constructs of SCT and the use of the selected measures.

Limitations

This study was limited to the confines of a cross-sectional survey research design, which may have presented inherent methodological weaknesses, internal and external validity issues, and construct validity considerations. I relied on online endometriosis support groups to recruit participants, which could have presented a limitation in the diversity of data collected due to participants being in the same groups. Because participants might have similar characteristics and experiences, such as not receiving an endometriosis diagnosis for several years, the findings might not be generalizable to PWE who received a quicker diagnosis. Individuals actively seeking online guidance and solutions for living with endometriosis may have had similar experiences and motivations for conducting their own research on endometriosis. There may have been biases expressed by participants in the completed surveys that may have influenced the study's outcomes. Finally, as I am an individual diagnosed with endometriosis, there may have been biases unintentionally communicated in this study.

Significance

This study helped fill a gap in knowledge by focusing specifically on PWE's HRQoL related to using various types of complementary self-care therapies to self-manage endometriosis and improve mental and physical health. Prior to this study, no studies examined the extent to which the use of various types of complementary self-care therapies to self-manage endometriosis is associated with PWE's HRQoL. The findings of this study could be used by PWE as an example of how various types of complementary self-care therapies may impact HRQoL when suffering from

endometriosis-related symptoms. Based on the study's findings, PWE may gain a better understanding of options for self-managing endometriosis and improving their HRQoL. Secondly, the study may provide support to professional practice and allow practical application by providing information to healthcare professionals on the various types of complementary self-care therapies that PWE have used to self-manage endometriosis and bolster their mental and physical health. In addition to working with healthcare providers to cope with endometriosis, PWE could use various types of complementary self-care therapies—such as the ones included in this study—to self-manage endometriosis and improve their HRQoL. With one in nine people born with a uterus having endometriosis in the United States, the \$78–\$119 billion annual economic burden of the disease may be lessened by PWE and healthcare professionals collaboratively strategizing to implement various types of complementary self-care therapies to improve PWE's overall health, thus lowering the direct and indirect costs of the 6.5 million Americans with endometriosis (Ellis et al., 2022).

This study may positively impact how PWE and healthcare professionals perceive the efficacy of using various types of complementary self-care therapies for improving PWE's HRQoL. The findings of the study may benefit the economy by PWE spending less on medical care and contributing more to the workforce as a result of learning how to effectively self-manage endometriosis. By considering the research and data presented in this study, future studies might follow-up on the advantages of PWE using various types of complementary self-care therapies to self-manage endometriosis and the association with PWE's HRQoL. The findings of this study may help increase awareness of

endometriosis—as well as other chronic endocrine conditions—and enhance the positive perception of using various types of complementary self-care therapies as treatments for such conditions. This is crucial for helping people properly manage these understudied, underdiagnosed, and prevalent conditions. Empowering PWE to feel more in control of their mental and physical health by using various types of complementary self-care therapies to self-manage endometriosis may generate positive social change related to improving PWE’s HRQoL.

Summary

In this chapter, I provided a preview of the study by presenting fundamental facts about endometriosis—such as the complex symptomatology, diagnosis, and treatment process associated with endometriosis—and explicating the negative impact endometriosis has on the lives of upwards of 190 million PWE worldwide due to the prevalence of the disease as well as the extraordinary personal and economic burden of endometriosis (see Ellis et al., 2022; Horne & Missmer, 2022; WHO, 2023). I introduced various factors contributing to poor mental and physical health within the population of people living with endometriosis and justified the need for additional studies examining PWE’s HRQoL related to self-managing endometriosis. I listed the study’s problem and purpose statements along with the RQs and hypotheses to demonstrate the alignment of the study. I pointed to inadequacies in the existing literature surrounding PWE’s HRQoL by exposing a gap in knowledge related to the use of various types of complementary self-care therapies to self-manage endometriosis in association with PWE’s HRQoL. I

introduced Orem's SCT and explained the importance of the theoretical foundation that guided this study.

To further demonstrate alignment within the study, I listed the key variables and described the nature of the study, including the intention behind using a cross-sectional survey research design. I explained how the data was collected from a sample of PWE and the methodology of the study. To clarify key terms and variables used in the study, I provided definitions and discussed the assumptions related to the meaningfulness of the study. I considered the purposefulness of focusing on the extent to which the use of various types of complementary self-care therapies to self-manage endometriosis is associated with PWE's HRQoL, as well as the generalizability of the study's findings. I discussed external and internal validity as well as considerations for bias and limitations of the study. I accentuated the significance of this study, emphasizing the importance of contributing to positive social change within the psychological, medical, and academic communities by increasing the knowledge of endometriosis so that PWE might receive meaningful and targeted support, education, and collaborative disease management strategies from healthcare professionals. In Chapter 2, I build upon the basis of this study by delivering an exhaustive review of the current and relevant literature surrounding the study's topic to elucidate the need to address a gap in the literature related to examining the extent to which the use of various types of complementary self-care therapies to self-manage endometriosis is associated with PWE's HRQoL.

Chapter 2: Literature Review

Introduction

As introduced in Chapter 1, the research problem this study addressed is the lack of knowledge on the extent to which the use of various types of complementary self-care therapies to self-manage endometriosis is associated with PWE's HRQoL. After searching the current literature to find the most applicable articles to include in this literature review, the limited research available on nontraditional methods of self-managing endometriosis made it clear that this study helps to fill a gap in the literature by specifically looking at how complementary self-care therapies are associated with PWE's HRQoL. Therefore, the purpose of this quantitative study was to examine the extent to which the use of various types of complementary self-care therapies to self-manage endometriosis is associated with PWE's HRQoL.

The current literature related to the topic of this study was limited due to PWE's HRQoL being understudied in relation to the use of complementary self-care therapies to self-manage endometriosis. During the extensive search of the relevant and current articles related to the scope of this study, articles presenting quantitative, qualitative, and mixed-methods studies on endometriosis management, self-management, HRQoL, and QoL were reviewed, with none of the studies reviewed examining the specific interaction of PWE's HRQoL being impacted by self-managing endometriosis using complementary self-care therapies. This gap in the literature was what this study aimed to fill. In doing so, current literature on the pathology and etiology of endometriosis was referenced. This study reviewed literature on the factors contributing to PWE's HRQoL and QoL,

including the role of chronic stress, chronic inflammation, chronic pain, mental health comorbidities, emotional well-being (EWB), the symptom burden of endometriosis, infertility, and other endometriosis-related symptoms. Social factors impacting PWE's HRQoL were also examined by reviewing literature related to PWE's personal, social, work, and academic lives as well as their intimate relationships and sexuality. Additionally, the role of cultural factors, diagnostic delay, and the financial burden of endometriosis were examined in the current literature in consideration of the impact on PWE's HRQoL. To assess the extent to which the use of various types of complementary self-care therapies to self-manage endometriosis is associated with PWE's HRQoL, relevant articles studying complementary therapies for treating endometriosis were reviewed to consider the effects of mind-body interventions, self-compassion and body compassion, as well as other physical and psychological interventions considered nontraditional. Most of the articles reviewed emphasized the need to increase knowledge and awareness of endometriosis and many researchers stressed the need for further studies on the populations affected by endometriosis.

In this chapter, I detail the literature search strategy I utilized for collecting recent peer-reviewed articles related to the key variables and concepts of the present study. The theoretical framework I used to guide the study is explained. I provide an exhaustive literature review of the articles related to the key variables and concepts of the study. In conclusion, I offer a summary of the major themes found in the literature and identify the gap in the literature that the present study fills.

Literature Search Strategy

As part of the literature search strategy for this study, I conducted thorough searches in the Walden University Library databases—using EBSCO—and search engines—including Google Scholar—with a focus on psychological, sociological, and medical journals. The primary databases searched were APA PsycInfo, ProQuest Central, ProQuest Nursing & Allied Health, PubMed, SAGE Journals, SocINDEX, and Taylor and Francis Online. To find literature in the databases and search engines, I used various combinations of terms, including *endometriosis, inflammation or inflammatory, self-care or self-management; endometriosis, self-care or self-management, quality of life; endometriosis, self-management, quality of life, alternative therapies; endometriosis, self-care or self-management, literature review or systematic review; endometriosis, quality of life, literature review or systematic review; endometriosis, health-related quality of life; endometriosis, health-related quality of life, self-care; endometriosis, health-related quality of life, self-management; and endometriosis, health-related quality of life, complementary therapies*. Variations of spellings of the terms were incorporated into the literature review search. To ensure the literature informing the study was scholarly and current, I limited the search to peer-reviewed journals and articles published no earlier than 2019.

Theoretical Foundation

As introduced in Chapter 1, Orem's SCT was the theoretical framework for this study. As a nurse, Orem approached self-care from a health and well-being standpoint and included in SCT the tenets of people being independent in completing activities to

care for themselves, eating a diet rich in nutrients, engaging in social activities, forming positive relationships, having intentional times of rest, and getting physical exercise (Orem, 1985). Orem approached independence in caring for oneself to improve health and well-being as a developmental process that could be encouraged and taught, particularly within the context of patients receiving collaborative care from healthcare practitioners (Orem, 1985). The main objective of SCT is healthcare professionals empowering patients to set their own self-care goals and providing them with support and tools to be successful in attaining optimal health outcomes, despite challenges within their environment such as lifestyle factors (Orem, 1985). These key components of SCT strengthened this present study, as they have for other recent and relevant studies, as a foundation for examining the extent to which the use of various types of complementary self-care therapies to self-manage endometriosis is associated with PWE's HRQoL.

Farshi et al. (2020) used SCT as the foundational theory in their randomized controlled trial that provided self-care group counseling to PWE in hopes of shifting the primary responsibility of managing endometriosis to PWE instead of healthcare practitioners. By breaking self-care into four elements of psychological, physical, spiritual, and social, the researchers led seven group counseling sessions to educate 38 participants with endometriosis on several self-care therapies and interventions including exercise, sleep quality (SLP), nutrition, yoga, massage therapy, and several activities that could potentially improve PWE's mental and physical health (Farshi et al., 2020). SCT was the foundation of the intervention study to meet the unique needs of each participant and identify the self-care therapies that worked best for each participant (Farshi et al.,

2020). The counseling sessions consisted of general education on endometriosis etiology, symptomatology, diagnosis, treatment, and complications; psychological, physical, spiritual, and social self-care practices to improve QoL; nutrition and diet strategies to combat inflammation; exercises to alleviate endometriosis-related symptoms; medications and non-pharmaceutical methods to cope with pain; and potential triggers of endometriosis-related symptoms (Farshi et al., 2020). For comparison, the researchers placed 35 participants with endometriosis in the control group to receive traditional medical care (Farshi et al., 2020). To assess levels of depression, anxiety, and QoL, all 73 participants with endometriosis completed the Beck Depression Inventory, State-Trait Anxiety Inventory, and Short-Form 36 questionnaires (Farshi et al., 2020).

After conducting follow-up interviews at the end of 12 weeks and analyzing the quantitative data, the researchers found statistical significance in the mean differences of anxiety and QoL scores between the intervention and non-intervention groups, with anxiety scores being lower while both physical and mental health scores were higher in the intervention group after being educated on complementary self-care therapies (Farshi et al., 2020). Although depression was found to be lower in the intervention group compared to the control group, it was not statistically significant (Farshi et al., 2020). Considering these meaningful findings, the researchers emphasized the importance of creating self-care programs to be utilized by PWE (Farshi et al., 2020). The results reflected positive social change implications related to PWE utilizing self-care therapies and supportive, collaborative interactions with healthcare professionals to improve their mental and physical health overall. As such, it was determined that a study addressing the

gap in the literature related to PWE's HRQoL would benefit from using SCT as a guide for structuring the research study and increasing awareness of the complementary self-care therapies PWE can use to improve their HRQoL by effectively self-managing endometriosis.

In the cross-sectional study by de Carvalho et al. (2022), SCT was used as the theoretical foundation to assess the self-care behaviors of 80 participants with CNCND, such as chronic respiratory and cardiovascular diseases. The CDC (2021) stated that the annual death rate due to noncommunicable diseases is 41 million individuals globally, with 15 million individuals being no more than 69 years old. Given the devastating impacts of CNCNDs that can lead to disability and death, de Carvalho et al. (2022) sought to analyze and describe the extent of self-care used by participants with CNCNDs in light of the lifestyle and sociodemographic factors affecting participants' self-care activities. The researchers also used SCT to guide the study by using participants that were patients of primary health care facilities to consider the influence of professional nurses in the education and promotion of self-care behaviors in people with CNCNDs (de Carvalho et al., 2022). The 80 participants completed a structured interview and questionnaire inquiring about their self-care activities, overall health, and sociodemographic factors, with the data quantitatively analyzed to show implications for self-care behaviors influencing the health of participants (de Carvalho et al., 2022). The study considered SCT's emphasis on conditioning factors of biological sex, education, life experiences, and overall health impacting a person's self-care and well-being (Orem, 1985). By creating concepts of self-care based on SCT, the researchers assessed participants' self-

reported gender and level of education as conditioning factors influencing self-care activities of hygiene, preparing their own meals, participating in physical activities, as well as their level of dependence in dressing, walking, urination, and defecation (de Carvalho et al., 2022).

The results of the study by de Carvalho et al. (2022) showed that each of the participants were independent in self-care activities of body hygiene, urination, and defecation, with 98.8% being independent in dressing and 96.3% being independent in walking. While 83.8% were independent in meal preparation, only 47.5% reported proper dietary intake; furthermore, 46.2% said they dealt with addiction and only 18.8% participated in physical exercise (de Carvalho et al., 2022). Of the 80 participants, 70 identified as female, 49 experienced anxiety, and 48 had an endocrine disease (de Carvalho et al., 2022), all of which related to endometriosis and factors associated with PWE's HRQoL as examined in this present study. de Carvalho et al. (2022) determined from the results of their analysis that the majority of participants could reasonably use self-care practices as described by SCT; moreover, the results suggested positive effects associated with professional nurses using SCT to structure the care provided to people with CNCs to support patients' independence in practicing self-care activities (de Carvalho et al., 2022). The researchers suggested that self-care behaviors should be widely promoted through increased awareness and education to benefit the health and well-being of people and communities (de Carvalho et al., 2022). This present study intended to contribute to that initiative by looking at associations between

complementary self-care therapies and HRQoL within a sample of participants affected by endometriosis.

As shown in the two relevant examples of using SCT as the theoretical foundation for quantitative studies, the flexibility of SCT made it an ideal theory to use in this present study as the basis for examining the extent to which the use of various types of complementary self-care therapies to self-manage endometriosis is associated with PWE's HRQoL. SCT defined the study's analysis by examining the self-care practices used by PWE to improve their HRQoL through self-management, while also considering SCT's focus on collaborative care between healthcare professionals and patients to improve patients' health and well-being (Orem, 1985). The structure of SCT was firmly rooted in patient-led self-care practices that can be implemented with any health condition to improve patients' mental and physical health (Orem, 1985), as evidenced in the related studies by de Carvalho et al. (2022) and Farshi et al. (2020) that used SCT to frame their studies. Implementing SCT in this study emphasized the need for PWE to be supported and educated by healthcare professionals through collaborative relationships from the standpoint of fostering independence in the self-management of endometriosis using self-care practices. SCT related to the research problem, purpose, and nature of the study by providing a supporting structure for improving PWE's HRQoL using various types of complementary self-care therapies to self-manage endometriosis.

Literature Review Related to Key Variables and Concepts

The Impact of Endometriosis on PWE's HRQoL

Pathology of Endometriosis

A plethora of theories on the pathology of endometriosis exist, yet the causes and development of the disease are widely debated as researchers continue to study the pathogenesis and etiology of endometriosis. Although genetics play a role, as evidenced by a high incidence rate within families with a history of endometriosis (Uzuner et al., 2023), the complexity of endometriosis leaves many questions as to the pathology of the disease. Researchers have continued to advance the understanding of the pathology and etiology of endometriosis by studying blood biomarkers in hopes of assisting healthcare practitioners in more effectively and quickly diagnosing, monitoring, and treating endometriosis, yet the inaccuracy of biomarkers paired with methodological concerns in recent studies have created uncertainty in the findings (Saunders & Horne, 2021). Chronic inflammation is a significant factor in causing and progressing endometriosis, as endometriosis is classified as a chronic inflammatory disease (WHO, 2023). In addition to inflammation contributing to the etiology of endometriosis, the endometrial-like tissues that invade parts of the body outside of the uterus result in increased inflammation in the body, constituting a bidirectional relationship (Bonavina & Taylor, 2022; Uzuner et al., 2023; WHO, 2023).

Similarly, immune dysfunction is known to be a factor in the pathology of endometriosis, with there being bidirectional relationships between stress and inflammation as well as immune dysfunction and inflammation stemming from dysbiosis,

which can occur when the microbiome is unbalanced (Uzuner et al., 2023). For example, peritoneal inflammation—likely caused by immune dysregulation—is linked to the pathology and symptomatology of endometriosis (Saunders & Horne, 2021; Uzuner et al., 2023). Inflammation and immune dysfunction both contribute to endometriosis adhesions and lesions growing, which can result in painful symptoms and complicate fertility (Uzuner et al., 2023). Other theories on the pathogenesis of endometriosis consider the impact of genetics, epigenetics, hormone dysregulation, stem cell dysfunction, retrograde menstruation, hematogenous and lymphatic metastasis or dissemination, coelomic metaplasia, and mullerian remnants (Bonavina & Taylor, 2022; Saunders & Horne, 2021; Uzuner et al., 2023).

When discussing the pathology of endometriosis, various sociodemographic risk factors are considered, especially a person's age, in addition to intricate biological factors, such as abnormalities in stem cells (WHO, 2023). Despite the pathology being largely unknown, experts believe that cellular metaplasia—the growth of endometrial-like tissue outside of the uterus due to cellular changes—and retrograde menstruation—the transportation of endometrial-like tissue through the fallopian tubes into other parts of the body during menstruation—are contributing factors to endometriosis (WHO, 2023). A significant factor in the pathology of endometriosis is elevated levels of estrogen, which can result in endometriosis developing as well as contribute to increased inflammation and pain (WHO, 2023). Additionally, many studies have found an elevated risk of developing endometriosis if menarche begins before the age of 12, as reported in the recent meta-analysis by Lu et al. (2023). The researchers compared 16 endometriosis

studies on early menarche to their own study, finding that studies occurring after 2000 had a higher rate of endometriosis linked to early menarche (Lu et al., 2023). In their own quantitative study, Lu et al. (2023) analyzed the association between early menarche and risk of endometriosis in 8,089 participants with endometriosis compared to 874,669 participants without endometriosis and found a statistically significant elevated risk by 1.34 times when PWE first menstruated prior to 12 years old. The complex range of risk factors for endometriosis and the unknown pathology warrant continued research to better understand how to prevent the development of endometriosis.

Chronic Stress

Although the etiology of endometriosis is unknown, the bidirectional influence of chronic stress and inflammation is at the root of endometriosis lesions, adhesions, scarring, and cysts related to endometrial-like tissue growing outside of the uterus (Schubert et al., 2022). The hypothalamic–pituitary–adrenal axis is known to be dysregulated by chronic stress, which promotes chronic inflammation and fuels the cyclical relationship between chronic stress and inflammation (Schubert et al., 2022). The perception and experience of stress can affect PWE in diverse ways, with studies using animal subjects pointing to a direct correlation between stress and the growth of endometriosis (Wang et al., 2021). The systematic review completed by Kalfas et al. (2022), which included 27 studies on PWE’s HRQoL, found that PWE’s perception of stress significantly alters their HRQoL, negatively impacting their mental and physical health. By mitigating chronic stress to reduce chronic inflammation, the negative impact of endometriosis-related symptoms might be minimized through non-medical methods,

empowering PWE to self-manage endometriosis and improve their HRQoL. Mind-body techniques can be used by PWE to successfully self-manage endometriosis by reducing stress through a combination of psychological and physical practices, including yoga and acupuncture. Studies such as the meta-analysis by Wang et al. (2021) emphasized the importance of studying the impact of stress on the progression of chronic inflammatory diseases such as endometriosis, showing through the analysis of numerous studies that PWE's response to stress may result in increased psychological and physical symptoms decreasing their HRQoL.

Ways for PWE to positively mediate stress need to be further studied. As noted by Schubert et al. (2022) and Wang et al. (2021), engaging the mind-body connection through mindfulness techniques and psychotherapy targeting chronic stress can positively impact PWE's HRQoL. Schubert et al. argued that previous studies assessing the use of complementary therapies, such as mind-body interventions, to treat endometriosis have lacked the rigorous quality required for scientific testing. Wang et al. commented on the potential benefits of PWE being educated on mindfulness and psychological approaches to manage chronic pain and improve their HRQoL. These recommendations and findings aligned with the present study's purpose to examine the extent to which the use of various types of complementary self-care therapies to self-manage endometriosis is associated with PWE's HRQoL.

Endometriosis-Related Symptoms

Endometriosis is a chronic inflammatory disease that can attack people born with a uterus with a myriad of physical, psychological, and emotional symptoms that

negatively impact the life course and HRQoL of PWE (WHO, 2023). Endometriosis is defined by the growth of endometrial-like tissue outside of the uterus (WHO, 2023), yet the vast scope of how displaced endometrial-like tissue—along with lesions, adhesions, scarring, and cysts—harms PWE’s mental and physical health is not commonly known by the public (Missmer et al., 2021). The symptoms are numerous—from chronic pain and fatigue to psychological disorders—and vary in presentation and severity from one person to the next—with some PWE having mild symptoms sporadically to others having severe symptoms regularly—making endometriosis a complex and misunderstood condition.

The WHO (2023) listed the most common symptom of endometriosis as chronic pelvic pain—especially during menstruation, sexual intercourse, defecation, or urination—along with heavy menstrual bleeding, fertility issues, bloating, nausea, fatigue, depression, and anxiety. Chronic pain is the leading component of many endometriosis-related symptoms, with dysmenorrhea, dyspareunia, dyschezia, dysuria, gastrointestinal pain, headaches, migraines, and other menstrual-related pain causing distress physically, mentally, and emotionally (Horne & Missmer, 2022; Van Niekerk et al., 2022a). A basic categorization of endometriosis can make people believe it is a reproductive health condition when the reality of the experience of symptoms is that endometriosis affects every aspect of PWE’s lives with a negative impact on their mental and physical health overall (Missmer et al., 2021).

Beyond the commonly recognized reproductive components of endometriosis, such as dysmenorrhea and infertility, the symptoms extend to mental health

comorbidities—including depression and anxiety—and physical health impairments—such as fatigue and chronic pain—that are interconnected and detrimental to PWE’s HRQoL (Lamvu et al., 2020; Missmer et al., 2021; Soliman et al., 2020; Van Niekerk et al., 2022a; Wang et al., 2021; WHO, 2023). Many of the symptoms individually are associated with innumerable health conditions, and the experiences of people with such symptoms can be similar even with a diagnosis other than endometriosis. However, there are distinct differences in the experiences of PWE compared to people with other conditions related to the intricacies in how, when, and to what extent the combination of symptoms present in each individual.

For example, a person with cancer may experience most of the symptoms associated with endometriosis, yet their condition is vastly different from endometriosis due to the potential for cancer to be terminal and the onset of cancer occurring at any life stage, along with the extensive symptoms that can accompany cancer that do not accompany endometriosis. Although not a terminal disease, the chronic nature of endometriosis has widespread and long-lasting consequences on the mental and physical health of PWE, necessitating studies that investigate the impact of endometriosis-related symptoms on PWE’s HRQoL and the complementary self-care therapies that may be used to self-manage endometriosis to improve their HRQoL. Such studies have been conducted on cancer and more well-known chronic conditions, yet the existing literature lacks studies examining the extent to which the use of various types of complementary self-care therapies to self-manage endometriosis is associated with PWE’s HRQoL.

The potential for PWE to experience endometriosis-related symptoms as early as preteen years—when some people born with a uterus first menstruate (WHO, 2023)—gives cause for studying the life-course impact of the condition in comparison to people without endometriosis to identify the health risks and related early life stage events—such as the development of an individual’s personality and the life goals set before adulthood—that may be impacted by endometriosis. Endometriosis-related symptoms are typically noticed within the first few years of the start of menstruation (WHO, 2023), resulting in the majority of PWE experiencing symptoms that impact their personal, academic, and social lives during formative years of personal growth and identity creation, leading to evidence that endometriosis can change the life-course of PWE (Missmer et al., 2021; Schneider et al., 2020). Unlike a chronic disease that might first present in mature adults (considered to be people 30 years and older) with fully developed brains, endometriosis tends to begin during critical stages of brain development (WHO, 2023), inherently impacting their life-course and HRQoL in unique ways not well studied in the research literature.

As an example, Schneider et al. (2020) conducted a study on 151 PWE between the ages of 18 to 25 years old—classifying it as a study on adolescents and young adults with endometriosis—yet the researchers commented on the need for studies on PWE under the age of 18 to grasp the impact on QoL during extremely important developmental years. The researchers noted statistical significance in every Short Form Survey (SF-36) score being worse for participants with endometriosis compared to participants without endometriosis; furthermore, the results showed that participants with

endometriosis dealt with relational and sexual impairment from dyspareunia two times more frequently than participants without endometriosis (Schneider et al., 2020). Given the significantly lower QoL overall, the researchers emphasized the negative impact endometriosis can have on the social lives and formative relationships of adolescents with endometriosis and stressed the importance of teens receiving an early diagnosis (Schneider et al., 2020). Knowing how endometriosis that begins in adolescence and teenage years might impact those PWE throughout their adult years is crucial for improving their HRQoL and recommending targeted self-management strategies, including complementary self-care therapies. The overarching goal of identifying complementary self-care therapies to self-manage endometriosis is giving PWE the tools to improve their HRQoL as close to the onset of endometriosis as possible, giving PWE a better chance of living their lives as they would without the influence of endometriosis.

Endometriosis-related symptoms may impact PWE's HRQoL more severely when an individual is under the age of 30, contributing to the need for further studies on age-related HRQoL assessments in PWE and the long-term impact of lowered HRQoL early in the life-course (Missmer et al., 2021; Van Niekerk et al., 2022c). The SF-36 has frequently been used to compare PWE's HRQoL to people without endometriosis, emphasizing a consensus of decreased overall health and well-being for PWE based on the average scores being substantially lower (Missmer et al., 2021; O'Hara et al., 2021; Soliman et al., 2020; Van Niekerk et al., 2022c). Effectively utilizing coping techniques to manage endometriosis is correlated with higher HRQoL, compared to lower HRQoL associated with insufficient coping techniques used by PWE (Missmer et al., 2021).

O'Hara et al. (2021) found statistically significant associations between PWE reporting higher levels of self-efficacy and increased mental and physical health as well as increased physical health when completing self-care activities. Mental health can be substantially impaired in younger populations of PWE, in particular due to insufficient methods of managing endometriosis-related symptoms (Missmer et al., 2021). The current literature has emphasized the importance of PWE having adequate resources, tools, education, knowledge, and support to effectively self-manage endometriosis and improve their HRQoL. This study examined the impact that self-managing endometriosis using complementary self-care therapies may have on PWE of all ages, looking at how PWE cope at different stages and how they can thrive in life while living with endometriosis.

Chronic Pain. Chronic pain is a leading cause of decreased HRQoL in PWE as well as people with other chronic pain conditions, with the correlation indicating that pain significantly influences the overall health and well-being of people regardless of the exact condition causing pain (Gete et al., 2023; Missmer et al., 2021; Soliman et al., 2020). Dysmenorrhea, chronic pelvic pain, dyspareunia, dysuria, dyschezia, myofascial pain, and bladder pain syndrome are common types of pain experienced by PWE (Della Corte et al., 2020; Ellis et al., 2022; Horne & Missmer, 2022; Missmer et al., 2021). These pain-related conditions associated with endometriosis can decrease HRQoL due to the uncertainty of the severity of pain and other symptoms that might be experienced at any time without warning, disrupting PWE's daily schedules and interfering with social, professional, intimate, and personal relationships (Della Corte et al., 2020; Gete et al.,

2023; Hudson et al., 2020; Missmer et al., 2021; Soliman et al., 2020). The recurrence of endometriosis-related pain has been reported in 70% of PWE receiving medical care for endometriosis, with the experience of chronic pain being undeniably linked to mental health comorbidities—such as chronic stress, depression, and anxiety—and worse mental and physical health overall compared to people without endometriosis (Ellis et al., 2022).

Chronic pain impacts every aspect of people's lives, negatively altering the life course of some PWE due to the experience of pain impeding their careers, academic pursuits, relationships, social lives, and overall mental and physical health (Della Corte et al., 2020; Gete et al., 2023; Hudson et al., 2020; Lamvu et al., 2020; Missmer et al., 2021; Soliman et al., 2020). Without effective ways to manage chronic pain aside from pharmaceutical interventions, many PWE choose to treat endometriosis primarily with prescription drugs. A study of 113,506 PWE living in the United States revealed that 89% of the participants used opioids to cope with endometriosis-related pain even though opioids are not on the list of pharmaceutical treatments for endometriosis (Ellis et al., 2022). In the midst of an ongoing opioid epidemic, this shocking statistic provided evidence of the inadequacy of traditional medical methods to treat endometriosis and pointed to a critical need for PWE to improve their HRQoL by self-managing endometriosis using various types of complementary self-care therapies.

There is a direct correlation between PWE suffering from a larger number of symptoms and their HRQoL being negatively impacted, which is also true of PWE experiencing greater severity of symptoms and lowered HRQoL (Márki et al., 2022; Pokrzywinski et al., 2020; Soliman et al., 2020; Van Niekerk et al., 2022b). The type,

frequency, and severity of endometriosis-related pain fluctuates for PWE based on innumerable factors, making the presentation of endometriosis unique from one individual to the next, especially when considering lifestyle and cultural factors that individualize PWE's experiences of living with endometriosis. An analysis of the life-course of PWE compared to people with chronic pain conditions other than endometriosis may be unequal in comparison given that the age of onset of endometriosis-related symptoms for many PWE is during early adolescence after menstruation begins (Le Roux et al., 2022; Liakopoulou et al., 2022; Missmer et al., 2021). Due to the extensive challenges of diagnosing endometriosis, especially in young populations, adolescents can suffer for years with unexplained symptoms stemming from endometriosis and have even less support in effectively treating symptoms than adults with endometriosis (Liakopoulou et al., 2022; Schneider et al., 2020).

Identifying the etiology of chronic pain and effective treatment options is critical to improving PWE's HRQoL. Researchers and experts on endometriosis continue to debate the etiology of the disease, with some theories founded on prenatal origin or immune dysfunction, while others are rooted in environmental factors or lifestyle risks causing endocrine disruption (Adoamnei et al., 2021; Della Corte et al., 2020). One element of etiology agreed upon by most experts is the vast number of genes, not just one, that influence the development of endometriosis (Bonavina & Taylor, 2022). The life-course of PWE can be negatively impacted during times when individuals are most vulnerable to pivotal life decisions, such as setting professional goals and beginning intimate relationships, due to endometriosis affecting PWE's mental and physical health

starting as early as the first menstrual cycle and, in some cases, continuing after menopause. The lack of longitudinal studies on the life-course of PWE leaves uncertainty as to the full scope of the negative impact of endometriosis on PWE's HRQoL. By analyzing the life-course of endometriosis over decades of disease progression in PWE, a more comprehensive understanding of the impact of endometriosis on HRQoL could be gained and the information used to improve endometriosis treatment.

Although a plethora of studies have been conducted on pharmaceutical and surgical interventions to treat the symptoms of endometriosis, such as controlled experimental studies measuring the effects on PWE's HRQoL when orally treating endometriosis-related pain with Elagolix (Pokrzywinski et al., 2020), there is a lack of literature on the extent to which using complementary self-care therapies when experiencing such pain impacts PWE's HRQoL. Márki et al. (2022) attempted to address this gap in the literature by conducting a qualitative study discussing PWE's perceptions of their QoL, approaches for managing endometriosis, and thoughts on complementary treatments compared to traditional medical treatments for endometriosis. After analyzing the findings from the focus groups, the predominant concern of participants was the intensity of endometriosis-related pain they experienced on a regular basis that influenced their HRQoL by negatively affecting their relationships, sexual life, fertility, finances, employment, education, and sense of femininity (Márki et al., 2022), which echoes the findings of other studies such as Rea et al. (2020). Even when participants' pain was alleviated by surgical or pharmaceutical interventions, or the use of complementary treatments, the stress and anxiety of fearing the return of chronic pain continued to

decrease their HRQoL through emotional and psychological distress (Márki et al., 2022). Falconer et al. (2022) found a lack of statistically rigorous in-depth studies on nontraditional methods for self-managing endometriosis yet identified common themes in complementary therapies that helped PWE reduce endometriosis-related pain. Although some studies have considered the use of complementary therapies for treating endometriosis and have found moderately positive implications for pain reduction, higher-quality research studies with improved methodology are necessary to substantiate the findings of weaker studies (Falconer et al., 2022). The present study helped fill this gap in the literature.

When considering the perceptions of people with chronic pain conditions, the worse their perceived experience of pain, the worse their perceived HRQoL (Gete et al., 2023; Missmer et al., 2021; Soliman et al., 2020). An important finding by Van Niekerk et al. (2022c) was the statistically significant effect of PWE's HRQoL decreasing when they experienced physical endometriosis-related symptoms, especially pain and fatigue. This echoes the findings by Soliman et al. (2020), showing statistically significant differences between PWE's HRQoL versus people without endometriosis, with chronic nonmenstrual pelvic pain contributing more than other factors to PWE's poor mental and physical health. Similarly, the extensive study by Gete et al. (2023) compared data collected using the SF-36 between 1996 and 2018 from 3,728 women and found a statistically significant decrease in the overall HRQoL of 615 participants with endometriosis included in the study. Furthermore, of all the HRQoL domains measured, the experience of physical pain was connected to the lowest HRQoL scores for

participants with endometriosis (Gete et al., 2023). The experience of chronic pain undoubtedly impacts HRQoL in negative ways, and a primary cause of distress is PWE feeling like managing pain and other endometriosis-related symptoms is out of their control (Márki et al., 2022).

Poor HRQoL being linked to chronic pain conditions is not isolated to the experience of pain but extends to the experience of other symptoms related to the condition worsening. As uncovered in the study by Van Niekerk et al. (2022a), chronic pain is only one element of decreased HRQoL and may not be as influential as other psychological elements, such as lack of control and feeling powerless over endometriosis. The formation of endometriosis lesions, adhesions, scarring, and cysts—even without the presence of endometriosis-related pain—can negatively impact PWE’s HRQoL (Missmer et al., 2021). As an example, the study by Álvarez-Salvago et al. (2020) found that participants with endometriosis had lower HRQoL in part due to significantly weaker isometric back strength, lumbar flexibility, and body balance compared to the control group, with their decreased physical fitness being linked to higher levels of fatigue. Additionally, the PWE in the study experienced significantly worse SLP, further debilitating their physical health and substantively impacting their perception of their HRQoL (Álvarez-Salvago et al., 2020).

Studies have found that sleep disturbances interfering with quality sleep is a significant component of chronic pain decreasing HRQoL (Álvarez-Salvago et al., 2020; Arion et al., 2020; Missmer et al., 2021). Arion et al. (2020) found a statistically significant correlation between PWE experiencing poor SLP and painful bladder

syndrome, drawing attention to a lesser-studied component of PWE's HRQoL being negatively impacted by endometriosis. In the study by Lamvu et al. (2020), 87.4% of the 451 participants with endometriosis described having difficulty sleeping, in large part due to chronic pain. The ability of PWE—especially in younger populations—to feel physically fit, have body strength uncompromised by a chronic health condition, and regularly experience quality sleep is crucial for improving both their mental and physical health overall.

Infertility. Endometriosis is considered a leading cause of infertility, with experts projecting that half of all people experiencing fertility issues likely have endometriosis as well (Bonavina & Taylor, 2022; Ellis et al., 2022; La Rosa et al., 2020; Márki et al., 2022; Van Poll et al., 2020). Furthermore, infertility is twice as common in PWE than those without endometriosis, making fertility a critical component of endometriosis treatment for many PWE (Bonavina & Taylor, 2022; Missmer et al., 2021). Like the pathology and etiology of endometriosis, the causes and development of infertility in PWE are largely unknown and can differ between PWE. The complicated factors and abnormalities leading to infertility are believed to comprise of inflammation that causes adhesions and fibrosis, impaired ovarian function and endometrial receptivity, changes to pelvic organs and bone structure, the stage of endometriosis, and pain interfering with sexual intercourse (Bonavina & Taylor, 2022; La Rosa et al., 2020).

Of all the endometriosis-related symptoms contributing to lower HRQoL in PWE, infertility can often cause the highest level of emotional and psychological distress (Missmer et al., 2021). In the study by Van Niekerk et al. (2022b), nonmenstrual

abdominal pain and fatigue were the most common endometriosis-related symptoms experienced by PWE. Similarly, Lamvu et al. (2020) reported that 91.8% of the 451 participants with endometriosis dealt with gastrointestinal issues and 93.6% felt fatigued due to chronic pain. However, the two symptoms described as the most distressing by PWE in the study by Van Niekerk et al. (2022b) were dysmenorrhea and infertility. Infertility can be a significant source of distress particularly in the case of an extended delay in diagnosing endometriosis due to age negatively impacting the number of eggs available and further decreasing the chance of pregnancy (Bonavina & Taylor, 2022). PWE may experience negative feelings about themselves due to infertility—such as low self-esteem and guilt—that can compromise sexual function and have detrimental consequences within sexual relationships (La Rosa et al., 2020). These psychological and relational issues can further complicate fertility treatment, making it harder to conceive (La Rosa et al., 2020).

The social and personal lives of PWE can be heavily influenced by the associated symptoms of infertility and the financial burden that may accompany treatment for infertility. Since infertility is common as PWE age, healthcare providers often recommend that PWE attempt to conceive at an earlier age than planned to increase the odds of conception (Márki et al., 2022). However, this life-changing decision to have children earlier than planned, or when PWE feel unprepared for parenthood, can increase anxiety and negatively impact their HRQoL based on relational, emotional, and financial concerns that arise (Márki et al., 2022). Given this biological component of fertility, PWE need to receive an endometriosis diagnosis earlier so that appropriate measures can

be taken during the most fertile years to increase the odds of conceiving when an individual is ready for parenthood, such as by using oocyte cryopreservation and in vitro fertilization (Bonavina & Taylor, 2022).

The added element of infertility can further compound mental health comorbidities when PWE experience psychological and emotional distress from being unable to get pregnant or even thinking about the future possibility of infertility (Márki et al., 2022). The PWE interviewed by Rea et al. (2020) voiced their profound distress when pondering the role of endometriosis in their fertility as well as the potential risks to a fetus if they became pregnant while using pharmaceutical interventions. The psychological toll of infertility on PWE is well documented, with studies such as the one by Pessoa de Farias Rodrigues et al. (2020) quantitatively analyzing the impact of infertility on PWE's QoL. The researchers differentiated their study from related studies by factoring in the stage of endometriosis for each of the 106 participants and found no statistical significance in the association between stage and QoL (Pessoa de Farias Rodrigues et al., 2020). However, there were statistically significant differences when assessing the participants' severity of endometriosis-related symptoms—especially dyspareunia and pelvic pain contributing to infertility—for QoL domains of general health as well as emotional and physical functioning (Pessoa de Farias Rodrigues et al., 2020). Thus, the researchers discovered that PWE's QoL related to infertility may be more impacted by the perception of endometriosis-related pain hindering their fertility than their stage of endometriosis (Pessoa de Farias Rodrigues et al., 2020).

Mental Health Comorbidities

Living with endometriosis can negatively impact the mental health of PWE and reduce their HRQoL, as presented within studies analyzing the prevalence of PWE experiencing mental health comorbidities such as depression and anxiety, which can heighten with the onset of endometriosis-related symptoms (Missmer et al., 2021; Van Niekerk et al., 2022a; Van Niekerk et al., 2022b; Van Niekerk et al., 2022c; Wang et al., 2021). These studies showed that endometriosis is often paired with mental health comorbidities developing during certain life phases and impacting PWE's HRQoL, which can compromise PWE's ability to function as they would without the influence of psychological disorders. The study by Wang et al. (2021) covering 44 studies on depression, anxiety, and HRQoL in PWE revealed statistically significant rates of both depression and anxiety in PWE, and significantly lower HRQoL overall, compared to individuals without endometriosis. Comparatively, Missmer et al. (2021) showed that HRQoL was negatively impacted by depression and anxiety in up to 48% of PWE, with many cases of mental health comorbidities connected to the loss of workdays and productivity resulting from the experience of endometriosis-related symptoms.

As shown in the study by Márki et al. (2022) that used participants without mental health comorbidities, anxiety played a significant negative role in PWE's HRQoL— affecting their personal, social, academic, and work lives—regardless of having an official diagnosis of a psychological disorder. Furthermore, Arion et al. (2020) provided evidence of sleep disturbances and sleep deprivation being linked to higher rates of depressive symptomatology experienced by PWE. Farshi et al. (2020) studied the impact

of self-care group counseling—grounded in the tenets of Orem’s SCT—on the mental health of PWE, finding statistical significance in the mean differences of anxiety and QoL scores between the intervention and non-intervention groups. The study’s results highlighted the benefits of self-managing endometriosis by way of focusing on psychological, physical, spiritual, and social elements of self-care practices to positively impact PWE’s HRQoL by decreasing anxiety, which implicated additional advantages of using complementary self-care therapies to boost mental health (Farshi et al., 2020). By including PWE and healthcare practitioners in their study, Rowe et al. (2021) found a consensus amongst the two groups of participants regarding the necessity of PWE being supported by multidisciplinary care—from consulting with functional and integrative medicine practitioners to receiving self-management education—to address the broad spectrum of mental, physical, and emotional challenges impacting PWE’s HRQoL. Studies such as these emphasized the positive impact on HRQoL when PWE are validated by practitioners and get to participate in collaborative care with a diverse network of healthcare professionals.

The psychological impact of endometriosis can extend to unhealthy feelings of low self-worth, self-confidence, and self-esteem due to PWE’s emotions being altered by hormone imbalances and other endometriosis-related symptoms (Missmer et al., 2021). Negative body image, particularly in the form of body image disturbance, can enhance depression and anxiety in PWE (Calvi et al., 2023), further decreasing their HRQoL—especially emotional HRQoL (Van Niekerk et al., 2022c). As specified by Missmer et al. (2021), mental health comorbidities, such as depression and anxiety, are more likely to

occur in PWE than those without endometriosis. This was corroborated in the meta-analysis by Wang et al. (2021), which found that the 33,704 PWE living in North America had significantly higher rates of depression compared to the 7,145,332 individuals without endometriosis. This suggested a markedly heavier toll on PWE's HRQoL, especially mental health, in North America related to living with endometriosis.

Calvi et al. (2023) showed that psychological distress, depression, and anxiety more profoundly impacted PWE when they lacked adequate social support (SS) and felt lonely. Depression and anxiety can inhibit PWE from keeping social commitments to friends and attending to work responsibilities, creating a cyclical relationship between these factors and mental health comorbidities (Calvi et al., 2023; Márki et al., 2022; Missmer et al., 2021). A contributing factor to the heightened feelings of hopelessness, inadequacy, guilt, and irritation that come with living with endometriosis is the inability of PWE to control or predict the onset and severity of endometriosis-related symptoms, from pain to depression and fatigue (Márki et al., 2022; Missmer et al., 2021). In the case-control study by Álvarez-Salvago et al. (2020), the participants with endometriosis experienced significantly greater behavioral, sensory, cognitive, and affective fatigue than the control group, as measured using the Piper Fatigue Scale. The stark contrast between energy levels and productivity in PWE when symptoms flared up versus subsided is a testament to the limitations of living with endometriosis that substantially impact PWE's personal, work, academic, and social lives.

The mental health repercussions of living with endometriosis can negatively impact the major life events of PWE, preventing PWE from achieving goals or

attempting to pursue ambitions deemed unlikely to be achievable when dealing with endometriosis-related symptoms. In particular, when adequate support is not received by healthcare professionals treating PWE, the ramifications can extend to the mental health of PWE further deteriorating without the necessary help to improve their HRQoL and mediate the impact of endometriosis-related symptoms (Márki et al., 2022; Missmer et al., 2021; Rowe et al., 2021). The participants in the study by Márki et al. (2022) stressed the psychological and emotional distress caused by healthcare professionals having limited understanding of endometriosis, leading to long delays in diagnosis and endometriosis-related symptoms being misdiagnosed or normalized by healthcare practitioners. As detailed in the review by O'Hara et al. (2019), PWE expressed confidence and motivation to self-manage endometriosis when receiving positive support from practitioners communicating extensive knowledge of endometriosis. In the qualitative study by Rowe et al. (2021), compassionate care from healthcare practitioners was identified by PWE as a powerful factor in improving their HRQoL, most notably when practitioners collaborated with PWE to understand their specific needs and recommended nontraditional methods for treating endometriosis-related symptoms.

Conversely, depression and anxiety may worsen in PWE when their symptoms are not understood by the people playing vital roles in their lives or when endometriosis-related symptoms are not validated by healthcare professionals, adding to PWE's feelings of isolation and confusion regarding their experiences of symptoms as well as uncertainty of how to manage endometriosis (Calvi et al., 2023; Missmer et al., 2021; O'Hara et al., 2019; Rea et al., 2020; Rowe et al., 2021; Soliman et al., 2020). However, as reported by

O'Hara et al. (2019), negative interactions with practitioners are far more common for PWE than positive interactions, with the worst exchanges involving practitioners dismissing or communicating disbelief in PWE's experiences, normalizing endometriosis-related symptoms, and harshly judging PWE's coping and management strategies. In the study by Rowe et al. (2021), PWE mentioned feeling shame after negative interactions with healthcare practitioners who lacked empathy and respect for the experiences PWE shared related to living with endometriosis. Furthermore, PWE described chronic anxiety stemming from fear of how endometriosis might impact their futures, the consequences of long-term pharmaceutical drug use, having negative interactions with multiple healthcare practitioners, and the potential of infertility (Rowe et al., 2021). The consensus of the existing literature was that PWE's mental health is significantly negatively impacted by the prevalent issue of inadequate support for living with endometriosis.

Symptom Burden

The symptom burden of endometriosis, with its toll on mental and physical health, is a powerful influence in lowering PWE's HRQoL. The experiences of PWE are a spectrum ranging from asymptomatic to the severity of symptoms causing disability. The negative impact of endometriosis-related symptoms includes physical limitations affecting PWE's ability to perform tasks in their personal, social, academic, and professional lives as well as psychological issues compromising PWE's ability to cope with the burden of the disease (Van Niekerk et al., 2022a). Chronic pain is the leading component of many endometriosis-related symptoms, with chronic pelvic pain,

dysmenorrhea, dyspareunia, headaches, gastrointestinal pain, and other menstrual-related pain causing distress physically, mentally, and emotionally (Van Niekerk et al., 2022a). This connection between physical and psychological symptoms related to endometriosis was evidenced in several other studies focused on PWE's HRQoL (Falconer et al., 2022; Kalfas et al., 2022; Soliman et al., 2020; Wang et al., 2021).

Although there are several endometriosis-related symptoms, pain and infertility are studied far more frequently and in-depth than other symptoms that some PWE consider more distressing. Recent studies looking at the impact of endometriosis-related symptoms on PWE's HRQoL touched on lesser-discussed symptoms, such as fatigue and nausea, that can negatively affect the daily functioning of PWE, yet the use of complementary self-care therapies to self-manage endometriosis was rarely mentioned in the literature. The extent and impact of psychological distress related to living with endometriosis is particularly important for future studies to examine due to the correlation between emotional distress leading to high incidences of anxiety and depression in PWE (Farshi et al., 2020; Kalfas et al., 2022; Kfoury et al., 2023; Wang et al., 2021). As the review by O'Hara et al. (2019) found, PWE being well-informed on endometriosis can lead to feeling increased anxiety, implicating that the overwhelming amount of information on endometriosis—as well as conflicting information—can be a source of emotional distress. Although Farshi et al. (2020) did not find a significant reduction in depression after PWE attended self-care group counseling sessions, they did find a statistically significant reduction in anxiety for the intervention group, which

warrants further examination of self-care strategies that may positively mitigate mental health comorbidities experienced by PWE, especially anxiety.

Experiencing various forms of chronic pain at any given time, or constantly in some cases, can intensify the endometriosis-related symptoms of fatigue, anxiety, depression, and other psychological comorbidities, further decreasing PWE's HRQoL (Kalfas et al., 2022; Soliman et al., 2020; Van Niekerk et al., 2022a). The study by Missmer et al. (2021) revealed a psychological comorbidity rate of nearly 60% in participants with endometriosis, indicating that PWE's HRQoL can suffer severely from the mental health aspect of endometriosis in addition to the well-studied physical health impact of endometriosis-related pain. The study further explained that the cyclical nature of endometriosis-related pain coincides with the ebb and flow of depression, anxiety, somatoform disorder, and other psychological comorbidities commonly experienced by PWE (Missmer et al., 2021). In the meta-analysis by Wang et al. (2021) analyzing 44 studies, endometriosis was found to impact PWE's HRQoL through statistically significant levels of depression and anxiety compared to those without endometriosis, with high levels of fatigue and insomnia also noted along with other somatoform disorders. Specific to endometriosis-related pain, Missmer et al. (2021) found that the more severe the endometriosis-related pain, the higher the odds of mental health conditions coexisting in PWE, to the extent that 53% of PWE with high levels of endometriosis-related pain had at least one psychological disorder. Kalfas et al. (2022) completed a systematic review of 27 studies on the associations between endometriosis-related pain, PWE's HRQoL, and various psychosocial factors, and found statistical

significance in seven studies regarding the associations between PWE having anxiety and worse pain levels. Furthermore, anxiety and lowered HRQoL were significantly associated in five of the studies analyzed by Kalfas et al. (2022).

A reason to believe that self-managing endometriosis with complementary self-care therapies may positively influence PWE's HRQoL is the evidence of pain responses being unique based on PWE's emotional reactions and cognitive awareness of experiencing pain (Van Niekerk et al., 2022a). How PWE perceived the pain being experienced dictated the impact on their HRQoL, with more negative perceptions of endometriosis-related pain leading to greater distress (Van Niekerk et al., 2022a). HRQoL is lowered not only by the frequency and severity of chronic pain, but also by the number of endometriosis-related symptoms experienced by PWE increasing (Márki et al., 2022; Pokrzywinski et al., 2020; Soliman et al., 2020; Van Niekerk et al., 2022b). Endometriosis lesions forming in the pelvis often cause dyspareunia and result in distress from the discomfort and pain of intercourse as well as the consequences of sexual intimacy being compromised by dyspareunia. The symptom of infertility can be doubly impacted by dyspareunia and endometrial lesions, making it difficult to conceive (Missmer et al., 2021; Van Niekerk et al., 2022a). Chronic pain is significantly correlated to poor HRQoL across studies on numerous chronic pain conditions, with endometriosis having a direct negative impact on mental health. Statistical analysis by Van Niekerk et al. (2022a) revealed that PWE perceived their HRQoL significantly better when they experienced less than 10 endometriosis-related symptoms. A common theme in the study's findings—based on ranking the significance of each symptom impacting

HRQoL—was participants feeling distress from the symptom burden of endometriosis, leading to PWE’s HRQoL being worse when they experienced higher levels of distress (Van Niekerk et al., 2022a). Effectively self-managing endometriosis may reduce the number of symptoms experienced by PWE and subsequently improve their HRQoL.

PWE’s HRQoL is negatively impacted, most notably, by endometriosis-related pain and fatigue occurring outside of menstruation, while dysmenorrhea is a significant contributor to lowered HRQoL during menstruation (Soliman et al., 2020; Van Niekerk et al., 2022a). Additionally, the fear of fertility being compromised by endometriosis is a leading cause of decreased HRQoL. These two components of the symptom burden experienced by PWE are the most cited in studies on PWE’s HRQoL, yet numerous other elements play critical roles in developing PWE’s mental and physical health. For example, when rating the specific influences on HRQoL, PWE ranked lack of control and feeling powerless over endometriosis as the worst impacts on HRQoL, while positive EWB was predominantly associated with greater HRQoL (Van Niekerk et al., 2022a). Other studies noted feelings of isolation, loneliness, and hopelessness as significant factors decreasing PWE’s HRQoL (Calvi et al., 2023; Márki et al., 2022; Missmer et al., 2021; Rea et al., 2020; Soliman et al., 2020).

As emphasized in the study by Rea et al. (2020), PWE frequently confront disbelief and lack of understanding from family, friends, employers, coworkers, and healthcare professionals regarding their endometriosis-related challenges, which in addition to prolonging the diagnostic delay may also damage their relationships and further decrease their HRQoL due to distressing feelings of loneliness and

misunderstanding. Depression and anxiety, measured independently, have been significantly associated with decreased HRQoL and increased pain in studies on endometriosis-related symptoms compromising PWE's mental and physical health (Kalfas et al., 2022). Moreover, Van Niekerk et al. (2022a) found that PWE rated their levels of anxiety and depression as being roughly equal—with the impact on HRQoL being moderate—whereas physical health issues were rated less concerning than mental health issues affecting HRQoL. As such, future studies are required to understand the extent to which the use of various types of complementary self-care therapies to self-manage every aspect of the endometriosis symptom burden is associated with PWE's HRQoL.

Although pain is the most cited endometriosis-related symptom associated with decreased HRQoL across major studies, the statistical analysis of the symptom burden of endometriosis conducted by Van Niekerk et al. (2022a) emphasized the substantial burden of lesser-discussed symptoms of nausea, fatigue, and bloating on PWE's HRQoL. While other studies listed these common endometriosis-related symptoms, the researchers did not dissect the impact of symptoms considered to be less distressing than the well-known symptoms of pain and infertility. This leaves a gap in knowledge related to the specific impact of other symptoms on PWE's HRQoL, as pointed out by Kfoury et al. (2023). Understanding the influence of symptoms unrelated to pain is essential to improving PWE's EWB by identifying components of HRQoL that could be positively impacted by PWE self-managing endometriosis. PWE having access to information on every element of the symptom burden of endometriosis and the tools to mitigate distress

could lead to positively improving self-management of endometriosis and increasing HRQoL (Rowe et al., 2021; Van Niekerk et al., 2022a). A valuable takeaway from the study by Van Niekerk et al. (2022a) was the importance of analyzing the individual experiences of living with the symptom burden of endometriosis to understand how PWE's perceptions of symptoms influence their mental and physical health outcomes. Effective treatment of endometriosis requires considering the entire experience of the symptom burden of endometriosis so that each aspect of HRQoL can be individually assessed and managed.

EWB

By testing factors correlated with HRQoL, Van Niekerk et al. (2022a) found that older PWE have better HRQoL than younger PWE, showing that the symptom burden is perceived as less severe by PWE closer to perimenopause and more severe by PWE closer to the prime years of fertility. Experiencing severe pain lowered PWE's EWB and negatively impacted their HRQoL (Van Niekerk et al., 2022a), which was also found in the study by Márki et al. (2022) with the added element of well-being further decreasing due to the distress of chronic pain manifesting at any given time. However, PWE perceived their EWB as better after living with endometriosis-related symptoms for a longer stretch of time, indicating that HRQoL increases as EWB improves over time (Van Niekerk et al., 2022a). Like the connection to age, PWE reported higher HRQoL the more experience they had with managing endometriosis long-term (Van Niekerk et al., 2022a). This highlighted the lengthy process of learning to live with a chronic disease and gradually identifying methods to positively impact HRQoL through improving EWB.

Furthermore, self-esteem and EWB can be positively impacted by PWE having strong relationships and SS to combat the feelings of isolation and loneliness that accompany living with endometriosis (Márki et al., 2022; Missmer et al., 2021; Soliman et al., 2020).

One important aspect of EWB not adequately explored in prior studies is the impact of genital pain—most notably, clitoral and vulva pain—in reducing HRQoL, which the study by Van Niekerk et al. (2022a) reported as the factor correlated with the worst HRQoL compared to all other factors. Beyond the physical distress of genital pain, the psychological implications of sexual impairment and pain associated with sexual behaviors were leading factors in lowered EWB and HRQoL. The intimate nature of sexual influences on PWE’s HRQoL likely contributes to the understudied impact of genital pain in the overall symptom burden of endometriosis. Dyspareunia and pain following sexual intercourse are more commonly studied in samples of PWE, but the specifics of pain associated with sex—such as the location of the pain—are not well known (Van Niekerk et al., 2022a). Understanding the extent of the impact genital pain has on EWB—such as experiencing less sexual satisfaction and greater relational problems with intimate partners—is a crucial component of improving PWE’s HRQoL. PWE can experience psychological distress within their sexual relationships due to endometriosis-related symptoms interfering with or preventing intercourse and sexual pleasure with partners (Kfoury et al., 2023; Rea et al., 2020). Furthermore, the intimate nature of genital pain and sexual dysfunction makes these contributors to PWE’s HRQoL more likely to be successfully addressed through self-management strategies that do not require the involvement of healthcare professionals. Empowering PWE with the

knowledge and tools to use complementary self-care therapies to self-manage the symptom burden of endometriosis may contribute to higher HRQoL by reducing psychological distress related to discussing the intimate details of genital pain and sexual impairment.

Studies such as these focusing on factors that improve PWE's HRQoL point to the need for educating and empowering PWE to self-manage endometriosis using complementary self-care therapies. Reducing distress associated with the symptom burden of endometriosis is tied to improving EWB, with the link to age and longer duration of symptom burden indicating that PWE's HRQoL improves over time (Missmer et al., 2021; Van Niekerk et al., 2022a; Van Niekerk et al., 2022b; Van Niekerk et al., 2022c). By empowering PWE with a sense of control over managing the symptom burden of endometriosis using complementary self-care therapies, PWE's HRQoL may substantially improve, especially given the study findings that abdominal pain—more than other factors—was strongly associated with a sense of powerlessness leading to reduced EWB and HRQoL (Van Niekerk et al., 2022a). Accelerating the timeline for PWE to experience higher levels of HRQoL at earlier ages and after a shorter duration of symptom burden could be associated with PWE effectively self-managing endometriosis by finding complementary self-care therapies that reduce the symptom burden and improve EWB.

Social Factors Impacting PWE's HRQoL

Personal Life. Endometriosis is taxing on the personal lives of PWE, which encompasses various levels of interpersonal relationships from friendships to intimate

relationships (Missmer et al., 2021). As part of the endometriosis-related symptoms experienced by PWE, dyspareunia can occur, causing sexual distress and negatively impacting the intimate relationships of PWE. Missmer et al. reported that 78% of participants experienced sexual distress and 32% experienced sexual dysfunction. Endometriosis-related distress and dysfunction can decrease HRQoL through the experience of pain during and after intercourse, increased anxiety, lowered self-esteem, lack of intimacy, and problems within intimate relationships. The emotional distress of endometriosis symptoms resulting in disruption of intimate relationships commonly causes PWE anxiety regarding the status of their relationships with intimate partners, making support received by partners an integral part of improving PWE's HRQoL (Márki et al., 2022; Missmer et al., 2021; Rea et al., 2020).

Intimate Relationships and Sexuality. Comparing recent literature on endometriosis impacting the personal lives of PWE by affecting their intimate relationships revealed how the symptom burden of endometriosis contributes to decreased HRQoL. The research has indicated that living with endometriosis significantly and negatively impacts an individual's QoL, HRQoL, and sexual QoL (SQoL; Facchin et al., 2021; Hudson et al., 2020; McKay et al., 2021; Kfoury et al., 2023; Van Poll et al., 2020). All the studies reviewed on this topic agreed that mental health is significantly compromised, in part, due to the consequences of the symptom burden of endometriosis interfering with PWE's intimate relationships and sexual satisfaction. The studies by Facchin et al. (2021) and Van Poll et al. (2020) found significant correlations between experiencing dyschezia and having decreased HRQoL

related to lower SQoL. Paramount in enhancing PWE's HRQoL is cultivating supportive intimate relationships rooted in their partners' understanding of their experiences living with the symptom burden of endometriosis. Through the analysis of hundreds of PWE, these studies discovered that an important missing link for maintaining positive intimate relationships and sexual satisfaction is utilizing effective treatments for endometriosis-related symptoms—such as dyspareunia, chronic pelvic pain, fatigue, and depression—to improve PWE's HRQoL.

SQoL can significantly impact PWE's HRQoL by affecting their mental health, intimate relationships, and social lives (Van Poll et al., 2020). When rating their level of SQoL, PWE tend to have lower SQoL than those without endometriosis. Sexual pleasure and performance can be negatively impacted by the compromising symptoms of endometriosis, such as dyspareunia and psychological comorbidities. Of all the factors associated with poor SQoL in PWE, experiencing dyspareunia was found to be the most influential, followed by experiencing severe dysmenorrhea and being unemployed (Van Poll et al., 2020). Comparatively, Facchin et al. (2021) indicated that PWE experienced greater mental health when their personal and intimate relationships were fulfilling, and worse mental health when endometriosis-related pain interfered with those relationships. Van Poll et al. (2020) showed that PWE's SQoL was significantly decreased by experiencing severe dysmenorrhea, which further draws a connection between HRQoL being substantially influenced by SQoL because of the extensive symptom burden of endometriosis. Stability, satisfaction, and support derived from a partner are significantly

associated with PWE having better HRQoL, as identified in the systematic review by Kalfas et al. (2022).

Positive support from intimate partners is paramount in helping PWE thrive in life and effectively self-manage endometriosis. By separately interviewing PWE and their partners to compare the experiences of couples within long-term relationships affected by endometriosis, Hudson et al. (2020) gained novel insights into the impact of endometriosis on couples' relationships and uncovered unique aspects of PWE's intimate lives. While the responses were diverse, the underlying theme was PWE's partners being genuinely concerned about the life-long consequences of living with endometriosis (Hudson et al., 2020). The interviews conveyed that some PWE suffering from pain during intercourse hide the pain from their partners, and some partners of PWE hide their feelings about how endometriosis affects them, both in hopes of protecting their partners and their relationships (Hudson et al., 2020). Bladder pain syndrome can co-occur with endometriosis, further impacting PWE's SQoL due to pain interfering with sexual pleasure and performance; furthermore, vaginal penetration during intercourse can cause increased pain in some PWE, which can also decrease SQoL (Van Poll et al., 2020). As denoted in the review by O'Hara et al. (2019), support from sexual partners in managing pain symptoms, particularly by abstaining from sexual intercourse causing dyspareunia, can positively impact PWE's HRQoL and further encourage them to self-manage endometriosis.

PWE would benefit from broadening the pool of resources to include complementary self-care therapies to cope with endometriosis-related symptoms that

negatively impact SQoL. Traditional medical methods for treating endometriosis, such as surgery and pain medication, were the only interventions mentioned in the studies to address endometriosis-related symptoms affecting PWE's SQoL (Facchin et al., 2021; McKay et al., 2021; Kfoury et al., 2023; Van Poll et al., 2020). For alleviating dyspareunia, and potentially improving SQoL, the studies determined that surgical treatment was most effective for PWE. However, Van Poll et al. (2020) noted that pain-relieving treatments were a temporary fix for PWE experiencing chronic pelvic pain and dyspareunia, not a permanent resolution for lower SQoL and HRQoL. Additionally, some surgical and pharmacological treatments interfere with fertility, making complementary therapies necessary for PWE actively trying to become pregnant. Furthermore, Van Poll et al. (2020) emphasized the dominant role of dyspareunia in decreasing SQoL and encouraged further research on nontraditional methods to eliminate pain during sexual intercourse and improve SQoL, and HRQoL, overall. None of the studies mentioned specific complementary treatments or self-care therapies that might make a positive difference in PWE's SQoL or HRQoL, further validating the need for future research examining the use of complementary self-care therapies to self-manage endometriosis.

The goal of PWE finding effective ways to self-manage endometriosis and improve their HRQoL includes having full autonomy over their sexuality by using complementary self-care therapies to improve their sexual functioning, such as by reducing the effects of dyspareunia and depression. As emphasized in the study by Van Poll et al. (2020), a correlation existed between PWE's self-image (SI) and sexuality being negatively impacted by the symptom burden of endometriosis, which led to

decreased HRQoL. This finding was echoed in the study by Van Niekerk et al. (2022c), which analyzed the influence of PWE's body image on a wide range of HRQoL components and found that intimate partnerships were negatively impacted by their perceptions of how their body functioned and looked. Moreover, Calvi et al. (2023) found that body image disturbance led to participants with endometriosis feeling increased emotional loneliness because of self-consciousness decreasing their satisfaction within sexual partnerships. Thus, the way PWE view themselves, their bodies, and their sexuality directly influences their personal and intimate relationships (Calvi et al., 2023; Facchin et al., 2021; McKay et al., 2021; Kfoury et al., 2023; Rea et al., 2020; Van Poll et al., 2020). As emphasized by Van Niekerk et al. (2022c), effective endometriosis treatment should include encouraging PWE to practice positive body image, as feelings related to body image are some of the most powerful influences on PWE's HRQoL. Using complementary self-care therapies to improve body image may help PWE express their sexuality without limitations related to endometriosis, leading to higher SQoL and HRQoL in PWE.

To further this understanding, Van Niekerk et al. (2022c) compared the mental and physical health of 318 PWE to 420 individuals without endometriosis and found statistical significance, with a large effect size, in the differences in HRQoL—most notably, the levels of depression and anxiety—between the two groups. The study notated statistical significance, with a moderate effect size, in PWE having worse body image than those without endometriosis as well as feeling greater dissatisfaction with, and disconnection from, their bodies (Van Niekerk et al., 2022c). Similarly, the study

findings by Calvi et al. (2023) showed significant associations between PWE experiencing heightened body image disturbance and feeling less SS as well as increased emotional loneliness stemming from intimate relationships.

Kfoury et al. (2023) analyzed the differences in sexual satisfaction between PWE and those without endometriosis to enhance the understanding of how endometriosis negatively impacts intimate relationships, sexual satisfaction, and HRQoL. The results of the study indicated that PWE had higher sexual satisfaction scores, and overall HRQoL, after undergoing surgical treatment, although hormone therapy and fertility treatments resulted in worse psychological comorbidities—including depression, anxiety, and chronic stress—with depression decreasing sexual satisfaction (Kfoury et al., 2023). McKay et al. (2021) focused on the role of sexual satisfaction within PWE's intimate relationships and stated that PWE experienced less sexual satisfaction than their respective partners, with fatigue contributing most notably to lower satisfaction and HRQoL. Research needs to be conducted on effective ways for PWE to self-manage endometriosis using complementary self-care therapies that improve their SQoL and strengthen their intimate relationships, thus contributing to better HRQoL overall.

Social Life. The extent of endometriosis-related symptoms experienced by PWE often dictates their social lives, given the severity of pain and other mental and physical health concerns related to endometriosis (Missmer et al., 2021). More so than other components of HRQoL, living with chronic pain and other endometriosis-related symptoms from the onset of endometriosis can have long-lasting effects on PWE's mental and physical health stemming from their social lives being altered by the disease

(Márki et al., 2022; Missmer et al., 2021). Missmer et al. (2021) found that nearly 50% of their participants with endometriosis were limited in their social activities by physical impairments or ailments, most notably attributed to endometriosis-related pain. The study emphasized the magnitude of endometriosis-related symptoms disturbing the life-course of PWE by impacting relationships and limiting the social interactions they might experience without the influence of a debilitating condition (Missmer et al., 2021). Similarly, the study by Schreurs et al. (2023) found statistical significance in the relationship between PWE's QoL and feeling emotionally supported to alleviate fear and anxiety. As humans are social creatures, the consequences of impaired social lives may include deteriorating health linked to increased psychological distress—such as depression and anxiety—and decreased SS for PWE (Márki et al., 2022; Missmer et al., 2021).

When endometriosis-related symptoms hinder PWE from engaging in social activities, the isolation and lack of relational interactions can negatively impact PWE's HRQoL through emotional distress and heightened sensations of symptoms (Missmer et al., 2021). Studies have demonstrated that PWE who feel alone in their experiences of living with endometriosis—and disconnected from friends and family who are unaffected by a chronic disease—are likely to be affected by poor EWB and self-esteem (Márki et al., 2022; Missmer et al., 2021; Soliman et al., 2020). Pain can be a powerful influence on the social lives of PWE, as highlighted by Missmer et al. (2021) with 59% of participants indicating that endometriosis-related pain inhibited their engagement in social events they would have otherwise attended. Chronic pain can often be paired with fatigue, further

limiting the social interactions of PWE and increasing the toll on their mental and physical health (Lamvu et al., 2020; Missmer et al., 2021). Studies exploring the impact of endometriosis on PWE's HRQoL conveyed the need to conduct future studies on the influences of social factors—such as support from partners, family, friends, other PWE, and healthcare professionals—on PWE's mental and physical health, as the existing literature on these topics is scarce (Kalfas et al., 2022; Missmer et al., 2021; Schreurs et al., 2023).

Work Life. A plethora of studies have focused on the consequences of endometriosis impacting PWE's work life and the disruptions that the condition causes in meeting career goals, with this study's review of the literature finding several articles on the topic specific to PWE's HRQoL (Ellis et al., 2022; Missmer et al., 2021; Mousa et al., 2021; Van Niekerk et al., 2022c). PWE are more likely than those without endometriosis to lose work hours due to experiencing endometriosis-related pain and symptoms, as highlighted by Missmer et al. (2021) indicating that PWE are on bedrest roughly 17 days per year, which adds to the loss of work hours related to endometriosis. Even when workdays are not missed, PWE can experience a loss of productivity that impedes the potential for earning raises and securing higher-paying positions (Missmer et al., 2021). Moreover, loss of productivity at work due to endometriosis-related symptoms—an increasingly common source of distress expressed by PWE—is a significant factor that compromises the work life of PWE and decreases their HRQoL due to the complex emotional, financial, and career consequences of work impairment (Ellis et al., 2022).

As stated by Van Niekerk et al. (2022c), there was a statistically significant connection between optimal physical health and having a job, as PWE were found to have higher HRQoL when employed. The study by Missmer et al. (2021) revealed that severe endometriosis symptoms can cause PWE to miss approximately 7 hours of work per week, which contributes to the loss of jobs from increased missed workdays and decreased work productivity associated with living with endometriosis (Missmer et al., 2021). Comparatively, some PWE reported 6 hours of productivity lost per week, which can result in 75-84% of the financial cost of endometriosis being directly linked to loss of income (Ellis et al., 2022). Missmer et al. (2021) also showed that the longer it takes for endometriosis to be diagnosed, the greater the negative impact on PWE's work hours and productivity. Consequently, PWE's stunted career growth and the financial burden of lost work hours plays significant roles in decreasing their HRQoL. Bolstering PWE's self-management strategies with complementary self-care therapies may diminish the loss of income by empowering PWE with ways to cope with and treat endometriosis-related symptoms, both by reducing absenteeism and improving productivity at work. Perhaps more than any other area of PWE's lives, effectively self-managing endometriosis could drastically alter the life-course of PWE in positive ways by reducing the significantly detrimental impacts of endometriosis on PWE's careers and income.

With people's professional success defining much of their personal and social success, the negative interference of a chronic condition like endometriosis may change the trajectory of their life-course. When comparing the level of endometriosis-related pain to work hours, Missmer et al. (2021) found that PWE with more severe pain were

more likely to be unemployed and be on short-term disability. Van Niekerk et al. (2022c) drew the connection between employment status and HRQoL in their study, reporting that PWE had significantly better emotional health when employed. Living with the debilitating symptoms of endometriosis may contribute to PWE working part-time instead of full-time, giving up favorable jobs for positions with less stress and more flexibility in hours, passing on opportunities to advance careers, or making the decision to be unemployed (Missmer et al., 2021). Ellis et al. (2022) stated that 46.5% of work impairment experienced by PWE was connected to endometriosis-related symptoms reducing their productivity during work hours. Participants in the study by Márki et al. (2022) explained that living with endometriosis had put their jobs at risk and added pressure to work relationships—especially with bosses—further increasing their stress and anxiety. These challenges faced in the workforce often result in greater distress and lower HRQoL (Márki et al., 2022; Missmer et al., 2021; Van Niekerk et al., 2022c).

Academic Life. Similar to the loss of work hours, PWE may experience setbacks and delays in educational attainment, or an inability to complete a degree, due to symptoms interfering with the completion of coursework. The severity of endometriosis-related pain significantly contributes to the extent of career and educational goals pursued and achieved by PWE, as seen in the thematic analysis of Márki et al. (2022) revealing that endometriosis symptoms led to taking extended leaves from academic pursuits. In cases of endometriosis and other chronic pain-related conditions, such as fibromyalgia, the number of school hours attended by students with these conditions is, on average, less than students without these conditions (Missmer et al., 2021). Furthermore, students with

deep endometriosis had a higher rate of missed school days compared to students with other forms of endometriosis, with pain being the primary reason for being absent (Missmer et al., 2021).

Cultural Factors. PWE's experiences can be vastly different based on the gender and marital expectations of people's cultures, as emphasized in the studies by Kfoury et al. (2023) on Lebanese PWE, Mousa et al. (2021) on Arab PWE, and Adoamnei et al. (2021) on Spanish PWE. Heightening the risk to PWE's HRQoL are cultural factors dictating societal and familial roles of biological females, such as bearing children and refraining from personal advocacy, that can prevent PWE from gaining access to appropriate healthcare or necessary support when living with endometriosis (Mousa et al., 2021). For example, Arab PWE may face detrimental obstacles to receiving medical care when suffering from endometriosis-related symptoms since the legal rights of Arab women can be restricted, and a lack of autonomy is a common barrier to biological females receiving proper medical care within some religious groups (Mousa et al., 2021).

To further highlight a critical barrier to endometriosis care, some cultural and religious restrictions include unmarried biological females being prevented from receiving gynecological medical care (Mousa et al., 2021). The large sample size of Arab women ($N = 2,610$) recruited by Mousa et al. (2021) was groundbreaking in drawing awareness to the complexities of living with endometriosis in diverse cultures, defining the unique challenges within various cultures and broadening the understanding of endometriosis globally. The study included 518 PWE—diagnosed through surgery—with the remaining Arab women being in the control group (Mousa et al., 2021). Of those

PWE, 61.8% sought medical care and received exploratory surgery because of fertility concerns, aligning with traditional Arab values regarding the role of biological females in bearing children (Mousa et al., 2021).

As with many health conditions experienced by people living in lower socioeconomic environments, lack of access to adequate medical care is a disadvantage and negatively impacts PWE when the individual is a minority from a marginalized culture, a lower income level, or a lower educational background. The systematic review by Falconer et al. (2022) emphasized the need for research on improving PWE's HRQoL overall, but particularly PWE from diverse ethnic and cultural backgrounds, by examining treatment accessibility for endometriosis care from healthcare providers. Considering the challenges of PWE related to receiving an official diagnosis and appropriate interventions to manage endometriosis-related symptoms, the influence of culture on PWE's HRQoL needs to be studied. Not only is access to medical care a barrier to improving the HRQoL of minority PWE, many studies also stressed the lack of adequate support received by PWE within lower socioeconomic environments due to PWE feeling disregarded or unheard when voicing their concerns to healthcare professionals (Falconer et al., 2022; Kfoury et al., 2023; Missmer et al., 2021; Mousa et al., 2021). This challenge in advocacy for managing endometriosis is a factor in decreasing HRQoL for all PWE, but even more so within certain cultural communities.

Diagnostic Delay

People too often live with undiagnosed endometriosis for several years after first experiencing endometriosis-related symptoms, resulting in suffering unnecessarily

without adequate care from healthcare professionals. In sum, the studies reviewed list wide ranges of time for participants to wait prior to receiving an endometriosis diagnosis—from several months to more than a decade. For example, Ellis et al. (2022) had participants who sought a diagnosis for 11 years, Lamvu et al. (2020) stated that half of their participants went undiagnosed for at least 6 years, while Márki et al. (2022) reported an average diagnostic delay of 2.05 years for their 21 participants. However, most studies reported that PWE typically spend several years suffering from symptoms prior to diagnosis. The similarities between endometriosis and other chronic conditions—such as polycystic ovarian syndrome, pelvic inflammatory disease, and irritable bowel syndrome—can cause misdiagnosis and further complicate the lengthy process of receiving an endometriosis diagnosis (Lamvu et al., 2020; Van Niekerk et al., 2022a). Interestingly, Lamvu et al. (2020) found a statistically significant association between diagnostic delay and PWE experiencing a greater number of endometriosis-related symptoms. The researchers hypothesized that the elevated incidence of PWE being diagnosed with other conditions prior to endometriosis indicates that insufficient education on endometriosis is given to healthcare practitioners, resulting in the multifaceted symptomatology being misunderstood (Lamvu et al., 2020).

Studies on endometriosis medical care have reported that many general practitioners believe the education they received is insufficient for diagnosing endometriosis—as some report difficulties differentiating endometriosis from severe menstrual symptoms—or understanding PWE’s complex needs, which further extends the diagnosis process (Ellis et al., 2022; Lamvu et al., 2020; Rowe et al., 2021). The

studies by Le Roux et al. (2022) and Liakopoulou et al. (2022) explored the unique challenges of living with endometriosis as an adolescent, emphasizing the negative impact of delayed diagnosis on adolescents' social interactions and cognitive development. The researchers argued that diagnostic delay is a critical issue for PWE in their teens and early twenties since the symptoms of endometriosis often present differently during earlier years, making it more difficult for adolescents with endometriosis to receive a diagnosis or adequate support for coping with symptoms (Le Roux et al., 2022; Liakopoulou et al., 2022; Rea et al., 2020; Schneider et al., 2020).

Because the presence of recurring pelvic pain is a main symptom of endometriosis, it can be an arduous process for PWE to recognize that the pain they feel is not normal menstrual pain, search for information on possible causes of the pain, discuss possible causes of the pain with healthcare practitioners, and continue to advocate for themselves until endometriosis is diagnosed. Kfoury et al. (2023) remarked that a leading cause of diagnostic delay is the experience of menstrual pain being normalized and downplayed by healthcare practitioners as well as misunderstood by the public. This link between blurred lines of menstrual versus endometriosis-related symptoms and diagnostic delay was shared in most of the studies reviewed. Furthermore, PWE are often diagnosed with other health conditions or mental health disorders prior to being diagnosed with endometriosis.

As an example of the prevalence of this, the study by Lamvu et al. (2020) stated that of the 451 participants with endometriosis surveyed, 208 were diagnosed with anxiety, 199 with depression, 173 with irritable bowel syndrome (IBS), 96 with pelvic

infection, and 61 with cystitis before endometriosis was diagnosed. Nabi et al. (2022) recruited 18,887 PWE for their study and found that PWE were three times more likely to develop IBS than people without endometriosis, in part due to the role of chronic inflammation. In addition to misdiagnosis, some of these related diseases may co-present with endometriosis; for example, an individual can be diagnosed with IBS due to dyschezia, chronic inflammation, and other endometriosis-related symptoms that closely reflect the characteristics of the condition (Horne & Missmer, 2022). Then, that individual might receive a gastroenterology referral and not receive information on endometriosis as a possible cause of gastrointestinal symptoms (Horne & Missmer, 2022). Situations like these can increase the diagnostic delay.

In the case of adolescents and young adults, endometriosis-related pain is frequently mislabeled as gastrointestinal issues or normal menstrual symptoms, leading to diagnostic delays spanning a decade in some cases (Le Roux et al., 2022; Liakopoulou et al., 2022; Rowe et al., 2021). Additionally, hesitation and caution in trusting healthcare practitioners can lead to diagnostic delays for individuals seeking medical interventions for endometriosis-related symptoms prior to diagnosis (Falconer et al., 2022). Positive support structures in the lives of PWE were correlated with increased HRQoL, while a lack of support from physicians treating PWE was linked to diagnostic delays and decreased HRQoL (Missmer et al., 2021; Rowe et al., 2021). As such, there is a critical need for collaborative care between patients and practitioners to build trust and increase the understanding of the impact of endometriosis on PWE's HRQoL prior to diagnosis.

Fostering collaborative partnerships for PWE with healthcare professionals may help combat diagnostic delays at all ages and stages of the disease.

As denoted by Van Niekerk et al. (2022b), one reason delayed diagnosis of endometriosis has a detrimental effect on PWE's HRQoL is the statistically significant role that delayed diagnosis has in decreasing PWE's self-compassion. The researchers noted that distress caused by the prolonged search for a diagnosis was more severe for younger participants with endometriosis, as age was a predictive factor of increased HRQoL related to having higher levels of self-compassion for living with endometriosis (Van Niekerk et al., 2022b). Furthermore, some PWE who suffer from chronic pain for longer durations prior to receiving an endometriosis diagnosis reported increased sensitization to pain and lowered pain tolerance (Ellis et al., 2022). As such, living without a confirmed reason for chronic pain may influence the perceptions of the person living in pain, and it may leave them without support or resources to effectively cope with the pain.

Although diagnostic delay is a primary factor in PWE experiencing poor HRQoL, the quality of support provided by healthcare providers once an endometriosis diagnosis is established is paramount for improving HRQoL by empowering PWE with self-management strategies to pair with traditional medical methods for treating endometriosis (O'Hara et al., 2019; Missmer et al., 2021; Rowe et al., 2021). This is particularly true given the findings by Van Niekerk et al. (2022c) showing that PWE's HRQoL significantly decreased once endometriosis was medically diagnosed, emphasizing the importance of PWE receiving sufficient support from healthcare practitioners to manage

endometriosis. By testing predictors of HRQoL, Van Niekerk et al. (2022a) revealed that PWE described better HRQoL if they received an endometriosis diagnosis within one year of seeking a diagnosis, while PWE experienced worse HRQoL if an endometriosis diagnosis took three or more years. The paramount study by Gete et al. (2023)—using longitudinal data gathered from more participants with endometriosis than previous studies on PWE’s HRQoL—validated the potential for improved HRQoL when individuals received an early diagnosis of endometriosis and stressed the need for future studies examining the impact of early diagnosis on mental and physical health.

Financial Burden

The financial burden of endometriosis negatively affects the lives of PWE, their families, and the economy in severe ways. The financial burden of PWE extends beyond the medical expense of treating endometriosis—estimated to cost PWE 3.5 times more than people without endometriosis—to the high rate of absenteeism resulting in a devastating loss of income that can be twice the amount paid for medical care (Ellis et al., 2022). In addition to the loss of income from missed work hours, PWE spend an average of \$16,000 on healthcare, more than double the amount spent on women’s healthcare by those without endometriosis (Missmer et al., 2021). Other statistics revealed that the cost of one person living with endometriosis, from medical care expenses to loss of income, was upwards of \$20,000 annually (Ellis et al., 2022). With a high rate of opioid use evidenced in a large-scale study of PWE, the financial burden of endometriosis can be substantially greater for PWE who use opioids to cope with pain (Ellis et al., 2022).

With the onset of endometriosis commonly occurring in the teenage years when PWE are dependents of guardians, the inevitable transition to becoming independent and responsible for the financial burden of endometriosis can place significant strain on the early adulthood of PWE (Missmer et al., 2021). The costs associated with paying for healthcare to treat endometriosis and losing potential income due to endometriosis-related symptoms interfering with work hours and productivity can be a challenging adjustment for PWE and negatively impact their HRQoL. Not only is absenteeism from work a major factor in the financial burden of endometriosis, but PWE also reported significant decreases in productivity while working, to the extent of over 6 hours of work per week being compromised or lost due to endometriosis-related symptoms (Ellis et al., 2022). This added financial burden, during an age range when finances are likely to cause the most stress and a lack of financial stability is more common, further decreases PWE's HRQoL and increases the risk of adverse health outcomes overall. Endometriosis-related symptoms tend to persist until menopause, with some PWE continuing to experience symptoms post-menopause, making the impact of endometriosis span decades of the life-course (Missmer et al., 2021).

Endometriosis-related symptoms not only impair PWE and negatively impact their life-course, but also substantially harm the economy through the elevated financial burden of healthcare costs associated with treating endometriosis and the diminished capacity of some PWE to contribute to the workforce (Missmer et al., 2021). In the United States, the economic burden resulting from endometriosis was estimated to be between \$78-119 billion dollars per year (Ellis et al., 2022). The extraordinary costs of

endometriosis on individuals and the economy are not only signs of increasing rates of endometriosis, but also of PWE suffering from long delays in diagnosis and receiving insufficient resources or support to effectively manage endometriosis.

Complementary Self-Care Therapies for Self-Managing Endometriosis

According to the NCCIH (2021), the terms complementary and alternative both incorporate nontraditional methods of treating health conditions and diseases, with the important differentiation between the terms being that complementary approaches are used in tandem with traditional medical care versus alternative approaches are used instead of traditional medicine. For the purpose of this present study, complementary approaches were considered by way of examining the extent to which the use of various types of complementary self-care therapies to self-manage endometriosis is associated with PWE's HRQoL. Complementary approaches to health management can include physical, psychological, and nutritional methods of coping with and treating symptoms that are not considered traditional medical interventions but can be used in combination with other treatments (NCCIH, 2021). Some complementary treatments used for self-managing health conditions and diseases, as described by the NCCIH (2021) include diet and dietary supplementation, yoga, tai chi, acupuncture, massage therapy, mindfulness and meditation, chiropractic care, relaxation techniques, and hypnotherapy. While many other therapies might be considered complementary, experts debate the categorization of treatments such as homeopathy, naturopathy, and Chinese medicine (NCCIH, 2021). This study examined the use of various types of complementary self-care therapies that could be used in collaboration with healthcare practitioners' medical advice.

The existing literature on treating endometriosis concentrates on three primary medical methods for reducing endometriosis-related symptoms—pharmaceutical treatments, hormonal therapy, and surgical interventions—with an overarching focus on coping with pain and treating infertility. The literature on endometriosis is devoid of studies examining associations between self-management using complementary self-care therapies and PWE’s HRQoL. While many peer-reviewed articles stated the need for future studies on nontraditional methods to treat endometriosis, the discussions were limited to hypothesizing potential benefits and did not cross over to the specific purpose of self-managing endometriosis or using complementary self-care therapies (Ellis et al., 2022; Rowe et al., 2021; Schubert et al., 2022; Wang et al., 2021). Consistently, the limitations sections of articles related to the impact of endometriosis on mental and physical health relayed a lack of research on effective treatments to improve the lives of PWE beyond suppressing and coping with endometriosis-related symptoms. The root cause of endometriosis—chronic inflammation—was rarely factored into the treatment of endometriosis within the existing research literature.

Ellis et al. (2022) analyzed traditional medical treatment options presented to PWE by healthcare practitioners and stressed the negative impact of birth control, pharmaceutical pain management, and surgery on PWE’s HRQoL—accentuating the lack of noninvasive, nonhormonal solutions as well as the significant economic burden of endometriosis care—but found scarce data on medical advances for treating endometriosis, such as using biomarkers and nanomedicine. Other studies mentioned the use of self-care activities, lifestyle and behavior changes, and complementary therapies

used by PWE in self-managing endometriosis without considering the effect on HRQoL. For example, in the systematic review by O'Hara et al. (2019), one included study reported that PWE rated exercise, diet and supplementation, acupuncture, counseling, and other nontraditional methods for self-managing endometriosis as helpful, yet there was no quantitative analysis of the association with complementary self-care therapies on PWE's HRQoL. The researchers also reviewed one study that taught PWE self-management strategies—such as setting goals, processing feelings of anger and fear, and effectively communicating with healthcare practitioners—with the results indicating that PWE's HRQoL was better after utilizing the self-management strategies, partly due to boosting confidence (O'Hara et al., 2019). Similarly, the study by Wang et al. (2023) found that participants with endometriosis experienced improvements in managing endometriosis-related pain, most notably with dysmenorrhea and pelvic pain, after using acupuncture and moxibustion. Although the study did not quantitatively assess the HRQoL or QoL of participants with endometriosis, the researchers commented on the potential benefits of using acupuncture to improve PWE's QoL (Wang et al., 2023).

The use of nontraditional methods to self-manage endometriosis was sometimes framed in controversial ways within studies, showing bias in how endometriosis care has been widely taught from the perspective of pharmaceutical and surgical interventions without consideration of non-medical interventions (O'Hara et al., 2019). The systematic review by Falconer et al. (2022) of studies investigating nontraditional methods for treating endometriosis cited medium effect sizes for the effectiveness of reducing endometriosis-related pain using nontraditional methods but revealed a lack of statistical

data on improving body image. Furthermore, the authors alluded to the need for further research on managing endometriosis using nontraditional methods to be bolstered by reputable health psychology theories (Falconer et al., 2022). The study on adolescents with endometriosis by Le Roux et al. (2022) revealed that the challenges of living with endometriosis and mitigating the negative impacts of the disease on PWE's HRQoL begin long before receiving a diagnosis, which can foster self-directed care. By providing adolescent PWE with resources and support prior to a diagnosis, the typical adolescent desire for independence and autonomy may fuel positive self-management strategies for living with endometriosis and improving their HRQoL overall. This study, rooted in SCT as the health psychology theory, adds to the existing literature by presenting statistical analyses of how using complementary self-care therapies to self-manage endometriosis impacts PWE's HRQoL, thus filling a gap in knowledge on the various aspects of living with endometriosis that might be positively impacted by nontraditional methods.

A primary purpose for filling this gap in the literature was to provide PWE with practical ways to increase their autonomy through self-managing endometriosis, in contrast to traditional medical methods that rely on interventions provided by healthcare practitioners and may result in decreased self-efficacy regarding the condition affecting every aspect of PWE's lives. A vital aspect of improving HRQoL is PWE feeling capable of taking ownership of their condition, which can include building confidence in their knowledge of endometriosis and trusting the signals from their bodies to inform their self-management decisions (O'Hara et al., 2019). Many studies encouraged further research on the impact of PWE self-managing endometriosis, with the study by Rowe et

al. (2021) recommending that practitioners take a patient-centered approach to treating endometriosis that educates PWE on diverse treatment options and encourages PWE to actively manage their symptoms through collaborative partnerships. Some studies exploring the use of nontraditional methods of treating endometriosis advocated for positively impacting PWE's HRQoL by improving PWE's self-esteem, self-efficacy, and autonomy using self-care practices to self-manage endometriosis (Falconer et al., 2022; Farshi et al., 2020; O'Hara et al., 2019), which was a goal of this study. Empowering PWE to self-manage endometriosis by providing education on using complementary self-care therapies may improve PWE's HRQoL in numerous ways, starting by enhancing their self-confidence with increased autonomy.

Not only are nontraditional methods to treat endometriosis seldom mentioned in the literature, but the side effects of traditional medical methods are not adequately examined, much less compared to complementary self-care therapies. Researchers aiming to increase the knowledge and awareness of the impact of endometriosis on PWE's HRQoL have commonly examined the use of various pharmaceutical treatments and analyzed the impact on PWE's HRQoL. Some studies have reported statistically significant reductions in endometriosis-related symptoms using pharmaceutical treatments while disclosing coinciding consequences of the treatments, such as depression and anxiety resulting from PWE taking gonadotropin-releasing hormone agonists (Wang et al., 2021). Similar side effects associated with taking hormonal birth control have been documented in the literature, but few studies have assessed the impact of side effects in further decreasing PWE's HRQoL. Ellis et al. (2022) extended their

discussion of treating endometriosis using birth control by listing some common negative effects of hormonal treatments—such as decreased bone density, thromboembolism, depression, breast tenderness, acne, nausea, and weight gain—and the inherent complication of PWE attempting to become pregnant. Additionally, the researchers mentioned the high risk of addiction and the common side effects of pharmaceutical pain management as well as the risk of surgical interventions causing trauma to the body or even worsened endometriosis-related symptoms (Ellis et al., 2022). The adverse effects and insufficiency of using traditional medical methods to treat PWE were widely acknowledged; however, when remarking on the limitations of their studies, many researchers noted the inability to analyze nontraditional methods of treating endometriosis due to a lack of literature on the subject.

Regardless of the inadequacy of various traditional medical methods for treating endometriosis, the use of complementary self-care therapies to self-manage endometriosis has not been directly examined in the existing literature. Studies assessing the use of complementary self-care therapies—which encompasses a wide range of holistic and nontraditional methods such as meditation and mindfulness, yoga and exercise, self-compassion and body compassion, nutrition and diet, intermittent fasting, homeopathy and Chinese herbal supplementation, acupuncture, chiropractic treatments, lymphatic drainage massage, cold and heat therapy, and psychotherapy—on PWE's HRQoL are needed to enhance the education provided to PWE on effectively managing endometriosis as well as the collaboration between patients and healthcare professionals treating PWE. Although the use of such nontraditional methods was discussed in some

studies related to endometriosis, the focus was on treatment methods without scrutinizing the influence of self-managing endometriosis on mental and physical health outcomes. Conversely, some studies isolated the focus to disease self-management approaches without analyzing the impact of nontraditional methods on improving PWE's HRQoL. For example, O'Hara et al. (2019) reviewed 19 studies on self-managing endometriosis and determined there is a lack of discussion on factors that increase or decrease self-management of endometriosis or impact PWE's health outcomes. As such, this study aimed to increase the knowledge of various complementary self-care therapies that might be used to self-manage endometriosis with the goal of spreading awareness of nontraditional methods to potentially improve PWE's HRQoL.

Mind-Body Interventions

The use of cognitive behavioral therapy (CBT) has been positively associated with improved outcomes for people with various chronic diseases suffering from pain and stress-induced symptoms (Schubert et al., 2022). In relation to impacting PWE's HRQoL, a study has yet to be published on the influence of CBT as an intervention for endometriosis. However, studies such as the meta-analysis by Wang et al. (2021) found psychological comorbidities, such as depression and anxiety, significantly impactful in lowering PWE's HRQoL and, thus, advocated for future studies to examine the extent to which CBT might improve PWE's HRQoL by reducing the impact of endometriosis-related symptoms and comorbidities. Other studies using psychological interventions to manage endometriosis, such as the one by Hansen et al. (2023), mentioned a lack of statistical significance in CBT and other psychological interventions reducing

endometriosis-related pain, yet claimed statistically significant improvements in PWE's QoL after utilizing psychological interventions. However, despite no significant improvements in managing endometriosis-related pain, the results showed statistical significance in psychological interventions improving PWE's experiences of dyschezia and constipation (Hansen et al., 2023). The qualitative study by Boersen et al. (2021) highlighted the positive feelings expressed by participants with endometriosis regarding using CBT to tailor treatment to meet their individual needs, give them a sense of control in self-managing endometriosis, and improve their QoL. The results of both studies pointed to encouraging potential benefits of self-managing endometriosis using psychological and mind-body interventions to improve PWE's HRQoL, as communicated by the researchers' recommendations for future studies analyzing the impact of mindfulness and acceptance-based psychological interventions in managing endometriosis (Boersen et al., 2021; Hansen et al., 2023).

The positive influence of yoga and various other self-care practices were documented in the study by Farshi et al. (2020) as improving PWE's HRQoL, with the results revealing statistically significant differences in both the mental and physical health scores between the intervention and non-intervention groups, including the mean scores of anxiety being reduced and QoL increased after attending seven self-care group counseling sessions. The authors noted the importance of self-care programs being created for PWE, as the results of their study underscored the unique needs of individuals self-managing chronic diseases, such as the importance of embracing self-care behaviors and taking ownership of their health overall (Farshi et al., 2020). Similarly, O'Hara et al.

(2019) found that participating in a yoga program was significantly associated with positive HRQoL outcomes and pain management for PWE, with the breathing and mind-body practices learned from yoga carrying into the daily lives of PWE as effective self-care techniques. The education and empowerment received during the yoga program helped PWE feel capable of self-managing endometriosis, particularly by reducing stress and pelvic pain (O'Hara et al., 2019). The yoga program also increased SS—shown in various studies to be a necessary component of PWE's HRQoL and ability to self-manage endometriosis—by introducing PWE to one another and giving them positive social interactions (O'Hara et al., 2019). Furthermore, Falconer et al. (2022) analyzed studies using psychological interventions paired with physical interventions—including psychotherapy, acupuncture, Chinese herbal medicines, dietary supplementation, yoga, somatosensory stimulation, and physical therapy—to manage endometriosis and found statistical significance in pain reduction with large effect sizes in two of the studies. Overall, the use of yoga along with psychotherapy may contribute to positive improvements in PWE's HRQoL, as supported by the results of the studies detailing the use of mindfulness and relaxation strategies to minimize the negative impact of multiple endometriosis-related symptoms (Falconer et al., 2022). Mind-body interventions, such as the ones mentioned in these studies, could powerfully alter HRQoL when education on complementary self-care therapies is provided to PWE, empowering them to self-manage endometriosis with strategies targeting the symptom burden and positively impact their mental and physical health.

The use of mind-body interventions to self-manage endometriosis extends beyond psychotherapy and yoga practices to self-awareness and reflection training that could positively impact PWE's HRQoL by empowering them to feel a sense of control over the influence of endometriosis in their lives. The intervention study by Simonsen et al. (2020) utilized guided self-determination (GSD) as a complementary therapy for 10 participants with endometriosis in which they filled out a reflective questionnaire followed by having discussions with healthcare professionals about their personal challenges and concerns regarding living with endometriosis. The goal of GSD is to deepen people's awareness of their needs through journaling exercises that encourage authentic self-expression, followed by sharing their important insights with a knowledgeable healthcare practitioner so that creating self-management strategies to address their needs becomes easier. Simonsen et al. (2020) reported that GSD positively changed participants' HRQoL as it fostered a supportive relationship with a healthcare professional that inspired them to learn skills necessary to self-manage endometriosis after they voiced their feelings of isolation and felt acceptance of living with endometriosis. By implementing GSD, and similar mindfulness interventions that focus on self-awareness and confidence building, PWE can enhance their problem-solving and life skills while benefiting from collaborative support from trained professionals (Simonsen et al., 2020). Complementary self-care therapies such as this could help PWE to self-manage endometriosis more effectively.

Self-Compassion and Body Compassion

The negative impact of endometriosis on PWE's HRQoL calls for research on therapeutic measures that can be used to effectively self-manage endometriosis and improve PWE's mental and physical health outcomes. As a form of complementary self-care therapy, practicing self-compassion can be a protective factor influencing HRQoL by PWE having the self-awareness to be kind to themselves, reduce internal judgment, and practice mindfulness, which was alluded to in the studies by Van Niekerk et al. (2022b, 2023). Similarly, other studies have emphasized the importance of self-efficacy, self-esteem, and body positivity in mediating the negative impact of endometriosis on PWE's HRQoL, as increasing each of these factors was associated with better mental and physical health (Kalfas et al., 2022; O'Hara et al., 2019). The earlier study by Van Niekerk et al. (2022b) established the need for understanding the extent to which PWE's mental health was impacted by self-compassion when dealing with the symptom burden of endometriosis. The study's results linked mental health symptoms of endometriosis—most notably, depression and anxiety—to lower levels of self-compassion, and further connected decreased self-compassion to increased negative effects on PWE's physical health—including increased endometriosis-related pain, nausea, and fatigue (Van Niekerk et al., 2022b).

Van Niekerk et al. (2023) explained in a recent study that self-compassion training was a way for PWE to learn how to foster a healthier body image and combat emotional distress related to living with endometriosis. Specifically, body compassion was a way for PWE to practice self-compassion when dealing with endometriosis-related

symptoms that negatively impacted their bodies (Van Niekerk et al., 2023). As established in an earlier study, finding effective ways to increase self-compassion can be pivotal for improving PWE's HRQoL because lower levels of self-compassion were linked to experiencing a greater number of endometriosis-related symptoms (Van Niekerk et al., 2022b). In that study, the correlations between decreased self-compassion and various endometriosis-related symptoms—including dysmenorrhea, dyspareunia and pain after sexual intercourse, back pain, constipation, nausea, and fatigue—were each statistically significant (Van Niekerk et al., 2022b). Moreover, Van Niekerk et al. (2023) found a statistically significant correlation, and a large effect size, between body compassion and self-compassion, with body compassion positively influencing PWE's self-compassion. The significant correlations between increased symptom burden and decreased self-compassion, revealed in both studies, reflected that the level of distress associated with endometriosis negatively influenced PWE's EWB (Van Niekerk et al., 2022b, 2023).

Both studies by Van Niekerk et al. (2022b, 2023) encouraged individualized treatment for endometriosis, and the distinctive symptom burden PWE deal with, by utilizing self-compassion to improve their mental health and increase HRQoL overall. With each case of endometriosis resulting in unique patterns and severity of symptoms, PWE may benefit from complementary self-care therapies and collaborative treatments based on their specific symptom burden instead of generalized options for treatment. For example, the findings related to an increase in body and self-compassion when experiencing vulva pain pointed to a possible connection between PWE having more

compassion for themselves when living with the effects of lesser-known endometriosis-related symptoms (Van Niekerk et al., 2023).

Utilizing self-compassion training for self-managing endometriosis through the lens of body compassion may alleviate the distress experienced by PWE and increase their HRQoL (Van Niekerk et al., 2023). Forms of self-compassion training recommended by Van Niekerk et al. (2022b) for use as complementary self-care therapies to improve HRQoL include mindful self-compassion, mindfulness-based stress reduction, and compassionate mind training, although no studies are known to have examined these therapies in treating endometriosis. However, these approaches to self-managing endometriosis mirrored the core beliefs of acceptance and commitment therapy, which can be used as a complementary self-care therapy with the potential to improve PWE's mental and physical health (Van Niekerk et al., 2023). Additionally, Calvi et al. (2023) found that their participants with endometriosis experienced less body image disturbance when their social relationships fostered body positivity, thus minimizing both self-consciousness and loneliness. The results showed that by mediating the negative effects of poor body image through supportive social circles, PWE experienced better mental health and had a greater ability to self-manage endometriosis (Calvi et al., 2023).

The toll of endometriosis on PWE's bodies is known to cause psychological issues related to feeling disconnected from, confused by, and at war with one's body, which reduces PWE's HRQoL by impacting their psychological well-being (Van Niekerk et al., 2023). PWE may struggle to maintain healthy body compassion when living with

endometriosis-related symptoms that change their physical appearance and compromise their EWB, making it more difficult to feel like they meet societal expectations surrounding beauty and physical appearance. The challenges can be profound for those living with endometriosis, given that the symptom burden is heavier during reproductive years when young adults are most vulnerable to believing their value is dictated by their physical appearance (Van Niekerk et al., 2022b, 2023).

Van Niekerk et al. (2023) found that feeling distressed by experiencing a greater endometriosis symptom burden had a statistically significant negative impact on body compassion. The study's results indicated that endometriosis-related symptoms hindering PWE's ability to complete physical roles can play the largest part in reducing their HRQoL, followed closely by the negative impact of fatigue and loss of vitality (Van Niekerk et al., 2023). The earlier study by Van Niekerk et al. (2022b) presented a statistically significant relationship between age and self-compassion, explaining that increased self-compassion occurred as PWE aged, which matched the findings of related studies showing that the endometriosis symptom burden decreased and HRQoL increased as PWE aged (Missmer et al., 2021; Van Niekerk et al., 2022a; Van Niekerk et al., 2022b; Van Niekerk et al., 2022c). Considering positive influences on PWE's HRQoL, body compassion was more significantly impactful than self-compassion, emphasizing the power of positive attitudes related to body image in improving PWE's overall mental and physical health (Van Niekerk et al., 2023). This is further supported by the findings of Calvi et al. (2023) that showed a connection between experiencing body image disturbance and internalizing the stigma surrounding endometriosis, leading to PWE

having negative attitudes and increased risk for mental health comorbidities. As such, helping PWE to improve their body image appears to be intertwined with boosting their body compassion in relation to coping with various endometriosis-related symptoms and experiencing better HRQoL.

Summary and Conclusions

Increasing Knowledge and Awareness of Endometriosis

Found throughout recent endometriosis studies were common threads of PWE lacking the necessary knowledge and awareness of endometriosis to understand the disease they live with, much less effectively self-manage endometriosis and improve their HRQoL. A frequently expressed concern of PWE was that information on living with endometriosis was not provided by their gynecologists or healthcare practitioners, both before and after diagnosis, leaving PWE to either choose to search for endometriosis-related resources on their own or remain ill-informed of the disease they live with (Márki et al., 2022). Both options can be daunting for PWE, as a lack of support from healthcare professionals may lead to uncertainty about managing endometriosis and lowered HRQoL from the consequences of limited information on managing endometriosis. A prime example of the underlying problem of PWE not receiving education on endometriosis was the study by Márki et al. (2022) that identified four themes—the impact of endometriosis on PWE’s QoL, medical experiences related to endometriosis, using complementary treatments for endometriosis, and strategies for coping with endometriosis—that compromised PWE’s HRQoL as a result of lack of information on managing endometriosis. The researchers emphasized the critical need for PWE to have

access to reliable resources on endometriosis, including advancing healthcare professionals' education on endometriosis so they can provide valuable guidance to patients presenting with endometriosis-related symptoms as a necessary support structure for living with endometriosis (Ellis et al., 2022; Farshi et al., 2020; Lamvu et al., 2020; Márki et al., 2022; Missmer et al., 2021; Rowe et al., 2021).

Increasing educational programs on endometriosis within communities and schools, along with educational information being easily accessed by people searching online, could drastically improve public knowledge and awareness of endometriosis, which might increase PWE's HRQoL by enhancing support from others and improving their understanding of endometriosis. These influences could positively impact the lives of PWE through empowerment to self-manage endometriosis and implement complementary self-care therapies to improve their HRQoL. As encouraged by researchers conducting recent studies on endometriosis, studies on utilizing nontraditional methods to treat endometriosis—such as rehabilitation programs focused on exercise interventions (Álvarez-Salvago et al., 2020)—are vitally needed to support PWE in self-managing endometriosis aside from the commonly used medical and pharmaceutical interventions, as improving PWE's HRQoL extends beyond simply treating endometriosis-related symptoms (Calvi et al., 2023). Although some studies found self-care activities used by PWE—particularly diet and exercise—to be unhelpful in improving physical HRQoL (Kalfas et al., 2022), researchers agreed that the impact of endometriosis on PWE's HRQoL overall needs to be further studied. For example, the qualitative study by Kumar et al. (2023) revealed participants' commitment to healthy

eating habits and promoted further research on dietary changes to help reduce inflammation and endometriosis-related symptoms considering the potential for most PWE to easily control their nutrition. As such, future studies examining the combination and number of complementary self-care therapies used to self-manage endometriosis could be valuable for gaining a quantitative understanding of how various methods impact PWE's HRQoL.

Further Studies Needed on Populations Affected by Endometriosis

The majority of research studies on endometriosis included a pool of participants with the mean age being in the mid-30s. Considering the complex psychological and social aspects of teenagers and young adults—especially people in their 20s—that could directly impact PWE's HRQoL in those age ranges, studies need to examine the unique perspectives and experiences of PWE prior to entering their 30s. The endocrine system plays a vital role in influencing mental and physical health based on individuals' fluctuating hormone levels. From the teenage years through the 20s, people are most susceptible to hormone imbalances dysregulating their emotions, negatively impacting their overall health, and disrupting their HRQoL. The endocrine differences in people during this early part of life compared to those in their mid-life can drastically alter their perceptions of living with a chronic disease, the ways they self-manage their condition, the treatments they undergo, the complementary therapies they try, and the overall impact on their HRQoL.

Considering these critical differences in age groups, PWE may benefit greatly from knowledge and education on maximizing their HRQoL by using complementary

self-care therapies to self-manage endometriosis during the formative teenage and young adult years. This requires research studies conducted exclusively on PWE in this age group. Additionally, there is a lack of literature on the long-term impacts of endometriosis within elderly populations, making it unclear how PWE's HRQoL is affected by endometriosis decades after menopause begins. Understanding the potential life-course of endometriosis is important for PWE to make appropriate decisions about their health, family, career, and finances. Future studies examining the specific factors influencing PWE's HRQoL at all stages of life are needed. As such, this study aimed to fill a gap in the existing literature by looking at the various complementary self-care therapies PWE can use to self-manage endometriosis and improve their HRQoL from the onset of the disease and throughout their lives.

Chapter 3: Research Method

Introduction

As described in Chapter 1, the purpose of this quantitative correlational study was to examine the extent to which the use of various types of complementary self-care therapies to self-manage endometriosis is associated with PWE's HRQoL. The intent of the study was to look at the association between using various types of complementary self-care therapies to self-manage endometriosis and PWE's HRQoL, as well as PWE's depressive symptomatology, controlling for sociodemographic variables. In this chapter, I review the study's research design and rationale. I explain all elements of the methodology, including the study's target population, sampling strategy and procedures, recruitment and participation procedures, data collection, instrumentation, and operationalization of constructs. I present the data analysis plan, including the software and statistical tests used to analyze the collected data. I state the study's threats to external and internal validity, along with the ethical procedures. Finally, I provide a summary of the chapter.

Research Design and Rationale

This quantitative correlational study used a cross-sectional survey research design to obtain self-reported information from questionnaires, filled out anonymously by a sample of PWE, that inquired about the HRQoL associated with endometriosis. The independent variables were the use of various types of complementary self-care therapies to self-manage endometriosis (as a count and as categories), age, highest educational degree obtained, partner status, and time since the onset of endometriosis-related

symptoms. The dependent variables were PWE's HRQoL and depressive symptomatology. This quantitative correlational design connected to the RQs by allowing the statistical analysis of the collected data from anonymous surveys to examine the associations between the variables in a descriptive and nonexperimental way. As explained in two foundational research texts by Babbie (2017) and Burkholder et al. (2016), the data collection method must properly align with the research design, which is contingent on the RQ as defined by the purpose and problem statements. Obtaining data to answer this study's RQs, which align with the study's purpose and problem statements, necessitated the use of online surveys so that data could be quantitatively analyzed. As such, bivariate correlation and hierarchical multiple linear regression (MLR) were appropriate for assessing the possible associations between the use of various types of complementary self-care therapies to self-manage endometriosis and PWE's HRQoL, controlling for sociodemographic variables.

Considering time and resource constraints, using a cross-sectional survey research design was the best option to examine the extent to which the use of various types of complementary self-care therapies to self-manage endometriosis is associated with PWE's HRQoL, as well as depressive symptomatology, controlling for sociodemographic variables. Although a qualitative design might have provided a richer description of the impact of endometriosis on PWE's HRQoL at an individual level, the study would have lacked the robust analysis allowed by statistical testing of variables. As evidenced in the literature review of this study, there were a plethora of qualitative studies exploring the lived experiences of PWE and the impact on their QoL and HRQoL;

however, there was a lack of quantitative studies examining the use of various types of complementary self-care therapies to self-manage endometriosis in relation to PWE's HRQoL. Implementing a cross-sectional survey research design provided awareness of the present circumstances of the participants that influenced the variables and provided a structure for analyzing the associations between the variables. Not only is survey research cost-effective and efficient for collecting data, but it is also an effective design for gathering data online from a specific population worldwide (Burkholder et al., 2016). Advancing knowledge within the field of psychology requires obtaining data from diverse individuals within the target population of PWE and introducing new studies into the pool of existing literature surrounding the gap in understanding, which was done, in part, through the methodology of this study.

Methodology

Population

The target population of this study was people living with endometriosis. The study aimed to examine the HRQoL of people self-reporting as having endometriosis by considering the associations between the sample's HRQoL and the use of various types of complementary self-care therapies for self-managing endometriosis. This study may help improve the lives of PWE by providing the target population with a better understanding of how complementary self-care therapies might be used to self-manage endometriosis and improve PWE's HRQoL.

Sampling and Sampling Procedures

For the purpose of implementing this study's survey research design, a nonprobability convenience sampling strategy was used. This type of sampling is justified for anonymous data collection from questionnaires and is conducive to a low-cost, efficient research strategy (Burkholder et al., 2016). The sample was drawn by anonymously recruiting people through online endometriosis support groups, by way of endometriosis websites and social media platforms, to complete the study's survey. The inclusion criteria for participation in the study was adults between the ages of 18-69 years old who self-reported as having endometriosis.

G*Power 3.1 was used to calculate the sample size for the study. To compute the a priori power analysis, MLR was selected as the statistical test with an effect size of .15, an alpha level of .05, and a power level of .80 for five predictors. These parameters for the effect size, alpha level, and power level were justified, given that they were selected by G*Power as Cohen's conventional values (see Kang, 2021). Based on these parameters, the power analysis determined that a minimum total sample size of 92 participants was appropriate for this research study. In the interest of the study having sufficient power and meaningfulness, I set the goal of obtaining a sample of 100 completed surveys.

Procedures for Recruitment, Participation, and Data Collection

I recruited adults between the ages of 18-69 years old who self-reported as having endometriosis. The recruiting procedures included a widely circulated online invitation for participation in the research study, a link to the survey hosted on BlockSurvey, and a

participation consent form. Prior to recruiting participants for the study or collecting data, approval was obtained from Walden University's Institutional Review Board (IRB). Upon IRB approval, the recruitment invitation was posted to online endometriosis support groups by way of endometriosis websites and social media platforms. The invitation included a link to the survey, a synopsis of the purpose of the study, the eligibility criteria, the confidentiality and informed consent procedures, the approximate time to complete the survey, and my contact information (see Appendix A). Potential participants were told about the volunteer nature of participation, their right to withdraw consent from participation in the study at any time, and the anonymity of survey responses that protected their privacy.

Once participants began the survey, the screening questions included another explanation of the inclusion criteria to ensure participants identified as adults between the ages of 18-69 years old who self-reported as having endometriosis. Along with the screening questions, participants were required to complete the informed consent document prior to beginning the survey. Participants were reminded that participation was optional and could be revoked for any reason and at any time. After confirming their understanding of the purpose of the study, the informed consent document, and the time required to complete the survey, participants were given access to the study's survey questions and items. Sociodemographic questions were included to establish the age, highest educational degree obtained, partner status, employment status, gender, and ethnicity of participants, along with time since the onset of endometriosis-related symptoms and complementary self-care therapies used by participants. Three reliable and

valid instruments were used in creating the survey. All sensitive information was kept private and secure in a password-protected file located on my personal computer accessible only by me. Data were collected from participants' responses within fully completed surveys. No follow-up procedures were required from participants, as completion of the survey was the extent of participation. Participants were given the option to request a summary of the study findings and a link to the published study in ProQuest.

Instrumentation and Operationalization of Constructs

This research study used eligibility and sociodemographic questions at the beginning of the survey followed by three published instruments: the EHP-30 (Jones et al., 2001), SASS-14 (Martínez et al., 2021), and CES-D (Radloff, 1977). The independent variables were the use of various types of complementary self-care therapies to self-manage endometriosis (as a count and as categories), age, highest educational degree obtained, partner status, and time since the onset of endometriosis-related symptoms. The dependent variables were PWE's HRQoL and depressive symptomatology. Instructions for completing the survey, along with the estimated completion time, were provided to potential participants.

Eligibility and Sociodemographic Questions

Eligibility and sociodemographic questions were used in this study. The two eligibility questions were as follows: (a) Are you an adult between the ages of 18-69 years old? and (b) Do you have endometriosis (self-reported or medically diagnosed)? The nine sociodemographic questions were as follows: (a) What is your age? (b) What is

your gender? (c) What is your ethnicity? (d) What is your highest educational degree obtained? (e) What is your employment status? (f) What is your partner status? (g) How long ago did you experience the onset of endometriosis-related symptoms? (h) Which of the following complementary self-care therapies have you used to self-manage endometriosis? and (i) How many days in the last week have you used one or more complementary self-care therapies to self-manage endometriosis?

EHP-30

The EHP-30 is an instrument developed by Jones et al. (2001) containing 30 questions related to PWE's HRQoL within the last 4 weeks. All the items prompt participants to reflect on their feelings related to experiences of living with endometriosis, with the phrasing of each item being negatively framed to reflect the severity of adverse experiences. There are five EHP-30 domains: pain, control and powerlessness (CP), EWB, SS, and SI. The first 11 items assess participants' feelings and experiences related to living with pain—the first domain. The remaining items ask participants about their feelings and experiences related to endometriosis-related symptoms and how living with endometriosis affects their emotional and mental health, which encompass the domains of CP (6 items), EWB (6 items), SS (4 items), and SI (3 items). The five domains aligned with this current study and were appropriate for ascertaining participants' HRQoL. Furthermore, the EHP-30 was an ideal instrument to use to answer this study's RQs given that endometriosis is the targeted disease of the EHP-30.

The EHP-30 domains are scored with a 5-point Likert scale ranging from *never* to *always* to assess how often a participant with endometriosis has felt or experienced what is described in the item (Jones et al., 2001). Scale scores are used instead of a total sum score by adding the scores for each of the five domains separately (Hansen et al., 2022). Each scale score is transformed into a score on a scale of 0 to 100, rating the severity of endometriosis impacting each domain of life (Hansen et al., 2022). EHP-30 scores that are closer to 0 are considered indicative of higher HRQoL in that domain of life, and scores that are closer to 100 tend to reflect poorer HRQoL in that domain of life (Hansen et al., 2022). By considering the scale scores for each of the five EHP-30 domains, the impact of endometriosis on PWE's HRQoL can be assessed.

The EHP-30 was originally used in Oxford, England, between 1999-2000 by interviewing 25 PWE at the John Radcliffe Hospital to assess their HRQoL (Jones et al., 2001). By conducting rigorous testing of the instrument in three stages, the developers statistically verified that the EHP-30 has high internal reliability ($\alpha = 0.83-0.93$ in core questionnaire and $\alpha = 0.79-0.96$ in modules, $p < .001$) and high correlations (-0.41 to -0.73) with the Short Form-36 instrument, demonstrating content and construct validity (Jones et al., 2001). Furthermore, Hansen et al. (2022) recently retested the validity of the EHP-30 and found statistical significance in the confirmatory factor analysis they conducted. This retesting of the EHP-30 supports the five-factor structure of the instrument for the assessment of PWE's HRQoL (Hansen et al., 2022). I obtained permission to use the EHP-30 in this study by applying for a copyright license from Oxford University Innovation.

SASS-14

The SASS-14 is a relatively new instrument developed by Martínez et al. (2021) for screening self-care activities to assess four factors (subscales) of self-care—health consciousness (HC), nutrition and physical activity (NPA), SLP, and interpersonal and intrapersonal coping strategies (IICS)—using 14 items to be answered with a 6-point Likert scale of 1 = *never* to 6 = *always* to indicate self-reported frequency of activity. The items include statements regarding self-care activities, including “I am alert to changes in my health” and “I think that my rest is of quality,” meant to assess self-care activities, behaviors, context, and environment (Martínez et al., 2021, p. 6). A total sum score is derived by adding the scores of the 14 items, with higher scores signifying higher levels of participation in self-care activities. Subscale sum scores are also calculated for HC, NPA, SLP, and IICS. The authors found that higher scores suggested higher well-being and lower perceived stress in participants. The measure was originally tested in a general population experiencing heightened stress levels, making it applicable to PWE. Using the SASS-14 in this study helped point to the impact of using various types of complementary self-care therapies to self-manage endometriosis.

Martínez et al. (2021) began building the SASS-14 in 2019 with the intent to increase people’s awareness of potentially unknown health risk factors they live with, particularly mental health risk factors such as depression and anxiety stemming from isolation and loneliness. The focus of the instrument in measuring people’s self-care during unprecedented times of difficulty and fear made it appropriate for screening PWE’s self-care given the extensive complications of living with endometriosis that

negatively impact PWE's health. The measure was created for use with any population, making it appropriate to utilize in this present study to assess the use of various types of complementary self-care therapies to self-manage endometriosis and the association with PWE's HRQoL. Moreover, the authors referenced SCT—the foundational theory for this study—drawing parallels to the use of SCT in studying people's abilities to perform self-care activities and the self-care behaviors they use. The SASS-14 is publicly available for use without need for permission or a license from the developers.

The SASS-14 was tested with an initial sample of 226 participants for an exploratory factor analysis (EFA) followed by a confirmatory factor analysis (CFA) with a second sample of 261 participants, all being from the general population (Martínez et al., 2021). Through rigorous statistical testing, the measure was found to have good internal validity and reliability, with the EFA displaying good internal consistency ($\alpha = 0.807$), good reliability ($\alpha = 0.831$), and statistically significant correlations ($\chi^2 = 1718.56, p < 0.001$) while the CFA revealed good internal consistency ($\alpha = 0.57\text{--}0.86$) and good reliability ($\alpha = 0.801$). Furthermore, convergent validity was confirmed for the SASS-14 through significantly and positively correlated subscales with a Cronbach's α of 0.85 (lowest correlation: $r = 0.23, p = 0.001$; highest correlation: $r = 0.46, p < 0.001$). The correlation results point to increased self-care leading to increased well-being, which further validated the use of the SASS-14 in this study to examine PWE's HRQoL in relation to the use of complementary self-care therapies to self-manage endometriosis.

Center for Epidemiological Studies Depression Scale

The CES-D was published by Radloff (1977) as a self-report instrument to comprehensively measure depressive symptomatology within the general population using the four categories (subscales) of depressed affect (DA), positive affect (PA), somatic complaints (SC), and interpersonal difficulties (ID). The researcher created the CES-D as a nonclinical measure to evaluate depressed mood by using broad statements related to people's feelings about their life—such as “I had trouble keeping my mind on what I was doing”—to quantify the frequency of these feelings within the last week (Radloff, 1977, p. 387). The measure examines people's perceptions of their mental health by using both positive and negative statements, such as “I was happy” and “I felt sad” (Radloff, 1977, p. 387). In addition to using self-reported data, the CES-D is different from other depression measures as the focus is on the affective component of depressed mood instead of on diagnosing clinical depression. The measure has been used within diverse populations, making it ideal for this study to examine the impact of endometriosis on PWE's depressive symptomatology. The CES-D is free to use with no permission needed from the developer.

The CES-D consists of 20 items assessing people's feelings and behaviors using a 4-point Likert scale ranging from *rarely or none of the time (less than 1 day)* to *most or all of the time (5-7 days)* (Radloff, 1977, p. 387). Each of the items are scored from 0 to 3, with a total sum score derived by adding the scores of the 20 items, making the range of scoring between 0 to 60 (Radloff, 1977). Subscale sum scores are also calculated for DA, PA, SC, and ID, with the four PA items being reverse-scored. A higher total CES-D

score indicates a greater number of depressive symptoms experienced by a participant (Radloff, 1977). Although a total score of 16 or higher has typically been considered indicative of potential mild depression, the systematic review with meta-analysis by Vilagut et al. (2016) found that a score of 20 or higher appears to more appropriately denote potential mild depression. Furthermore, a score below 20 may imply minimal or a lack of depression, while a score above 27 likely signifies potential major depression in the participant (Vilagut et al., 2016).

When the CES-D was originally tested by Radloff (1977), it was found to be valid and reliable—with high internal consistency, considerable construct validity, and factor analysis showing satisfactory test-retest stability—as a depressive symptomatology screening tool within populations consisting of a wide range of sociodemographic factors. More recently, Siddaway et al. (2017) assessed the CES-D as a self-reported measure for depressive symptomatology with a potential for highlighting well-being—due to the PA component—and established the validity and reliability of the measure with high internal consistency (Cronbach's $\alpha = 0.85\text{--}0.90$) in diverse populations. Moreover, the CES-D was found to have exceptional convergent validity ($r = .85$) when tested with the Patient Health Questionnaire-9 and the Beck Depression Inventory-II (Siddaway et al., 2017). The CES-D was appropriate to include in this current study as it aligned with the study's concentration on examining the use of various types of complementary self-care therapies to self-manage endometriosis in association with PWE's depressive symptomatology, as measured by the affective component of depressed mood (Siddaway et al., 2017).

Data Analysis

To analyze the data collected during this study, I used IBM SPSS Version 29. For the integrity of the data, data cleaning and screening procedures included an extensive verification process of ensuring the data collected from the surveys was transferred into SPSS correctly, certifying that no duplicates existed, checking for missing data, looking for extreme values, and confirming the validity and reliability of the data. A cross-sectional survey research design was used to obtain self-reported information from completed surveys consisting of all items from the EHP-30, SASS-14, and CES-D measures. BlockSurvey was used to host the study's survey. This quantitative correlational design used a nonprobability convenience sampling strategy to collect anonymous data from participants—PWE between the ages of 18-69 years old who self-reported as having endometriosis—by posting the study's survey to online endometriosis support groups by way of endometriosis websites and social media platforms.

The RQs and hypotheses that directed this study are as follows:

RQ1: To what extent is the use of various types of complementary self-care therapies to self-manage endometriosis associated with PWE's HRQoL, controlling for sociodemographic variables?

*H*₀₁: The use of various types of complementary self-care therapies to self-manage endometriosis is not significantly associated with PWE's HRQoL, controlling for sociodemographic variables.

H_{a1}: The use of various types of complementary self-care therapies to self-manage endometriosis is significantly associated with PWE's HRQoL, controlling for sociodemographic variables.

RQ2: To what extent is the use of various types of complementary self-care therapies to self-manage endometriosis associated with PWE's depressive symptomatology, controlling for sociodemographic variables?

H₀₂: The use of various types of complementary self-care therapies to self-manage endometriosis is not significantly associated with PWE's depressive symptomatology, controlling for sociodemographic variables.

H_{a2}: The use of various types of complementary self-care therapies to self-manage endometriosis is significantly associated with PWE's depressive symptomatology, controlling for sociodemographic variables.

The independent variables were the use of various types of complementary self-care therapies to self-manage endometriosis (as a count and as categories), age, highest educational degree obtained, partner status, and time since the onset of endometriosis-related symptoms. The dependent variables were PWE's HRQoL and depressive symptomatology. The a priori power analysis in G*Power 3.1 indicated that an effect size of .15, an alpha level of .05, and a power level of .80 for five predictors could be used for MLR with a minimum total sample size of 92 participants. As such, the goal was to obtain 100 completed surveys.

Once all the surveys were collected, the scores from the EHP-30, SASS-14, and CES-D were calculated. Extreme values were looked for, as these could tip the data

toward a certain point, but none were found. The data was quantitatively assessed in SPSS using bivariate correlation and hierarchal MLR. After inspecting the data for outliers (+2 standard deviations), the descriptives were examined, paying particular attention to the means. Next, the bivariate correlations were assessed to see how the variables related to one another. Then, I assured the assumptions for MLR were met before analyzing the results of the regression models. The hierarchal MLR models were structured by block, with Block 1 including the sociodemographic variables. Block 2 incorporated the total sum scores from the SASS-14 to consider what the Block 1 factors did on their own and what changed when Block 2 was added. The results of the tests were analyzed to look for statistical significance in the regression models, including noting any significant R-squared (R^2) changes from Block 1 to Block 2 as well as examining the standardized beta coefficients (β), t -values, and p -values to assess the relationships between the variables. The same process was implemented for RQ1 and RQ2, with the EHP-30 domain sum scores used as the dependent variable in the regression for RQ1 whereas the CES-D total scores were used for RQ2. By examining the results of the regression models, it could be determined if over and above the use of various types of complementary self-care therapies to self-manage endometriosis had an impact on PWE's HRQoL or depressive symptomatology.

Threats to Validity

As this was a nonexperimental survey research study, the threats to internal validity were limited by the short time frame in which participants completed the survey. The assumption was that there was unlikely to be a historical event related to

endometriosis occurring during the study, minimizing this risk to internal validity. Although there were uncontrollable maturation factors that could have potentially impacted participants' behaviors or feelings while taking the survey—such as becoming anxious or annoyed with the time it takes to complete the survey—it was understood that the short time frame of filling out the survey substantially decreased the chance of perceptions changing (Babbie, 2017). Similarly, the lack of a pretest and posttest reduced the risk of testing and instrumentation being threats to internal validity. The nonprobability convenience sampling strategy and anonymity of participants substantially reduced the threats of statistical regression and selection biases. However, bias was a potential threat to internal validity given the assumption that participants chose to complete the survey due to having endometriosis and were personally invested in the continued research of the disease. Experimental mortality was a possible threat to internal validity since it was assumed that some people would start the survey without fully completing it. As such, only eligible people who submitted fully completed surveys were included as participants in the study.

The premise of external validity is applicability to the real world at large and whether the results of the research study are generalizable (Babbie, 2017). It was known that the demographics associated with this study's target population and participants might have affected the applicability of the results (Burkholder et al., 2016). Because the experiences of people are unique to each individual, broad generalizations made from the results of this study may not apply to some people. Therefore, it was known that this study's external validity could be threatened by a lack of diversity in the sample of

participants used to obtain the results. Diversity could refer to race, gender, sexuality, economic status, age, academic level, or several other factors that might have influenced results. Due to this study being nonexperimental and based on surveys, the threats to external validity of testing reactivity, interaction effects of selection and experimental variables, specificity of variables, reactive effects of experimental arrangements, and multiple-treatment interference were extremely low or non-existent. To address potential threats to external validity, disclaimers were made in the final study. Furthermore, there were no expected threats to construct or statistical conclusion validity.

Ethical Procedures

To ensure ethical procedures were followed during this study, the appropriate Walden IRB agreements to gain access to participants and data as a doctoral student were obtained. The actual documents in the IRB application were included in the final study. This study's participants were treated ethically in accordance with all IRB rules and guidelines. Institutional permission was requested and granted from the IRB. The IRB approval number for this study is 09-19-24-1026280.

There were ethical concerns related to this study's recruitment materials and processes as well as data collection. Paramount to ethical research practices is protecting participants' identities and their data. To address these concerns, a plan was in place to protect participants by providing disclosures prior to completing the survey, collecting informed consents from participants, stating the right of participants to withdraw consent at any time, listing a free mental health resource for participants in the consent form, maintaining the anonymity of survey responses and participants, and securely storing the

data to guarantee protection of participants. Furthermore, the study used language that is non-biased and inclusive of all gender identities—by way of using the term PWE to include all individuals born with a uterus and living with endometriosis—as well as all sexual orientations, races, ethnicities, and other sociodemographic factors. This study is intended to further the research on a critical topic for participants—given that participants are living with endometriosis—making this study potentially beneficial for participants. As such, participants were informed that the study’s findings will be published on ProQuest and accessible to the public. To avoid ethical issues, participants were not incentivized to complete the study. Participants voluntarily elected to participate in the study and had the freedom to complete the survey or withdraw consent to participate. Only individuals who met the inclusion criteria were included as participants. As participation in the study was limited to people who found the recruitment ad and chose to complete the online survey, the sample was limited to PWE who had access to online resources and to those who were able to complete the entire survey. Therefore, the sample may not reflect the perceptions of all PWE as only a tiny percentage of PWE were included as study participants.

The risks for participation in the study were minimal and were stated in the informed consent. The completed informed consent forms were obtained from the participants before the survey was started by each participant. A copy of the informed consent was included in the final study. Personally identifiable information, such as names and email addresses, were not collected from participants. When taking the survey, participants were reminded that participation was voluntary, survey responses

were anonymous, and consent to participate could be withdrawn at any point. Additionally, participants were provided with a free resource for emotional and psychological distress. All participants were told they could remove themselves from the study at any time without penalty. Participants were given my contact information to express concerns or request assistance with participation. Furthermore, the informed consent included Walden University's research participant advocate contact information. The data collected from the surveys was kept confidential by securing it within a password-protected file on my password-protected computer, kept in my locked home, and sharing it only with my dissertation committee and the Walden IRB. Five years after the completion of the study, I will destroy the data.

Summary

The purpose of this study was to examine the extent to which the use of various types of complementary self-care therapies to self-manage endometriosis is associated with PWE's HRQoL, as well as PWE's depressive symptomatology, controlling for sociodemographic variables. The independent variables were the use of various types of complementary self-care therapies to self-manage endometriosis, age, highest educational degree obtained, partner status, and time since the onset of endometriosis-related symptoms. The dependent variables were PWE's HRQoL and depressive symptomatology. To answer the study's RQs, a cross-sectional survey research design and nonprobability convenience sampling strategy were used. Self-reported information from an online survey, which was filled out anonymously and voluntarily by an eligible sample of PWE, was collected for analysis. The survey included items from the EHP-30,

SASS-14, and CES-D. A correlational methodology was used to examine the associations between the variables in a descriptive and non-experimental way. To do so, the data collected from the participants was quantitatively analyzed in SPSS by way of bivariate correlation and hierarchal MLR.

In Chapter 4, the data collection process is outlined, including the timeline of recruitment and data collection along with the responses from the study's survey. Any ethical issues, complications, or discrepancies in the data collection process are disclosed. The data scoring, cleaning, and analysis process is detailed. The demographic data collected from the participants is reviewed. The study's research findings are thoroughly discussed. The results of the bivariate correlation and hierarchal MLR are presented, with the descriptive statistics and test results displayed in tables. Any statistically significant or nonsignificant results from the regression model are reported and analyzed. A detailed explanation of the statistically significant findings is included. Chapter 5 will follow with a detailed discussion of findings and its application.

Chapter 4: Results

Introduction

The purpose of this study was to examine the extent to which the use of various types of complementary self-care therapies to self-manage endometriosis is associated with PWE's HRQoL. The RQs and hypotheses that directed this study are as follows:

RQ1: To what extent is the use of various types of complementary self-care therapies to self-manage endometriosis associated with PWE's HRQoL, controlling for sociodemographic variables?

*H*₀₁: The use of various types of complementary self-care therapies to self-manage endometriosis is not significantly associated with PWE's HRQoL, controlling for sociodemographic variables.

*H*_{a1}: The use of various types of complementary self-care therapies to self-manage endometriosis is significantly associated with PWE's HRQoL, controlling for sociodemographic variables.

RQ2: To what extent is the use of various types of complementary self-care therapies to self-manage endometriosis associated with PWE's depressive symptomatology, controlling for sociodemographic variables?

*H*₀₂: The use of various types of complementary self-care therapies to self-manage endometriosis is not significantly associated with PWE's depressive symptomatology, controlling for sociodemographic variables.

*H*_{a2}: The use of various types of complementary self-care therapies to self-manage endometriosis is significantly associated with PWE's depressive symptomatology, controlling for sociodemographic variables.

In Chapter 4, I describe this study's recruitment process, time frame, and response rate for data collection. I report the baseline descriptives and sociodemographic factors of the sample of participants. I explain how representative and proportional the sample of participants is of the population of people living with endometriosis. I evaluate the statistical assumptions and report the findings of the bivariate correlation and hierarchical MLR models, organized by RQs and hypotheses. I include tables and figures to illustrate the statistical analyses results. Then, I summarize the answers to the RQs and introduce Chapter 5.

Data Collection

After receiving IRB approval to recruit participants for this study's anonymous survey, the data collection process began by posting the study's recruitment ad to online endometriosis support groups by way of endometriosis websites and social media platforms. The time frame for data collection, from the first ad posted to an endometriosis support group until the final day of the survey being live, was 24 consecutive days in October of the 2024 fall term. During the recruitment phase, people between 18-69 years old who self-reported as having endometriosis were invited to participate in the study. The response rate consisted of 399 unique views of the survey with 150 fully completed surveys collected, indicating a 38% completion rate. Once 150 potential participants completed the survey, data collection ended with the closure of the survey. After

disqualifying completed surveys from people who selected “disagree” on the acknowledgment of the consent form and those who did not fit the eligibility criteria, a total sample size of 136 participants was obtained. With the sample size goal set at 100 participants, the goal was exceeded by 36 participants.

Results

Descriptive Statistics of the Population

Each of the 136 participants completed sociodemographic questions on the survey, including providing their age, gender, highest educational degree obtained, employment status, partner status, time since the onset of endometriosis-related symptoms, and use of various types of complementary self-care therapies to self-manage endometriosis (as a count and as categories). The sociodemographic variables characterizing this study’s sample are reported in detail in Table 1. Analyzing the collected data in SPSS revealed that most participants identified as White ($n = 109$, 80.1%) females ($n = 127$, 93.4%) who were employed in some way ($n = 109$, 80.1%) and had life partners ($n = 87$, 64.0%). This sample’s baseline characteristics are representative and proportional of PWE studied in the recent and relevant literature that included sociodemographic factors characterizing the samples; however, many researchers chose not to divulge these details in the articles. Reviewing studies with relevant sociodemographic factors listed in the articles revealed that most participants samples consisted predominately of White women who were employed and living with a life partner (Álvarez-Salvago et al., 2020; O’Hara et al., 2019; Soliman et al., 2020; Van Niekerk et al., 2022c; Van Poll et al., 2020). Each of the articles reviewed for this study

noted that all, or nearly all, of participants were “female,” “cis-woman,” or “woman” and did not mention the inclusion of gender-diverse participants, with most specifying in the inclusion criteria that eligible participants were assigned female at birth. Furthermore, all the recent and relevant literature reviewed stated that, on average, participants were in their 30s, which was similar to the results reported here. This study’s participants ranged from 19 to 66 years old, with the average age being 33.63 years old ($SD = 7.79$).

Although the majority of the 136 participants fell in the categories discussed above, nine participants (6.5%) identified as gender-diverse, 27 participants (19.9%) specified ethnicities other than White, 27 participants (19.8%) were not employed, and 49 participants (36.1%) had no life partner. Regarding highest educational degree obtained, most had a bachelor’s degree or less ($n = 101$, 74.2%) while a smaller percentage had a graduate degree ($n = 35$, 25.8%). Participants experienced their first endometriosis-related symptoms an average of 13.9 years ago ($SD = 9.07$), with some stating an onset of endometriosis as long as 47 years ago. When asked how many days within the last week participants had used complementary self-care therapies to self-manage endometriosis, the average was 3.7 days ($SD = 2.30$). Out of the 19 complementary self-care therapies included in the survey, the average number used by participants was 6.6 ($SD = 4.05$). The three mostly commonly used were cold or heat therapy ($n = 108$, 79.41%), diet ($n = 92$, 67.65%), and exercise ($n = 91$, 66.91%). The full list of complementary self-care therapies is presented in Table 2.

Table 1*Frequencies of Participant Sociodemographic Variables*

Sociodemographic variables	<i>n</i>	%
Age in years (<i>N</i> = 136)		
19-29	44	32.3
30-39	62	45.5
40-49	27	19.8
50-66	3	2.1
Gender (<i>N</i> = 136)		
Agender	1	.7
Apagender	1	.7
Female	127	93.4
Genderqueer	2	1.5
Nonbinary	3	2.2
Transgender man	1	.7
Woman (she/them)	1	.7
Ethnicity/race (<i>N</i> = 136)		
American Indian or Alaska Native	2	1.5
Asian or Asian American	6	4.4
Black or African American	2	1.5
Hispanic or Latino	10	7.4
Middle Eastern or North African	4	2.9
Mixed ethnicity/race	3	2.2
White	109	80.1
Highest educational degree obtained (<i>N</i> = 136)		
High school degree or equivalent	31	22.8
Associate's degree	18	13.2
Bachelor's degree	52	38.2
Master's degree	25	18.4
Doctorate	10	7.4
Employment status (<i>N</i> = 136)		
Employed	91	66.9
Retired	1	.7
Self-employed	18	13.2
Unemployed	26	19.1
Partner status (<i>N</i> = 136)		
Divorced or separated	5	3.7

Sociodemographic variables	<i>n</i>	%
Married or life partner	87	64.0
Single (never married)	42	30.9
Widowed	2	1.5
Years since onset of endo (<i>N</i> = 136)		
5 or less	33	24.1
6-11	25	18.3
12-19	41	30.1
20 or more	37	26.9
# of CSCT used to self-manage endo (<i>N</i> = 136)		
1-6	74	54.4
7-12	48	35.3
13-19	14	10.2
# of days last week CSCT used (<i>N</i> = 136)		
0-2	49	36.1
3-5	50	36.8
6-7	37	27.2

Note. CSCT = complementary self-care therapies; endo = endometriosis.

Table 2*Frequencies of CSCT Types Used by Participants*

CSCT types	<i>n</i>	%
acupuncture	32	23.53
body compassion	32	23.53
Chinese herbal supplementation	24	17.65
chiropractic treatments	29	21.32
cold or heat therapy	108	79.41
diet	92	67.65
exercise	91	66.91
homeopathy	19	13.97
hypnotherapy	1	0.74
intermittent fasting	35	25.74
lymphatic drainage massage	16	11.76
meditation	46	33.82
mindfulness	56	41.18
naturopathy	21	15.44
nutrition	65	47.79
psychotherapy	40	29.41
relaxation techniques	71	52.21
self-compassion	54	39.71
tai chi	4	2.94
yoga	61	44.85

Mean Scores of Measures

The overall scores of the EHP-30, SASS-14, and CES-D completed by all participants ($N = 136$) were analyzed. The domain sum scores of the EHP-30, ranging from 0 (indicative of higher HRQoL) to 100 (poorer HRQoL) for each of the five domains of life, are presented in Table 3. When measuring the mean scores, pain was 53.04 (SD = 21.63), CP was 67.13 (SD = 25.67), EWB was 50.34 (SD = 21.99), SS was 57.49 (SD = 25.60), and SI was 61.70 (SD = 26.75). The total sum score and subscale scores of the SASS-14 are presented in Table 4, with higher scores signifying higher

levels of participation in self-care activities. Assessing the mean scores revealed that the total sum was 59.95 (SD = 8.69), HC was 24.74 (SD = 3.81), nutrition physical activity (NPA) was 16.97 (SD = 3.59), SLP was 8.04 (SD = 2.43), and inter/intrapersonal coping strategies (IICS) was 10.20 (SD = 3.32). The total sum score and subscale scores of the CES-D are presented in Table 5, with higher scores indicating a greater number of depressive symptoms experienced. Calculating the mean scores showed that the total sum was 26.82 (SD = 12.10), DA was 8.51 (SD = 5.56), PA—which was reverse-scored—was 6.63 (SD = 3.08), SC was 10.18 (SD = 4.34), and ID was 1.49 (SD = 1.57).

Table 3

EHP-30 Domain Sum Scores

	EHP-30 Pain	EHP-30 CP	EHP-30 EWB	EHP-30 SS	EHP-30 SI
N	136	136	136	136	136
Mean	53.04	67.13	50.34	57.49	61.70
SD	21.63	25.67	21.99	25.60	26.75
Range	100	100	100	100	100

Note. CP = control and powerlessness, EWB = emotional well-being, SI = self-image, SS = social support.

Table 4*SASS-14 Total and Subscale Sum Scores*

	SASS-14 Total	SASS-14 HC	SASS-14 NPA	SASS-14 SLP	SASS-14 IICS
<i>N</i>	136	136	136	136	136
Mean	59.95	24.74	16.97	8.04	10.20
SD	8.69	3.81	3.59	2.43	3.32
Range	49	16	18	10	15

Note. HC = health consciousness, IICS = inter/intrapersonal coping strategies,

NPA = nutrition physical activity, SLP = sleep quality

Table 5*CES-D Total and Subscale Sum Scores*

	CES-D Total	CES-D DA	CES-D PA	CES-D SC	CES-D ID
<i>N</i>	136	136	136	136	136
Mean	26.82	8.51	6.63	10.18	1.49
Median	26.00	8.00	7.00	10.00	1.00
Mode	30	6	7	11	0
SD	12.10	5.56	3.08	4.34	1.57
Range	56	21	12	21	6

Note. DA = depressed affect, ID = interpersonal difficulties, PA = positive affect, SC = somatic complaints.

Statistical Analysis of RQ1*Basic Correlations*

The basic correlations for RQ1 are listed in tables in Appendix B. All the participants ($N = 136$) were included in each analysis, with no missing cases. Looking at the correlations between the EHP-30 domain sum scores—pain, CP, EWB, SI, and SS—

and education (see Table B1), there were no statistically significant associations between PWE's highest educational degree obtained and their perceptions of endometriosis impacting their HRQoL within any domain. The correlations between the EHP-30 domain sum scores and partner status (see Table B2) showed statistical significance only in the domain of CP, with a weak positive relationship ($r = .196, p = .022$) implying PWE's feelings of powerlessness and lack of control over their HRQoL due to endometriosis may be slightly increased by their partner status. Reviewing the correlations between the EHP-30 domain sum scores and the number of years since the onset of endometriosis-related symptoms (see Table B3), statistical significance was indicated for the domains of pain ($r = -.236, p = .006$), CP ($r = -.256, p = .003$), and EWB ($r = -.267, p = .002$), with weak negative relationships signifying PWE's perceptions of endometriosis-related pain, lack of CP, and adverse EWB may decrease as the number of years living with endometriosis increases.

When considering the correlations between the EHP-30 domain sum scores and the number of complementary self-care therapies used to self-manage endometriosis (see Table B4), the only statistical significance found was the weak negative relationship ($r = -.239, p = .005$) with the domain of pain, indicating PWE's perceptions of endometriosis-related pain may decrease as the number of complementary self-care therapies used to self-manage endometriosis increases. Analyzing the correlations between the EHP-30 domain sum scores and the number of days in the past week that complementary self-care therapies were used to self-manage endometriosis (see Table B5) revealed statistical significance for each of the five domains ($p < .001$), with pain ($r = .337$), CP ($r = .335$),

EWB ($r = .294$), SS ($r = .426$), and SI ($r = .309$) denoting moderate positive relationships. This suggests that PWE reporting worse overall HRQoL may use a greater number of complementary self-care therapies to self-manage endometriosis due to the severity of endometriosis-related symptoms experienced. As such, PWE with higher EHP-30 domain sum scores may require a wider range of complementary self-care therapies to self-manage endometriosis as the symptoms experienced are complex and PWE may need to cycle through several treatments to find effective strategies throughout the week. Finally, the correlations between the EHP-30 domain sum scores and the SASS-14 total sum score (see Table B6) revealed no statistically significant correlations—with the domain of EWB being the only correlation approaching significance ($p = .056$)—representing a lack of association between participants' HRQoL and self-care activities scores in the study's sample.

Statistical Assumptions

Before analyzing the results of the five hierarchal MLR models for RQ1, the six assumptions for conducting MLR were evaluated for each model. The assumptions included independence of error, multicollinearity, influence of outliers, normal distribution of errors, homoscedasticity, and linearity. The models exhibited no issues with any of the MLR assumptions. Therefore, the assumptions were assumed to be met.

Hierarchal MLR

The results of the five hierarchal MLRs were analyzed to answer RQ1. The hierarchal MLRs contained the same independent variables in Block 1—highest educational degree obtained (graduate degree as reference category), partner status (no

life partner as reference category), time since the onset of endometriosis-related symptoms, the number of complementary self-care therapies used to self-manage endometriosis, and the number of days in the past week that complementary self-care therapies were used to self-manage endometriosis—and Block 2—SASS-14 total sum score. The dependent variable—PWE’s HRQoL—was differentiated in each hierarchal MLR to include one of the five EHP-30 domain sum scores. Higher EHP-30 scores indicated worse HRQoL for participants in the given domain, while lower scores designated better HRQoL. Higher SASS-14 scores denoted higher participation in self-care activities, while lower scores suggested lower participation. Hierarchal MLR allowed for detailed analyses of the influence of various types of complementary self-care therapies to self-manage endometriosis on each domain of participants’ HRQoL, while controlling for sociodemographic variables.

EHP-30 Domain of Pain. The first hierarchal MLR examined the influence of various types of complementary self-care therapies to self-manage endometriosis on the EHP-30 domain of pain, while controlling for sociodemographic variables. The Block 1 factors explained 19.1% of the variance, $R^2 = .221$, adjusted $R^2 = .191$, $F(5, 130) = 7.377$, $p < .001$ (see Table 6). The addition of the SASS-14 total sum score in Block 2 explained an additional 1.6% of the variance, $\Delta R^2 = .016$, $F(1, 129) = 2.732$, $p = .101$, resulting in a final adjusted R^2 of .202. Examining the Block 2 coefficients analysis (see Table 7), three independent variables were significantly associated with pain—with statistical significance of Block 2 ($p < .001$) found overall—yet the addition of the SASS-14 total sum score was not statistically significant. Time since the onset of endometriosis-related

symptoms was significantly associated with lower pain scores as time increased ($\beta = -0.266, t = -3.222, p = .002$). The number of complementary self-care therapies used to self-manage endometriosis was significantly associated with higher pain scores as therapies increased ($\beta = .283, t = 3.205, p = .002$). The number of days in the past week that complementary self-care therapies were used to self-manage endometriosis was significantly associated with higher pain scores as days increased ($\beta = 0.244, t = 2.944, p = .004$).

Table 6

Hierarchical MLR Model Summary: EHP-30 Pain

Block	<i>R</i>	<i>R</i> ²	Adj. <i>R</i> ²	<i>SE</i> of Estimate	Change statistics				
					<i>R</i> ² Change	<i>F</i> Change	df1	df2	Sig. <i>F</i> Change
1	.470	.221	.191	19.458	.221	7.377	5	130	<.001
2	.487	.237	.202	19.329	.016	2.732	1	129	.101

Note. Dependent variable: EHP-30 domain sum score: pain.

Table 7*Hierarchical MLR Coefficients: EHP-30 Pain*

Block		Unstd.		Std.		<i>p</i>
		<i>B</i>	<i>SE</i>	β	<i>t</i>	
1	(Constant)	44.770	4.566		9.806	<.001
	Grad Degree	-3.559	3.843	-.072	-.926	.356
	No Life Partner	4.131	3.481	.092	1.187	.237
	Endo Onset	-.677	.197	-.284	-3.445	<.001
	# CSCT Used	1.354	.465	.253	2.912	.004
	Days/Wk CSCT	2.226	.785	.236	2.837	.005
2	(Constant)	63.459	12.184		5.209	<.001
	Grad Degree	-3.069	3.829	-.062	-.801	.424
	No Life Partner	3.123	3.511	.070	.889	.375
	Endo Onset	-.635	.197	-.266	-3.222	.002
	# CSCT Used	1.512	.472	.283	3.205	.002
	Days/Wk CSCT	2.299	.781	.244	2.944	.004
	SASS-14 Score	-.339	.205	-.136	-1.653	.101

Note. Dependent variable: EHP-30 domain sum score: pain.

EHP-30 Domain of CP. The second hierarchal MLR examined the influence of various types of complementary self-care therapies to self-manage endometriosis on the EHP-30 domain of CP, while controlling for sociodemographic variables. The Block 1 factors explained 18.6% of the variance, $R^2 = .216$, adjusted $R^2 = .186$, $F(5, 130) = 7.184$, $p < .001$ (see Table 8). Adding the SASS-14 total sum score in Block 2 explained an additional 2.3% of the variance, $\Delta R^2 = .023$, $F(1, 129) = 3.907$, $p = .050$, resulting in a final adjusted R^2 of .204. Reviewing the Block 2 coefficients analysis (see Table 9), all independent variables except for highest educational degree obtained were significantly associated with CP, and statistical significance of Block 2 ($p < .001$) was found overall. Partner status was significantly associated with higher CP scores ($\beta = .157$, $t = 2.004$, $p = .047$), or a greater lack of control and sense of powerlessness over endometriosis. Time

since the onset of endometriosis-related symptoms was significantly associated with lower CP scores as time increased ($\beta = -0.252, t = -3.050, p = .003$). The number of complementary self-care therapies used to self-manage endometriosis was significantly associated with higher CP scores as therapies increased ($\beta = .181, t = 2.050, p = .042$). The number of days in the past week that complementary self-care therapies were used to self-manage endometriosis was significantly associated with higher CP scores as days increased ($\beta = 0.275, t = 3.327, p = .001$). The SASS-14 score was significantly associated with lower CP scores as self-care activities increased ($\beta = -0.163, t = -1.977, p = .050$).

Table 8

Hierarchical MLR Model Summary: EHP-30 CP

Block	<i>R</i>	<i>R</i> ²	Adj. <i>R</i> ²	<i>SE</i> of Estimate	Change statistics				
					<i>R</i> ² Change	<i>F</i> Change	df1	df2	Sig. <i>F</i> Change
1	.465	.216	.186	23.153	.216	7.184	5	130	<.001
2	.489	.240	.204	22.899	.023	3.907	1	129	.050

Note. Dependent variable: EHP-30 domain sum score: CP.

Table 9*Hierarchical MLR Coefficients: EHP-30 CP*

Block		Unstd.		Std.		
		<i>B</i>	<i>SE</i>	β	<i>t</i>	<i>p</i>
1	(Constant)	57.348	5.433		10.556	<.001
	Grad Degree	-.098	4.572	-.002	-.021	.983
	No Life Partner	9.766	4.142	.183	2.358	.020
	Endo Onset	-.772	.234	-.273	-3.300	.001
	# CSCT Used	.922	.553	.145	1.667	.098
	Days/Wk CSCT	2.975	.934	.266	3.186	.002
2	(Constant)	83.826	14.433		5.808	<.001
	Grad Degree	.596	4.536	.010	.131	.896
	No Life Partner	8.337	4.159	.157	2.004	.047
	Endo Onset	-.712	.233	-.252	-3.050	.003
	# CSCT Used	1.146	.559	.181	2.050	.042
	Days/Wk CSCT	3.078	.925	.275	3.327	.001
	SASS-14 Score	-.481	.243	-.163	-1.977	.050

Note. Dependent variable: EHP-30 domain sum score: CP.

EHP-30 Domain of EWB. The third hierarchical MLR examined the influence of various types of complementary self-care therapies to self-manage endometriosis on the EHP-30 domain of EWB, while controlling for sociodemographic variables. The Block 1 factors explained 16.0% of the variance, $R^2 = .191$, adjusted $R^2 = .160$, $F(5, 130) = 6.149$, $p < .001$ (see Table 10). Adding the SASS-14 total sum score in Block 2 explained an additional 2.4% of the variance, $\Delta R^2 = .024$, $F(1, 129) = 3.970$, $p = .048$, resulting in a final adjusted R^2 of .179. Considering the Block 2 coefficients analysis (see Table 11), three independent variables were significantly associated with EWB, and statistical significance of Block 2 ($p < .001$) was found overall. Time since the onset of endometriosis-related symptoms was significantly associated with lower EWB scores, or a greater sense of EWB, as time increased ($\beta = -0.252$, $t = -3.011$, $p = .003$). The number

of days in the past week that complementary self-care therapies were used to self-manage endometriosis was significantly associated with higher EWB scores as days increased ($\beta = 0.246, t = 2.925, p = .004$). The SASS-14 score was significantly associated with lower EWB scores as self-care activities increased ($\beta = -0.167, t = -1.993, p = .048$). Although the number of complementary self-care therapies used to self-manage endometriosis approached statistical significance, there was no association with EWB ($p = .057$).

Table 10

Hierarchical MLR Model Summary: EHP-30 EWB

Block	<i>R</i>	<i>R</i> ²	Adj. <i>R</i> ²	<i>SE</i> of Estimate	Change statistics				
					<i>R</i> ² Change	<i>F</i> Change	df1	df2	Sig. <i>F</i> Change
1	.437	.191	.160	20.152	.191	6.149	5	130	<.001
2	.464	.215	.179	19.926	.024	3.970	1	129	.048

Note. Dependent variable: EHP-30 domain sum score: EWB

Table 11*Hierarchical MLR Coefficients: EHP-30 EWB*

Block		Unstd.		Std.		
		<i>B</i>	<i>SE</i>	β	<i>t</i>	<i>p</i>
1	(Constant)	47.091	4.729		9.959	<.001
	Grad Degree	-7.914	3.980	-.158	-1.989	.049
	No Life Partner	3.651	3.605	.080	1.013	.313
	Endo Onset	-.664	.204	-.274	-3.262	.001
	# CSCT Used	.740	.482	.136	1.536	.127
	Days/Wk CSCT	2.265	.813	.236	2.786	.006
2	(Constant)	70.318	12.560		5.599	<.001
	Grad Degree	-7.305	3.947	-.146	-1.851	.066
	No Life Partner	2.397	3.619	.053	.662	.509
	Endo Onset	-.612	.203	-.252	-3.011	.003
	# CSCT Used	.936	.486	.172	1.924	.057
	Days/Wk CSCT	2.355	.805	.246	2.925	.004
	SASS-14 Score	-.422	.212	-.167	-1.993	.048

Note. Dependent variable: EHP-30 domain sum score: EWB.

EHP-30 Domain of SS. The fourth hierarchal MLR examined the influence of various types of complementary self-care therapies to self-manage endometriosis on the EHP-30 domain of SS, while controlling for sociodemographic variables. The Block 1 factors explained 17.5% of the variance, $R^2 = .205$, adjusted $R^2 = .175$, $F(5, 130) = 6.723$, $p < .001$ (see Table 12). With the SASS-14 total sum score added in Block 2, an additional 2.2% of the variance was explained, $\Delta R^2 = .022$, $F(1, 129) = 3.679$, $p = .057$, resulting in a final adjusted R^2 of .192. Evaluating the Block 2 coefficients analysis (see Table 13), only one independent variable showed statistical significance for SS; however, statistical significance of Block 2 ($p < .001$) was found overall. The number of days in the past week that complementary self-care therapies were used to self-manage endometriosis was significantly associated with higher SS scores as days increased ($\beta =$

0.408, $t = 4.897$, $p = < .001$). Although the SASS-14 score neared statistical significance, it was not associated with SS ($p = .057$).

Table 12

Hierarchical MLR Model Summary: EHP-30 SS

Block	R	R^2	Adj. R^2	SE of Estimate	Change statistics				
					R^2 Change	F Change	df1	df2	Sig. F Change
1	.453	.205	.175	23.258	.205	6.723	5	130	<.001
2	.477	.227	.192	23.022	.022	3.679	1	129	.057

Note. Dependent variable: EHP-30 domain sum score: SS.

Table 13

Hierarchical MLR Coefficients: EHP-30 SS

Block		Unstd.		Std.		
		B	SE	β	t	p
1	(Constant)	44.993	5.457		8.244	<.001
	Grad Degree	-5.144	4.593	-.088	-1.120	.265
	No Life Partner	-.685	4.160	-.013	-.165	.869
	Endo Onset	-.364	.235	-.129	-1.547	.124
	# CSCT Used	.416	.556	.066	.749	.455
	Days/Wk CSCT	4.455	.938	.400	4.749	<.001
2	(Constant)	70.826	14.511		4.881	<.001
	Grad Degree	-4.466	4.560	-.077	-.979	.329
	No Life Partner	-2.079	4.182	-.039	-.497	.620
	Endo Onset	-.305	.235	-.108	-1.299	.196
	# CSCT Used	.634	.562	.100	1.129	.261
	Days/Wk CSCT	4.555	.930	.408	4.897	<.001
	SASS-14 Score	-.469	.245	-.159	-1.918	.057

Note. Dependent variable: EHP-30 domain sum score: SS.

EHP-30 Domain of SI. The fifth hierarchal MLR examined the influence of various types of complementary self-care therapies to self-manage endometriosis on the

EHP-30 domain of SI, while controlling for sociodemographic variables. The Block 1 factors explained 7.8% of the variance, $R^2 = .112$, adjusted $R^2 = .078$, $F(5, 130) = 3.279$, $p = .008$ (see Table 14). With the SASS-14 total sum score added in Block 2, an additional 1.0% of the variance was explained, $\Delta R^2 = .010$, $F(1, 129) = 1.531$, $p = .218$, resulting in a final adjusted R^2 of .082. Assessing the Block 2 coefficients analysis (see Table 15), only one independent variable indicated statistical significance for SI, though statistical significance of Block 2 ($p = .009$) was found overall despite the addition of the SASS-14 score demonstrating no statistical significance. The number of days in the past week that complementary self-care therapies were used to self-manage endometriosis was significantly associated with higher SI scores as days increased ($\beta = 0.282$, $t = 3.171$, $p = .002$).

Table 14

Hierarchical MLR Model Summary: EHP-30 SI

Block	R	R^2	Adj. R^2	SE of Estimate	Change statistics				
					R^2 Change	F Change	df1	df2	Sig. F Change
1	.335	.112	.078	25.685	.112	3.279	5	130	.008
2	.350	.122	.082	25.633	.010	1.531	1	129	.218

Note. Dependent variable: EHP-30 domain sum score: SI.

Table 15*Hierarchical MLR Coefficients: EHP-30 SI*

Block		Unstd.		Std.		<i>p</i>
		<i>B</i>	<i>SE</i>	β	<i>t</i>	
1	(Constant)	50.388	6.027		8.360	<.001
	Grad Degree	-1.553	5.072	-.025	-.306	.760
	No Life Partner	2.820	4.595	.051	.614	.540
	Endo Onset	-.331	.260	-.112	-1.277	.204
	# CSCT Used	.530	.614	.080	.864	.389
	Days/Wk CSCT	3.212	1.036	.276	3.100	.002
2	(Constant)	68.945	16.157		4.267	<.001
	Grad Degree	-1.067	5.077	-.017	-.210	.834
	No Life Partner	1.819	4.656	.033	.391	.697
	Endo Onset	-.289	.261	-.098	-1.107	.271
	# CSCT Used	.687	.626	.104	1.098	.274
	Days/Wk CSCT	3.284	1.036	.282	3.171	.002
	SASS-14 Score	-.337	.272	-.109	-1.238	.218

Note. Dependent variable: EHP-30 domain sum score: SI.

Statistical Analysis of RQ2

Basic Correlations

The basic correlations for RQ2 are listed in tables in Appendix C. There were no missing cases as all participants provided data ($N = 136$). Reviewing the individual correlations between the CES-D total sum score and highest educational degree obtained (see Table C1), partner status (see Table C2), the number of years since the onset of endometriosis-related symptoms (see Table C3), and the number of complementary self-care therapies used to self-manage endometriosis (see Table C4), there were no statistically significant associations with depressive symptomatology for any of these four variables. Analyzing the correlation between the CES-D total sum score and the number of days in the past week that complementary self-care therapies were used to self-manage

endometriosis (see Table C5) showed statistical significance with a weak positive relationship ($r = .263, p = .002$), indicating that PWE presenting with greater depressive symptomatology may need to implement complementary self-care therapies more frequently throughout the week to self-manage endometriosis and cope with depressive symptomatology. The correlation between the CES-D and SASS-14 total sum scores (see Table C6) denoted statistical significance with a weak negative relationship ($r = -.230, p = .007$), implying that PWE's depressive symptomatology may decrease as the number of self-care activities used to self-manage endometriosis increases.

Statistical Assumptions

As with RQ1, the six assumptions for conducting MLR were evaluated prior to analyzing the results of the hierarchal MLR model for RQ2. There were no concerns with independence of error, multicollinearity, influence of outliers, normal distribution of errors, homoscedasticity, or linearity. As such, the assumptions were presumed to be met.

Hierarchal MLR

To answer RQ2, the results of the hierarchal MLR were dissected. The model was structured by block, with Block 1 containing highest educational degree obtained (graduate degree as reference category), partner status (no life partner as reference category), time since the onset of endometriosis-related symptoms, the number of complementary self-care therapies used to self-manage endometriosis, and the number of days in the past week that complementary self-care therapies were used to self-manage endometriosis, and Block 2 adding in the SASS-14 total sum score. The dependent variable for RQ2—PWE's depressive symptomatology—was measured by the CES-D

total sum score. Higher CES-D scores implied greater depressive symptomatology for participants, while lower scores indicated lesser depressive symptomatology.

The hierarchal MLR for RQ2 examined the influence of various types of complementary self-care therapies to self-manage endometriosis on PWE's depressive symptomatology, while controlling for sociodemographic variables. The Block 1 factors explained 9.0% of the variance, $R^2 = .123$, adjusted $R^2 = .090$, $F(5, 130) = 3.661$, $p = .004$ (see Table 16). Adding the SASS-14 total sum score in Block 2 explained an additional 6.2% of the variance, $\Delta R^2 = .062$, $F(1, 129) = 9.867$, $p = .002$, resulting in a final adjusted R^2 of .148. The coefficients analysis (see Table 17) showed statistical significance of Block 2 ($p < .001$) overall, with three independent variables significantly associated with PWE's depressive symptomatology. The number of complementary self-care therapies used to self-manage endometriosis was significantly associated with higher CES-D scores as quantity of therapies increased ($\beta = 0.206$, $t = 2.261$, $p = .025$). The number of days in the past week that complementary self-care therapies were used to self-manage endometriosis was significantly associated with higher CES-D scores as days increased ($\beta = 0.219$, $t = 2.560$, $p = .012$). The SASS-14 score was significantly associated with lower CES-D scores as self-care activities increased ($\beta = -0.268$, $t = -3.141$, $p = .002$).

Table 16*Hierarchical MLR Model Summary: CES-D Total Sum Score*

Block	<i>R</i>	<i>R</i> ²	Adj. <i>R</i> ²	<i>SE</i> of Estimate	Change statistics				Sig. <i>F</i> Change
					<i>R</i> ²	<i>F</i>	df1	df2	
1	.351	.123	.090	11.539	.123	3.661	5	130	.004
2	.431	.186	.148	11.165	.062	9.867	1	129	.002

Note. Dependent variable: CES-D total sum score.**Table 17***Hierarchical MLR Coefficients: CES-D Total Sum Score*

Block		Unstd.		Std.		<i>p</i>
		<i>B</i>	<i>SE</i>	β	<i>t</i>	
1	(Constant)	23.051	2.708		8.513	<.001
	Grad Degree	-2.413	2.279	-.088	-1.059	.292
	No Life Partner	2.474	2.064	.099	1.199	.233
	Endo Onset	-.243	.117	-.182	-2.080	.039
	# CSCT Used	.443	.276	.148	1.606	.111
	Days/Wk CSCT	1.075	.465	.204	2.310	.022
2	(Constant)	43.568	7.037		6.191	<.001
	Grad Degree	-1.875	2.212	-.068	-.848	.398
	No Life Partner	1.367	2.028	.054	.674	.501
	Endo Onset	-.196	.114	-.147	-1.721	.088
	# CSCT Used	.616	.272	.206	2.261	.025
	Days/Wk CSCT	1.155	.451	.219	2.560	.012
	SASS-14 Score	-.373	.119	-.268	-3.141	.002

Note. Dependent variable: CES-D total sum score.

Summary

For the purpose of this study, two RQs were formulated to separately assess potential associations between PWE's overall health and self-managing endometriosis with complementary self-care therapies. RQ1 questioned the impact of six independent variables on PWE's HRQoL, and RQ2 considered the impact of the same independent

variables on PWE's depressive symptomatology. Based on the analyses of both RQ1 and RQ2, each of the six hierarchical MLR models revealed statistically significant associations overall. Therefore, the null hypotheses for RQ1 and RQ2 were both rejected, and the alternative hypotheses were accepted. The results of the statistical analysis for RQ1 indicate that the use of various types of complementary self-care therapies to self-manage endometriosis is significantly associated with PWE's HRQoL, controlling for sociodemographic variables. Similarly, the findings of the analysis for RQ2 suggest that the use of various types of complementary self-care therapies to self-manage endometriosis is significantly associated with PWE's depressive symptomatology, controlling for sociodemographic variables. The results of this study will be further discussed in detail in Chapter 5 where I will provide an interpretation of the findings, along with implications for positive social change. Moreover, limitations of this study will be stated and recommendations for future studies considered.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this study was to examine the extent to which the use of various types of complementary self-care therapies to self-manage endometriosis is associated with PWE's HRQoL. At the time of this study, there were no other studies on the use of various types of complementary self-care therapies to self-manage endometriosis in association with PWE's HRQoL. Reviewing the existing literature revealed limited research on nontraditional methods of self-managing endometriosis, making it clear that this study helps fill a gap in the literature on endometriosis impacting PWE's mental and physical health by considering the use of complementary self-care therapies as a multilayered strategy for self-managing endometriosis. The data used to conduct bivariate correlation and hierarchal MLR analyses were gathered from an anonymous online survey of 136 people self-reporting as having endometriosis, either diagnosed or suspected. Utilizing the EHP-30, CES-D, and SASS-14 measures, the survey asked participants to disclose their perceptions of the impact of endometriosis on their HRQoL. This study was conducted to provide PWE and healthcare professionals with an understanding of how self-managing endometriosis using complementary self-care therapies might impact PWE's HRQoL. The study's aim was to increase awareness of endometriosis and educate PWE on nontraditional methods for potentially improving their health and well-being overall. The findings revealed statistical significance in the associations between the use of various types of complementary self-care therapies to self-manage endometriosis and PWE's HRQoL, as well as PWE's depressive

symptomatology. These findings could help PWE effectively collaborate with healthcare providers to improve the medical support they receive while also empowering PWE with knowledge to positively impact their mental and physical health overall.

The knowledge on PWE's HRQoL has been extended through this study's findings on the impact of using complementary self-care therapies to self-manage endometriosis. While a small number of articles were closely related to the gap that this study examines, no research had explored the relationship between the use of various types of complementary self-care therapies for self-managing endometriosis and PWE's HRQoL. Existing endometriosis studies predominantly focused on traditional medical treatments involving pharmaceutical and surgical interventions with minimal guidance on self-management strategies or complementary approaches to improve PWE's HRQoL. As discussed in several relevant studies, this knowledge gap leaves many PWE unaware of nontraditional symptom management options—with inadequate support leading to poor mental and physical health outcomes—while the negative impact of chronic pain and comorbidities on HRQoL underscores the need for targeted self-care interventions to improve PWE's HRQoL (Falconer et al., 2022; Farshi et al., 2020; Hudson et al., 2020; Lamvu et al., 2020; Le Roux et al., 2022; O'Hara et al., 2019; Rea et al., 2020; Rowe et al., 2021; Simonsen et al., 2020). By addressing the gap in the literature, this study's findings may positively influence perceptions of the effectiveness of complementary self-care therapies, encouraging further research on their impact on HRQoL. Additionally, raising awareness of endometriosis and empowering PWE to feel more in control of their health could foster positive social change and improve HRQoL for those living with this

understudied and underdiagnosed condition. This will be discussed in detail in this chapter.

Interpretation of the Findings

This study's findings were similar to some of the results of the relevant research articles examined in Chapter 2. As part of the statistical analysis, the domains of pain, CP, EWB, SS, and SI as well as depressive symptomatology were considered in relation to self-managing endometriosis using various types of complementary self-care therapies. The present study found statistical significance in the relationships between self-managing endometriosis using various types of complementary self-care therapies and PWE's HRQoL at different stages, which is compared to existing literature below.

Chronic Pain

Chronic pain from endometriosis is a major contributor to decreased HRQoL and affects all aspects of PWE's lives (Della Corte et al., 2020; Ellis et al., 2022; Gete et al., 2023; Horne & Missmer, 2022; Hudson et al., 2020; Lamvu et al., 2020; Missmer et al., 2021; Soliman et al., 2020). Furthermore, research has found a direct correlation between more severe or numerous endometriosis-related symptoms and lower HRQoL in PWE (Márki et al., 2022; Pokrzywinski et al., 2020; Soliman et al., 2020; Van Niekerk et al., 2022b). Due to individual differences in type, frequency, and severity of pain, along with lifestyle and cultural factors, the experience of endometriosis is highly unique for each person. In the present study, higher numbers of complementary self-care therapies used to self-manage endometriosis and higher frequency of use in a week were significantly associated with higher pain scores, implying that more severe pain leads PWE to use a

broader range of therapies more frequently to attempt to cope with pain. However, lower pain scores were reported as time living with endometriosis increased, suggesting that PWE's perception of pain improves over time possibly due to endometriosis-related pain lessening as PWE age. This is reflected in the literature reviewed expressing that younger PWE often experience worse mental health due to ineffective symptom management (Missmer et al., 2021).

Worse perceptions of pain are linked to lower HRQoL in people with chronic pain, including PWE (Gete et al., 2023; Missmer et al., 2021; Soliman et al., 2020). Physical symptoms, particularly pain and fatigue, significantly decrease PWE's HRQoL (Van Niekerk et al., 2022c), with chronic nonmenstrual pelvic pain being a major contributor to poor mental and physical health (Soliman et al., 2020). A large-scale study by Gete et al. (2023) revealed a statistically significant decline in HRQoL among PWE, with physical pain leading to the lowest HRQoL scores. A primary cause of distress is PWE feeling a lack of control over pain and other symptoms (Márki et al., 2022). Multidisciplinary support and self-management education are crucial for addressing mental, physical, and emotional challenges associated with endometriosis, as shown by Rowe et al. (2021). Collaborative care involving a diverse network of healthcare professionals positively impacts HRQoL by validating PWE's experiences and providing comprehensive support.

The present study's statistical findings align with this consensus by showing that a greater number of complementary self-care therapies used as well as more frequent use of such therapies in a week were both associated with PWE experiencing higher pain levels,

greater lack of CP, poorer EWB, lower perceived SS, worse SI, and higher depressive symptomatology. Although greater overall self-care engagement—measured by SASS-14 scores—was shown to be beneficial for PWE, the results point to worse HRQoL and depressive symptomatology overall when using more complementary self-care therapies and frequent use of such therapies possibly due to PWE with more severe endometriosis-related symptoms needing increased levels of self-care as well as support from healthcare professionals to improve their HRQoL. The statistical significance found related to PWE's perception of CP over endometriosis improving as more self-care activities were incorporated into their routines adds to the literature on PWE's HRQoL being positively impacted by self-care behaviors. Additionally, these findings correspond with the fundamental elements of SCT that encouraged people living with chronic health conditions to be emboldened to self-manage their health for improved HRQoL (Orem, 1985). As with the tenets of SCT, this study points to a positive relationship between PWE having a greater sense of control and power over their health by way of self-management and increased HRQoL.

CP

Poor HRQoL in chronic pain conditions such as endometriosis is influenced not only by pain but also by psychological factors such as lack of CP. Research has demonstrated that PWE ranked lack of control and feelings of powerlessness as having the worst impact on HRQoL, whereas positive EWB was linked to greater HRQoL (Van Niekerk et al., 2022a). This suggests that psychological elements play a more significant role than pain alone in influencing PWE's HRQoL. This was reflected in the present

study's findings on the relationship between CP and using various types of complementary self-care therapies to self-manage endometriosis. The results revealed that the number of complementary self-care therapies used to self-manage endometriosis was significantly associated with higher CP scores as therapies increased, and the number of days in the past week that complementary self-care therapies were used to self-manage endometriosis was significantly associated with higher CP scores as days increased. With higher CP scores indicating worse HRQoL in that domain, this relates to the relevant literature on CP being negatively impacted by endometriosis. This suggests that worse CP necessitates the use of a broader range of complementary self-care therapies and more frequent use of nontraditional methods to cope with the psychological aspects of living with endometriosis.

This study's results also revealed that using self-care activities was significantly associated with lower CP scores as self-care activities increased, which indicates that using complementary self-care activities may improve PWE's HRQoL in that domain. This is in alignment with SCT's main component of patient-led self-care and self-management of chronic health conditions positively impacting health outcome (Orem, 1985). Additionally, time since the onset of endometriosis-related symptoms was significantly associated with lower CP scores as time increased. Similar to other studies that found PWE's mental and physical health improving as their age increased (Márki et al., 2022; Missmer et al., 2021; Gete et al., 2023), this finding insinuates that PWE's perception of CP over endometriosis improves the longer they live with endometriosis.

Researchers have confirmed that endometriosis symptoms often disrupt intimate relationships, causing PWE to feel anxious about their relationship status, which makes partner support essential for improving PWE's HRQoL (Márki et al., 2022; Missmer et al., 2021; Rea et al., 2020). Of the five EHP-30 domains, the only one showing statistical significance related to partner status in the present study was CP. Participants' partner status was significantly associated with higher CP scores, or a greater lack of control and sense of powerlessness over endometriosis. The relevant literature highlights the significant negative impact of endometriosis on PWE's HRQoL related to intimate relationships due to symptoms like dyspareunia, chronic pelvic pain, fatigue, and depression (Facchin et al., 2021; Hudson et al., 2020; McKay et al., 2021; Kfoury et al., 2023; Van Poll et al., 2020). Studies have consistently shown that PWE's mental health suffers when endometriosis-related symptoms—particularly dyspareunia and dysmenorrhea—disrupt sexual satisfaction and intimate bonds (Facchin et al., 2021; Van Poll et al., 2020). Supportive intimate relationships are crucial for better HRQoL and SQoL, with studies emphasizing the detrimental impact of PWE and their partners concealing their struggles (Hudson et al., 2020; Kalfas et al., 2022). This coincides with the present study's findings that PWE's partner status influences the level of CP they feel over endometriosis and the concurrent impact on their HRQoL. PWE's perception of control and power over their bodies and sexuality while living with endometriosis directly influences their personal and intimate relationships (Calvi et al., 2023; Facchin et al., 2021; McKay et al., 2021; Kfoury et al., 2023; Rea et al., 2020; Van Poll et al., 2020).

Upon analyzing 27 studies on PWE's HRQoL, Kalfas et al. (2022) discovered that mental and physical health were negatively impacted by PWE's perceptions of stress. To cope with stress and minimize the influence of endometriosis-related symptoms, the researchers found that PWE utilized numerous psychological and physical mind-body practices—such as yoga and acupuncture—that empowered them to self-manage endometriosis and improve their HRQoL. These conclusions are similar to the present study's findings showing a statistically significant relationship between the use of various types of complementary self-care therapies to self-manage endometriosis and PWE's HRQoL. In particular, this study revealed that increased self-care activities were significantly associated with a better sense of control and power over endometriosis-related symptoms as well as improved EWB, as measured by participants' SASS-14 and EHP-30 scores. These concepts are echoed in the multifaceted approach to self-managing chronic health conditions established in SCT. Moreover, this reflects the use of mind-body practices reducing stress to improve PWE's HRQoL (Kalfas et al., 2022) as well as the use of mindfulness and psychological approaches to manage chronic pain improving mental and physical health overall (Wang et al., 2021).

EWB

Effective coping techniques for managing endometriosis are linked to higher HRQoL, while inadequate coping is associated with lower HRQoL (Missmer et al., 2021). Higher self-efficacy and engagement in self-care activities are correlated with improved mental and physical health (O'Hara et al., 2021), as asserted by the core components of SCT. Younger PWE often experience worse mental health due to

ineffective symptom management (Missmer et al., 2021). Older PWE generally report better HRQoL than younger PWE, perceiving symptoms as less severe as they approach perimenopause, whereas younger PWE closer to their prime fertility years report more severe symptoms (Van Niekerk et al., 2022a). EWB improves over time, leading to higher HRQoL, with long-term experience in managing endometriosis contributing to better coping and emotional resilience. This emphasizes the gradual learning process of living with a chronic disease and discovering strategies to enhance HRQoL (Van Niekerk et al., 2022a). This relates to the present study's findings on PWE's EWB improving—as revealed by lower EWB scores on the EHP-30—as time since the onset of endometriosis-related symptoms increased. Thus, this adds to the relevant literature on PWE's mental and emotional health improving the longer they live with endometriosis.

Adequate resources, education, and support are essential for PWE to effectively self-manage endometriosis and improve EWB and HRQoL overall. Farshi et al. (2020) demonstrated that focusing on psychological, physical, spiritual, and social self-care practices reduces anxiety and enhances mental health, highlighting the benefits of self-care strategies and complementary methods of treating endometriosis. This emphasizes the need to educate and empower PWE to use complementary self-care therapies to improve their HRQoL. Reducing distress from endometriosis symptoms improves EWB, with studies showing that HRQoL increases over time as PWE adapt to the symptom burden (Missmer et al., 2021; Van Niekerk et al., 2022a; Van Niekerk et al., 2022b; Van Niekerk et al., 2022c). Although the present study found a statistically significant association between more frequent use of complementary self-care therapies to self-

manage endometriosis in a week and worse EWB scores, this matches the findings of similar studies emphasizing the negative impact of coping with endometriosis on PWE's EWB and health overall. The severity of endometriosis-related symptoms may require consistent use of complementary self-care therapies throughout the lifespan to yield positive results. Given this detrimental effect on HRQoL, PWE may benefit from learning how to manage symptoms using self-care activities tailored to the unique needs of each individual and targeting the endometriosis-related symptoms causing the most distress. This is particularly critical since abdominal pain is strongly linked to worse CP, reduced EWB, and poor HRQoL (Van Niekerk et al., 2022a). By effectively self-managing endometriosis using strategies created specifically for each individual, PWE may experience better EWB and HRQoL overall at earlier ages and after shorter symptom durations.

SS

Relevant studies revealed that endometriosis-related symptoms—particularly chronic pain—significantly impacted PWE's social lives, leading to mental and physical health challenges (Missmer et al., 2021; Márki et al., 2022). The present study's findings indicated that participants perceived SS to be worse when coping with endometriosis required more frequent use of complementary self-care therapies in a week. Specifically, the number of days in the past week that complementary self-care therapies were used to self-manage endometriosis was significantly associated with higher SS scores as days increased. This aligns with the current literature on endometriosis-related pain, fatigue, and other physical impairments frequently limiting or preventing PWE from participating

in social activities (Lamvu et al., 2020), with nearly 50% of PWE in one study reporting such restrictions due to pain (Missmer et al., 2021).

This correlation between PWE's SS and weekly time spent using complementary self-care therapies may indicate that social interactions are limited and negatively impacted by the severity of endometriosis-related symptoms requiring more time devoted to symptom management, which parallels findings in the literature. This lack of SS is detrimental to PWE's HRQoL as emotional support is proven to alleviate psychological distress and social connection is strongly linked to greater mental health and well-being (Schreurs et al., 2023). Conversely, the isolation stemming from symptom-related social withdrawal experienced by PWE can contribute to depression, anxiety, and diminished emotional health (Márki et al., 2022; Missmer et al., 2021). Given the limited literature on these social factors impacting PWE's HRQoL, researchers have agreed that future research needs to explore how SS from partners, family, friends, other PWE, and healthcare professionals influences mental and physical health outcomes (Kalfas et al., 2022; Missmer et al., 2021; Schreurs et al., 2023).

SI

SI plays a crucial role in PWE's HRQoL, particularly by influencing sexuality, intimate relationships, and overall well-being. Van Poll et al. (2020) found that negative SI and sexual dysfunction due to endometriosis symptoms led to lower HRQoL. Similarly, Van Niekerk et al. (2022c) showed that body image dissatisfaction affected intimate partnerships, while Calvi et al. (2023) linked body image disturbance and self-consciousness to emotional loneliness and reduced sexual satisfaction. These studies

highlight the direct impact of body image on PWE's self-perception, relationships, and sexuality, emphasizing the need to promote positive body image and SI to enhance HRQoL (Calvi et al., 2023; Facchin et al., 2021; McKay et al., 2021; Kfoury et al., 2023; Rea et al., 2020; Van Poll et al., 2020). The present study revealed statistical significance in the association between number of days in the past week that complementary self-care therapies were used to self-manage endometriosis and higher SI scores as days increased. Essentially, participants who reported using complementary self-care therapies more frequently throughout the week had worse SI and lowered HRQoL. This may imply that PWE's SI is negatively impacted to the point of requiring daily or frequent use of complementary self-care therapies to cope with endometriosis, which may interfere with their interpersonal relationships and negatively impact their intimate relationships.

Endometriosis can lead to low self-worth, reduced self-confidence, and diminished self-esteem because of hormone imbalances and endometriosis-related symptoms affecting PWE's SI and HRQoL overall (Missmer et al., 2021). Additionally, negative SI—especially in the form of body image disturbance—can worsen depression and anxiety, which further reduces HRQoL related to lowered SI (Calvi et al., 2023; Van Niekerk et al., 2022c). The relevant literature on endometriosis has discussed the relationships between PWE's HRQoL, SI, and interpersonal relationships, especially the experiences within intimate relationships. These findings align with the study by Van Niekerk et al. (2022c) exposing significant differences in HRQoL, depression, anxiety, and SI between 318 PWE and 420 individuals without endometriosis, particularly with PWE experiencing greater body dissatisfaction and disconnection that negatively affected

their relationships. Calvi et al. (2023) further associated body image disturbance with reduced SS and emotional loneliness, while surgical treatment improved sexual satisfaction and HRQoL for PWE; however, hormone and fertility treatments worsened psychological comorbidities and reduced sexual satisfaction (Kfoury et al., 2023). McKay et al. (2021) also highlighted that PWE experienced less sexual satisfaction than their partners, with fatigue being a key factor. Pairing these findings with the present study, PWE suffering from negative SI may require more frequent use of complementary self-care therapies throughout the week in order to self-manage endometriosis and improve their long-term HRQoL, which could impair their feelings related to their SI and how their partners perceive them. These findings underscore the need for effective self-management strategies using complementary self-care therapies to enhance SI and intimate relationships, ultimately improving PWE's HRQoL.

Depressive Symptomatology

The relevant literature on endometriosis provides robust evidence that PWE are more likely to experience mental health comorbidities such as depression and anxiety compared to those without endometriosis. Lamvu et al. (2020) found that among 451 participants with endometriosis, 208 were diagnosed with anxiety, 199 with depression, 173 with IBS, 96 with pelvic infection, and 61 with cystitis before receiving an endometriosis diagnosis. A meta-analysis by Wang et al. (2021) confirmed significantly higher rates of depression among 33,704 PWE in North America compared to 7,145,332 individuals without endometriosis, indicating a greater impact on HRQoL, particularly mental health. While Van Niekerk et al. (2022a) found that anxiety and depression were

rated as equally impactful on PWE's HRQoL, physical health issues were considered less concerning. However, both depression and anxiety were linked to decreased HRQoL and increased pain in the study by Kalfas et al. (2022). The correlation between emotional distress and high rates of anxiety and depression underscores the need for further research on the psychological impact of endometriosis (Farshi et al., 2020; Kalfas et al., 2022; Kfoury et al., 2023; Missmer et al., 2021; Wang et al., 2021).

This aligns with the findings of the present study related to depressive symptomatology experienced by participants. The number of complementary self-care therapies used to self-manage endometriosis was significantly associated with higher CES-D scores as quantity of therapies increased. Similarly, the number of days in the past week that complementary self-care therapies were used to self-manage endometriosis was significantly associated with higher CES-D scores as days increased. These two statistics highlight the negative impact of endometriosis on PWE's mental health, as higher CES-D scores implicate greater depressive symptomatology. Additionally, this study found that increased use of self-care activities—measured by the SASS-14 score—was significantly associated with lower depressive symptomatology. While seemingly at odds with the statistical findings on the number of therapies used and frequency of use in a week, these results suggest that depressive symptomatology may be linked to PWE experiencing severe endometriosis that requires an extensive treatment plan and more time devoted to effectively self-managing symptoms. This extends the knowledge in the relevant literature on lessening depressive symptomatology and mental health comorbidities by

utilizing individualized and targeted self-care strategies to improve PWE's HRQoL overall, which is based in the fundamentals of SCT.

Psychological distress, depression, and anxiety are exacerbated by inadequate SS and emotional loneliness, significantly impacting PWE's HRQoL (Calvi et al., 2023). These mental health challenges can disrupt social commitments and work responsibilities, creating a vicious cycle of mental health comorbidities (Calvi et al., 2023; Márki et al., 2022; Missmer et al., 2021). Feelings of hopelessness, inadequacy, guilt, and irritation are often linked to unpredictable endometriosis symptoms, including pain, depression, and fatigue (Márki et al., 2022; Missmer et al., 2021). Álvarez-Salvago et al. (2020) found that PWE experienced significantly greater fatigue across behavioral, sensory, cognitive, and affective dimensions than those without endometriosis. The contrast in energy levels, productivity, and mental health during endometriosis flare-ups versus remission demonstrates the substantial impact of endometriosis on personal, work, academic, and social lives. Studies like the present one can add to the literature on ways to positively improve PWE's HRQoL through self-managing endometriosis using complementary self-care therapies that meet the unique needs of the individual and address the complex range of symptoms compromising PWE's health overall.

Limitations of the Study

There were some limitations to this study that warrant consideration. Data diversity may have been limited by participants belonging to the same support groups, potentially sharing similar experiences and characteristics such as delayed diagnosis. Likewise, participants seeking online support and information may have comparable

experiences and motivations, leading to similar perspectives shared in the survey.

Response biases may have influenced the study's outcomes. Additionally, many PWE may not desire or feel capable of discussing their endometriosis experiences, and there are PWE without the ability to respond to an online survey.

There are other limitations of this study that reflect the limitations of previous research on endometriosis. Researchers have noted a lack of statistically rigorous studies on self-managing endometriosis using nontraditional treatment methods—although some researchers recognized themes in complementary approaches leading to reduced endometriosis-related pain—and a need for in-depth research studies with better methodology to validate previous studies (Falconer et al., 2022; Schubert et al., 2022). This study did not specifically address the negative impact of infertility—a common symptom associated with the highest level of emotional and psychological distress in several studies (Bonavina & Taylor, 2022; La Rosa et al., 2020; Márki et al., 2022; Missmer et al., 2021; Pessoa de Farias Rodrigues et al., 2020; Rea et al., 2020; Van Niekerk et al., 2022b)—on PWE's HRQoL, as the subject of fertility was not included in the survey. Similarly, other factors contributing to PWE's HRQoL were not included due to the limited scope of this study. There are lesser-discussed endometriosis-related symptoms—such as fatigue and nausea—that may negatively impact PWE's HRQoL; however, these symptoms were rarely mentioned in the literature and were not included in this study's survey, pointing to the need for future studies to explicitly analyze the impact of these symptoms.

Another limitation is that the present study's findings did not address associations between PWE using complementary self-care therapies to self-manage endometriosis and their HRQoL related to work or academic life. As shown in the literature, PWE's career and academic goals are significantly impacted by endometriosis, with studies highlighting lost work hours, reduced productivity, and financial strain due to endometriosis-related symptoms (Ellis et al., 2022; Missmer et al., 2021; Mousa et al., 2021; Van Niekerk et al., 2022c). PWE often face lost wages and limited career growth due to absenteeism and decreased productivity (Ellis et al., 2022; Missmer et al., 2021). Employment is linked to better HRQoL, though severe endometriosis-related symptoms can lead to job loss and reduced income (Ellis et al., 2022; Missmer et al., 2021; Van Niekerk et al., 2022c). Endometriosis-related pain also affects employment status, with PWE often working part-time, forgoing career advancements, or facing unemployment (Ellis et al., 2022; Márki et al., 2022; Missmer et al., 2021; Van Niekerk et al., 2022c). Educational attainment is similarly hindered, with endometriosis-related pain causing missed school days and academic delays (Márki et al., 2022; Missmer et al., 2021). Effective self-management strategies may support academic achievement, mitigate income loss, and improve career outcomes, making it crucial for future studies to examine these aspects of PWE's HRQoL.

Due to the study's sample consisting predominantly of participants who identified as White, the findings did not include an examination of the associations between variables related to ethnicity or race. Of the 136 participants in this study, only 27 identified as an ethnicity or race other than White, which limited the ability to include

these important factors in the analysis. The relevant literature reviewed showed a similar limitation in studies, with only a few being specific to cultural aspects of living with endometriosis. The literature emphasizes the need for research on improving PWE's HRQoL within diverse populations by exploring treatment accessibility in endometriosis care (Falconer et al., 2022; Kfoury et al., 2023; Missmer et al., 2021; Mousa et al., 2021). Given the challenges PWE face in obtaining a diagnosis and receiving appropriate symptom management, it is essential to examine how cultural influences further impact HRQoL. In addition to barriers to medical care, minority PWE often experience inadequate support due to feeling disregarded or unheard by healthcare professionals, particularly within lower socioeconomic environments. This lack of advocacy negatively affects HRQoL for all PWE and is especially significant within underrepresented populations of PWE.

Diagnostic delay is well-documented in the literature as negatively impacting PWE and lowering their HRQoL, with studies documenting diagnostic delay spanning from 2-11 years (Ellis et al., 2022; Lamvu et al., 2020; Márki et al., 2022). The present study did not include diagnostic delay in the analysis, limiting the study's consideration of diagnostic delay impacting PWE's HRQoL. Researchers have indicated that diagnostic delay is an especially significant challenge for PWE in their teens and early 20s because endometriosis symptoms often present differently at younger ages, making it harder for younger PWE to get a diagnosis or receive the necessary support to manage their symptoms (Le Roux et al., 2022; Liakopoulou et al., 2022; Rea et al., 2020; Schneider et al., 2020). In particular, Van Niekerk et al. (2022b) found that younger PWE are more

severely distressed by the prolonged search for an endometriosis diagnosis and the resulting negative impact on their self-compassion, which further decreases their HRQoL. Additionally, the study by Lamvu et al. (2020) found a statistically significant association between diagnostic delay and PWE experiencing a greater number of endometriosis-related symptoms, while Ellis et al. (2022) found that the delay is associated with increased pain sensitization and lowered pain tolerance. Consequently, lacking a confirmed reason for chronic pain can impact PWE's pain perceptions and leave them without adequate support or coping resources. Given these findings in the literature, future studies need to incorporate these critical factors to better understand the role of self-managing endometriosis in mitigating diagnostic delay and improving PWE's HRQoL.

All of these issues impacted the generalizability of the sample to the overall population of PWE. Furthermore, as someone diagnosed with endometriosis, I acknowledge the possibility of unintentional bias in conducting and interpreting the study's results. Despite these limitations, this study addressed a critical gap in the literature and informs future research related to the impact of self-managing endometriosis using complementary self-care therapies on PWE's HRQoL by detailing statistically significant results.

Recommendations

Given the strengths and limitations of this study, and those identified in the relevant research literature, there are recommendations to consider for future research studies on the impact of endometriosis on PWE's HRQoL. The overarching

recommendation stemming from this study and the reviewed literature is that effectively self-managing endometriosis may reduce the number of symptoms experienced by PWE and subsequently improve their HRQoL, which calls for future studies to examine these potential strategies for improving the mental and physical health of individuals living with endometriosis. In particular, the lack of longitudinal studies on endometriosis leaves uncertainty about its full impact on PWE's HRQoL over a lifetime. The consensus in the research is that endometriosis can negatively impact PWE's life-course during critical life stages, such as setting professional goals and forming intimate relationships, as symptoms often begin with the first menstrual cycle and, in some cases, persist beyond menopause. Conducting long-term analyses of endometriosis progression would provide a comprehensive understanding of its effects on HRQoL, offering valuable insights to improve endometriosis treatment and support better life outcomes for PWE.

Recent studies have shown that PWE often lack the necessary knowledge and awareness about endometriosis, which hinders their ability to self-manage the disease and improve HRQoL. Many PWE report receiving little to no information from gynecologists or healthcare providers, both before and after diagnosis, leaving them to either search for resources independently or remain uninformed, leading to uncertainty and reduced HRQoL (Márki et al., 2022). Márki et al. (2022) identified four themes impacting HRQoL: the disease's impact on QoL, medical experiences, use of complementary treatments, and coping strategies, all linked to insufficient education on managing endometriosis. Researchers have emphasized the need for reliable resources and improved healthcare education to better support PWE (Ellis et al., 2022; Farshi et al.,

2020; Lamvu et al., 2020; Márki et al., 2022; Missmer et al., 2021; Rowe et al., 2021). Educational programs on endometriosis in schools and communities, along with accessible online resources, could enhance public awareness and understanding, potentially improving PWE's HRQoL by fostering better support systems and self-management practices. Researchers have advocated for studies on nontraditional methods, such as exercise-based rehabilitation programs (Álvarez-Salvago et al., 2020), to complement medical and pharmaceutical treatments in enhancing HRQoL (Calvi et al., 2023). Although some studies have found self-care activities, especially diet and exercise, to be ineffective in improving physical HRQoL (Kalfas et al., 2022), others have promoted further research on dietary changes to reduce inflammation and symptoms, highlighting nutrition's potential for self-management (Kumar et al., 2023). Future studies should explore the combination and frequency of complementary self-care therapies to understand their quantitative impact on HRQoL.

Chronic pain recurrence affects 70% of PWE receiving medical care for endometriosis and is strongly linked to mental health comorbidities, including chronic stress, depression, and anxiety, leading to worse mental and physical health compared to those without endometriosis (Ellis et al., 2022). Chronic anxiety was also linked to fears about the future, the long-term effects of pharmaceutical treatments, negative interactions with practitioners, and potential infertility (Rowe et al., 2021). When considering other comorbidities, Lamvu et al. (2020) found that 91.8% of the 451 participants with endometriosis dealt with gastrointestinal issues and 93.6% felt fatigued due to chronic pain. Due to the limited effectiveness of pharmaceutical interventions for managing

chronic pain, many PWE rely on prescription drugs. A study of 113,506 PWE in the United States found that 89% used opioids to manage endometriosis-related pain, despite opioids not being recommended for endometriosis treatment (Ellis et al., 2022). This statistic amid the ongoing opioid epidemic highlights the limitations of traditional medical treatments and underscores the urgent need for PWE to improve HRQoL by self-managing endometriosis using complementary self-care therapies. Thus, more research on nontraditional methods of treating endometriosis-related pain must be conducted.

Nontraditional methods for treating endometriosis are rarely discussed in the literature, and the side effects of traditional medical treatments are underexplored, especially compared to complementary self-care therapies. These therapies include meditation, mindfulness, yoga, exercise, self-compassion, diet, intermittent fasting, herbal supplements, acupuncture, chiropractic care, lymphatic drainage massage, cold and heat therapy, psychotherapy, along with other nonsurgical and nonpharmaceutical treatment methods. Research on these therapies could enhance patient education and improve collaboration between PWE and healthcare professionals. Although some studies mentioned nontraditional methods, they typically focused on treatments without examining how self-managing endometriosis affected mental and physical health outcomes, such as O'Hara et al. (2019) finding a lack of discussion on factors influencing self-management or health outcomes within the 19 studies they reviewed. Conversely, other studies focused solely on disease self-management without considering the impact of nontraditional therapies on HRQoL. This is true of most studies found in the relevant literature that focused on pharmaceutical treatments and their impact on HRQoL, noting

symptom reduction but also significant side effects like depression and anxiety (Wang et al., 2021). Similar side effects are linked to hormonal birth control, but their effect on HRQoL is rarely examined. Ellis et al. (2022) highlighted negative effects of hormonal treatments, including decreased bone density, thromboembolism, depression, breast tenderness, acne, nausea, and weight gain, as well as complications for PWE wanting to become pregnant. They also noted the addiction risks of pharmaceutical pain management and potential trauma or worsened symptoms from surgical interventions. Although the negative effects and limitations of traditional treatments are widely acknowledged, researchers have frequently cited a lack of literature as a barrier to analyzing nontraditional methods. These considerations need to be studied in future endometriosis research.

The findings of this study highlight the need for PWE to receive education on complementary self-care therapies to self-manage endometriosis that have the potential to improve HRQoL. For example, future studies should be conducted on using CBT to boost PWE's HRQoL. CBT has been linked to improved outcomes for people with chronic pain and stress-related symptoms, but its impact on PWE's HRQoL has not been studied (Schubert et al., 2022). Studies have proposed that psychological comorbidities like depression and anxiety significantly lower PWE's HRQoL, prompting calls for research on CBT's potential benefits (Wang et al., 2021). Although some studies have found no significant pain reduction from CBT, they have reported improved QoL and relief from symptoms like dyschezia and constipation (Hansen et al., 2023), with participants appreciating CBT's role in tailoring treatment and enhancing self-

management (Boersen et al., 2021). Furthermore, implementing CBT through telehealth services and mobile applications—such as the free mobile application MindShift CBT that features comprehensive tools for reducing anxiety based on CBT strategies (Anxiety Canada, 2025)—is a way for PWE to potentially improve their mental health through the convenient use of a virtual complementary self-care therapy. These types of nontraditional strategies for living with endometriosis should be discussed in future studies.

Endometriosis can have significant mental health repercussions, preventing PWE from achieving life goals or pursuing ambitions due to the burden of endometriosis-related symptoms. Depression and anxiety often worsen when PWE's symptoms are misunderstood or invalidated by those closest to them or by healthcare professionals, leading to feelings of isolation, confusion, and uncertainty about managing endometriosis; moreover, inadequate support from healthcare professionals can further deteriorate PWE's mental health, worsening HRQoL and leaving them without effective strategies for managing symptoms (Calvi et al., 2023; Márki et al., 2022; Missmer et al., 2021; O'Hara et al., 2019; Rea et al., 2020; Rowe et al., 2021; Soliman et al., 2020). For example, one study highlighted the psychological distress caused by delayed diagnoses and symptom normalization due to practitioners' limited understanding of endometriosis (Márki et al., 2022). Another study found that positive support from knowledgeable practitioners empowered PWE to confidently self-manage endometriosis, yet negative interactions were more common than positive ones, with the most damaging experiences involving dismissal, disbelief, normalization of symptoms, and judgmental attitudes

(O'Hara et al., 2019). Additionally, Rowe et al. (2021) found that shame and anxiety were prevalent among PWE who encountered lack of empathy from healthcare professionals, while compassionate care and collaborative practitioner-patient relationships were powerful contributors to improved HRQoL, particularly when nontraditional treatment options were recommended. These protective factors for PWE need to be further studied to better understand the role of support from healthcare professionals in improving PWE's HRQoL.

The consensus across the literature is that inadequate awareness of, education on, or support for endometriosis significantly and negatively impacts PWE's mental and physical health and well-being overall. Despite these limitations in previous research being acknowledged by experts and researchers, studies have not been conducted on these crucial aspects impacting PWE's HRQoL. This study added to the literature by examining the associations between self-managing endometriosis using various types of complementary self-care therapies and PWE's HRQoL, yet there were limitations to the extent to which these factors were examined. Notwithstanding, this study's findings may encourage researchers to conduct more in-depth research on factors used in this study.

Implications

Promoting positive social change by empowering PWE to self-manage endometriosis is central to this study, as it encourages autonomy and self-efficacy using complementary self-care therapies rather than relying solely on traditional medical interventions. By educating PWE on diverse self-management strategies, this approach enhances self-confidence and HRQoL, fostering a patient-centered model that encourages

collaborative care with healthcare practitioners (O'Hara et al., 2019; Rowe et al., 2021). Improving self-esteem, autonomy, and self-efficacy through nontraditional methods contributes to positive social change by enabling PWE to take control of their health, which may reduce diagnostic delays and enhance HRQoL (Falconer et al., 2022; Farshi et al., 2020). Diagnostic delays often result from normalizing menstrual pain and misdiagnosis, leading to worsened HRQoL due to recurring symptoms and mental health challenges (Kfoury et al., 2023; Nabi et al., 2022). Collaborative partnerships between PWE and healthcare professionals can combat diagnostic delays and provide effective self-management strategies, improving HRQoL even after diagnosis (Missmer et al., 2021; O'Hara et al., 2019; Rowe et al., 2021). Positive social change is further supported by early diagnosis, which significantly improves HRQoL (Gete et al., 2023; Van Niekerk et al., 2022a). As evidenced by the results of this study, PWE need to be empowered with knowledge and tools to self-manage endometriosis effectively using a variety of complementary self-care therapies in combination with collaborative care from practitioners. This study advocates for positive social change through a transformative shift in healthcare practices that enhance the autonomy of PWE and improve their HRQoL by reducing disparities in endometriosis care within the industry.

This study addresses a gap in knowledge by exploring how using various types of complementary self-care therapies to self-manage endometriosis affects PWE's HRQoL, which had not been examined in prior research. The findings provide practical insights that can help PWE better understand their self-management options and improve their mental and physical health. Healthcare professionals may also use this information to

support PWE in integrating complementary self-care therapies into their care plans, potentially enhancing collaborative strategies for managing endometriosis. With 1 in 9 people born with a uterus affected by endometriosis in the United States and an estimated \$78–\$119 billion annual economic burden (Ellis et al., 2022), effective self-management could lower medical costs and increase workforce productivity. This study’s findings may influence perceptions of complementary self-care therapies’ effectiveness, encouraging further research on their impact on HRQoL. Additionally, raising awareness of endometriosis and empowering PWE to feel more in control of their health could foster positive social change and improve HRQoL for those living with this understudied and underdiagnosed condition.

Some studies like the present one have emphasized the importance of implementing self-care programs in the treatment of endometriosis to empower PWE to take ownership of their mental and physical health by utilizing self-care behaviors. Farshi et al. (2020) and O’Hara et al. (2019) considered the impact of yoga on endometriosis-related pain management and anxiety reduction, findings statistically significant improvements in PWE’s HRQoL. In addition to yoga, Falconer et al. (2022) examined the impact of psychological and physical interventions—such as psychotherapy, acupuncture, and dietary supplements—and found significant pain reduction suggesting that mindfulness and relaxation strategies in combination with physical treatments positively impact PWE’s HRQoL. Another study by Simonsen et al. (2020) utilized guided self-determination—focused on self-awareness, reflection training, and collaborative support from healthcare professionals—with PWE reporting enhanced self-

management skills, problem-solving, and emotional acceptance of endometriosis after experiencing the group therapy. Van Niekerk et al. (2022b, 2023) found that practicing self-compassion and body compassion were protective factors improving PWE's HRQoL, while Kalfas et al. (2022) and O'Hara et al. (2019) found self-efficacy, self-esteem, and body positivity were protective factors for improved mental and physical health. These nontraditional methods for improving PWE's HRQoL found in the literature helped guide the purpose of the present study. Considering the positive results of these highlighted studies, complementary self-care therapies—especially in combination—should be further studied as approaches to self-management that may improve PWE's HRQoL and promote positive social change related to thriving while living with endometriosis.

The statistically significant findings of this study underscore the detrimental impact of endometriosis on PWE, as indicated by the relationship between PWE experiencing worse HRQoL and requiring more frequent use of a wide range of complementary self-care therapies to cope with symptoms. Many of the therapies used by participants in this study are costly and may increase PWE's monetary expenses, potentially contributing to negative effects on HRQoL related to financial stress. However, several therapies used by participants are free or low-cost, making it more affordable and convenient to try various types of complementary self-care therapies. In future studies, the impact of using nontraditional methods to self-manage endometriosis needs to be compared to traditional medical care received by PWE to better understand the financial burden of endometriosis on PWE, their families, and the economy. With

PWE's medical expenses estimated to be 3.5 times higher than those without endometriosis and income loss from absenteeism being double the cost of medical care—exceeding \$20,000 per person annually—social change needs to encompass the potential positive influence of cost-effective nontraditional treatments for managing endometriosis that may improve HRQoL while reducing the financial expenditure of surgical and pharmaceutical interventions used over the life-course (Ellis et al., 2022). These substantial costs associated with endometriosis management need to be examined in future studies to consider the potential positive impact of decreasing financial stress using cost-effective nontraditional treatment strategies.

Most studies on endometriosis—including this study—involve participants with a mean age in the mid-30s, which leads to results that fail to address the unique psychological, social, and endocrine differences experienced by teenagers and young adults that may impact PWE's HRQoL. During these formative years, hormonal fluctuations can disrupt emotions and overall health, impacting how PWE perceive and manage chronic illness and influencing their HRQoL. These age-specific experiences can shape their treatment choices, use of complementary therapies, and self-management strategies. To better support teenagers and young adults with endometriosis, age-specific research is needed to explore complementary self-care therapies that can enhance HRQoL during this critical life stage. Additionally, there is a lack of studies on elderly populations with endometriosis, making it unclear how the disease affects HRQoL decades after menopause. Understanding endometriosis throughout the life-course would enable PWE to make informed decisions about health, family, career, and finances.

Therefore, this study aimed to fill a gap in existing research by examining complementary self-care therapies for self-managing endometriosis and improving HRQoL across all life stages.

Existing research on endometriosis primarily focuses on symptom suppression using pharmaceutical treatments, hormonal therapy, and surgical interventions to manage pain and infertility without addressing the chronic inflammation underlying endometriosis (Ellis et al., 2022; Rowe et al., 2021; Schubert et al., 2022; Wang et al., 2021). Although nontraditional methods of treating endometriosis are suggested for future research, the specific use of self-care therapies remains underexplored (Falconer et al., 2022). As such, the literature lacks studies on the impact of self-management using complementary self-care therapies on PWE's HRQoL. The findings of this study address that gap in knowledge and point to the need for future studies on the topic. Other studies have also drawn awareness to this need. Ellis et al. (2022) highlighted the negative effects of hormonal and surgical treatments on PWE's HRQoL and stressed the need for non-invasive options, noting limited research on biomarkers and nanomedicine. Some studies mentioned self-care activities like exercise, diet, acupuncture, and counseling, but did not measure the effect on PWE's HRQoL (O'Hara et al., 2019). Wang et al. (2023) found that acupuncture and moxibustion helped manage endometriosis-related pain, although HRQoL was not measured quantitatively. As using these types of nontraditional methods to self-manage endometriosis have the potential to improve PWE's HRQoL, the findings of this study promote positive social change and draw awareness to areas of endometriosis care that need to be studied in-depth. The more targeted resources and

support that PWE have for living with endometriosis, the more likely they are to improve their HRQoL over the life-course.

Research has shown that adolescents with endometriosis face HRQoL challenges long before receiving a diagnosis, which often leads to self-directed care (Le Roux et al., 2022). Providing resources and support to adolescent PWE before diagnosis can leverage their natural desire for independence and autonomy, encouraging positive self-management strategies and ultimately improving HRQoL. Grounded in SCT as the health psychology framework, this study contributes to the existing literature and promotes positive social change by presenting statistical analyses on how complementary self-care therapies for self-managing endometriosis influence PWE's HRQoL, thereby filling a knowledge gap on the potential positive impacts of nontraditional methods for thriving while living with endometriosis. However, this study—like most on endometriosis—did not include adolescent participants. Positive social change related to improving PWE's HRQoL over the life-course relies heavily on adolescents and young adults with endometriosis being educated by teachers, healthcare providers, and other trusted adults on the symptoms and comorbidities associated with the chronic disease, the statistics on delayed and incorrect diagnosis, the various types of complementary self-care therapies to self-manage endometriosis that may positively impact their HRQoL, and the benefits of openly talking about their experiences to help spread awareness of this understudied and underdiagnosed disease. Therefore, PWE would benefit from future studies including results specific to adolescent and young adult populations of PWE.

Creating positive social change related to effectively treating endometriosis and improving PWE's HRQoL corresponds with the need for change within the U.S. healthcare system for people with chronic health conditions. As revealed in this study's findings, PWE's HRQoL is negatively impacted by insufficient support for living with endometriosis and deficient treatment methods for coping with symptoms, necessitating collaborative care with practitioners. One review of 48 studies on 3,803 patients with chronic health conditions highlighted the positive impact on patients' health when various healthcare professionals collaboratively worked together to manage patients' chronic conditions through multifaceted approaches—known as interprofessional collaborative practice (Davidson et al., 2022). The focus on collaborative care enhanced the relationships between patients and practitioners by encouraging effective communication between the parties and addressing patients' health from a holistic perspective that incorporated the expertise of several healthcare professionals working together to improve patient health and well-being overall (Davidson et al., 2022). Patients reported significant benefits from the convenience of multiple healthcare professionals meeting with them at the same appointment, strengthened support and connection with their practitioners, as well as increased involvement in managing their chronic health conditions and implementing self-care practices (Davidson et al., 2022).

The affirmative findings on patient well-being and improved self-management of chronic health conditions described by Davidson et al. (2022) speak to the potential for positive social change within the healthcare industry that could enhance PWE's HRQoL. Many people with chronic health conditions, such as endometriosis, receive inadequate

assistance from healthcare practitioners and a lack of pertinent information on nontraditional treatment methods, such as using complementary self-care therapies, that may improve their mental and physical health. As shown through this study and the findings of Davidson et al., people need the tools necessary to thrive in life by learning how to effectively self-manage their health conditions using a wide range of treatment methods and feel supported by healthcare professionals working as a team to address complex symptomatology and comorbidities associated with their chronic health conditions. Therefore, a crucial factor in improving the HRQoL of PWE and those with chronic health conditions is receiving collaborative care and comprehensive education from healthcare practitioners that empowers patients to create individualized self-management strategies and effectively navigate the challenges of living with chronic conditions.

Gender-diverse individuals are vastly underrepresented in the literature on endometriosis and other endocrine conditions, leading to research that overlooks aspects of gender diversity influencing some PWE's HRQoL and the negative experiences of this population with healthcare professionals. In recent years, the ACOG (2021) has made strides toward institutional changes to positively affect the healthcare experiences of gender-diverse populations by publishing calls to action related to educating practitioners and restructuring healthcare practices—especially within endocrinology—to reflect gender-sensitive care. Studies such as this one—which used gender-inclusive language and stepped outside the traditional gender identity limitations constraining earlier research—spotlight the need for positive social change within the peer-reviewed

literature that educates healthcare professionals, academics, thought leaders, and individuals seeking knowledge to inform their decisions in managing chronic health conditions such as endometriosis.

With one study finding that 30% of gender-diverse individuals have experienced healthcare discrimination and may avoid seeking medical care due to negative experiences with practitioners (Kachen et al., 2020), there is elevated concern for gender-diverse PWE failing to obtain essential support and education from healthcare professionals on managing endometriosis. This may result in gender-diverse PWE facing increased challenges in coping with endometriosis-related symptoms and decreased HRQoL—especially considering the alarming rate of depression diagnosed within the gender-diverse population (Liu et al., 2024). To foster collaborative care between gender-diverse individuals and healthcare practitioners—as a potent way to improve patients’ HRQoL outcomes—research inclusive of the experiences of gender-diverse populations is needed, especially within the literature on endometriosis. Promoting positive social change starts with research studies like this one that point to the gap in the literature on improving HRQoL for people of all gender identities living with endometriosis.

Conclusion

Endometriosis is a challenging chronic condition impacting over 190 million people born with a uterus globally (WHO, 2023), with that number being far less than the actual percentage of PWE. This study added to the research literature on endometriosis in relation to PWE’s HRQoL by examining various types of complementary self-care therapies used to self-manage endometriosis. Moreover, this study draws awareness to

the use of nontraditional methods for self-managing endometriosis that may be more readily accessible to PWE, especially prior to receiving an official endometriosis diagnosis and appropriate support from healthcare practitioners. The statistically significant findings of this study revealed the potential for PWE's mental and physical health overall to be positively impacted by nontraditional methods of treating endometriosis over the life-course, accentuating the necessity for future research to study such approaches that empower PWE to take ownership of their health and advocate for support from healthcare professionals. This is particularly important given that many PWE experience the onset of endometriosis as early as the start of puberty and some continue to suffer from adverse endometriosis-related symptoms—as well as numerous comorbidities—even beyond the start of menopause.

There is a lack of understanding within the psychological and medical communities on the extent to which endometriosis impacts PWE's HRQoL, with this gap in the literature adversely affecting the life-course of people living with endometriosis. As a debilitating health condition stemming from chronic inflammation and impaired immune function, endometriosis not only physically devastates the bodies of those who live with it but confounds the mental health and EWB of impressionable adolescents and young adults during formative identity-making years. The lack of in-depth peer-reviewed literature on mitigating the harmful life-long outcomes of living with endometriosis is a severe problem impacting not only individuals with endometriosis and their loved ones but also the economy due to the financial burden of the disease. Each research study on endometriosis and other chronic endocrine conditions has the profound ability to shape

awareness, education, policies, and social reform related to improving health outcomes.

As such, it is imperative that studies like this one contribute to positive social change by furthering the knowledge in the literature on improving PWE's HRQoL using effective self-management strategies to enrich the lives of those living with endometriosis.

References

- Adoamnei, E., Moran-Sanchez, I., Sanchez-Ferrer, M. L., Mendiola, J., Prieto-Sanchez, M. T., Monino-Garcia, M., Palomar-Rodriguez, J. A., & Torres-Cantero, A. M. (2021). Health-related quality of life in adult Spanish women with endometriomas or deep infiltrating endometriosis: A case-control study. *International Journal of Environmental Research and Public Health*, *18*(5586), 1–10.
<https://doi.org/10.3390/ijerph18115586>
- Álvarez-Salvago, F., Lara-Ramos, A., Cantarero-Villanueva, I., Mazheika, M., Mundo-López, A., Galiano-Castillo, N., Fernández-Lao, C., Arroyo-Morales, M., Ocón-Hernández, O., & Artacho-Cordón, F. (2020). Chronic fatigue, physical impairments and quality of life in women with endometriosis: A case-control study. *International Journal of Environmental Research and Public Health*, *17*(3610), 1–13. <https://doi.org/10.3390/ijerph17103610>
- The American College of Obstetricians and Gynecologists. (2021). *Health care for transgender and gender diverse individuals*.
<https://www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2021/03/health-care-for-transgender-and-gender-diverse-individuals>
- The American College of Obstetricians and Gynecologists. (2024). *Endometriosis*.
<https://www.acog.org/womens-health/faqs/endometriosis>
- American Psychological Association. (2018a). *Comorbidity*.
<https://dictionary.apa.org/comorbidity>

American Psychological Association. (2018b). *Mindfulness*.

<https://dictionary.apa.org/mindfulness>

American Psychological Association. (2023). *Self-management*.

<https://dictionary.apa.org/self-management>

Anxiety Canada. (2025). *MindShift CBT*. [Mobile app]. Apple App Store.

<https://apps.apple.com/gb/app/mindshift-cbt-anxiety-relief/id634684825>

Arion, K., Orr, N. L., Noga, H., Allaire, C., Williams, C., Bedaiwy, M. A., & Yong, P. J.

(2020). A quantitative analysis of sleep quality in women with endometriosis. *Journal of Women's Health, 29*(9), 1209–1215.

<https://doi.org/10.1089/jwh.2019.8008>

Babbie, E. (2017). *Basics of social research* (7th ed.). Cengage Learning.

Boersen, Z., de Kok, L., van der Zanden, M., Braat, D., Oosterman, J., & Nap, A. (2021).

Patients' perspective on cognitive behavioural therapy after surgical treatment of endometriosis: A qualitative study. *Reproductive Biomedicine Online, 42*(4), 819–

825. <https://doi.org/10.1016/j.rbmo.2021.01.010>

Bonavina, G., & Taylor, H. S. (2022). Endometriosis-associated infertility: From

pathophysiology to tailored treatment. *Frontiers in Endocrinology, 13*(1020827),

1–27. <https://doi.org/10.3389/fendo.2022.1020827>

Burkholder, G. J., Cox, K. A., & Crawford, L. M. (2016). *The scholar-practitioner's*

guide to research design. Laureate Publishing.

Calvi, C., Sherman, K. A., & Pham, D. (2023). Loneliness and perceived social support

in endometriosis: The roles of body image disturbance and anticipated

stigma. *International Journal of Behavioral Medicine*, 2023, 1–11.

<https://doi.org/10.1007/s12529-023-10230-w>

Centers for Disease Control and Prevention. (2021). *About global noncommunicable diseases*. <https://www.cdc.gov/globalhealth/healthprotection/ncd/global-ncd-overview.html>

Centers for Disease Control and Prevention. (2022). *Health-related quality of life*.

https://archive.cdc.gov/www_cdc_gov/hrqol/index.htm

Chou, R., Wagner, J., Ahmed, A. Y., Blazina, I., Brodt, E., Buckley, D. I., Cheney, T. P., Choo, E., Dana, T., Gordon, D., Khandelwal, S., Kantner, S., McDonagh, M. S., Sedgley, C., & Skelly, A. C. (2020). Treatments for acute pain: A systematic review. *Agency for Healthcare Research and Quality*, 20(21), 1–383.

<https://doi.org/10.23970/AHRQEPCCER240>

Davidson, A. R., Kelly, J. T., Ball, L., Morgan, M., & Reidlinger, D. P. (2022). What do patients experience? Interprofessional collaborative practice for chronic conditions in primary care: An integrative review. *BMC Primary Care*, 23(8), 1–12. <https://doi.org/10.1186/s12875-021-01595-6>

de Carvalho, E. A., das Neves, T. T., Nogueira, I. L. A., Silva, C. J. de A., de Queiroz, A. A. R., & de Menezes, R. M. P. (2022). Self-care of users with chronic diseases in primary care in the light of Orem's theory. *Enfermería Global*, 21(4), 202–215.

<https://doi.org/10.6018/eglobal.508511>

Della Corte, L., Di Filippo, C., Gabrielli, O., Reppuccia, S., La Rosa, V. L., Ragusa, R., Fichera, M., Commodari, E., Bifulco, G., & Giampaolino, P. (2020). The burden

of endometriosis on women's lifespan: A narrative overview on quality of life and psychosocial wellbeing. *International Journal of Environmental Research and Public Health*, 17(4683), 1–17. <https://doi.org/10.3390/ijerph17134683>

Denyes, M. J., Orem, D. E., & Bekel, G. (2001). Self-care: A foundational science.

Nursing Science Quarterly, 14(1), 48–54.

<https://doi.org/10.1177/089431840101400113>

Ellis, K., Munro, D., & Clarke, J. (2022). Endometriosis is undervalued: A call to action.

Frontiers in Global Women's Health, 3, 1–8.

<https://doi.org/10.3389/fgwh.2022.902371>

Endometriosis Association, Inc. (2023). *About endometriosis*.

<https://endometriosisassn.org/about-endometriosis/>

Endometriosis.org. (2024). *About endometriosis*. <https://endometriosis.org/endometriosis/>

Facchin, F., Buggio, L., Vercellini, P., Frassinetti, A., Beltrami, S., & Saita, E. (2021).

Quality of intimate relationships, dyadic coping, and psychological health in women with endometriosis: Results from an online survey. *Journal of Psychosomatic Research*, 146(110502), 1–7.

<https://doi.org/10.1016/j.jpsychores.2021.110502>

Falconer, L., Hendricks, E., & Harcourt, D. (2022). What is the evidence of effectiveness

of non-pharmaceutical, non-surgical, biopsychosocial interventions for body image and pain management in individuals with endometriosis? A systematic review. *Journal of Endometriosis and Pelvic Pain Disorders*, 00(0), 1–11.

<https://doi.org/10.1177/22840265221139909>

- Farshi, N., Hasanpour, S., Mirghafourvand, M., & Esmailpour, K. (2020). Effect of self-care counselling on depression and anxiety in women with endometriosis: A randomized controlled trial. *BMC Psychiatry*, *20*(391), 1–12.
<https://doi.org/10.1186/s12888-020-02795-7>
- Gete, D. G., Doust, J., Mortlock, S., Montgomery, G., & Mishra, G. D. (2023). Impact of endometriosis on women's health-related quality of life: A national prospective cohort study. *Maturitas*, *174*, 1–7. <https://doi.org/10.1016/j.maturitas.2023.04.272>
- Hansen, K. E., Brandsborg, B., Kesmodel, U. S., Forman, A., Kold, M., Pristed, R., Donchulyesko, O., Hartwell, D., & Vase, L. (2023). Psychological interventions improve quality of life despite persistent pain in endometriosis: Results of a 3-armed randomized controlled trial. *Quality of Life Research*, *32*(6), 1727–1744.
<https://doi.org/10.1007/s11136-023-03346-9>
- Hansen, K. E., Lambek, R., Røssaak, K., Egekvist, A. G., Marschall, H., Forman, A., & Kesmodel, U. S. (2022). Health-related quality of life in women with endometriosis: Psychometric validation of the Endometriosis Health Profile 30 questionnaire using confirmatory factor analysis. *Human Reproduction Open*, *2022*(1), 1–11. <https://doi.org/10.1093/hropen/hoab042>
- Hudson, N., Law, C., Culley, L., Mitchell, H., Denny, E., & Raine-Fenning, N. (2020). Conducting dyadic, relational research about endometriosis: A reflexive account of methods, ethics and data analysis. *Health*, *24*(1), 79–93.
<https://doi.org/10.1177/1363459318786539>
- Jones, G., Budds, K., Taylor, F., Musson, D., Raymer, J., Churchman, D., Kennedy, S.

- H., & Jenkinson, C. (2024). A systematic review to determine use of the Endometriosis Health Profiles to measure quality of life outcomes in women with endometriosis. *Human Reproduction Update*, 30(2), 186–214.
<https://doi.org/10.1093/humupd/dmad029>
- Jones, G., Kennedy, S., Barnard, A., Wong, J., & Jenkinson, C. (2001). Development of an endometriosis quality-of-life instrument: The Endometriosis Health Profile-30. *Obstetrics and Gynecology*, 98(2), 258–264. [https://doi.org/10.1016/S0029-7844\(01\)01433-8](https://doi.org/10.1016/S0029-7844(01)01433-8)
- Kachen, A., & Pharr, J. R. (2020). Health care access and utilization by transgender populations: A United States transgender survey study. *Transgender Health*, 5(3), 141–148. <https://doi.org/10.1089/trgh.2020.0017>
- Kalfas, M., Chisari, C., & Windgassen, S. (2022). Psychosocial factors associated with pain and health-related quality of life in Endometriosis: A systematic review. *European Journal of Pain*, 26(9), 1827–1848.
<https://doi.org/10.1002/ejp.2006>
- Kang, H. (2021). Sample size determination and power analysis using the GPower software. *Journal of Educational Evaluation for Health Professions*, 18(17), 1–12. <https://doi.org/10.3352/jeehp.2021.18.17>
- Kfoury, M., Barakat, H., Hallit, S., & Saliba, S. (2023). Association between endometriosis and sexual satisfaction among a sample of Lebanese women. *BMC Women's Health*, 23(164), 1–9. <https://doi.org/10.1186/s12905-023-02323-1>
- Kumar, K., Narvekar, N. N., & Maslin, K. (2023). Self-managed dietary changes and

- functional gut symptoms in endometriosis: A qualitative interview study. *European Journal of Obstetrics & Gynecology and Reproductive Biology*, 19(100219), 1–6. <https://doi.org/10.1016/j.eurox.2023.100219>
- Lamvu, G., Antunez-Flores, O., Orady, M., & Schneider, B. (2020). Path to diagnosis and women's perspectives on the impact of endometriosis pain. *Journal of Endometriosis and Pelvic Pain Disorders*, 12(1), 16–25. <https://doi.org/10.1177/2284026520903214>
- La Rosa, V. L., Barra, F., Chiofalo, B., Platania, A., Di Guardo, F., Conway, F., Di Angelo Antonio, S., & Lin, L.-T. (2020). An overview on the relationship between endometriosis and infertility: The impact on sexuality and psychological well-being. *Journal of Psychosomatic Obstetrics and Gynaecology*, 41(2), 93–97. <https://doi.org/10.1080/0167482X.2019.1659775>
- Le Roux, A., McCall, J., Pudwell, J., Pyper, J. S., & Bougie, O. (2022). Therapeutic journey of adolescents and young adults with severe dysmenorrhea and endometriosis. *Journal of Endometriosis and Pelvic Pain Disorders*, 14(4), 183–191. <https://doi.org/10.1177/22840265221116271>
- Liakopoulou, M.-K., Tsarna, E., Eleftheriades, A., Arapaki, A., Toutoudaki, K., & Christopoulos, P. (2022). Medical and behavioral aspects of adolescent endometriosis: A review of the literature. *Children*, 9(384), 1–11. <https://doi.org/10.3390/children9030384>
- Liu, M., Patel, V. R., Reisner, S. L., & Keuroghlian, A. S. (2024). Health status and mental health of transgender and gender-diverse adults. *JAMA Internal Medicine*,

184(8), 984–986. <https://doi.org/10.1001/jamainternmed.2024.2544>

- Lu, M.-Y., Niu, J.-L., & Liu, B. (2023). The risk of endometriosis by early menarche is recently increased: A meta-analysis of literature published from 2000 to 2020. *Archives of Gynecology and Obstetrics*, 307(1), 59–69. <https://doi.org/10.1007/s00404-022-06541-0>
- Márki, G., Vásárhelyi, D., Rigó, A., Kaló, Z., Ács, N., & Bokor, A. (2022). Challenges of and possible solutions for living with endometriosis: A qualitative study. *BMC Women's Health*, 22(20), 1–11. <https://doi.org/10.1186/s12905-022-01603-6>
- Martínez, M., Luis, E. O., Oliveros, E. Y., Fernández-Berrocal, P., Sarrionandia, A., Vidaurreta, M., & Bermejo-Martins, E. (2021). Validity and reliability of the Self-Care Activities Screening Scale (SASS-14) during COVID-19 lockdown. *Health and Quality of Life Outcomes*, 19(1), 1–12. <https://doi.org/10.1186/s12955-020-01607-6>
- McKay, C. L., Van Niekerk, L. M., & Matthewson, M. L. (2022). An exploration of dyadic relationship approach-avoidance goals and relationship and sexual satisfaction in couples coping with endometriosis. *Archives of Sexual Behavior*, 51(3), 1637–1646. <https://doi.org/10.1007/s10508-021-02150-1>
- Missmer, S. A., Tu, F. F., Agarwal, S. K., Chapron, C., Soliman, A. M., Chiuve, S., Eichner, S., Flores-Caldera, I., Horne, A. W., Kimball, A. B., Laufer, M. R., Leyland, N., Singh, S. S., Taylor, H. S., & As-Sanie, S. (2021). Impact of endometriosis on life-course potential: A narrative review. *International Journal of General Medicine*, 14, 9–25. <https://doi.org/10.2147/IJGM.S261139>

- Mousa, M., Al-Jefout, M., Alsafar, H., Becker, C. M., Zondervan, K. T., & Rahmioglu, N. (2021). Impact of endometriosis in women of Arab ancestry on: Health-related quality of life, work productivity, and diagnostic delay. *Frontiers in Global Women's Health*, 2, 1–15. <https://doi.org/10.3389/fgwh.2021.708410>
- Nabi, M. Y., Nauhria, S., Reel, M., Londono, S., Vasireddi, A., Elmiry, M., & Ramdass, P. V. A. K. (2022). Endometriosis and irritable bowel syndrome: A systematic review and meta-analyses. *Frontiers in Medicine*, 9(914356), 1–12. <https://doi.org/10.3389/fmed.2022.914356>
- National Center for Chronic Disease Prevention and Health Promotion. (2022). *About chronic diseases*. <https://www.cdc.gov/chronicdisease/about/index.htm>
- National Center for Complementary and Integrative Health. (2021). *Complementary, alternative, or integrative health: What's in a name?* <https://www.nccih.nih.gov/health/complementary-alternative-or-integrative-health-whats-in-a-name>
- The Office of the National Coordinator for Health Information Technology. (2013). *Health IT*. <https://www.healthit.gov/faq/who-provider-or-professional-purposes-mobile-device-privacy-and-security-subsection-healthitgov>
- O'Hara, R., Rowe, H., & Fisher, J. (2019). Self-management in condition-specific health: A systematic review of the evidence among women diagnosed with endometriosis. *BMC Women's Health*, 19(80), 1–19. <https://doi.org/10.1186/s12905-019-0774-6>
- O'Hara, R., Rowe, H., & Fisher, J. (2021). Self-management factors associated with

quality of life among women with endometriosis: A cross-sectional Australian survey. *Human Reproduction*, 36(3), 647–655.

<https://doi.org/10.1093/humrep/deaa330>

Orem, D. E. (1985). *Nursing: Concepts of practice*. McGraw-Hill Inc.

Pessoa de Farias Rodrigues, M., Lima Vilarino, F., de Souza Barbeiro Munhoz, A., da

Silva Paiva, L., de Alcantara Sousa, L. V., Zaia, V., & Parente Barbosa, C.

(2020). Clinical aspects and the quality of life among women with endometriosis and infertility: a cross-sectional study. *BMC Women's Health*, 20(1), 1–124.

<https://doi.org/10.1186/s12905-020-00987-7>

Pokrzywinski, R. M., Soliman, A. M., Chen, J., Snabes, M. C., Coyne, K. S., Surrey, E.

S., & Taylor, H. S. (2020). Achieving clinically meaningful response in

endometriosis pain symptoms is associated with improvements in health-related

quality of life and work productivity: Analysis of 2 Phase III clinical

trials. *American Journal of Obstetrics and Gynecology*, 222(592), 1–10.

<https://doi.org/10.1016/j.ajog.2019.11.1255>

Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research in the

general population. *Applied Psychological Measurement*, 1(3), 385–401.

<https://doi.org/10.1177/014662167700100306>

Rea, T., Giampaolino, P., Simeone, S., Pucciarelli, G., Alvaro, R., & Guillari, A. (2020).

Living with endometriosis: A phenomenological study. *International Journal of*

Qualitative Studies on Health & Well-Being, 15(1), 1–11.

<https://doi.org/10.1080/17482631.2020.1822621>

- Rowe, H. J., Hammarberg, K., Dwyer, S., Camilleri, R., & Fisher, J. R. W. (2021). Improving clinical care for women with endometriosis: Qualitative analysis of women's and health professionals' views. *Journal of Psychosomatic Obstetrics & Gynecology*, 42(3), 174–180. <https://doi.org/10.1080/0167482X.2019.1678022>
- Saunders, P. T. K., & Horne, A. W. (2021). Endometriosis: Etiology, pathobiology, and therapeutic prospects. *Cell*, 184(11), 2807–2824. <https://doi.org/10.1016/j.cell.2021.04.041>
- Schneider, M. P., Vitonis, A. F., Fadayomi, A. B., Charlton, B. M., Missmer, S. A., & DiVasta, A. D. (2020). Quality of life in adolescent and young adult women with dyspareunia and endometriosis. *Journal of Adolescent Health*, 67(4), 557–561. <https://doi.org/10.1016/j.jadohealth.2020.02.024>
- Schreurs, A. M. F., Dancet, E. A. F., Apers, S., Kuchenbecker, W. K. H., van de Ven, P. M., Maas, J. W. M., Lambalk, C. B., Nelen, W. L. D. M., van der Houwen, L. E. E., & Mijatovic, V. (2023). The relation between patient-centered care and quality of life in women with endometriosis. *Gynecologic and Obstetric Investigation*, 88, 249–255 <https://doi.org/10.1159/000531063>
- Schubert, K., Lohse, J., Kalder, M., Ziller, V., & Weise, C. (2022). Internet-based cognitive behavioral therapy for improving health-related quality of life in patients with endometriosis: Study protocol for a randomized controlled trial. *Current Controlled Trials in Cardiovascular Medicine*, 23(300), 1–12. <https://doi.org/10.1186/s13063-022-06204-0>
- Siddaway, A. P., Wood, A. M., & Taylor, P. J. (2017). The Center for Epidemiologic

Studies-Depression (CES-D) scale measures a continuum from well-being to depression: Testing two key predictions of positive clinical psychology. *Journal of Affective Disorders*, 213, 180–186. <https://doi.org/10.1016/j.jad.2017.02.015>

Simonsen, S. M., Strømberg, C., Zoffmann, V., Hartwell, D., & Olesen, M. L. (2020).

About me as a person not only the disease—Piloting guided self-determination in an outpatient endometriosis setting. *Scandinavian Journal of Caring Sciences*, 34(4), 1017–1027. <https://doi.org/10.1111/scs.12810>

Soliman, A. M., Singh, S., Rahal, Y., Robert, C., Defoy, I., Nisbet, P., & Leyland, N.

(2020). Cross-sectional survey of the impact of endometriosis symptoms on health-related quality of life in Canadian women. *Journal of Obstetrics and Gynaecology Canada*, 42(11), 1330–1338.

<https://doi.org/10.1016/j.jogc.2020.04.013>

Uzuner, C., Mak, J., El-Assaad, F., & Condous, G. (2023). The bidirectional relationship

between endometriosis and microbiome. *Frontiers in Endocrinology*,

14(1110824), 1–9. <https://doi.org/10.3389/fendo.2023.1110824>

Van Niekerk, L., Dell, B., Johnstone, L., Matthewson, M., & Quinn, M. (2023).

Examining the associations between self and body compassion and health related quality of life in people diagnosed with endometriosis. *Journal of Psychosomatic Research*, 167(111202), 1–6. <https://doi.org/10.1016/j.jpsychores.2023.111202>

Van Niekerk, L., Johnstone, L., & Matthewson, M. (2022a). Health-related quality of life

in endometriosis: The influence of endometriosis-related symptom presence and distress. *Journal of Health Psychology*, 27(14), 3121–3135.

<https://doi.org/10.1177/13591053221085051>

Van Niekerk, L., Johnstone, L., & Matthewson, M. (2022b). Predictors of self-compassion in endometriosis: The role of psychological health and endometriosis symptom burden. *Human Reproduction*, *37*(2), 264–273.

<https://doi.org/10.1093/humrep/deab257>

Van Niekerk, L., Steains, E., & Matthewson, M. (2022c). Correlates of health-related quality of life: The influence of endometriosis, body image and psychological wellbeing. *Journal of Psychosomatic Research*, *161*, 1–7.

<https://doi.org/10.1016/j.jpsychores.2022.110993>

Van Poll, M., van Barneveld, E., Aerts, L., Maas, J. W. M., Lim, A. C., de Greef, B. T. A., Bongers, M. Y., & van Hanegem, N. (2020). Endometriosis and sexual quality of life. *Sexual Medicine*, *8*(3), 532–544.

<https://doi.org/10.1016/j.esxm.2020.06.004>

Vilagut, G., Forero, C. G., Barbaglia, G., & Alonso, J. (2016). Screening for depression in the general population with the Center for Epidemiologic Studies Depression (CES-D): A systematic review with meta-analysis. *PLoS One*, *11*(5), 1–17.

<https://doi.org/10.1371/journal.pone.0155431>

Wagnild, G., Rodriguez, W., & Pritchett, G. (1987). Orem's self-care theory: A tool for education and practice. *The Journal of Nursing Education*, *26*(8), 342–343.

<https://doi.org/10.3928/0148-4834-19871001-12>

Wang, Y., Coyle, M. E., Hong, M., He, S., Zhang, A. L., Guo, X., Lu, C., Xue, C. C. L., & Liang, X. (2023). Acupuncture and moxibustion for endometriosis: A

systematic review and analysis. *Complementary Therapies in*

Medicine, 76(102963), 1–10. <https://doi.org/10.1016/j.ctim.2023.102963>

Wang, Y., Li, B., Zhou, Y., Wang, Y., Han, X., Zhang, S., He, Z., & Ouyang, L. (2021).

Does endometriosis disturb mental health and quality of life? A systematic review and meta-analysis. *Gynecologic and Obstetric Investigation*, 86(4), 315–335.

<https://doi.org/10.1159/000516517>

World Health Organization. (2023). *Endometriosis*. [https://www.who.int/news-room/facts-](https://www.who.int/news-room/factsheets/detail/endometriosis)

[sheets/detail/endometriosis](https://www.who.int/news-room/factsheets/detail/endometriosis)

World Health Organization. (2024). *WHOQOL: Measuring quality of life*.

<https://www.who.int/tools/whoqol>

Appendix A: Recruitment Invitation

There is a new study about the impact of using complementary self-care therapies to self-manage endometriosis on the health-related quality of life of people with endometriosis. You are invited to complete a 10-minute anonymous survey.

Seeking volunteers that meet these requirements:

- Between the ages of 18-69 years old
- Self-reported endometriosis

This study is part of the doctoral program for XXX a doctoral student at Walden University. The survey will be open until the end of October 2024. Questions should be directed to XXX@waldenu.edu.

Please click [here](#) to view the consent form and begin the survey.

Appendix B: RQ1 Tables

Table B1*Correlations: EHP-30 Domain Sum Scores and Highest Education*

		Graduate Degree	EHP-30 Pain	EHP-30 CP	EHP-30 EWB	EHP-30 SS	EHP-30 SI
Graduate Degree	Pearson	1	-.064	.000	-.159	-.078	-.017
	Sig.		.462	.996	.064	.366	.848
	N	136	136	136	136	136	136
EHP-30 Pain	Pearson	-.064	1	.798**	.714**	.616**	.645**
	Sig.	.462		<.001	<.001	<.001	<.001
	N	136	136	136	136	136	136
EHP-30 CP	Pearson	.000	.798**	1	.717**	.596**	.653**
	Sig.	.996	<.001		<.001	<.001	<.001
	N	136	136	136	136	136	136
EHP-30 EWB	Pearson	-.159	.714**	.717**	1	.697**	.638**
	Sig.	.064	<.001	<.001		<.001	<.001
	N	136	136	136	136	136	136
EHP-30 SS	Pearson	-.078	.616**	.596**	.697**	1	.604**
	Sig.	.366	<.001	<.001	<.001		<.001
	N	136	136	136	136	136	136
EHP-30 SI	Pearson	-.017	.645**	.653**	.638**	.604**	1
	Sig.	.848	<.001	<.001	<.001	<.001	
	N	136	136	136	136	136	136

**Correlation significant at 0.01 level (2-tailed)

Table B2*Correlations: EHP-30 Domain Sum Scores and Partner Status*

		No Life Partner	EHP-30 Pain	EHP-30 CP	EHP-30 EWB	EHP-30 SS	EHP-30 SI
No Life Partner	Pearson	1	.101	.196*	.090	-.003	.058
	Sig.		.243	.022	.295	.975	.500
	N	136	136	136	136	136	136
EHP-30 Pain	Pearson	.101	1	.798**	.714**	.616**	.645**
	Sig.	.243		<.001	<.001	<.001	<.001
	N	136	136	136	136	136	136
	Pearson	.196*	.798**	1	.717**	.596**	.653**

EHP-30	Sig.	.022	<.001		<.001	<.001	<.001
CP	N	136	136	136	136	136	136
EHP-30	Pearson	.090	.714**	.717**	1	.697**	.638**
EWB	Sig.	.295	<.001	<.001		<.001	<.001
	N	136	136	136	136	136	136
EHP-30	Pearson	-.003	.616**	.596**	.697**	1	.604**
SS	Sig.	.975	<.001	<.001	<.001		<.001
	N	136	136	136	136	136	136
EHP-30	Pearson	.058	.645**	.653**	.638**	.604**	1
SI	Sig.	.500	<.001	<.001	<.001	<.001	
	N	136	136	136	136	136	136

*Correlation significant at 0.05 level (2-tailed)

**Correlation significant at 0.01 level (2-tailed)

Table B3

Correlations: EHP-30 Domain Sum Score and Years Since Endo Onset

		Endo Onset	EHP-30 Pain	EHP-30 CP	EHP-30 EWB	EHP-30 SS	EHP-30 SI
Endo Onset	Pearson	1	-.236**	-.256**	-.267**	-.143	-.111
	Sig.		.006	.003	.002	.097	.196
	N	136	136	136	136	136	136
EHP-30 Pain	Pearson	-.236**	1	.798**	.714**	.616**	.645**
	Sig.	.006		<.001	<.001	<.001	<.001
	N	136	136	136	136	136	136
EHP-30 CP	Pearson	-.256**	.798**	1	.717**	.596**	.653**
	Sig.	.003	<.001		<.001	<.001	<.001
	N	136	136	136	136	136	136
EHP-30 EWB	Pearson	-.267**	.714**	.717**	1	.697**	.638**
	Sig.	.002	<.001	<.001		<.001	<.001
	N	136	136	136	136	136	136
EHP-30 SS	Pearson	-.143	.616**	.596**	.697**	1	.604**
	Sig.	.097	<.001	<.001	<.001		<.001
	N	136	136	136	136	136	136
EHP-30 SI	Pearson	-.111	.645**	.653**	.638**	.604**	1
	Sig.	.196	<.001	<.001	<.001	<.001	
	N	136	136	136	136	136	136

**Correlation significant at 0.01 level (2-tailed)

Table B4*Correlations: EHP-30 Domain Sum Scores and # CSCT Used*

		# CSCT Used	EHP-30 Pain	EHP-30 CP	EHP-30 EWB	EHP-30 SS	EHP-30 SI
# CSCT Used	Pearson	1	.239**	.148	.117	.151	.134
	Sig.		.005	.086	.175	.079	.120
	N	136	136	136	136	136	136
EHP-30 Pain	Pearson	.239**	1	.798**	.714**	.616**	.645**
	Sig.	.005		<.001	<.001	<.001	<.001
	N	136	136	136	136	136	136
EHP-30 CP	Pearson	.148	.798**	1	.717**	.596**	.653**
	Sig.	.086	<.001		<.001	<.001	<.001
	N	136	136	136	136	136	136
EHP-30 EWB	Pearson	.117	.714**	.717**	1	.697**	.638**
	Sig.	.175	<.001	<.001		<.001	<.001
	N	136	136	136	136	136	136
EHP-30 SS	Pearson	.151	.616**	.596**	.697**	1	.604**
	Sig.	.079	<.001	<.001	<.001		<.001
	N	136	136	136	136	136	136
EHP-30 SI	Pearson	.134	.645**	.653**	.638**	.604**	1
	Sig.	.120	<.001	<.001	<.001	<.001	
	N	136	136	136	136	136	136

**. Correlation is significant at the 0.01 level (2-tailed).

Table B5*Correlations: EHP-30 Domain Sum Scores and Days Last Week CSCT Used*

		Days/Wk CSCT Used	EHP-30 Pain	EHP-30 CP	EHP-30 EWB	EHP-30 SS	EHP-30 SI
Days/Wk CSCT Used	Pearson	1	.337**	.335**	.294**	.426**	.309**
	Sig.		<.001	<.001	<.001	<.001	<.001
	N	136	136	136	136	136	136
EHP-30 Pain	Pearson	.337**	1	.798**	.714**	.616**	.645**
	Sig.	<.001		<.001	<.001	<.001	<.001
	N	136	136	136	136	136	136
EHP-30 CP	Pearson	.335**	.798**	1	.717**	.596**	.653**
	Sig.	<.001	<.001		<.001	<.001	<.001

	N	136	136	136	136	136	136
EHP-30	Pearson	.294**	.714**	.717**	1	.697**	.638**
EWB	Sig.	<.001	<.001	<.001		<.001	<.001
	N	136	136	136	136	136	136
EHP-30	Pearson	.426**	.616**	.596**	.697**	1	.604**
SS	Sig.	<.001	<.001	<.001	<.001		<.001
	N	136	136	136	136	136	136
EHP-30	Pearson	.309**	.645**	.653**	.638**	.604**	1
SI	Sig.	<.001	<.001	<.001	<.001	<.001	
	N	136	136	136	136	136	136

**Correlation significant at 0.01 level (2-tailed)

Table B6

Correlations: EHP-30 Domain Sum Scores and SASS-14 Total Sum Score

		SASS-14 Score	EHP-30 Pain	EHP-30 CP	EHP-30 EWB	EHP-30 SS	EHP-30 SI
SASS-14 Score	Pearson	1	-.100	-.156	-.164	-.106	-.074
	Sig.		.247	.069	.056	.221	.391
	N	136	136	136	136	136	136
EHP-30 Pain	Pearson	-.100	1	.798**	.714**	.616**	.645**
	Sig.	.247		<.001	<.001	<.001	<.001
	N	136	136	136	136	136	136
EHP-30 CP	Pearson	-.156	.798**	1	.717**	.596**	.653**
	Sig.	.069	<.001		<.001	<.001	<.001
	N	136	136	136	136	136	136
EHP-30 EWB	Pearson	-.164	.714**	.717**	1	.697**	.638**
	Sig.	.056	<.001	<.001		<.001	<.001
	N	136	136	136	136	136	136
EHP-30 SS	Pearson	-.106	.616**	.596**	.697**	1	.604**
	Sig.	.221	<.001	<.001	<.001		<.001
	N	136	136	136	136	136	136
EHP-30 SI	Pearson	-.074	.645**	.653**	.638**	.604**	1
	Sig.	.391	<.001	<.001	<.001	<.001	
	N	136	136	136	136	136	136

**Correlation significant at 0.01 level (2-tailed)

Appendix C: RQ2 Tables

Table C1*Correlations: CES-D Total Sum Score and Highest Education*

		Grad Degree	CES-D Score
Grad Degree	Pearson	1	-.081
	Sig.		.350
	N	136	136
CES-D Score	Pearson	-.081	1
	Sig.	.350	
	N	136	136

Table C2*Correlations: CES-D Total Sum Score and Partner Status*

		No Partner	CES-D Score
No Partner	Pearson	1	.105
	Sig.		.224
	N	136	136
CES-D Score	Pearson	.105	1
	Sig.	.224	
	N	136	136

Table C3*Correlations: CES-D Total Sum Score and Years Since Endo Onset*

		Endo Onset	CES-D Score
Endo Onset	Pearson	1	-.164
	Sig.		.056
	N	136	136
CES-D Score	Pearson	-.164	1
	Sig.	.056	
	N	136	136

Table C4*Correlations: CES-D Total Sum Score and # CSCT Used*

		# CSCT Used	CES-D Score
# CSCT Used	Pearson	1	.151
	Sig.		.079
	N	136	136
CES-D Score	Pearson	.151	1
	Sig.	.079	
	N	136	136

Table C5*Correlations: CES-D Total Sum Score and Days Last Week CSCT Used*

		Days/Wk CSCT Used	CES-D Score
Days/Wk CSCT Used	Pearson	1	.263**
	Sig.		.002
	N	136	136
CES-D Score	Pearson	.263**	1
	Sig.	.002	
	N	136	136

**Correlation significant at 0.01 level (2-tailed)

Table C6*Correlations: CES-D Total Sum Score and SASS-14 Total Sum Score*

		SASS-14 Score	CES-D Score
SASS-14 Score	Pearson	1	-.230**
	Sig.		.007
	N	136	136
CES-D Score	Pearson	-.230**	1
	Sig.	.007	
	N	136	136

**Correlation significant at 0.01 level (2-tailed)