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Lived Experiences of COPD Patients with Exertional Hypoxemia Prescribed Supplemental Oxygen

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Walden University
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Abstract

Lived Experiences of COPD Patients with Exertional Hypoxemia Prescribed Supplemental Oxygen

by

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DNP, Carlow University, 2019

MSN, American Sentinel University, 2014

BSN, Slippery Rock University, 2011

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Patients with exertional hypoxemia are often prescribed supplemental oxygen therapy to alleviate their symptoms and maintain adequate arterial oxygen saturation; however, little is known about how chronic obstructive pulmonary disease (COPD) patients with exertional hypoxemia experience the addition of supplemental oxygen on their lives. The purpose of this descriptive phenomenological study guided by Roger's science of unitary human beings was to explore the lived experiences of COPD patients with exertional hypoxemia and who require supplemental oxygen. Purposive sampling was used to recruit participants using a query from the electronic medical records to identify patients prescribed supplemental oxygen for exertional, not resting hypoxemia. Participants were contacted via telephone to review study details and schedule an interview. Semi structured interviews were conducted via telephone, which were audiotaped and transcribed into a Word document. Thematic analysis using Colaizzi's method was used to identify and describe three primary themes: (a) ease of use, (b) social stigma, and (c) benefits of portable oxygen. The themes identified from this study may serve as a foundation to guide discussions between patients and providers, with respect to how oxygen therapy affects the experiences of individuals of a similar background. Recommendations for future research include development and testing of treatment plans based on patient-specific goals and values. The findings of this study may contribute to positive social change by improving providers' and patients' understanding of the use of supplemental oxygen and its impact on the lives of individuals with COPD.

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Dedication

I dedicate this dissertation to my husband and the rest of my highly supportive family members. It is with much gratitude that truly thank my family for helping me through this educational journey. I appreciate all the love and support that you have all demonstrated throughout the entire process.

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I would like to take this opportunity to thank Dr. Deborah Lewis for her weekly check-in and continual support throughout the entire process. I have learned so much from you and truly appreciate everything that you have done to help me succeed.

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Chapter 1: Introduction to the Study

Introduction

Chronic obstructive pulmonary disease (COPD) is a chronic and debilitating disease that consists of the remodeling of the patient’s airway and lung parenchyma (Mussa et al., 2018). Patients diagnosed with COPD often struggle to manage their progressive condition, which worldwide, has been identified as one of the primary causes of mortality and morbidity (AlMutairi et al., 2018; Russell et al., 2018). In many instances, these patients are prescribed long-term oxygen therapy (LTOT) based on their stage in the disease process and current level of activity (Branson, 2018; McDonald, 2014).

Worldwide, COPD has been identified as the third leading cause of death, and, in 2019, contributed to over 3.23 million deaths (World Health Organization, 2021), these numbers illustrate the global prevalence of COPD. In the United States, 1.5 million Americans are prescribed supplemental oxygen therapy. This is a heterogenous population and supplemental oxygen is prescribed, to some, to prolong their lives, while in others, it is prescribed to lessen the impact the disease has on the daily lives of the patients (Jacobs et al., 2018). In patients with COPD and exertional, but not resting, hypoxemia, the addition of supplemental oxygen to the treatment plan has not shown a mortality benefit (Mussa et al., 2018). Currently, practitioners are unaware of the net effect that supplemental oxygen therapy has on the daily lives of COPD patients with only exertional hypoxemia. This limits the practitioner’s ability to effectively counsel individuals and to foster shared decision making with the COPD patient population, who may be considering the use of supplemental oxygen (Mesquita et al., 2018; Rubio, 2019). Management of chronic disease processes involve patient education, so that the patient can know what to expect in the disease course. Information obtained from this study helped to fill the current gap in literature related to the effects that supplemental oxygen has for patients diagnosed with COPD and exertional hypoxemia.

Chapter 1 provides a background and social implications related to the phenomenon of interest. The purpose of the study, research questions, theoretical framework, nature of the study, study definitions, assumptions, scope and delimitations, limitations, and significance were addressed in this chapter.

Social Change Implication

The results of this study aim to provide in-depth accounts from COPD patients with exertional hypoxemia regarding their experiences using supplemental oxygen. The findings can change the health outcomes for COPD patients, as informed patients have the power to change their own health outcomes, making themselves healthier and improve their overall quality of life. The lived experiences of patients who have been prescribed supplemental oxygen could enlighten other patients, future patients, and health care providers on the practice of using supplemental oxygen in the management of exertional hypoxemia. Study results are useful in examining the role of supplemental oxygen on the experiences and activities of daily living for this patient population. A descriptive phenomenological approach to this phenomenon helped to identify themes that can be used by practitioners, when educating patients who are deciding if the advantages versus limitations of supplemental oxygen for patients with exertional hypoxemia align with their preferences and goals. Themes identified from this study can serve as a foundation to guide discussions between patients and providers, with respect to how oxygen therapy may affect individuals of a similar background. Study results can be used to tailor treatments plans based upon patient-specific goals and values in this tertiary care pulmonary clinic (AlMutairi et al., 2018; Hillebregt et al., 2017). Ultimately, the findings of this study contributed to positive social change by improving the understanding patients and providers have regarding the lived experiences of COPD patients with exertional hypoxemia when supplemental oxygen is added to their plan of care.

Background

There is very little literature on lived experiences of COPD patients with exertional hypoxemia and their in-depth accounts related to the addition of supplemental oxygen to their treatment plan (Graney et al., 2017; Mussa et al., 2018). Studies in this patient population have focused on mortality benefit, exacerbation rates, and hospitalization; however, current literature fails to explore the in-depth accounts of how the addition of this treatment modality affects their daily lives (AlMutairi et al., 2018; Graney et al., 2017; Mesquita et al., 2018; Mussa et al., 2018).

Supplemental oxygen is prescribed to a heterogenous population, for some, to prolong their lives, while in others, it is prescribed to lessen the impact the disease has on the daily lives of the patients (Jacobs et al., 2018; Lindell et al., 2018). In patients with COPD and exertional hypoxemia, the addition of supplemental oxygen to the treatment plan has not shown a mortality benefit (Mussa et al., 2018). Currently, practitioners are unaware of the net effect that supplemental oxygen therapy has on the daily lives of COPD patients with only exertional hypoxemia. The lack of information surrounding the perceived impact on their life for this patient population limits the practitioner's ability to effectively counsel individuals and to foster shared decision making with the COPD patient population, for those who may be considering the use of supplemental oxygen as a treatment regimen (Mesquita et al., 2018; Rubio, 2019). Management of chronic disease processes involve patient education, so that the patient can know what to expect in their disease course.

Current literature fails to elucidate the lived experiences of COPD patients with exertional hypoxemia regarding how the addition of supplemental oxygen affects their everyday lives. This limitation inhibits the providers' ability to properly counsel each individual patient so that the patients can make the correct informed decision as to whether supplemental oxygen is appropriate for them (AlMutairi et al., 2018). Obtaining in-depth information from patients, regarding the effects supplemental oxygen has on their life, has the potential to improve patient education opportunities and current prescribing regimens for this select population at a local tertiary care pulmonary clinic. The specific research problem that was addressed through this study is that practitioners counseling COPD patients with exertional hypoxemia have no information about how patients who use supplemental oxygen therapy perceive or experience the benefits of its use in their treatment regimen to reduce exertional hypoxemia, to share with patients when counseling them regarding the addition of supplemental oxygen (Branson, 2018; McDonald, 2014). A descriptive phenomenological approach to this phenomenon provided insight to practitioners and patients with respect to the benefits and barriers to adding supplemental oxygen to the treatment plan for COPD patients with exertional, but not resting hypoxemia.

Problem Statement

The specific research problem addressed through this study is that practitioners counseling COPD patients with exertional, but not resting hypoxemia, have limited information to share with patients when counseling them regarding the addition of supplemental oxygen to their treatment plan (Branson, 2018; McDonald, 2014). Jacobs et al. (2020) indicated that further research is necessary, as current data are both scarce and inconclusive to direct and support the prescription of supplemental oxygen for patients that are normoxemic at rest but desaturate upon exertion. Currently, the evidence base used to prescribe and manage exertional hypoxemia for COPD patients is over four decades old, and the findings from initial trials are used by healthcare personnel as a basis for prescribing and treating this patient population (Branson, 2018). A descriptive phenomenological approach to this phenomenon has provided insight for practitioners and patients with respect to the benefits and barriers to adding supplemental oxygen to the treatment plan for COPD patients with exertional hypoxemia.

Research Problem

Currently, clinicians are unable to accurately educate COPD patients with exertional hypoxemia on the effects of supplemental oxygen to their treatment plan. Since the addition of supplemental oxygen to this patient population does not impact hospitalization rates, rates of exacerbation of their condition, or mortality, it is imperative to understand how patients perceive the value of supplemental oxygen to understand if the therapy has any role in their plan of care (Dakkak et al., 2021). With any treatment modality, healthcare professionals seek to comprehend how the prescribed therapy makes the patient feel, or function, thereby effecting their overall well-being (AlMutairi et al., 2018). Exploring in-depth accounts of patients' experiences with their supplemental oxygen therapy allows practitioners the ability to fully examine how the treatment impacts the patients' conditions, manages their symptoms, or alters their previous level of functionality (Graney et al., 2017; Mussa et al., 2018).

The specific research problem addressed through this study is the need to gain an understanding of patients lived experiences while receiving supplemental oxygen in their treatment regimens for COPD.

Purpose of the Study

The purpose of this descriptive phenomenological study was to explore the lived experiences of COPD patients with exertional hypoxemia, who received care at a rural tertiary care pulmonary clinic in Pennsylvania and who required supplemental oxygen as a part of their treatment plan. Understanding the meaning of the lived experiences of patients with supplemental oxygen was possible as the participants described their experiences with the addition of oxygen on their everyday life (Christensen et al., 2016; Graney et al., 2017; Mussa et al., 2018).

Research Question

A central research question guided this study.

How do adult COPD patients with exertional hypoxemia at a rural tertiary care pulmonary clinic in Pennsylvania describe their experiences with using supplemental oxygen?

Theoretical Framework

Martha Roger’s science of unitary human beings (SUHB) theory grounded this study. Martha Rogers describes a person as being a unitary human being, as they are indivisible with a pandimensional energy field, which is characterized and identified by a specific pattern, as they manifest specific characteristics of their whole being, which is unable to be predicted from knowledge of the sum of their parts (Rogers, 1990). The Rogerian model is built on the foundation that humans coexist with the environment, which influences the change process to achieving better health. According to Rogers, an individual is unable to be separated from their environment when addressing their health needs and subsequent treatment (Fawcett, 2000). The SUHB theory aligns with the descriptive phenomenological approach to this study, as the lived experiences of the COPD patients with exertional hypoxemia needed to be examined before judgements and/or patient-specific interventions can be identified, which was designed to enhance and improve their daily living experiences and overall well-being.

Martha Roger’s SUHB theory is an abstraction composed of four major postulates, and three primary principles, which are engrained in a four-dimensional, non-casual, negentropic, open system model, where the environmental fields and the human beings are irreducible and integral with each other (Butcher, 1996). The theoretical perspective of the SUHB theory focuses on both human beings and the manifestation of patterns, rather than a pathological view that simply examining the causation and effect (Rogers, 1970; 1992). The SUHB theory has four primary postulates, along with the principles of homeodynamics. The four postulates of the theory include energy fields, patterns, openness, and pan-dimensionality (Fawcett, 2000). The environment or the environmental energy field relate to energy fields, which include both nonliving and living object, which helps us to see an individual and their environment. Patterns relate to the fact that each individual human being is defined by distinguishable characteristics from within the energy field, and they are not able to be understood by simply studying the sum of their parts. Rogers (1990) indicates that human and the environmental fields are pan dimensional, which means that they are not a linear domain with temporal or spatial attributes. The unitary human being is not just observed or assessed as the sum of their parts. As described by Phillips (2015), human beings are both unique and different in their pandimensional awareness, as they individual differences help others visualize and comprehend the various way an individual experiences a phenomenon.

Patients with COPD and exertional hypoxemia are not simply visualized as individuals with a chronic lung disease, the nurse must examine the unique identifiable patterns of the individual to identify their specific needs. The individual that is in front of the nurse is different from another patient with the same medical diagnosis. Each human being is unique, they are unable to be simply identified and treated based upon their medical diagnosis or presenting illness. Roger’s theory guides the nurse to assess and care for the individual based on their structure, mass, function, and the feelings of the individual. Once nurses are able to visualize and assess an individual’s energy fields, their patterns, and distinguishing characteristics, subsequently, the care that is provided can be directed based on these observations and interaction in an agreed upon manner by both the individual and the nurse (Rogers, 1990).

To fully examine and comprehend the experiences of daily living for individuals diagnosed with COPD and exertional hypoxemia, who have been prescribed supplemental oxygen, the nurse must adhere to the two stages of the SUHB theory. First, the pattern manifestation appraisal must be completed, which requires visualization of the whole person without reducing the individual to a list of diagnoses or categories, or examination of separate parts (Andersen & Smereck, 1992). The practice of pattern manifestation appraisal requires the nurse to use their own intuition, paying special attention to thoughts, sensory information, imagination, and their own awareness (Cowling, 1990). The second stage in the process pertains to the deliberative and mutual patterning, which requires active participation from the patient, as well as the nurse, to initiate interventions that are designed to promote the integrality of the human-environment, and ultimately better health (Biley, 1993).

Along with the four postulates in the SUHB theory, there are three primary principles of homeodynamics, which when they are combined, help to describe the nature, context of the change, and the process (Rogers, 1992). These principles of homeodynamics include the concepts of resonancy, helicy, and integrality.

The principles of homeodynamics focus on the way the field patterns change. The concept of resonancy represents the notion of a nonlinear change, in which the frequencies will differ and continually oscillate resulting in changes within an individual’s patterns. The unique principles of resonancy can be visualized in several factors, as each individual presents with a different fluctuation in their pattern manifestations. Patients with COPD and exertional hypoxemia may experience variations in their daily living activities and perceived quality of their life experiences, which necessitates nursing personnel to explore each individual’s personal view of life experiences as both different and unique from another patient. The principle of helicy highlights the notion that an individual’s unique field patterns are innovate, continuous, unpredictable, and elevate in diversity (Phillips, 2016). The concept of helicy relates to the role of innovative and continuous change that expands from within the mutual interactions that occur amongst individuals, along with the environmental factors that continually spiral along the longitudinal axis in time (Rogers, 1970). Roger’s principle of helicy is useful in highlighting the fact that patients with COPD and exertional hypoxemia represent a diverse population of individuals, further demonstrating that standard prescribing of supplemental oxygen as a treatment modality is not only an undesirable, but also an ineffective and inefficient approach to generalizing treatment regimens. The concept of helicy promotes the use of person centered treatments backed by the notion that each person has a diversity of field and requires a unique approach to management of their conditions and treatments (Phillips, 2016; Rogers, 1990). And finally, the concept of integrality can be defined as the mutual oneness of the human field, which is continuous, and the environmental fields process. This is a mutual process, where both the environmental fields and the human being can co-evolve together (Rogers, 1990). This concept delineates the notion that the environmental energy fields and the nature of the human beings are essentially inseparable. This concept, in relation to COPD patients, aligns with the thought process that external factors must be considered and contemplated when determining an individual’s ability and motivation to comply with therapies prescribed to improve or maintain their chronic illness.

The SUHB was chosen to guide this study because the theory focuses on the unique individuality of each person, providing a foundation for examining the four theory postulates of the energy field, patterns, openness, and pandimensionality specific to each individual, which helps direct patient specific care that meets the needs and goals of each person (Fawcett, 2000; Rogers, 1990). The logical connection between the framework presented and the nature of my study is that the primary focus of nursing practice relates to unitary human beings and the environment. This study explored the lived experiences of COPD patients diagnosed with exertional hypoxemia, who have been prescribed supplemental oxygen to manage their disease complex. The SUHB theoretical framework helped provide a foundation for health promotion strategies that are derived from considering a holistic perspective of the patient, rather than directing management techniques and strategies that fail to consider a unitary or individualized approach to self-management of chronic illness, such as COPD.

Nature of the Study

To address the research question in this descriptive phenomenological study, the specific research design included a descriptive phenomenological design (Queiros et al., 2017), as the participants’ reality is socially constructed and can be both understood and changed subjectively. According to Morse and Johnson (1991), to provide nursing care that is thoughtful, patient centered, and effective, it is essential to delineate, define, and describe unique concepts and symptoms, to elicit rich in-depth descriptions of an individual’s experiences and the meanings associated with those experiences (as cited in Pooler, 2014). A descriptive phenomenological approach allows for the researcher to explore the perception of life experiences of participants to fully comprehend the complex realities and the attached meaning of actions that have been given to these similar experiences by the participants (Williams, 2021). Semi structured face-to-face or virtual interviews were conducted to fully explore the perspectives of life experiences of COPD patients’ usage of supplemental oxygen, which included both strengths and barriers. Using semi structured interviews allowed for predefined questions, while permitting me the freedom to explore some questions in greater depth.

Current literature fails to elucidate COPD patients’ lived experiences and patient’s perspectives regarding how the addition of supplemental oxygen affects the everyday lives of patients with exertional hypoxemia. These unknown patient perspectives and life experiences inhibits the providers’ ability to properly counsel each individual patient so that the patients can make the correct informed decision as to whether supplemental oxygen is appropriate for them (AlMutairi et al., 2018). Obtaining in-depth information from patients, regarding the impact supplemental oxygen has on their life, has the potential to improve patient education opportunities and current prescribing regimens for this select population at a local tertiary care pulmonary clinic. The specific research problem addressed through this study is that practitioners counseling COPD patients with exertional hypoxemia have no information about how patients who use supplemental oxygen therapy experience its use in their treatment regimen to reduce exertional hypoxemia, to share with patients when counseling them regarding the addition of supplemental oxygen (Branson, 2018; McDonald, 2014). A descriptive phenomenological approach to this phenomenon provided insight to practitioners and patients with respect to adding supplemental oxygen to the treatment plan for COPD patients with exertional hypoxemia.

Definitions

Exertional hypoxemia: A drop in oxygen saturation to $\leq$88% while performing a 6-minute walk test in participants who are normoxemic at rest (Hussain et al., 2020). Kalin et al. (2021) have further defined exertional hypoxemia as “an absolute drop in oximeter reading by 3% or more from baseline” (p. 12).

Normoxemic: Having normal blood oxygen levels in the tissue (Gilbert-Kawai et al., 2014).

Unitary human beings: Roger’s (1986) describes unitary human beings as an indivisible, irreducible, and pandimensional energy filed, which is identified by their pattern and the subsequent manifestation of unique characteristics that are specific to a whole and is not able to be predicted from simply knowing the parts.

Assumptions

The primary tenets of this study consist of relativist ontological and constructionist epistemological assumptions. The ontological assumption is that daily life for these individuals is not one simple truth and that the interactions and meaning of quality is subjective and changes at any given time based upon their personal interactions and feelings toward a quality experience. According to Creswell and Creswell (2018), individuals make sense of their worldviews as they actively engage in their world based on their social and historical perspectives. The explained social reality of the individuals diagnosed with COPD and exertional hypoxemia was defined by collecting and evaluating the self-reported reality of the daily living experiences for individual throughout the study. The constructivist epistemological assumptions are that the individuals derive their truths or reality from a cocreate meaning, these individuals combine their social and historical perspectives of quality to define their worldwide view of a life worth living (Burkholder et al., 2020). The epistemological assumptions are derived from experiences with chronic lung disease patients receiving supplemental oxygen. There are a few research studies that have demonstrated that some patients are able to maintain some degree of quality in their life experiences with the use of oxygen therapy, while some patients chose to retreat in their homes and not utilize prescribed oxygen therapies. Individuals perceive their worthwhile experiences and wellbeing based upon life experiences, social factors, and historical perspectives; however, there are potential commonalities in these decisions and experiences (Lutter et al., 2020). A primary assumption is that it would be assumed that each research participant would be truthful in their subjective responses relating to their lived experiences, and that the answers provided during the interview were both honest and experiences that have been experienced by the participant themselves. Additionally, questions answered during the interview process should be perceived in a nonthreatening manner and would not lead to any participant responses that would be incriminating in nature.

Scope and Delimitations

The main purpose of this study is to examine the lived experience of COPD patients, with exertional hypoxemia who are prescribed supplemental oxygen. The study was chosen to address the gap in the literature, with respect to the impact supplemental oxygen has on the daily lives and experiences of patients with COPD.

The study has been designed using descriptive phenomenological methodology employing semi structured questions to elicit the participants lived experiences in their own words. The study boundaries and inclusion criteria included any individual 18 years of age or older, that has been diagnosed with exertional hypoxemia and prescribed supplemental oxygen therapy. The study was conducted in a single tertiary care pulmonary clinic, located in rural central Pennsylvania. The participant data were recorded and transcribed for coding purposes. Participants who meet study criteria were recruited sequentially from December 2022, until a target 10-20 participants are enrolled, and/or saturation had been achieved. While these results may not be generalizable, the study design can be transferable or adapted to any population in order assess this phenomenon in other demographics. Exclusion criteria included any individuals diagnosed with COPD and resting hypoxemia, non-English speaking participants, patients with life expectancy of less than six months, and patients that have received lung transplantation, stem cell transplantation, or endobronchial valve treatment for COPD.

Limitations

This study was conducted at a single medical center and therefore participant responses may not be representative of similar patients in other geographical locations.

The complications that may arise with the plan to conduct face-to-face interviews due to the current COVID-19 pandemic may also serve as a limitation. The in-person approach to this process has been complicated by social distancing precautions that are designed to protect both the participants and the researchers. A variety of virtual options have emerged and have rapidly gained traction in the realm of qualitative descriptive interviews (Roberts et al., 2021). However, a weakness of virtual interviews, in comparison to face-to-face interviews, is that the virtual approach can limit the intimacy of the interview sessions, and possibly limit the quality of information that is obtained during the session (Davies et al., 2020). Virtual interviews were more cost-efficient and easier to conduct; however, lack of access to digital services by the participants could be a possible limitation to this approach (Krouwel et al., 2019). I contacted the participants via the telephone and discuss whether they would be more comfortable with in-person interviews, or would they prefer to use an electronic platform to participate in virtual interviews.

Being a nurse may also pose a limitation to the study results. As a nurse and a researcher, it was necessary to be aware of how my own experiences are infused into both the engagement process of the interviews as well as the actual analysis of the data (Creswell & Creswell, 2018). Bias and positionality are essential factors to consider when conducting descriptive phenomenological research. In these studies, the researchers are the primary instruments and shape the data that is collected. As described by Ravitch and Carl (2021), researchers can actively engage in reflexivity by collecting data and writing research memos, journaling, using dialogic engagement, or through research interviews with the participants. A researcher's reflexivity informs their positionality in relation to the phenomenon of interest. Reflexivity requires the examination of the researcher's own beliefs, practices, and judgments throughout the study. The term positionality can be described as the worldview of the researcher and the position that he/she has adopted about his/her research topic, including its political and social context. (Dodgson, 2019; Holmes, 2020). Positionality pertains to what we have come to know or believe, while reflexivity refers to what is being done with that knowledge (Secules et al., 2020). To continually assess researcher reflexivity, positionality, and bias, it is essential to document observations, feelings, and various instances that have a personal impact. As a researcher, I continually documented anything that was experienced throughout the duration of the study. To control for the potential bias, bracketing was utilized to address personal experiences, and the use of reflective journaling was completed throughout the study, to include data collection, coding of data, data analysis, as the results are shared, and during the interpretation of the research findings. Member checking and peer review processes assisted with maintaining quality throughout the study as well (Candela, 2019).

Significance

The results of this study aim to provide in-depth accounts from COPD patients with regard to their experiences with the use of supplemental oxygen. The finding can enlighten other patients, future patients, and health care providers on the experiences of using supplemental oxygen in the management of exertional hypoxemia. This information is useful in examining the role of supplemental oxygen on life experiences and various other activities of daily living for this patient population. A descriptive phenomenological approach identified themes that can be used by practitioners, when educating patients who are deciding if the use of supplemental oxygen aligns with their own health management goals. Themes identified from this study can serve as a foundation to guide discussions between patients and providers, with respect to how oxygen therapy is experienced individuals of a similar background. This information can be used to tailor treatments plans based upon patient specific goals and values in this tertiary care pulmonary clinic (Christensen et al., 2016). Ultimately, the findings of this study contribute to positive social change by improving the understanding patients and providers have regarding the experiences of COPD patients, with exertional hypoxemia, regarding their use of supplemental oxygen.

Summary

Using Roger's SUHB theory to provide a theoretical foundation for this study helped guide research efforts from a theoretical lens that views humans as a coexistence with their environment, allowing healthcare personnel to treat these patients in a way the change process can possibly lead toward better health outcomes (Maki & DeVon, 2018; Rogers 1990; Wright, 2004). Through a holistic approach to exploring the lived experience of COPD patients, with exertional hypoxemia, prescribed supplemental oxygen, the primary focus of this study was the human beings and the patterns that they manifest, rather than simply observing and studying the pathological view of their health status and current self-management of their chronic condition based on mere cause and effect of their illness (Rogers, 1990).

Chapter 2 includes the empirical literature that is associated with this phenomenon. The identified studies found within the literature helped provide a link between Roger’s SUHB theoretical approach, current evidence regarding COPD patients who have exertional hypoxemia, COPD patient and supplemental oxygen, and the importance of this phenomenon for study.

Chapter 3 includes a description of the identified research method and design in this study. This chapter also includes the research question, criteria for participant selection, and the process for recruitment. Additionally, the role of the researcher as the primary instrument is discussed, along with plans to protect the research participants, the data analysis process, and measures to ensure trustworthiness of this study.

Chapter 2: Literature Review

Introduction

The purpose of this descriptive phenomenological study was to explore the lived experiences of COPD patients, with exertional hypoxemia, regarding the use of supplemental oxygen on their life, at a rural tertiary care pulmonary clinic in Pennsylvania. The meaning of the lived experience helps to describe the range of patients experiences toward the addition of oxygen on their everyday life (Christensen et al., 2016; Graney et al., 2017; Mussa et al., 2018).

Research Problem

Currently, clinicians are unable to accurately educate COPD patients with exertional hypoxemia on the effects of supplemental oxygen to their treatment plan. Since the addition of supplemental oxygen to this patient population does not impact hospitalization rates, rates of exacerbation of their condition, or mortality, it is imperative to understand how patients perceive the value of supplemental oxygen, and examine their lived experiences, to understand if the therapy has any role in their plan of care (Dakkak et al., 2021). With any treatment modality, healthcare professionals seek to comprehend how the prescribed therapy makes the patient feel, or function, thereby effecting their overall wellbeing (AlMutairi et al., 2018). Exploring in-depth accounts of patients' experiences with their supplemental oxygen therapy allows practitioners the ability to fully examine how the treatment impacts the patients' conditions, manages their symptoms, or alters their previous level of functionality (Christensen et al., 2016; Graney et al., 2017; Mussa et al., 2018). The specific research problem addressed through this study is the need to describe the lived experiences of COPD patients with exertional hypoxemia when supplemental oxygen is added to their treatment regimens.

Purpose of the Study

The purpose of this descriptive phenomenological study was to explore the lived experiences of COPD patients, with exertional hypoxemia, when supplemental oxygen is added to their treatment plan. The meaning of the lived experience helps to describe the range of patients experiences toward the addition of oxygen on their everyday life (Christensen et al., 2016; Graney et al., 2017; Mussa et al., 2018). The phenomenon requires further investigation to provide information that may inform practice and support future patient decision-making at a rural tertiary pulmonary clinic in Pennsylvania.

Current literature examines some common issues and limitations that COPD patients experience with using supplemental oxygen; however, most studies focus on patients with hypoxemia at rest, while not addressing those patients with exertional hypoxemia. In Chapter 2, current literature was reviewed related to the phenomenon of interest. Empirical literature that is associated with COPD patients that are prescribed supplemental oxygen help visualize the correlation between Roger’s SUHB theoretical approach, and issues these patients experience with the use of supplemental oxygen. Additionally, a summary and conclusion are discussed, as it pertains to the review of the literature related to this phenomenon.

Literature Search Strategy

The keywords and databases used to identify relevant literature include “COPD or chronic obstructive pulmonary disease”, “exertional hypoxemia”, “supplemental oxygen", "quality of life", "mobility", "oxygen therapy", "exercise-induced hypoxemia", and "Roger's theory of unitary human beings", "COPD AND exertional hypoxemia", "COPD AND exertional hypoxemia OR exercise-induced hypoxemia AND supplemental oxygen", "COPD AND exertional hypoxemia OR exercise-induced hypoxemia", "COPD AND exertional hypoxemia OR exercise-induced hypoxemia OR walking OR supplemental oxygen" "COPD AND Roger's theory of unitary human beings OR exertional hypoxemia OR exercise-induced hypoxemia", "Roger's theory of unitary human beings AND quality of life". Term variants and synonyms were searched and combined using the Boolean operators 'AND' and "OR' to reduce the potential of omitting any studies that may be relevant to this phenomenon. Articles between the years of 2016 – 2022 were reviewed and integrated as appropriate, when they met the inclusion criteria for this study. Any editorials, review articles, or opinion papers were excluded from the review. Original research, peer-reviewed journals, and studies in English were chosen. The search terms were used in CINAHL, ProQuest Central, PubMed, SAGE Journals, ERIC, and Thoreau multi-database searches.

Literature Review

Individuals diagnosed with COPD often experience exertional desaturation, which is a fundamental component of interstitial lung disease (ILD) and consequently is an essential predictor of mortality (Kohr et al., 2019). However, as explained by Johannson et al. (2017), exertional hypoxemia is often more advanced in patients diagnosed with ILD in comparison to those diagnosed solely with COPD. For either diagnosis, many physicians prescribe ambulatory or supplemental oxygen therapy for this patient population with the goal of relieving their dyspnea upon exertion, along with improving their level of activity and overall well-being; however, the effect of this therapeutic modality is scarcely evaluated in the literature and national and international guidelines for prescribing often vary (Kohr et al., 2019).

Kim et al. (2022) found that the use of educational materials prior to supplemental oxygen administration, along with proactive self-monitoring activities correlated with significant improvements in the health status of patients diagnosed with COPD, which can potentially influence future guidelines for the use of this therapy modality. Along with the findings from Kim et al., Sharp et al. (2016) also suggested that patients with chronic lung disease that are normoxic at rest, but experience desaturation upon exertion, may benefit from the use of supplemental oxygen during mobilization, or other activities, improving their capacity for exercise and promote relief from breathlessness or dyspnea. Although both studies suggested a possible long-term benefit from the use of supplemental oxygen, both study findings were examined short-term and only speculate long-term benefits. Furlanetto and Pitta (2017) also suggested that supplemental oxygen may improve physical activities of daily living; however, they found that the size and ability to transport the equipment often impedes the overall satisfaction and perceived benefit of the therapy. As technology advances, the development of portable oxygen devices has improved, potentially impacting the health outcomes for COPD patients prescribed this therapeutic modality (Bell et al., 2017).

A patients exercise capacity, and their level of physical activity are now being recognized as a prognostic factor in disease progression and have become an essential foci for the management of their condition (Sadaka et al., 2018). In many instances, the degree of saturation experienced during exercise has been correlated as a strong predictor of mortality (Waatevik et al., 2016). Several prior research studies examined the efficacy of supplemental oxygen for COPD patients during exercise training. Liu and Gong (2019) found that COPD patients using supplemental oxygen during exercise training did not improve V02 max, which is the volume of oxygen used by the body during maximum effort during exercise training, or the power output, which measures the individual's power that is expended during exercise training. Additionally, Kawachi et al. (2019) COPD patients using supplemental oxygen during exercise training did not improve their overall exercise tolerance when compared to the exercise training alone. Findings suggest that COPD patients that experience severe desaturation during exercise may benefit from supplemental oxygen, in that their exercise tolerance may be increased. Sadaka et al. (2018) did not find an association between supplemental oxygen usage, exercise response, and survival rates in COPD patients that exercise-induced desaturation. However, these systematic reviews and research studies involved studies on patients are normoxemic at rest and during exercise, in addition to patients that only desaturate during exercise. Prior research examines the physical parameters of using supplemental oxygen, primarily during exercise, but fails to examine the patients' perception of the overall impact on their daily living activities. The primary focus of this study does not examine patients that are hypoxemic at rest, or their physical outcome measures during exercise, the phenomenon of interest only examines the patient's experience of supplemental oxygen therapy for COPD patients with exertional hypoxemia, which is not well reported in the literature.

The remainder of the literature review describes the relationship between Roger's SUHB theory, and the experience of COPD patients diagnosed with exertional hypoxemia and prescribed supplemental oxygen to manage their disease complex (Bender, 2018; Fawcett, 2000). Roger's theory describes a framework of concepts including nursing, environment, person, and health. The nursing component focuses on how the optimal patient outcomes can be delivered with a mutual nurse-patient relationship, when it occurs in a caring and safe environment. The environmental component examines an individual's surroundings to further identify how these situations and circumstances personally affect the individual. The person component examines the individual from their unique perspective, as they perceive and respond to the care that they receive. And finally, the health component explores the extent to which an individual's access to care and their perceived wellness is characterized by the individual, examining this concept throughout their entire lifespan (Rogers, 1990).

Nursing

Chen and Pan (2021) and Karasu and Okuyan (2021) found that nursing care can play a pivotal role in promotion of self-management of symptoms for patients diagnosed with COPD. Nurses approach the patients' educational needs from a holistic perspective, which helps them to provide patients with targeted education and skills necessary to adapt to the psychological and physical changes that they experience because of their COPD manifestations. These nursing initiatives help maximize patient functions by providing them with education related to increasing their exercise capacity, proper nourishment, medication adherence, breathing exercises, and the promotion of regular physician check-ups, which improve their overall quality of life and often limit exacerbations and reduce hospital readmissions. Zwakman et al. (2019) found that in addition to the educational components of nursing care, patients identified that the relationship between the patient and the nurse often leads to a higher level of personal engagement that is fostered by a trusting environment, which promotes better patient outcomes.

Roger’s SUHB theory connects science with nursing practice to care for the patient, while striving to enhance patient outcomes. This concept provides the nurse with a theoretical foundation that is designed to integrate the patients in a coexisting relationship with their environment, which guides both the care of the patient and the attainment of optimal health outcomes (Fawcett, 2000).

Environment

The environment component of Roger's theory focuses on the irreducible energy field that is unique to each human being, which is ever-changing (Alligood, 2013). The environmental component extends far beyond the human beings’ physical surroundings to encompass both social and emotional surroundings and includes anything that can potentially have an impact on the health and well-being of the human beings (Fawcett, 2000). As a nurse, the Rogerian model illuminates that it is essential to be cognizant of my role in the patient’s environment, helping them to become more comfortable with their surroundings and find refuge and satisfaction with their inner thoughts and feelings.

Stigma is a social process that is anticipated or experienced by an individual, and characterized by rejection, blame, exclusion, or feelings of devaluation resulting from a perception, an experience, or sensible anticipation of an opposing social judgment regarding a group or an individual (Jerpseth et al., 2021). Such judgment serves as a foundation of an enduring feature of a specific health condition, or health-related problem, and this judgment is not medically warranted (Weiss et al., 2006). Additionally, researchers contended that COPD is a chronic disease that is often stigmatized by onlookers, as many people assume that these individuals were smokers prior to their diagnosis (Berger et al., 2011; Breaden et al., 2018; Woo et al., 2021). In many instances, COPD is a preventable disease, which leads to some on-lookers feeling that patients with COPD are responsible for their lung disease. As a result, this smoking-related act of discrimination leads to individuals often delaying or failing to access proper medical care to reduce the feeling of being devalued by others (Woo et al., 2021).

Health-related stigma is described by Kane et al. (2019) as a significant social determinant of health that ultimately drives health disparities, along with mortality and morbidity rates. Stigma is generally characterized by emotional, behavioral, and emotional components that are often reflected in attitudes, which are abstracted as anticipated, internalized, or anticipated experiences, and stigmas. Berger et al. (2011) and Kane et al. found that these perceptions, treatments, and attitudes of the public are often important to an individual, especially when the individual is diagnosed with a chronic illness. Mathioudakis et al. (2021) reported results that were consistent with Berger et al., and highlighted that this stigma, or social construct, devalues an individual based on specific distinguishing characteristics, which include individuals diagnosed with COPD and using supplemental oxygen devices. Rose et al. (2017) suggested that stigma-related experiences can frequently be perceived among individuals diagnosed with chronic health conditions prior to the initiation of treatment. Breaden et al. (2018) reported consistent results with Rose et al. and added that an individual diagnosed with COPD often learns about the stigma associated with supplemental oxygen devices prior to initiation of the therapy and assume this stigmatized identity after being prescribed oxygen therapy. Breaden et al. and Woo et al. (2021) utilized a descriptive, phenomenological approach to describe the experiences and social changes that COPD patients experience in their daily lives once they have been diagnosed. Madawala et al. (2022) used a nationwide cross-sectional, online survey to determine if there was a difference in perceived care from the healthcare providers with smokers and non-smokers diagnosed with COPD in Australia and found that both patient groups experienced stigma in relation to the care they received. However, diagnosis was self-reported, and the individual experiences of the perceived stigma was not examined by Madawala et al. A descriptive phenomenological approach to this phenomenon was beneficial to comprehend the experienced stigma to explore the reasoning for delays in care or avoidance in seeking help for this patient population. Breaden et al. utilized an interpretive descriptive approach with semi structured interview questions to explore the lived experiences of oxygen use in the home environment for individuals that are living with COPD. The study findings from Breaden et al. (2018), Madawala et al., and Woo et al. indicated that COPD patients prescribed supplemental oxygen often felt isolated when using the therapy due to use restrictions, as well as a feeling of embarrassment, which directly affects how they feel about themselves. In conclusion, although many of the COPD patients prescribed supplemental oxygen therapy have reduced their socialization activities due to functional limitations of the disease process, some individuals limit social activity involvement to mitigate stigmatizing situations that may arise because of their visual appearance with the oxygen device and COPD diagnosis (Berger et al., 2011; Breaden et al., 2018; Woo et al., 2021).

Individuals who feel stigmatized by the public often experience impaired mental health well-being, and subsequently poorer health outcomes. The results of Jerpseth et al. (2021) are consistent with Breaden et al. (2018) and Madawala et al. (2022); however, these researchers also noted individuals experiencing stigma also felt both uncomfortable and unworthy of care from healthcare professionals, as they felt responsible for their medical condition. It is essential to examine the life experiences of individuals with exertional hypoxemia, who have been prescribed supplemental oxygen, with a goal to further comprehend both why and how these individuals feel stigmatized, in an effort to provide ample education and support to mitigate these circumstances, promoting positive lifestyle choices and body image (Breaden et al., 2019; Mathioudakis et al., 2021, Woo et al., 2021).

Person

The person component of Roger’s theory includes the individual, as well as their family members and friends. The focus reaches far beyond the physical need of the individual and encompasses emotional, spiritual, and social needs as well (Rogers, 1970; Rogers, 1990). Roger’s SUHB theory highlights the notion that human beings are identified as on indivisible and irreducible, their manifesting characteristics are specific to their whole being, and must not to visualized as the sum of their parts (Rogers, 1990). Patients diagnosed with COPD often experience mobility-related disability concerns when they begin supplemental oxygen therapy, as many individuals have mobility restrictions due to complications with the oxygen delivery device. Nurses must look beyond the diagnosis and prescribed medical modalities to explore the daily living experiences that these aspects have on an individual (Alligood, 2013). When patients with COPD are prescribed medications, clinicians most often discuss possible side effects of the prescriptions; however, in many instances patients are not explained the limitations they may encounter with supplemental oxygen. These individuals are tethered to a device, which can potentially limit their mobility status and overall well-being. AlMutairi et al. (2018) and Furlanetto and Pitta (2017) both found that COPD patients prescribed supplemental oxygen may find that their oxygen delivery device are cumbersome, and this can impact their level of physical activity, subsequently decreasing their perceived overall quality of life experiences. Medina-Mirapeix et al. (2018) and AlMutairi et al. agreed that the device can impact the level of mobility for COPD patients; however, Medina-Mirapeix et al. also suggested monitoring an individual’s pulmonary function prior to examining mobility activities, as the pulmonary function often correlates with the ability to perform specific mobility demands.

Cani et al. (2019) and Jacobs et al. (2018) found that the oxygen delivery device can impact the degree of mobility for patients diagnosed with COPD and prescribed supplemental oxygen; however, researchers also noted that the prescribed duration of the therapy was one of the strongest predictors of the patient’s level of mobility. However, Jacobs et al. and Furlanetto and Pitta (2017) noted that often this issue relates to equipment that it not properly working, prescribed equipment that is too heavy for the patient to manage, or the lack of access to portable systems with high-flow capabilities.

Dakkak (2021) along with Jacobs et al. (2018) indicated that to improve the functional and mobility status of COPD patients prescribed supplemental oxygen, technological advances are necessary to improve the portability, design, and prescription of oxygen devices for patients, which can possibly enhance the accessibility and usability of oxygen delivery devices. Mesquita et al. (2018) followed COPD patients with exertional hypoxemia for one year, after starting oxygen therapy, to examine the impact of adherence to the therapy on dyspnea, exercise capacity, and daily living activities. Mesquita et al. (2018) had findings that are similar to Dakkak (2021) and Jacobs et al. (2018), as the study findings indicate that when patients are involved in the care planning process, they could contemplate pros and cons of device options and optimize their daily lives by selecting a treatment option that meets their level of activity.

While AlMutairi et al. (2018), Cani et al. (2019), Dakkak et al. (2021), and Jacobs et al. (2018) focus primarily on the level of mobility and the prescribed oxygen delivery device, D’Amore et al. (2022) agrees that these aspects are important to the life experiences for these individuals; however, it is also essential to examine more than simply the physical constraints and impairments, and concurrently explore the psychological health of these individuals. Current literature supports that a patient’s perception of their degree of mobility can impact their physical and mental well-being, demonstrating the importance of ensuring that the right oxygen delivery device is prescribed to meet their social, physical, and psychological demands of each individual patient (AlMutairi et al., 2018; Cani et al., 2019; Dakkak et al., 2021; Jacobs et al., 2018).

Health

In Rogers (1990) the health component pertains to the degree of wellness and access to healthcare services that a human being has to them. The health of human beings is visualized as a concept that has pan dimensionality and is constantly in motion. Health and well-being encompass their genetic makeup, emotional, physical, social, intellectual, and spiritual well-being that exists throughout their lifespan, additionally, these aspects are integrated into healthcare practices and processes for optimal health outcomes (Fawcett, 2000).

Patients diagnosed with COPD encounter both exacerbations of acute symptoms along with gradual decline of pulmonary function as the disease progresses, all of which negatively impact activities of daily living for these patients (Russell et al., 2018). Smoking cessation, regular daily exercise, proper use of medications, and adequate nutrition are the cornerstones to the management of COPD (Siltanen et al., 2020). Russell et al. (2018) found that COPD patients had poor health literacy, limiting their knowledge surrounding disease-specific terminology, the progressive and incurable nature of their disease, and they often failed to fully comprehend how to recognize signs of exacerbations, or how to manage such episodes. Sandelowsky et al. (2019) found that patients with moderate COPD were in better physical health but reported a greater need for disease-specific education related to their COPD symptom management, as self-management education is often not administered to patients until later in their disease process, when acute exacerbations become unmanaged.

Feiring and Friis (2020) and Siltanen et al. (2020) both examined common factors that clinicians believed influenced written action plans designed to support self-management for COPD patients. Both studies indicated that clinicians must be knowledgeable and skilled in constructing patient-centered action plans, prioritizing education and patient ownership in self-management practices are essential, and individualized strategies that target patient-specific needs improve effectiveness of patient outcomes. The results of Russell et al. (2018) are consistent with Sandelowsky et al. (2019); however, the study findings also indicated that nursing professionals frequently lacked a holistic approach to patient goal-setting strategies, which could promote increased physical activities, adequate diet, and self-management practices.

Hillebregt et al. (2017) found similar results to that of Russell et al. (2018) and Sandelowsky et al. (2019), but also noted that providers found it difficult to embed self-management strategies into their daily routine in clinical care, and additionally found that both healthcare providers and patients themselves experienced difficulties when they were asked to define personal goals. In lieu of educating patients on self-management skills, Young et al. (2015) found that some nurses used pulmonary rehabilitation referrals to support such education. Young et al. (2015) along with Sandelowsky et al. agree that for nurses to deliver quality self-management education to COPD patients, they need training regarding the use of self-management skills, along with clear guidance on structured goal setting for this patient population. These findings suggest that nursing professionals should have up-to-date knowledge, along with the necessary skills for providing patient-centered education that is suitable for the management of COPD care. Hillebregt et al. noted that the overall goal is to initiate a behavior change, which lead to a healthier lifestyle and better quality of life for these patients; however, influencing this behavior change is the most difficult part. A holistic approach is necessary, while ensuring that the patients feel supported by the nursing professional, along with a careful examination of their level of motivation and degree of self-efficacy in performing the desired skills (Hillebregt et al., 2017; Sandelowsky et al., 2019).

Summary and Conclusions

Current literature examines some of the social restrictions and mobility-related constraints that are experienced by COPD patients prescribed supplemental oxygen therapy. These patients often have difficulty managing their devices or feeling socially accepted with their disease-related characteristics, which include perceived stigmas that lead to decreased mobility and social isolation (AlMutairi et al., 2018; Cani et al., 2019; Dakkak et al., 2021; Jacobs et al., 2018). However, the SUHB theory is useful in describing the individual from a holistic point of view, monitoring their manifesting characteristics, and helping to collaborate with these individuals to set goals that are meaningful and applicable to their overall health and wellbeing. Previous studies failed to approach these individuals from a holistic perspective that can visualize more than the disease diagnosis or acute clinical manifestations that present at the bedside or in the medical office. A descriptive phenomenological approach to this phenomenon elicited and illuminated the experiences of COPD patients with exertional hypoxemia, who are prescribed supplemental oxygen therapy, providing useful information for enhancing their experiences with therapy. Chapter 3 includes the research design and rationale, role of the researcher, methodology, and instrumentation.

Chapter 3: Methodology

Introduction

Chapter 2 provided an extensive review of the literature on theories and studies related to patients diagnosed with COPD and exertional hypoxemia who have been prescribed supplemental oxygen as a treatment modality, as well as Roger's SUHB theory as it relates to this patient population. Chapter 3 includes the research design and rationale, research question, role of the researcher, methodology, issues with trustworthiness, and a summary.

Purpose of the Study

The purpose of this descriptive phenomenological study was to explore the lived experiences of COPD patients, with exertional hypoxemia, regarding the effects of the addition of supplemental oxygen on their life, at a rural tertiary care pulmonary clinic in Pennsylvania. The meaning of the lived experience described the range of patients experiences toward the addition of oxygen on their everyday life (Christensen et al., 2016; Graney et al., 2017; Mussa et al., 2018).

Research Question

A central research question guided this research study.

How do adult COPD patients with exertional hypoxemia at a rural tertiary care pulmonary clinic in Pennsylvania describe their experiences with using supplemental oxygen?

Research Design and Rationale

Choice of Approach

The phenomenon of interest that was studied are the lived experiences of COPD patients with exertional when supplemental oxygen is added to their treatment regimen. A descriptive phenomenological research design guided this study.

A phenomenological approach is designed to mitigate misunderstandings of the phenomenon, as this approach requires researchers to focus directly on the experiences of the participants to fully comprehend and appreciate their life experiences, along with illuminating the reasons why the participants react in a specific manner to a particular experience or event. As described by Giorgi (2005), The analysis of phenomenological studies is not designed to discover or explain causes of a phenomenon, it simply aims to seek understanding or provide clarification of a specific phenomenon from an individual’s lived experience. This approach was useful in examining the degree of transferability of participant responses to experiences from one participant to another, as well as helping to decipher whether these unique experiences are relatable to other participants with similar backgrounds or perhaps in a similar circumstance (Burkholder et al., 2020).

Descriptive phenomenology originated from Husserl’s (2017) philosophy, which seeks exploration of a particular phenomenon through a direct interaction amongst the participants and the researcher. As explained by Husserl, in daily life, the lived experience is rarely fully explored, therefore, this information in not readily available. This information must be examined through three primary phenomenological philosophical stances, which include essences, intentionality, and phenomenological reduction. Essences seek to describe an affiliation, or relationship, with something in memory, something real, or from within one's own imagination. The concept of intentionality refers to the consciousness of directing one's own thoughts in the direction of an object or specified content. And finally, the notion of phenomenological reduction involves the deliberate suspension of beliefs pertaining to the experience, and is obtained via the act of bracketing, or simply the conscious process of disregarding any past assumptions or personal beliefs, to fully comprehend the phenomenon without have any interference from preconceptions (Tassone, 2017). Using a descriptive phenomenological approach helps offer researchers a universal representation of their phenomenon of interest, in contrast to the contextual representation, which is often uncovered in interpretative phenomenological research studies (Wojnar & Swanson, 2007). A descriptive phenomenological design allowed me, as the researcher, to explore the experiences of participants to fully comprehend the complex realities and the attached meaning of actions that have been given to these similar experiences by the participants. A descriptive phenomenological approach helped support this inquiry, as this design provided a foundation to help learn from the lived experiences of the selected interview participants. This methodological approach focused on the discovery and comprehension of a particular phenomenon by exploring the lived experience, and worldviews of those who experience it. (Bradshaw et al., 2017; Neubauer et al., 2019; Patton, 2015). Telephone interviews, which were based upon participant preference, were conducted with a semi structured interview guide (see Appendix A) to fully explore the lived experiences of COPD patients’ usage of supplemental oxygen. Using semi structured interviews allowed for predefined questions, while permitting the researcher the freedom to use probing questions, when necessary, to explore some questions in greater depth. A comfortable atmosphere is paramount to facilitate in-depth qualitative descriptive interviewing for oxygen-dependent patients to reduce burden and increase sharing of information during the interview process (AlMutairi et al, 2018; Ravitch & Carl, 2021). Many patients receiving supplemental oxygen have limited mobility and often have a fear of leaving their homes, which makes a qualitative naturalistic setting optimal to further explore the phenomenon. A purposive sampling strategy was used to recruit participants from a local pulmonary care clinic at a tertiary care medical center in Pennsylvania. In descriptive phenomenological research, this sampling strategy is optimal, as this approach enabled the selection of information-rich cases aimed at providing in-depth accounts of the phenomenon (Patton, 2015). Recruitment and interviews continued until data saturation occurred, which is when no further themes emerged from the participant responses (Davies et al., 2022; Roberts et al., 2021).

Role of the Researcher

In descriptive phenomenological research studies, the primary data collection instrument is the researcher, and an essential role is to identify any personal assumptions, values, or biases that are present throughout all phases of the study (Creswell & Creswell, 2018). As described by Ravitch and Carl (2021), researchers can actively engage in reflexivity by collecting data and writing research memos, journaling, using dialogic engagement, or through research interviews with the participants. A researcher’s reflexivity informs their positionality in relation to the phenomenon of interest. Reflexivity requires the examination of the researcher’s own beliefs, practices, and judgments throughout the study. The term positionality can be described as the worldview of the researcher and the position that he/she has adopted about his/her research topic, including political and social context (Dodgson, 2019; Holmes, 2020). Positionality pertains to what we have come to know or believe, while reflexivity refers to what is being done with that knowledge (Secules et al., 2020).

To continually assess researcher reflexivity, positionality, and bias, it was essential to document observations, feelings, and various instances that have a personal impact. Member checking and peer review processes were also essential to assist with maintaining quality throughout the study (Candela, 2019). As indicated by Galdas (2017), the term “bias” commonly refers to any possible influence that may provide a distortion of the study results. Researchers must be both reflexive and transparent in critically examining any preconceptions, dynamics within their relationships, and their analytic focus. The positionality and social identity of the researcher are essential to understanding the role of the researcher at each stage of the research process. Ravitch and Carl (2021) described positionality as how the researcher’s identity and role intersect in relation to both the context and the research setting. Positionality entails the variety of roles and relationships that occur amongst both the researcher and the study participants in relation to the topic, setting, and the broader contexts which shape these roles and relationships.

For this study, the participants have no direct personal or professional relationship with me, as the researcher. However, my professional role as a nurse within the hospital setting was discussed when the participants were contacted. Participants were contacted if they were identified as being a patient within the healthcare organization and have a diagnosis of COPD and active prescription for supplemental oxygen. At no point in time was there a chance that I, as a nurse, provided any care to these participants. My role as a nurse does not entail any interactions or provisions of care for patients that receive treatment within the pulmonary clinic. Additionally, my professional role as a nurse researcher did not intersect with any personal identification of patients or caring aspect of the patient’s care. This study was conducted solely for the academic experience and all processes of the study were conducted outside of my professional working hours and outside the confines of the organization. To reduce the chance of bias with my professional role as a nurse researcher, and my academic role as a student, both roles were discussed with the interview candidates prior to beginning the study. Participants were fully aware of my role within the healthcare organization, with acknowledgement that any information that is obtained throughout the study was not shared with any members of the healthcare organization, and that their participation did not impact their care in any manner. Throughout this study, the relationship between the participants and the researcher was simply an academic relationship to identify the phenomenon of interest and inform the central research question and did not intersect with my professional role.

Throughout this study it was imperative that as a researcher, I acknowledged any potential or actual biases that were encountered. As a healthcare professional, I acknowledged my bias in feeling that patients diagnosed with COPD should practice smoking cessation techniques. This information was written in memos, this bias was put aside, and did not hinder any part of this study (Ravitch & Carl, 2021). The engagement of a reflexive approach assisted with reducing bias in this study. My positionality was continually explored throughout the study to ensure awareness of any potential biases, properly identified these areas, and accounted for them (Holmes, 2020). As each participant was interviewed, their responses were not judged based upon what I feel is the ‘right’ course of action for their health benefit. There were participants who refused supplemental oxygen due to their continuation of smoking habits.

An additional bias that must be identified and controlled relates to my assumption, as a healthcare professional, that usage of supplemental oxygen may improve the participants overall physical and mental well-being. This notion was formally written in a memo but did not interfere with any aspect of the study. To eliminate any of these actual or potential biases, several steps were taken. Each participant reviewed their responses to ensure that my interpretation aligns with the intent of the participant. Research participants were provided a comfortable and safe environment, to foster an environment that allowed the individual to freely express themselves during the interview process. Personal experiences were bracketed prior to the interview process and steps in the analysis, to attain an unbiased and clean approach to the interview and analysis process. All processes throughout this study were both secure and sensitive to the participant to ensure proper protection, in addition to upholding all agreed upon stipulations from the institutional review board.

Methodology

Participant Selection

Inclusion criteria for the target group of interest for this study included any adult patients over 18 years of age, who have a COPD diagnosis, received care at the tertiary care pulmonary clinic within the healthcare organization, and have been prescribed supplemental oxygen as a treatment regimen to manage their chronic illness. Exclusion criteria included any individuals diagnosed with COPD and resting hypoxemia, non-English speaking participants, patients with life-expectancy of less than six months, and patients who have received lung transplantation, stem cell transplantation, or endobronchial valve treatment for COPD, or any participant that refuses to consent to participation in this study. A purposive sampling strategy was used to audit the electronic health record (EHR) for candidates matching the inclusion criteria, in addition to referrals obtained from the respiratory therapist working in the pulmonary clinic. Approximately 10-15 participants were interviewed via telephonic interviews, which were based upon participant preference, using a semi structured interview guide, to elicit in-depth accounts of the lived experiences of the phenomenon of interest. Creswell and Creswell (2018) suggested that 3-10 participant interviews are necessary when conducting qualitative descriptive phenomenological research studies. However, according to Boddy (2017), data saturation is often achieved after 12-15 participant interviews have concluded. Participants were interviewed until data saturation was achieved and no further information was discovered from within the participant responses. Saunders et al. (2018), described saturation as when the researcher fails to identify any additional data to develop properties of a given category. When similar instances and experiences occur repeatedly from the participant responses, I was able to be confident that the category has been saturated. The plan was to look for groups of participants that can stretch the diversity of the data obtained to ensure that saturation is achieved on the largest possible range of data on the category. Ideally, for this study, data were collected, and interviews were conducted until the data collection process adequately addressed all essential issues and insights into the research question and the phenomenon of interest (Hennink & Kaiser, 2022).

Instrumentation

As a researcher, I am the primary instrument in this study. As explained by Denzin (2008), the researcher is a major instrument that plays a pivot role in the data collection process, along with the interpretation of the data, and presentation of such findings. At each stage of the research process, the meaning is defined by me, as the researcher (Corbin & Strauss, 2015). In my role as a research instrument, I observed for verbal and non-verbal cues throughout the interview process. The goal was to become partners with the participants to create meaning from their lived experiences (Xu & Storr, 2012). In addition to my role as a research instrument, the face-to-face or virtual interviews, based on participant preference, served as a research instrument for this study. The data collection instrument, the interview guide (Appendix A) is another instrument being utilized. The interview guide was compiled of semi structured open-ended interview questions, which align with the phenomenon of interest. Additionally, the consent form, approved by the IRB, was an instrument for this study. To ensure protection of the participant’s confidentiality, each study participant was administered the consent form prior to participation in the interview process to ensure that they comprehend the scope and the purpose of this study, and fully understand how their information was used.

Procedures for Data Collection

A descriptive phenomenological approach was utilized, which included in-depth face-to-face interviews, guided by the semi structured interview guide questions, in order to elicit the lived experiences of supplemental oxygen for participants who have been diagnosed with COPD and ordered supplemental oxygen therapy. A purposive sampling strategy was used to recruit participants who met the inclusion criteria and could provide in-depth and detailed information related to the phenomenon which is being investigated. The inclusion criteria included any patients 18 years of age or older that have received treatment at the tertiary care pulmonary clinic, who have been diagnosed with COPD and prescribed supplemental oxygen therapy for the treatment of exertional, but not resting, hypoxemia. Demographic information pertaining to gender, age, and duration of supplemental oxygen was recorded (Appendix A).

To identify participants that met the inclusion criteria for this study, a query report was be generated from the electronic health records at a rural tertiary care pulmonary clinic. Participants were screened if they are an adult patient, diagnosed with COPD and exertional hypoxemia, prescribed supplemental oxygen, and speaks English. Participants were selected if they have received care, have a COPD and exertional hypoxemia diagnosis, and are prescribed supplemental oxygen been January 2022 to August 2022. Data were collected from the telephonic interview sessions with participants meeting the inclusion criteria. The interview sessions were scheduled to last from forty-five minutes to one hour. Each participant was advised that a second interview may be necessary for follow-up questions that may arise. The sessions were recorded through the Otter.ai transcription service available at the medical facility. All verbatim transcriptions were reviewed by the participants to ensure credibility and accuracy of the data that has been transcribed. If too few participants are identified at the single rural tertiary care pulmonary clinic, the strategy was to screen and enroll additional participants from an additional pulmonary clinic that was affiliated with the current medical center.

Procedures for Recruitment, Participation, and Data Collection

This researcher conducted an electronic report from within the electronic health record to identify any patients that met the inclusion criteria for this study. Patients that carry the following diagnoses, or ICD-10 codes, COPD [J44.9], hypoxemia [R09.02] were searched via the electronic health records on file at the medical center, patient were selected for screening when they were identified as meeting the inclusion criteria for this study. Potential participants were identified by screening the list of pulmonary clinics with the previously identified ICD-10 codes, who also have met the inclusion criteria.

Data Analysis Plan

Researchers must have a data analysis plan established in order to assist with organizing and interpreting the data. This analysis roadmap helped to provide a foundation for the identification of patterns that emerged from within the data, which formed the basis for conclusions that are both informed and verifiable, with an overall goal of tying together the research objectives to the data that have been collected.

As a researcher conducting descriptive phenomenological research, it was necessary to be aware of how my own experiences are infused into both the engagement process of the interviews and the actual analysis of the data (Creswell & Creswell, 2018). Bias and positionality are essential factors to consider when conducting descriptive phenomenological research. In these studies, the researchers are the primary instruments and shape the data that is collected. As described by Ravitch and Carl (2021), researchers can actively engage in reflexivity by collecting data and writing research memos, journaling, using dialogic engagement, or through research interviews with the participants. A researcher's reflexivity informs their positionality in relation to the phenomenon of interest. Reflexivity requires the examination of the researcher's own beliefs, practices, and judgments throughout the study. The term positionality can be described as the worldview of the researcher and the position that he/she has adopted about his/her research topic, including its political and social context. (Dodgson, 2019; Holmes, 2020). Positionality pertains to what we have come to know or believe, while reflexivity refers to what is being done with that particular knowledge (Secules et al., 2021). To continually assess researcher reflexivity, positionality, and bias, it was essential to document observations, feelings, and various instances that have a personal impact. Dr. Laura Knight-Lynn advises researchers to continually document anything that is experienced throughout the duration of the study. For this study, audit trails and journaling were used in conjunction with this interview guide (Candela, 2019).

In descriptive phenomenological research studies, a thematic analysis is conducted to identify and generate themes that emerge from the interview data that has been collected to generate a deep and nuanced comprehension of the phenomenon. For this study, manual coding was used to conduct the thematic analysis. These research findings can inform current practice, provide detailed descriptions of problems within current practice, or potentially offer insight into the professional practices that occur within a specific problem of practice (Lester et al., 2020). There are a number of common descriptive phenomenological analytic approaches that include a variety of ways in which a researcher may analyze the data that has been collected, in both an iterative and nonlinear process. Each analytic approach is designed to bring a unique theoretical expectation and assumption (Clarke & Braun, 2013).

The data analysis process entails the examination of statements and themes with the goal of searching for any/all possible meanings (Creswell & Creswell, 2018). To successfully attain this goal, the researcher must set aside any/all preconceived judgement by bracketing personal experiences. As described by Tufford and Newman (2010), the epoche phase, can help eliminate or clarify any preconceptions with the conscious awareness of these prejudices, assumptions, or viewpoints pertaining to the phenomenon of interest. A researcher uses bracketing to manage this process, which involves memo writing throughout the data collection and the analysis process, in order to examine and reflect upon the engagement of the researcher and data (Patton, 2015).

For this study, the manual process of thematic analysis and hand coding included the seven steps of Colaizzi's method of analysis, which were used for coding and thematic analysis. This method of data analysis was comprised of seven steps, each of the steps build on the three phenomenological philosophical stances of Husserl, which were previously described. The analysis process provided a foundation for the rigorous examination of narrative data, which helps researchers formulate a precise description of the phenomenon of interest (Shosha, 2012; Vignato et al., 2021). The first step includes familiarization with the data that has been collected by reading the transcripts several times. The second step is to identify any significant statements that are directly relevant to the phenomenon. The third step requires the researcher to use a bracketing technique, and then identify any relevant meanings that arise from the data that has been collected. The fourth step is to identify these meanings into themes, which are common across all participants. The fifth step requires the researcher to compose an inclusive and full description of the phenomenon with the incorporated themes. The sixth step entails the creation of a short and exhaustive description of the phenomenon. In the final step, the researcher seeks verification from some, or all, of the participants, to ensure that the outcomes fully capture their experiences (Morrow et al., 2015).

As themes were developed, the data was explored for any discrepant cases, which may run counter to any emerging themes. Should any discrepant cases have been identified, alternative explanations would have been sought, and this information would have been categorized and incorporated into the final analysis. Discrepant cases have the potential to arise anytime that the data derived from participants deviate from the thematic or analyses or elements of the studied phenomenon; however, no discrepant cases were identified in this analysis (Rose & Johnson, 2020).

Issues with Trustworthiness

Descriptive research studies focus the four key components of data trustworthiness, which include credibility, transferability, dependability, and confirmability.

Credibility

Credibility refers to the confidence that a researcher has in that the truth is fully represented within the study findings. This is established when the study findings represent plausible information that is drawn from the original data of the participants, and this information is an accurate interpretation of the view of the participant (Toma, 2011). A few measures were taken to ensure credibility before, during, and after interview process. The beginning of each interview session began with a lengthy rapport session with the interviewee, which was performed to promote a comfortable atmosphere, which helped with building a trusting relationship, and helped provide a foundation that was designed to encourage an opportunity for rich data collection (Moser & Korstjens, 2017). The phenomenon of interest was explained in detail, along with a video session that provided visualization and real-life accounts of a gentleman living with COPD and using supplemental oxygen. During all phases of the interview, before it starts, during the session, and at the conclusion of the session, it was essential to use a reflexive approach that includes keeping memos and notes of any real or potential biases or preconceived notions that could possibly impact the outcome of this study. In many instances, the subjective responses from the interviewee were restated, or probing questions were utilized to ensure that the questions were both completely understood, and that their responses provided in-depth accounts of their lived experiences with using supplemental oxygen (Ravitch & Carl, 2021). Additionally, field notes and memos were compiled prior to the interview sessions, during the interview sessions, and throughout the coding process, and data was read and re-read to achieve credibility throughout each step of the study. Prolonged engagement is also a viable strategy to ensure credibility, as the research must have a lasting presence during the long interview in the field with the participants. It is essential to invest sufficient time to become familiar with the context and setting, test for any misinformation, take time to build rapport and trust with the participants, and get immersed in the rich data (Moser & Korstjens, 2018; Nowell et al., 2017).

Transferability

Transferability refers to the degree that the research findings can be transferred to other contexts or settings with different participants. The researcher must provide the reader with a dense description of the population that is being studied and the research process, which can be accomplished by describing the participant demographics and the geographical boundaries. When data collection methods remain the same with various geographical locations or demographic groups it is easier for the researcher to demonstrate transferability. Researchers must provide thick descriptions of both the experiences and behaviors, as well as the context, so that these experiences and behaviors can be more meaningful to the reader (Moser & Korstjens, 2018). It is the responsibility of the reader to assess whether the research findings are transferrable to their specific setting, which is referred to as transferability judgement (Toma, 2011). This suggests that the reader needs to make the judgment, as the research has no way of knowing their specific settings. The findings illuminate a range of experiences in which the readers can build an understanding that help them decide if this research can be applicable to their practice environment, setting, or circumstances (Toma, 2011).

Dependability

Dependability refers to whether the study process is consistent and if this process remains stable over time and across methods and researchers. One way to highlight reliability and consistency of the study findings is to ensure that the researcher comprehensively document the specific research procedures, which allows the reader to audit, follow, and critique to documented research process (Elo et al., 2014; Nowell et al., 2017). I kept an audit trail throughout each step of the study to ensure that anyone conversant with this qualitative study, the identified methodology, the study findings, and the conclusions, can seamlessly audit the decisions made with this research study, along with the analytical procedures and processes that were performed to confirm the study findings (Carcary, 2021).

Confirmability

Confirmability relates to the degree that other researchers can confirm the study findings. This concept is concerned with notion that collected data and the interpretations of the study findings are not merely a figment of the researcher’s imagination, but that these aspects are clearly derived from the data that has been obtained (Moser & Korstjens, 2018). Confirmability is contingent upon the ability of the researcher to demonstrate a clear audit trail related to how the study was framed, along with the steps for data collection and analysis. It is essential that the researcher is cognizant of their personal biases, assumptions, and values, as they may have influenced various aspects of the study, while communicating how they contemplated and considered any rival study conclusions (Toma, 2011). Confirmability focuses on the facet of neutrality. To assure confirmability, I compiled notes to reflect any decisions made throughout the research process, including sampling, reflective thoughts, the emergence of study findings, and any information related to the data management of study data, which enable any auditors to visualize the transparency of my research path (Moser & Korstjens, 2018; Ravitch & Carl, 2021).

Triangulation

Triangulation strategies were utilized to ensure attainment of various dimensions of trustworthiness. Peer debrief sessions occurred to allow an independent and unbiased researcher, which was my committee chair, to review the transcripts, as well as examine the codes and themes. These debrief sessions with my Committee Chair occurred after the interviews were transcribed and themes were identified. The interpretations were compared, and any discrepancies discussed. Additionally, the verbatim transcripts were reviewed by the interviewees to ensure accuracy of the transcription. The final outcomes were also sent to the interviewees to ensure that the results aligned with their lived experiences (Toma, 2011).

Ethical Procedures

There several ethical procedures and processes related to the recruitment of participants, collection of data, and debriefing tactics that must be considered when conducting descriptive phenomenological studies. Values such as responsibility, respect, compassion, and cultural sensitivity are essential during each phase of the study (Gyure et al., 2014). As a researcher, it is necessary to verbalize and demonstrate respectful, approachable, and tactful manners as participants are recruited and interviewed during the research process. Prior to recruiting participants, all proposed strategies and materials are processed through the institutional review board (IRB), to ensure that all ethical components are upheld. Respect for privacy is an ethical concern that must be addressed early in the recruitment process, as researchers must ensure that the privacy of the candidates is upheld as they are solicited for participation. Participation must be done on a voluntary basis, allowing the candidate adequate time to review the invitation request and to contemplate if they would like to participate in the study (Sanjari et al., 2014).

Ethical consideration related to data collection entail that the researcher must present the potential interview candidate with an accurate and clear description of the study, carefully explaining what data was collected and how this data was utilized, along with ensuring that the candidate was given an unbiased presentation of the entire research study (Gyure et al., 2014; Sanjari et al., 2014). Prior to enrolling participants or collecting data, the participant must consent to the informed consent, which specified what data components were collected, and how this data was used. The primary principle of the informed consent is that it stresses the responsibility of the researcher to adequately inform the participants about the various aspects of the study in a language that is comprehensible to the participant. The participant must clearly understand their potential role in the study, the researcher identity, any financing body that is present, and how the results were used, and where this information was published (Sanjari et al., 2014).

As a researcher and a nurse within the healthcare organization, there are potential ethical concerns that must be addressed with regard to the recruitment of study participants. Any participant that met the inclusion criteria of the study was referred by the pulmonologist working in the clinic at the medical center. The personal health information (PHI) that was collected and reviewed for recruitment purposes was not shared, or affect the care of the patient, as precautions were enacted to protect the health information. Permission to access the PHI was sought from the organizations IRB, which served as the IRB of record for this project. Any paper or electronic documents that were collected was locked in a cabinet or stored on a password protected and encrypted computer device. All electronic information is protected on the medical center’s secure network.

I met with study participants that met the inclusion criteria for the study, the participants were briefed on the primary components of the study. To reduce any potential power differentials, participants were informed that their willingness to participate is voluntary, and that their enrollment or refusal to participate had no impact on the care that is provided to them at the medical center. Additionally, participants were informed that my role as a nurse within the medical center had no impact on the care that they receive or their decision to participate, as this study was being conducted as a fulfillment of an educational requirement.

A consent form was completed by any interested candidates, allowing them ample time to review and reflect on the main tenants of the study. A key focus of the consent was to include the concepts of confidentiality and privacy for the participants. To uphold confidentiality as a researcher, the participant(s) were informed that confidentiality will be upheld because only I, as the researcher, will know any identifiable information of the study participants (Saunders et al., 2015). To ensure confidentiality, anyone that has participated in the study was not revealed by anyone within the research team, including any links or comments to any specific participants, which included any publishable participant information. An essential principle of confidentiality is the concept of privacy, which includes anything that is said by the participants, which is ensured to encourage the participant to more freely detail their lived experiences with the researcher (Kaiser, 2009; Saunders et al., 2015). All participant information was de-identified and only be distinguishable to me, as the researcher.

Summary

Chapter 3 has provided details on the research design for this study, the study sample selection, the role of the researcher, and the identified study method. Additionally, the manual method of data collection, data analysis and interpretation have been discussed. Key concepts of establishing trustworthiness have been identified, along with a detailed plan for protecting the ethical aspects of participants that participate in this study, which includes both concepts of maintaining confidentiality and privacy. Study findings are discussed in Chapter 4 of this manuscript.

Chapter 4: Results

The purpose of this descriptive phenomenological study was to explore the lived experiences of COPD patients, with exertional hypoxemia, when supplemental oxygen was added to their treatment plan. The findings of this research study may be useful in providing healthcare professionals with perspectives and experiences of COPD patients with exertional hypoxemia that are currently using supplemental oxygen to manage their health condition. The knowledge gained by healthcare professionals may be used to share with current or prospective patients for education or to assist them with transition to home supplemental oxygen use. These findings can also further inform patients that have been prescribed supplemental oxygen, who are unsure if the benefits of this therapy outweigh the barriers.

Research Question

A central research question guided this study.

How do adult COPD patients with exertional hypoxemia at a rural tertiary care pulmonary clinic in Pennsylvania describe their experiences with using supplemental oxygen?

Introduction

Throughout the analysis process several commonalities and similarities were discovered amongst the participant responses. The detailed experiences from the participants were pivotal in being able to visualize relevant themes, expressions, and recurrent statements highlighted and illuminated the participants’ perceptions of their experiences with using supplemental oxygen to manage their medical condition.

Chapter Organization

Throughout this chapter, the demographics and settings are discussed for the study participants. This chapter includes the process for data analysis, details pertaining to obtaining trustworthiness, final results, and a summary of the process utilized to collect the data.

Setting

The recruitment process for this study occurred from December 2022 to February 2023. Each participant was offered the option of a virtual Teams platform or a telephone interview. Participants selected the date and time that they would be available to participate in the interview sessions. All study participants opted to participate in the interview process via a recorded phone call approach.

Demographics

A total of 11 candidates signed the consent form after receiving and reviewing the participation details and the information contained on the approved consent from, all candidates subsequently agreed to participate in the telephone interview. However, two participants declined the interview appointments due to acute physical illness, and one participant failed to respond to scheduling inquiries. The participant interviews consisted of seven respondents who consented and participated in the interview process. Five women and two men who participated in the interview sessions ranged from 46 – 72 years of age, with the mean age of 59 years.

The initial goal of the study was to enroll and consent 10-15 participants for a depth and breadth of lived experiences to be gathered; however, saturation was reached after interviewing the seven participants. Cresswell and Cresswell (2018) recommended a minimum sample size of three participants for phenomenological studies; thus, the seven participants are a sufficient sample record, allowing for the study to proceed.

Data Collection

Participants

Study participants met the inclusion criteria after being identified and confirmed by ICD-10 codes queried from within the electronic medical record, along with self-reporting from each participant. Each participant agreed to telephone interview being audio-recorded to ensure transcription accuracy.

Location of Data Collection, Frequency, and Duration

On December 13, 2022, IRB approval was obtained from the healthcare organization for this study and granted as 2022-0903. A query was employed through the medical records of the healthcare facility to identify potential participant candidates with ICD-10 codes that met the inclusion criteria for this study. Participants were contacted via telephone to screen individuals meeting the inclusion criteria to identify if they would be interested in the study. Any participant that expressed interest in the study was met in the pulmonary clinic during their next visit or mailed a consent form in a self-addressed envelope to be returned to my office. Participants were again contacted via telephone to again review the details of the study and answer any questions that they may have regarding participation. Participants scheduled a date and time that would be feasible to meet and conduct the interview session. To ensure participant privacy during the sessions, each participant was advised to select a date, location, and time that would allow for privacy and no interruptions during the open-ended interview session. Each interview session lasted between 27 – 38 minutes. Consistent with the plan that was proposed and approved for this research study, I utilized Otter.ai for real-time interview session transcription. The audio recording of the sessions was communicated verbally prior to beginning the interview sessions. Each participant interview was conducted using the interview guide (see Appendix A) to ensure consistency throughout the interview session. The interview guide consisted of four interview questions. The participants were asked open-ended questions to allow each participant to share their unique experiences related to the phenomenon of interest.

During each interview session, field notes were used to keep a notation of subjective information provided from the responses of the participants, which necessitated follow-up questions for the purpose of clarifying their responses. Follow-up questions were posed to the participants when their responses to the questions required additional exploration in an effort to fully comprehend their responses.

Each transcribed interview session was downloaded from my personal mobile device and saved onto my personal computer, which is password-protected. Each transcript was reviewed and edited, when necessary, to ensure that verbatim transcription of the interview session was obtained.

Data Analysis

Coding Process

For this study, the data analysis process began with a hand coding process of each participant transcript. This process for data analysis process enabled me to further explore the data obtained by the interview sessions. For my study I used a descriptive phenomenological approach to examine the lived experiences of COPD patients, with exertional hypoxemia, regarding the use of supplemental oxygen on their life, at a rural tertiary care pulmonary clinic in Pennsylvania. I performed repetitive reviews of the data obtained from the semi structured interview questions and participant responses from the verbatim transcription documents to examine the relevance of both the interview questions and the participant responses. I thoroughly reviewed the participant responses until saturation of data was achieved, enabling the illumination of emergent themes, which subsequently developed from the unique perspectives and experiences of the participants.

In the initial stages of the data analysis process, it was essential to begin the process of actively engaging in reflexivity activities to ensure that my positionality and/or preconceived biases on this particular phenomenon had no impact on study proceedings. Tracking and analyzing steps practices and processes were utilized throughout the study, which are consistent with the central components of Colaizzi’s method for analysis of descriptive phenomenology. These steps included writing research memos, journaling, and utilizing dialogic engagement during all aspects of the interview process. My personal practices, beliefs, and judgments were suspended throughout the entire study

(Dodgson, 2019; Holmes, 2020). In conjunction with the use of the interview guide, audit trails and journaling practices helped assist with the data analysis process. Additionally, my committee chair was available to provide a peer review process to ensure that the quality of interview process was upheld and aligned with the proposed study practices.

Manual coding practices were employed to conduct a thematic analysis of participant data. Colaizzi’s process for thematic analysis assisted with providing a solid foundation for the laborious examination of the narrative data that was collected, subsequently helping to formulate a more precise description of the phenomenon being studied (Shosha, 2012; Vignato et al., 2021).

The following seven steps were utilized to identify themes that emerged from the interview data. The transcripts were read and re-read several times to ensure that I was familiar with the data encompassed within the transcripts. Significant statements and/or attestations that were directly relevant to the phenomenon were identified after rigorous examination of the participant transcripts. Themes that emerged from the transcripts were then identified, which helped with the generation of a deep and nuanced comprehension related to this phenomenon . The next step involved the creation of a full and inclusive description of the phenomenon from the themes that had emerged. At this point, it was possible to create a short, but exhaustive description of the phenomenon. The final step in the process was to ensure that the information was accurately reported, to fully capture the subjective nature of the participants experiences (Morrow et al., 2015). At the conclusion of the thematic analysis process, it was noted that there were no discrepant cases that arose throughout the data collection process (Rose & Johnson, 2020).

Evidence of Trustworthiness

Ensuring trustworthiness of the study findings and the methods utilized to identify emergent themes was essential. The trustworthiness of a study provides the strength and foundation of a qualitative research study, which is achieved through the credibility, transferability, dependability, and conformability of the processes and findings (Moser & Korstjens, 2017; Nowell et al., 2017). The semi structured interview guide (Appendix A) was used to establish the trustworthiness of the study. Audit trails and memos were compiled to reflect upon decisions made throughout the research process, emergence of study findings, and pertinent information related to the management of study data (Carcary, 2021). Reflective journaling techniques were utilized to document both the researcher's interpretations and reflections of each interview session, along with an additional journal that documented the use of Colaizzi's method for data analysis (Shosha, 2012; Vignato et al., 2021).

Credibility

Credibility of study findings was attained when there was affirmed confidence in the study results (Toma, 2011). Each interview session began with a lengthy conversation to build rapport with the study participant prior to beginning the interview session (Moser & Korstjens, 2017). Additionally, a reflective approach to ensuring credibility was utilized by maintaining both memos and notes throughout the interview sessions (Ravitch & Carl, 2021).

Transferability

To ensure transferability of study results, thick descriptions were elicited from each interview participant. As described by Nowell et al. (2017), obtaining thick descriptions of participant experiences during the interview sessions help provide external validity of study details. Additionally, the research setting, methods for data collection and analysis, and study results are compiled within this chapter to allow other readers the ability to replicate this study.

Dependability

Each specific research process and procedure was documented in an effort to ensure that the approach was consistent and stable throughout the study (Nowell et al., 2017). To attain dependability throughout the study, specific research procedures were documented through the audit trail to allow other researchers to audit, follow, and critique the research processed utilized to obtain study findings (Elo et al., 2014).

Confirmability

Study confirmability is achieved when the study findings can articulate participants views and experiences, while not including any aspects of researcher bias (Moser & Korstjens, 2018; Ravitch & Carl, 2021). Triangulation techniques were employed to ensure that confirmability was met. Peer debrief sessions occurred with the committee chair to review the participant transcripts, along with the codes and emergent themes.

Results

Themes Generated

The data analysis process led to the illumination of codes, categories, and themes. The most common and repetitive words from the transcripts were color-coded and then highlighted into relevant groups. The codes were grouped together, which helped formulate the categories. These categories were created by grouping the coded data into alike segments, ultimately highlighting themes common to all participant data. The three primary themes evolved from the thematic coding process were: (a) ease of use, (b) social stigma, and (c) Benefits of portable oxygen (see Table 1).

Table 1

Codes to Categories to Themes Transition

Codes	Categories	Themes
Equipment is cumbersome	Portability	Ease of use
Battery life of machine	Usability	
Heavy to maneuver	Weight of Device	
People stare at me	Uncomfortable in Public	Social stigma
Treated as disabled	Stigmatized	
Time with family	socialization	Benefits of oxygen
Enjoy outdoor and family activities	Better quality of life	
Going on vacation	travel	

Ease of Use

A dominant concern from all participants related to the ease of use of their oxygen therapy device. The innovation of advanced technology features of portable oxygen concentrators, such as weight, size, and portability help COPD patients improve upon their daily mobility activities. The ease of use with the device allows for this patient population to increase their mobility options outside of the home, participate in exercise activities, and aides in achievement of desired activities both inside and outside of their residence. Participants consistently reiterated that the oxygen tanks had significant issues with ease-of-use features, dramatically limiting the portability and comfort with utilizing such devices. In most instances, participants remained within the home and did not engage in activities outside of the home when they were prescribed oxygen tanks as their primary treatment modality.

Some common portability topics discussed in the participant interviews surrounded the amenities and accessories for portable oxygen concentrators that allowed for a higher degree of mobility. The car chargers allowed for longer battery life, extended amounts of time outside of the home, and ease of mind knowing that they would not run out of oxygen while they were out of the home. The portable oxygen concentrators were also less cumbersome and lighter in comparison to the oxygen tanks. Participants often described the difficulty with carrying the tanks with them outside of the home, in addition to the weight of the device with was a physical burden, limiting mobility activities. Additionally, many participants have purchased backpacks to carry their portable oxygen concentrators. The backpacks allowed for greater mobility, while keeping their hands free to carry additional objects. Finally, the portable oxygen was often described as a preference within the home, as the tubing was less of a restriction to their daily activities in comparison to the oxygen tanks.

Social Stigma

Participants often described the social stigma that they experienced or perceived when they used their portable oxygen concentrators in a public or social environment. It is not uncommon for these individuals to feel uncomfortable when members of the community stare at them. In many instances, participants described events in which they felt that strangers would stare at them while they were shopping or in many public environments. In some instances, participants described how they were treated 'differently', or they felt that strangers viewed them as having a physical disability due to their need for the oxygen device and their assistive walking devices. Participants did not indicate that they chose to stay home more often due to this stigma, simply that the experiences made them feel uncomfortable.

Many participants described a desire to be understood, rather than judged by their medical device usage. Participants indicated that if the public was more informed with COPD diagnoses and the need for this treatment modality, they felt that the scrutiny over the overall appearance would be lessened. The participants did not want to be viewed as having a disability because of their appearance with the oxygen device.

Benefits of Portable Oxygen Therapy

A common theme amongst all participants was the perceived benefits of having the ability to use portable oxygen therapy to manage their medical condition. Participants often spoke of their gratitude to be able to participant in social gathering, activities outside of the home, family sporting events, and vacation travels. The available accessories such as car chargers and carrying devices for the equipment have had a positive impact on mobility options and quality of life experiences for this patient population.

Exemplars are identified from participant responses to illuminate the recurring themes in this study (see Table 2).

Table 1

Generalized Significant Statements Reflecting Themes

Statements	Theme
• I worry about my tank running out or not working properly (P1, 35) • I just use the car charger while we are driving (P5, 88) • It goes right in the backpack (P3, 43)	Ease of Use
• I feel like when I go out, people stare at me (P1, 23) • Felt like everybody's looking at you because you have this big tank with you (P3, 88-89) • They usually just give me this, um, like I'm doing something wrong or don't belong there (P4, 69-71)	Social Stigma
• The oxygen makes me feel better (P1, 134) • I go to picnics and things like that (P6, 43) • The oxygen makes the day-to-day things much more manageable (P1, 109)	Benefits of Oxygen

Summary

In this chapter, the study results were discussed. This chapter included a description of the research setting environment, methods of data collection, and the data analysis process, trustworthiness, and study findings.

Chapter 5 includes the final discussion and conclusions of the research study. This includes reviewing the study results through the interpretation of findings, limitations of study findings, recommendations, and implications for positive social change.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this descriptive phenomenological study was to explore the lived experiences of COPD patients with exertional hypoxemia, who received care at a rural tertiary care pulmonary clinic in Pennsylvania and who required supplemental oxygen as a part of their treatment plan. Understanding the meaning of the lived experiences of patients with supplemental oxygen was possible as the participants described their experiences with the addition of oxygen on their everyday life (Christensen et al., 2016; Graney et al., 2017; Mussa et al., 2018).

The key findings of this study were based on answers to questions that were designed to elicit the participants lived experiences with using supplemental oxygen to manage their chronic medical condition. The primary themes that emerged from the data collected were (a) ease of use; (b) social stigma; and (c) benefits of oxygen therapy. Participants provided information that illuminated items and devices related to their ease of use, which subsequently either made the use of supplemental oxygen a positive aspect of their daily routine, or simply a struggle. Social stigma was a resounding issue with using supplemental oxygen in public spaces outside of the home. Participants were either limited their out of home activities, or often felt discomfort when leaving them home due to their perceived social stigma with using the devices. Additionally, participants were able to highlight the benefits of using supplemental oxygen, which ranged from simply leaving them home, to vacationing, or participating in family social activities.

Research Question

A central research question guided this study.

How do adult COPD patients with exertional hypoxemia at a rural tertiary care pulmonary clinic in Pennsylvania describe their experiences with using supplemental oxygen?

Interpretation of Study Findings

Study results indicate that participants found benefits from using supplemental oxygen devices; however, limitations were noted with relation to the usability and portability of these devices. Participants felt that the portable oxygen concentrators had a direct benefit with respect to their mobility activities, ease of use, duration of therapy benefits, and participation of social activities outside of their home. The lighter and more portable devices appeared to have a more favorable opinion. Participants were concerned about social stigmata; however, this did not impact their willingness to use these devices in public. These study findings confirm findings in previous studies that indicate the functionality, portability, and ease of use of the device directly correlate with an individual's mobility status and perceived degree of satisfaction with using the device (AlMutairi et al., 2018; Dakkak 2021; Jacobs et al., 2018; Mesquita et al., 2018). However, the population studied did not verbalize an unwillingness to seek medical care or feelings of being unworthy of care directed by their healthcare provider as previously found by Breaden et al. (2018) and Madawala et al. (2022); however, a majority of the participants felt stigmatized by using the device (Kane et al., 2019; Woo et al., 2021).

The findings of this study help extend the available knowledge regarding the impact supplement oxygen has on COPD patients with exertional, but not resting hypoxemia.

Study Limitation

There were a few inherent limitations to this study that relate directly to the study design and the chosen approach to this inquiry. First, the study results were developed by the analysis of the participant responses to the semi structured interview questions. A primary limitation to this approach relates to the necessity to allow each participant the benefit of doubt and accept that the responses provided are accurate and true responses to the questions (Bradshaw et al., 2017). Additionally, the study results in a qualitative study can be biased, the researcher acts as the primary instrument in the data analysis process, potentially deriving the study results from a subjective interpretation of the findings (Creswell & Creswell, 2018; Patton, 2015). A final limitation to this study was the relatively small sample size, limiting the ability to generalize the study findings across various populations; however, saturation was met with this study sample. For this study, the sample population was restricted to rural Pennsylvanians and collected from a single center medical site.

Recommendations

Each study participant provided in-depth accounts of their struggles with managing the oxygen tanks outside of their home environment; however, the use of portable oxygen concentrators mitigated the majority of their concerns. A common prescribing practice amongst physicians is to begin with oxygen tanks and subsequently perform additional tests to determine eligibility for portable oxygen concentrators. A primary recommendation from this study is that prescribers should strongly consider prescribing portable supplemental oxygen concentrators when initially prescribing oxygen therapies to patients with exertional hypoxemia. This has the opportunity to improve overall adherence and the patient’s experience using supplemental oxygen. Additionally, manufactures should consider producing carrying devices that are both comfortable to wear and preserve the patient’s ability to remain mobile with use of both upper extremities. Future research studies should be conducted by practitioners on their own patient population to provider further insight into this phenomenon. This study indicates that patients from rural Pennsylvania experience benefits from supplemental oxygen, especially with reference to portable oxygen concentrators, but is it unclear if these results can be generalized to other populations.

Implications for Positive Social Change

The findings of this study contribute to positive social change by helping illuminate manners in which healthcare personnel can improve the care of the COPD patient with exertional hypoxemia so that these patients can benefit from community and social events and benefit the community and families by their presence and participation in such activities. To provide an organizational level of social change, healthcare facilities should consider offering COPD patients portable oxygen concentrators as an initial treatment regimen, when they qualify for supplemental oxygen devices to manage their exertion.

Conclusions

The primary themes of this study included ease of use, social stigma, and benefits of oxygen. Ease of use, with reference to the portability of supplemental oxygen devices, plays a pivotal role in helping COPD patients maintain a more active lifestyle. The advanced technology features of portable oxygen concentrators, such as weight, size, and portability help COPD patients improve upon their daily mobility activities. The ease of use with device allows for this patient population to increase their mobility options outside of the home, participate in exercise activities, and aides in achievement of desired activities both inside and outside of their residence. The findings of this study help inform current practices of COPD patients with exertional hypoxemia, with relation to their perceptions and limitations to the use of supplemental oxygen to manager their chronic medical condition. The themes generated from the analysis of participants transcripts help provide physicians and healthcare professionals with rich, detailed descriptions of their perceptions and concerns with current prescribing practices and experiences with using various oxygen therapy devices. These findings offer valuable insight into adherence and mobility practice for patients with COPD and exertional hypoxemia with respect to their prescribed oxygen devices (Lester et al., 2020). In alignment with findings from Dakkak et al. (2021), advances in portable oxygen concentrator technology has seemed to approve the overall experiences with these devices for the patient in this study.

References

Alligood, M. R., & Tomey, A. M. (2006). *Nursing theory utilization & application.* (3rd ed.). Mosby.

AlMutairi, H. J., Mussa, C. C., Lambert, C. T., & Strickland, S. L. (2018). Perspectives from COPD subjects on portable long-term oxygen therapy devices. *Respiratory Care*, *63*(11), 1321-1330. https://doi.org/10.4187/respcare.05916

Anderson, M. D., & Smereck, G. A. (1992). The consciousness rainbow: An explication of Rogerian field pattern manifestations. *Nursing Science Quarterly, 5*(2), 72-79. https://doi.org/10.1177/089431849200500207

Bell, E. C., Cox, N. S., Goh, N., Glaspole, I., Westall, G. P., Watson, A., & Holland, A. E. (2017). Oxygen therapy for interstitial lung disease: A systematic review. *European Respiratory Review*, *26*(143), 1-7. https://doi.org/10.1183/16000617.0080-2016

Bender, M. (2018). Re-conceptualizing the nursing metaparadigm: Articulating the philosophical ontology of the nursing discipline that orients inquiry and practice. *Nursing Inquiry*, *25*(3), 1-9. https://doi.org/10.1111/nin.12243

Berger, B. E., Kapella, M. C., & Larson, J. L. (2011). The experience of stigma in chronic obstructive pulmonary disease. *Western Journal of Nursing Research, 33*(7), 916-932. https://doi.org/10.1177/0193945910384602

Biley, F. C. (1993). Energy fields nursing: A brief encounter of a unitary kind. *International Journal of Nursing Studies*, *30*(6), 519-525. https://doi.org/10.1016/0020-7489(93)90023-n

Boddy, C. R. (2016). Sample size for qualitative research. *International Journal of Qualitative Market Research, 19*(4), 426–432. https://doi.org/10.1108/QMR-06-2016-0053

Bradshaw, C., Atkinson, S., & Doody, O. (2017). Employing a qualitative description approach in health care research. *Global Qualitative Nursing Research, 4*(1), 1-8. https://doi.org/10.1177/2333393617742282

Branson, R. D. (2018). Oxygen therapy in COPD. *Respiratory Care, 63*(6), 734-748. https://doi.org/10.4187/respcare.06312

Breaden, K., Collier, A., Lister, C., Allcroft, P., Currow, D. C., & Phillips, J. L. (2018). Stigma and the in(visible) perspectives and expectations of home oxygen therapy among people with chronic breathlessness syndrome: A qualitative study. *Palliative Medicine*, *33*(1), 82-90. https://doi.org/10.1177%2F0269216318805621

Burkholder, G. J., Cox, K. A., Crawford, L. M., & Hitchcock, J. H. (Eds.). (2020). *Research designs and methods: An applied guide for the scholar-practitioner*. SAGE.

Butcher, H. K. (1996). A unitary field pattern portrait of dispiritedness in later life. *Visions: The Journal of Rogerian Nursing Science, 4*, 41-58.

Candela, A. G. (2019). Exploring the function of member checking. *The Qualitative Report*, *24*(3), 619-628. https://doi.org/10.46743/2160-3715/2019.3726

Cani, K. C., Matte, D. L., Silva, I. J., Gulart, A. A., Karloh, M., & Mayer, A. F. (2019). Impact of home oxygen therapy on the level of physical activities in daily life in subjects with COPD. *Respiratory Care, 64*(11), 1392-1400.

https://doi.org/10.4187/respcare.06206

Carcary, M. (2021). The research audit trail: Methodological guidance for application in practice. *Journal of Business Research Methods (EJBRM), 18*(2), 1-12. https://doi.org/10.34190/JBRM.18.2.008

Chen, Y., & Pan, L. (2021). Nursing research on patients with chronic obstructive pulmonary disease and respiratory failure based on big data. *Journal of Healthcare Engineering, 13*, 1-8. https://doi.org/10.1155%2F2021%2F2541751

Christensen, V. L., Holm, A. M., Cooper, B., Paul, S. M., Miaskowski, C., & Rustøen, T. (2016). Differences in symptom burden among patients with moderate, severe, or very severe chronic obstructive pulmonary disease. *Journal of Pain and Symptom Management*, *51*(5), 849–859. https://doi.org/10.1016/j.jpainsymman.2015.12.324

Clarke, V., & Braun, V. (2013). Teaching thematic analysis: Overcoming challenges and developing strategies for effective learning. *The Psychologist, 26*(2), 120–123. https://doi.org/https://uwe-repository.worktribe.com/output/937596

Corbin, J., & Strauss, A. (2015). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (4th ed). SAGE.

Cowling, W. R. (1990). A template for unitary pattern-based nursing practice. In E. A. M. Barrett (Ed.). *Visions of Roger's science-based nursing*. National League for Nursing.

Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches*. (5th ed.). SAGE.

Dakkak, J., Tang, W., Smith, J. T., Balasubramanjan, A., Mattson, M., Ainechi, A., Dudley, B., Hill, M. N., Mathai, S. C., McCormack, M. C., Acharya, S., & Danoff, S. K. (2021). Burden and unmet needs with portable oxygen in patients on long-term oxygen therapy. *Annals ATS, 18*(9), 1498-1505. https://doi.org/10.1513/annalsats.202005-487oc

D'Amore, C., O'Hoski, S., Griffith, L. E., Richardson, J., Goldstein, R. S., & Beauchamp, M. K. (2022). Factors associated with participation in life situations in people with COPD. *Chronic Respiratory Disease, 19*, 1-8. https://doi.org/10.1177/14799731221079305

Davies, L., LeClair, K. L., Bagley, P., Blunt, H., Hinton, L., Ryan, S., & Ziebland, S. (2020). Face-to-face compared with online collected accounts of health and illness experiences: A scoping review. *Qualitative Health Research, 30*(13), 2092-2102. https://doi.org/10.1177/1049732320935835

Denzin, N. K. (2008). The new paradigm dialogs and qualitative inquiry. International *Journal of Qualitative Studies in Education, 21*, 315-325. https://doi.org/10.1080/09518390802136995

Dodgson, J. E. (2019). Reflexivity in qualitative research. *Journal of Human Lactation, 35*(2), 220–222. https://doi.org/10.1177%2F0890334419830990

Elo, S., Kaariainen, M., Kanste, O., Polkki, T., Utriainen, K., & Kyngas, H. (2014). Qualitative content analysis: A focus of trustworthiness. *SAGE Open, 4*(1), 1-10. https://doi.org/10.1177%2F2158244014522633

Feiring, E., & Friis, T. (2020). Facilitators and barriers to clinicians' use of COPD action plans in self-management support: A qualitative study. *Patient Education and Counseling, 103*, 693-701. https://doi.org/10.1016/j.pec.2019.11.002

Fawcett, J. (2000). *Analysis and evaluation of contemporary nursing knowledge: Nursing models and theories*. F. A. Davis.

Furlanetto, K. C., & Pitta, F. (2017). Oxygen therapy devices and portable ventilators for improved physical activity in daily life in patients with chronic respiratory disease. *Expert Review of Medical Devices, 14*(2), 103-115. https://doi.org/10.1080/17434440.2017.1283981

Galdas, P. (2017). Revisiting bias in qualitative research: Reflections on its relationship with funding and impact. *International Journal of Qualitative Methods, 16*(1), 1-2. https://doi.org/10.1177%2F1609406917748992

Gilbert-Kawai, E. T., Mitchell, K., Martin, D., Carlisle, J. & Grocott, M. P. (2014). Permissive hypoxaemia versus normoxaemia for mechanically ventilated critically ill patients. *Cochrane Database of Systematic Reviews, 20*(5), 1-21. https://doi.org/10.1002%2F14651858.CD009931.pub2

Giorgi, A. (2005). The phenomenological movement and research in human sciences. *Nursing Science Quarterly, 18*(1), 75-82. https://doi.org/10.1177/0894318404272112

Graney, B. A., Wamboldt, F. S., Baird, S., Churney, T., Fier, K., Korn, M., McCormick, M., Vierzba, T., & Swigris, J. J. (2017). Looking ahead and behind at supplemental oxygen: A qualitative study of patients with pulmonary fibrosis.

Heart & Lung, 46(5), 387–393. https://doi.org/10.1016/j.hrtlng.2017.07.001

Gyure, M., Quillin, J. M., Rodriguez, V. M., Markowitz, M. S., Corona, R. A., Borzelleca, J. F., Bowen, D. J., Krist, A. H., & Bodurtha, J. N. (2014). Practical considerations for implementing research recruitment etiquette. *National Institute for Better Health, 36*(6), 1-12. https://doi.org.ncbi.nlm.nih.gov/pmc/articles/PMC4324645/

Holmes, A. (2020). Researcher positionality - a consideration of its influence and place in qualitative research - a new researcher guide. *International Journal of Education, 8*(4), 1–10. https://doi.org/10.34293/education.v8i4.3232

Hennink, M., & Kaiser, B. N. (2022). Sample sizes for saturation in qualitative research: A systematic review of empirical tests. *Social Science & Medicine, 11*(2), 1-10. https://doi.org/10.1016/j.socscimed.2021.114523

Hillebregt, C., Vlonk, A. J., Bruijnzeels, M. A., Schayck, O. C., & Chavannes, N. H. (2017). Barriers and facilitators influencing self-management among COPD patients: A mixed methods exploration in primary and affiliated specialist care. *International Journal of COPD, 12*, 123-133. https://doi.org/10.2147/COPD.S103998

Husserl, E. (2017). *Ideas: General introduction to pure phenomenology*. Martino Fine Books.

Hussain, T., Saman, H. T., & Yousaf, Z. (2020). Identification of exertional hypoxemia and its implications in SARS-CoV-2 pneumonia. *American Journal of Tropical Medicine and Hygiene*, *103*(4), 1742-1743. https://doi.org/10.4269%2Fajtmh.20-

1012

Jacobs, S. S., Lindell, K. O., Collins, E. G., Garvey, C. M., Hernandez, C., McLaughlin, Schneidman, A. M., & Meek, P. M. (2018). Patient perceptions of the adequacy of supplemental oxygen therapy: Results of the American Thoracic Society nursing assembly oxygen working group survey. *Annals ATS, 15*(1), 24-32. https://doi.org/10.1513/AnnalsATS.201703-209OC

Jerpseth, H., Knutsen, I. R., Jensen, K. T., & Halvorsen, K. (2021). Mirror of shame: Patients experiences of late-stage COPD: A qualitative study. *Journal of Clinical Nursing, 30*, 2854-2862. https://doi.org/10.1111/jocn.15792

Johannson, K. A., Pendharkar, S. R., Mathison, K., Fell, C. D., Guenette, J. A., Kalluri, M., Kolb, M., & Ryerson, C. J. (2017). Supplemental oxygen in interstitial lung disease: An art in need of science. *Annals of the American Thoracic Society, 14*(9), 1373-1377. https://doi.org/10.1513/AnnalsATS.201702-137OI

Kalin, A., Javid, B., Knight, M., Inada-Kim, M., & Greenhalgh, T. (2021). Direct and indirect evidence of efficacy and safety of rapid exercise tests for exertional desaturation in Covid-19: A rapid systematic review. *BMC, 10*(77), 1-13. https://doi.org/10.1186/s13643-021-01620-w

Karasu, F., & Okuyan, C. B. (2021). The effect of nursing care applied to patients with chronic obstructive pulmonary disease on their sexual experiences and quality of life. *Sexuality and Disability, 39*, 529-542. https://doi.or/10.1007/s11195-021-09677-0

Kawachi, S., Yamamoto, S., Nishie, K., Yamaga, T., Shibuya, M., Sakai, Y., & Fujimoto,

K. (2021). The effectiveness of supplemental oxygen during exercise training in patients with chronic obstructive pulmonary disease who show severe exercise-induced desaturation: A protocol for a meta-regression analysis and systematic review. *BMC, 10*(110), 1-7. https://doi.org/10.1186/s13643-021-01667-9

Kim, Y., Park, H. Y., Rhee, C. K., Min, K. H., Yoo, K. H., Lim, S. Y., Kim, Y. H., Jang, S. H., Jung, K. S., & Hwang Y. (2022). Ambulatory oxygen therapy with documented self-monitoring of oxygen use improves health status among patients with chronic obstructive pulmonary disease. *Journal of Thoracic Disease*, *14*(5), 1353-1359. https://doi.org/10.21037%2Fjtd-21-1878

Krouwel, M., Jolly, K., & Greenfield, S. (2019). Comparing skype (video calling) and in-person qualitative interview modes in a study of people with irritable bowel syndrome: An exploratory comparative study. *BMC Medical Research Methodology*, *19*(219), 1-9. https://doi.org/10.1186/s12874-019-0867-9

Lindell, K.O., Collins, E. G., Catazarite, L., Garvey, C. M., Hernandez, C., Mclaughlin, S., Schneidman, A. M., Meek, P. M., & Jacobs, S. S. (2018). Equipment, access and worry about running short of oxygen: Key concerns in the ATS patient supplemental oxygen survey. *Heart & Lung, 48*(7), 245-249. https://doi.org/10.1016/j.hrtlng.2018.12.006

Liu, Y., & Gong, F. (2019). Determination of whether supplemental oxygen therapy is beneficial during exercise training in patients with COPD: A systematic review and meta-analysis. *Experimental and Therapeutic Medicine*, *18,* 4081-4089. https://doi.org/10.3892/etm.2019.8026

Lutter, J.I., Jorres, R.A., Kahnert, K., Schwarzkopf, L., Studnicka, M., Karrasch, S., Schulz, H., Vogelmeier, C.F., & Holle, R. (2020). Health-related quality of life associates with change in FEV1 in COPD: Results from the COSYCONET cohort. *BMC Pulmonary Medicine, 20*(148), 1-12. https://doi.org/10.1186/s1289-020-1147-5

Madawala, S., Enticott, J., Sturgiss, E., Selamoglu, M., & Barton, C. (2022). The impact of smoking status on anticipated stigma and experience of care among smokers and ex-smokers with chronic illness in general practice. *Chronic Illness, 0*(0), 1-14. https://doi.org/10.1177/17423953221101337

Maki, K. A., & DeVon, H. A. (2018). A nursing theory-guided framework for genetic and epigenetic research. *Nursing Inquiry 25*(3), 1-8. https://doi.org/10.1111/nin.12238

Mathioudakis, A. G., Ananth, S., & Vestbo, J. (2021). Stigma: An unmet public health priority in COPD. *Lancet Respiratory Medicine, 9*(9), 955-956. https://doi.org/10.1016/s2213-2600(21)00316-7

McDonald, C. F. (2014). Oxygen therapy for COPD. *Journal of Thoracic Disease, 6*(11), 1632-1639. https://dx.doi.org/10.3978%2Fj.issn.2072-1439.2014.10.23

Medina-Mirapeix, F., Bernabeu-Mora, R., Sanchez-Martinez, M. P., Montilla-Herrador, J., Bernabeu-Mora, M., & Escolar-Reina, P. (2018). Mobility limitations related to reduced pulmonary function among aging people with chronic obstructive pulmonary disease. *PLOS ONE, 13*(5), 1-10. https://doi.org/10.137/journal.pone.0196152

Mesquita, C. B., Knaut, C., de Oliveira Caram, L. M., Ferrari, R., Bazan, S. G., Godoy, I., & Tanni, S. E. (2018). Impact of adherence to long-term oxygen therapy on patients with COPD and exertional hypoxemia followed for one year. *J Bras Pneumonl, 44*(5), 390-397. https://doi.org/10.1590/S1806-37562017000000019

Morrow, R., Rodriguez, A., & King, N. (2015). Colaizzi's descriptive phenomenological method. *The Psychologist*, *28*(8), 643–644. https://doi.org/https:eprints.hud.ac.uk/id/eprint/26984/

Moser, A., & Korstjens, I. (2017). Series: Practical guidance to qualitative research. *European Journal of General Practice, 23*(1), 271-273. https://doi.org/10.1080/13814788.2017.1375093

Mussa, C. C., Tonyan, L., Yi-Fan Chen, & Vines, D. (2018). Perceived satisfaction with long-term oxygen delivery devices affects perceived mobility and quality of life of oxygen-dependent individuals with COPD. *Respiratory Care, 63*(1), 11–19. https://doi.org/10.4187/respcare.05487

Neubauer, B. E., Witkop, C. T., & Varpio, L. (2019). How phenomenology can help us learn from the experiences of others. *Perspectives of Medical Education, 8*(2), 90-97. https://dx.doi.org/10.1007%2Fs40037-019-0509-2

Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. *International Journal of Qualitative Methods, 16,* 1-13. https://doi.org/10.1177/1609406917733847

Patton, M. Q. (2015). *Qualitative research & evaluation methods* (4th ed.). SAGE.

Phillips, J. R. (2015). Martha E. Rogers: Heretic and heroine. *Nursing Science Quarterly,* *28*(1), 42-48. https://doi.org/10.1177/0894318414558608

Phillips, J. R. (2016). Roger's science of unitary human beings: Beyond the frontier of science, *Nursing Science Quarterly, 29*(1), 38-46. https://doi.org/10.1177/0894318415615112

Pooler, C. (2014). Living with chronic lower pulmonary disease: Disruptions of the embodied phenomenological self. *Global Qualitative Nursing Research, 10*(1), 1-11. https://doi.org/10.1177/2333393614548762

Queiros, A., Faria, D., & Almeida, F. (2017). Strengths and limitations of qualitative and quantitative research methods. *European Journal of Education Studies, 3*(9), 1-19. http://doi.org/10.5281/zenodo.887089

Ravitch, S. M., & Carl, N. M. (2021). *Qualitative research: Bridging the conceptual, theoretical, and methodological* (2nd ed.). SAGE.

Roberts, J. K., Pavlakis, A. E., & Richards, M. P. (2021). It's more complicated than it seems: Virtual qualitative research in the COVID-19 era. *International Journal of Qualitative Methods, 20*(3), 1-13. https://doi.org/10.1177%2F16094069211002959

Rogers, M. E. (1970). *An introduction to the theoretical basis of nursing.* F. A. Davis Co.

Rogers, M. E. (1990). Nursing: Science of unitary, irreducible human beings. In E. A. M. Barrett (Ed.). *Visions of Roger's science-based nursing*. Barrett

Rose, J., & Johnson, C. (2020). Contextualizing reliability and validity in qualitative research: Toward more rigorous and trustworthy qualitative social science in leisure research. *Journal of Leisure Research, 51*(4), 432-451.

https://doi.org/10.1080/00222216.2020.1722042

Rose, S., Paul, C., Boyes, A., Kelly, B., & Roach, D. (2017). Stigma-related experiences in non-communicable respiratory disease: A systematic review. *Chronic Respiratory Disease*, *14*(3), 199-216. https://doi.org/10.1177/1479972316680847

Rubio, M. (2019). Patient perceptions of life-limiting chronic obstructive pulmonary disease. *The Journal for Nurse Practitioners*, *15*(2), 183-1883. https://doi.org/10.1016/j.nurpra.2018.10.005

Russell, S., Ogunbayo, O. J., Newham, J. J., Heslop-Marshall, K., Netts, P., Hanratty, B., Beyer, R., & Kraner, E. (2018). Qualitative systematic review of barriers and facilitators to self-management of chronic obstructive pulmonary disease: Views of patients and healthcare professionals. *NPJ Primary Care Respiratory Medicine*, *28*(1), 2. https://doi.org/10.1038/s41533-017-0069-z

Sadaka, A. S., Montgomery, A. J., Mourad, S. M., Polkey, M. I., & Hopkinson, N. S. (2018). Exercise response to oxygen supplemental is not associated with survival in hypoxemic patients with obstructive lung disease. *International Journal of COPD*, *13*, 1607-1612. https://doi.org/10.2147%2FCOPD.S163119

Sandelowsky, H., Krakau, I., Modin, S., Stallberg, B., & Nager, A. (2019). COPD patients need more information about self-management: A cross-sectional study in Swedish primary care. *Scandinavian Journal of Primary Health Care*, *37*(4), 459-467. https://doi.org/10.1080/02813432.2019.1684015

Sanjari, M., Bahramnezhad, F., Fomani, F. K., Shoghi, M., & Cheraghi, M. A. (2014). Ethical challenges of researchers in qualitative studies: The necessity to develop a specific guideline. *Journal of Medical Ethics and History of Medicine, 7*(14), 1-6. https://doi.org/ncbi.nlm.nih/gov/pmc/articles/PMC4263394/

Saunders, B., Sim, J., Kingstone, T., Baker, S., Waterfield, J., Bartlam, B., Burroughs, H., & Jinks, C. (2018). Saturation in qualitative research: Exploring its conceptualization and operationalization. *Quality & Quantity, 52*(4), 1893-1907. https://dx.doi.org/10.1007%2Fs11135-017-0574-8

Secules, S., McCall, C., Mejia, J., Beebe, C., Masters, A. S., L. Sánchez-Peña, M., & Svyantek, M. (2021). Positionality practices and dimensions of impact on equity research: A collaborative inquiry and call to the community. *Journal of Engineering Education*, *110*(1), 19–43. https://doi.org/10.1002/jee.20377

Sharp, C., Adamali, H., & Millar, A. B. (2016). Ambulatory and short-burst oxygen for interstitial lung disease. *Cochrane Database Systematic Review, 2016*(7), 1-27. https://doi.org/10.1002%2F14651858.CD011716.pub2

Shosha, G. A. (2012). Employment of Colaizzi's strategy in descriptive phenomenology: A reflection of a researcher. *European Scientific Journal*, *8*(27), 31-43. https://doi.org/10.19044/esj.2012.v8n27p

Siltanen, H., Aine, T., Huhtala, H., Kaunonen, M., Vasankari, T., & Paavilainen, E. (2020). Psychosocial issues need more attention in COPD self-management education. *Scandinavian Journal of Primary Health Care, 38*(1), 47-55. https://doi.org/10.1080/02813432.2020.1717087

Smalley, K. R., Aufegger, L., Flott, K., Holt, G., Mayer, E. K., & Darzi, A. (2019). Which behavior change techniques are most effective in improving healthcare utilization in COPD in self-management programmes? A protocol for a systematic review. *BMJ Open Respir Res, 6*(1),

Tassone, B. G. (2017). The relevance of Husserls' phenomenological exploration of interiority to contemporary epistemology. *Humanities and Social Sciences Communications, 3*, 28-37, https://doi.org/10.1057/palcomms.2017.66

Toma, J. D. (2011). Approaching rigor in applied qualitative research. In C. F. Conrad & R. C. Serlin (Eds.). *The SAGE handbook for research education: Pursuing ideas as the keystone of exemplary inquiry* (2nd ed., p. 263). SAGE.

Tufford, L., & Newman, P. A. (2010). Bracketing in qualitative research. *Qualitative Social Work, 11*(1), 80-96. http://dx.doi.org/10.1177/1473325010368316

Vignato, J., Inman, M., Patsais, M., Conley, V. (2021). Computer-assisted qualitative data analysis software, phenomenology, and Colaizzi's method. *Midwest Nursing Research Society*, *25*(2), 71-76. https://doi.org/10.1177/01939459211030335

Waatevik, M., Johannessen, A., Real, F. G., Aanerud, M., Hardie, J. A., Bakke, P. S., & Eagan, T. M. (2016). Oxygen desaturation in 6-min walk test is a risk factor for adverse outcomes in COPD. *European Respiratory Journal, 48*, 82-91. https://doi.org/10.1183/13993003.00975-2015

Weiss, M. G., Ramakrishna, J., & Somma, D. (2006). Health-related stigma: Rethinking concepts and interventions. *Psychology, Health & Medicine, 11*(3), 277-287. https://doi.org/10.1080/13548500600595053

Williams, H. (2021). The meaning of "phenomenology": Qualitative and philosophical phenomenological research methods. *The Qualitative Report*, *26*(2), 366-385.

https://doi.org/10.46743/2160-3715/2021.4587

Wojnar, D. M., & Swanson, K. M. (2007). Phenomenology: An exploration. *Journal of Holistic Nursing, 25*(3), 172-180. https://doi.org/10.1177/0898010106295172

Woo, S., Zhou, W., & Larson, J. L. (2021). Stigma experiences in people with chronic obstructive pulmonary disease: An integrative review. *International Journal of Chronic Obstructive Pulmonary Disease*, *16*, 1647-1659. https://doi.org/10.2147/copd.s306874

World Health Organization. (21, June 2021). *Chronic obstructive pulmonary disease (COPD)*. https://www.who.int/news-room/fact-sheets/detail/chronic-obstructive-pulmonary-disease-(copd)

Wright, B. W. (2004). Trust and power in adults: An investigation using Rogers' science of unitary human beings. *Nursing Science Quarterly, 17*(2), 136-146. https://doi.org.10.1177/0894318404263303

Xu, M. A., & Storr, G. B. (2012). Learning the concept of researcher as instrument in qualitative research. *The Qualitative Report*, *17*(42), 1-18. https://doi.org/10.46743/2160-3715/2012.1768

Young, H. M., Apps, L. D., Harrison, S. L., Johnson-Warrington, V. L., Hudson, N., & Singh, S. J. (2015). Important, misunderstood, and challenging: A qualitative study of nurses' and allied health professionals' perceptions of implementing self-management for patients with COPD. *International Journal of Chronic Obstructive Pulmonary Disease, 10*, 1043-1052. https://doi.org/10.2147/COPD/S78670

Zwakman, M., Weldam, S. W., Vervoort, S. C., Lammers, J. W., & Schuurmans, M. J. (2019). Patients’ perspectives on the COPD-GRIP intervention, a new nursing care intervention for COPD. *BMC Primary Care, 20*(78), 1-8. https://doi.org/10.1186/s12875-019-0957-0

Appendix A: Interview Guide

My name is Sarah Evans. I would like to take a moment to thank you for your participation in this interview session. You have already consented to participate in this interview and understand that it will be recorded. The purpose of this interview is to explore the perceptions of COPD patients with exertional hypoxemia, regarding the effects of the addition of supplemental oxygen on your life.

This interview session will take approximately 45 to 60 minutes.

After examining your answers and analyzing this data, some of your answers will be shared with my faculty members who are working with me on this study.

Demographic questions:

Please share your gender, age, and duration of supplemental oxygen use

Initial research question:

I would like to begin by asking you to describe your experiences with using supplemental oxygen.

Possible sub-questions or prompts:

1. Describe what is it like to use supplemental oxygen to manage your medical condition.
2. Have you encountered any difficulties with using supplemental oxygen?
3. What are some benefits of using supplemental oxygen?
4. Based on what we have already discussed, is there anything else you would like to share about your use of supplemental oxygen to treat your medical condition.

Thank you for taking the time to be interviewed. After reviewing this interview transcripts, I may need to schedule a follow-up interview session if any additional questions arise. I will leave you with my contact information, should you feel that you have any further information that you would like to add, please reach out to me.