2020

Lived Experiences of Medical Coders Who Work Remotely in a Sedentary Environment

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Walden University
2020

Abstract

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MHA, Seton Hall University, 2005

BS, Temple University, 1978

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Health Services

Walden University

February 2020

Abstract

Sedentary behavior is a public health issue which may increase the risk of mortality. The work environment is critical to the success of reducing sedentary behavior due to the amount of time spent in the workplace. Excessive sitting during work hours may perpetuate sedentary behavior of medical record coders that may result in adverse health outcomes. There is a lack of understanding of the lived experiences of coders who work in sedentary home environments toward their perspectives of the effect that sitting may have on their health. The purpose of this descriptive phenomenological study was to understand the lived experiences of medical coders who work in sedentary home environments. The study was guided by Thosar and Gabbard's eco-behavioral model of sedentary behavior. Data collection for this qualitative study included 1-on-1 interviews of 12 home-based medical record coders using open-ended questions. The Colaizzi method of data analysis was used to identify themes. Five themes emerged from the data analysis which included the coders methods of coping with sedentary behavior, the effects of the workload on sedentary behavior, the health impact of sedentary behavior, strategies to decrease sedentary behavior, and participant suggestions to decrease sedentary behavior. Results indicated that the impact on the health of participants as well as strategies to cope with sedentary behavior varied according to the individual participant. Positive social change may be found in this study in understanding the experiences of medical coders as to the health hazards of sitting and personal coping mechanisms.

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Dedication

This dissertation is dedicated to my Lord and Savior, Jesus Christ, and Matilda Deans.

Table of Contents

List of Tables

List of Figures

Chapter 1: Introduction to the Study

Introduction

Sedentary behavior increases the risk of mortality. The fourth leading risk factor for death due to physical inactivity is sedentary behavior, accounting for 3.2 million deaths globally, per year (World Health Organization, 2010). The amount of time spent sitting is associated with death, regardless of participation in moderate to vigorous physical activity (Chau et al., 2015; Kikuchi, Inoue, Odagiri, Inoue, & Sawada, 2015; Matthews et al., 2012; Parry & Straker, 2013; Van der Ploeg, Chey, Korda, & Bauman, 2012). Participation in moderate to vigorous physical activity does not protect the risk of mortality caused by sedentary behavior (Matthews et al., 2012). The impact of sedentary behavior on the health of the population is a healthcare concern.

Studies have shown that spending significant hours in sedentary behavior can affect health outcomes. Researchers found that people sitting more than 10 hours in one day may increase their risk of dying by 40% over a 3-year period compared with individuals sitting less than 4 hours (Van der Ploeg et al., 2012). There is a direct association between sedentary time, colon, breast, endometrial, ovarian, and colorectal cancer incidence, mortality incidence, and cardiovascular disease mortality (Biswas et al., 2015; Boyle, 2012; Thorpe, Owen, Neuhaus, & Dunstan, 2011). Adults who spend more time in sedentary behavior increase their risk for Type 2 diabetes compared with adults who spend little time in sedentary behavior (Wilmot et al., 2012). Sedentary behavior has been shown by scientists to be harmful to the global population (Thosar & Gabbard,

2013). The global population continues to be sedentary during working hours, making the occupational sedentary behavior a component of public health concern.

The occupational environment is critical to the success of reducing sedentary behavior due to the number of hours workers spend in their work environment. Occupational sitting is a major contributor to the overall exposure to sedentary behavior accounting for 81.8% of an employee's hours worked (Coenen, Gilson, Healy, Dunstan, & Straker, 2017; Parry & Straker, 2013). Occupational sitting is a health concern with 80% of jobs being sedentary and, since 1960, jobs with moderate physical activity decreased 30% (Bush, 2018). Medical record coders sit for 8 hours per day when performing the job of coding medical records and a survey of all health information technicians, including coders, revealed that they sit continually 66% of the time (O Net Online, 2017). Many coders work at home or remote locations (Miller & Ridpath, 2010). Projections indicate decentralization of the traditional health information management department by 2025, with the continued performance of medical record coding functions in the home of employees (Dimick, 2012). As the U.S. population ages, the demand for healthcare will increase, creating a 15% increase in the employment of medical records and health information technicians from 2014 to 2024 (Bureau Labor Statistics, 2016; Dimick, 2012). As the demand for the coding workforce increases, studying the work environment is necessary.

Numerous studies focused on strategies to support positive health outcomes by decreasing occupational sedentary time. These studies include the effects of active workstations, studies outlining the effectiveness of interventions to decrease sedentary

behavior, and studies comparing work break strategies (see Hall, Mansfield, Kay, & McConnell, 2015; Loitz, Potter, Walker, McLeod, & Johnston, 2015). Researchers concluded through qualitative study that the perceptions of employees and employers on the work environment should be considered before implementing changes that reduce sedentary behavior in the workplace (Cole, Tully, & Cupples, 2015). Qualitative research on the perceptions of workers on sedentary work environment interventions have been conducted (Cole et al., 2015; Hadgraft et al., 2016; Jancey & Leavy, 2016; Mackenzie, Goyder, & Eves, 2015, Taylor et al., 2013). However, I was unable to find qualitative studies on sedentary behavior of employees who work from home. A qualitative study may outline the gap in the current literature by reviewing perceptions of medical record coders. Revealing the perceptions of medical record coders working in the remote sedentary environment will contribute to positive social change. Positive social change may also be impacted by adding to the body of knowledge of the medical record coding workforce, the health information profession and the healthcare industry on employee work environments and employee health and wellness. Chapter 1 outlines the contents of the study.

Chapter 1 includes the background of the study, the problem statement, and the purpose of the study. The research questions, the theoretical framework, and the nature of the study are also outlined in Chapter 1. A list of definitions, the assumptions, scope, limitations, and significance of the study are provided in Chapter 1, which is concluded with a summary of the study.

Background of the Study

Non sedentary work life is essential for maintaining overall good health. Occupational sedentary time is a major contributor to the exposure to sedentary behavior (Parry & Straker, 2013). The first evidence of the adverse effects of occupational sedentary behavior, discovered in research in 1958, revealed that when compared to physically active workers such as postmen, bus drivers' risk for experiencing death from heart disease was higher (Morris & Crawford, 1958). Researchers who studied railroad workers in 1962 found that men in sedentary railroad jobs had a higher incidence of coronary heart disease when compared with men in active physical railroad jobs (Taylor et al., 1962). Many of the studies after this time focused on physical activity instead of sedentary behavior (Biswas et al., 2015). Workers in sedentary jobs for more than 10 years have two times the risk of developing cancer of the colon (Boyle, Fritschi, Heyworth, & Bull, 2011). Information on the perceived experiences of working in a sedentary environment may provide knowledge that may be useful in decreasing sedentary time.

Medical record coders often work at home and sit for 8 hours per day which puts their health at risk. By the year 2025, there will be a 15% increase in the demand for medical record coders (Dimick, 2012). Protecting the health of medical record coders is essential to the U.S. healthcare delivery system since the cost of health care for hospital workers is 9% higher than the overall U.S. workforce (Taylor & Bithoney, 2012). Workers and employers should provide input into the implementation of any strategies or interventions targeting the reduction of sedentary behavior (Cole et al., 2015). This

qualitative study may provide insights into the lived experience of working in a sedentary environment, which may be essential to the quality of life of medical record coders. The literature search resulted in identification of qualitative studies on sedentary behavior reduction (Coenen et al., 2017; Cole et al., 2015; Hadgraft et al., 2016; Waters et al., 2016). These studies did not include the lived experiences of employees.

The focus for some qualitative studies was on public opinion. One qualitative study included the public response to a public health guidance statement on workplace sedentary behavior that failed to obtain public input when developing the guidelines (Gardner, Smith, & Mansfield, 2017). Other qualitative studies included the perceptions and benefits of booster breaks and sit-stand workstations but did not address the lived experiences of employees in a sedentary work environment (Graves, Murphy, Shepherd, Cabot, & Hopkins, 2015; Jancey & Leavy, 2016; Taylor et al., 2013). Qualitative inquiry of workers on the feasibility of decreasing sitting time in the office was helpful with reducing sedentary behavior but did not address lived experiences. There is a gap in the knowledge of what the lived experiences of medical record coders entail. The goal of this study was to provide insight into this gap by asking open-ended questions to coders about their lived experiences working in a sedentary home environment.

Problem Statement

Excessive sitting during work hours perpetuates the sedentary behavior of medical record coders which may lead to poor health outcomes. Research has revealed that occupational sitting is a major contributor to a worker's overall sedentary behavior (Parry & Straker, 2013). Medical record coders sit for 8 hours per day in a home sedentary work

environment, isolated from the organization, which puts coders at risk for poor health outcomes (Chau et al., 2015; Kikuchi et al., 2015). The research problem was that there was a lack of understanding of the lived experiences of coders who work in a home occupational sedentary environment. Research on sedentary behavior has focused on interventions with very few qualitative studies on perceptions of workers. There was a lack of research on medical record coders' perspectives about how their homework life may affect their health or longevity. This study may provide information that fills this gap in the existing literature.

Purpose of the Study

The purpose of this qualitative study was to understand the lived experiences of medical record coders who work at home in an occupational sedentary environment. Extensive research indicates that occupational sedentary behavior increases the risk of mortality for employees (Parry & Straker, 2013). The information obtained from this study fills the gap in the literature on the coders' perception of working in a sedentary home environment. This current study also contributes to the existing body of knowledge that is used to evaluate how to sustain the workforce, secure the future health of the medical record coding profession and present knowledge that will assist in the reduction of occupational sedentary behavior. This study focuses on medical record coders who have been working in a sedentary home environment for at least 4 years and offers information and insight into working in a sedentary home environment.

Research Questions

RQ1: What are the lived experiences of coders who work remotely, at home, in an occupational sedentary environment?

RQ2: What are coders perceived effects of sitting for 6-8 hours per day on their health?

RQ3: What strategies, as perceived by coders, can be implemented to decrease sedentary behavior in the home-based sedentary work environment?

Theoretical Framework

The theory of this study was the eco-behavioral model of sedentary behavior, which includes the occupational domains where sedentary behavior occurs. The model also includes a behavioral component, the health belief model, which targets sedentary behavior to address the individual decision-making process to act against adverse health outcomes of sedentary behavior (Thosar & Gabbard, 2013). The model provides a framework to gain an understanding of the perceptions of medical record coders by framing questions regarding workplace environments and the decision-making process to act against the sedentary behavior. Based on the model, the inquiry into the coders' experiences in a home occupational sedentary environment is captured and outlined in detail.
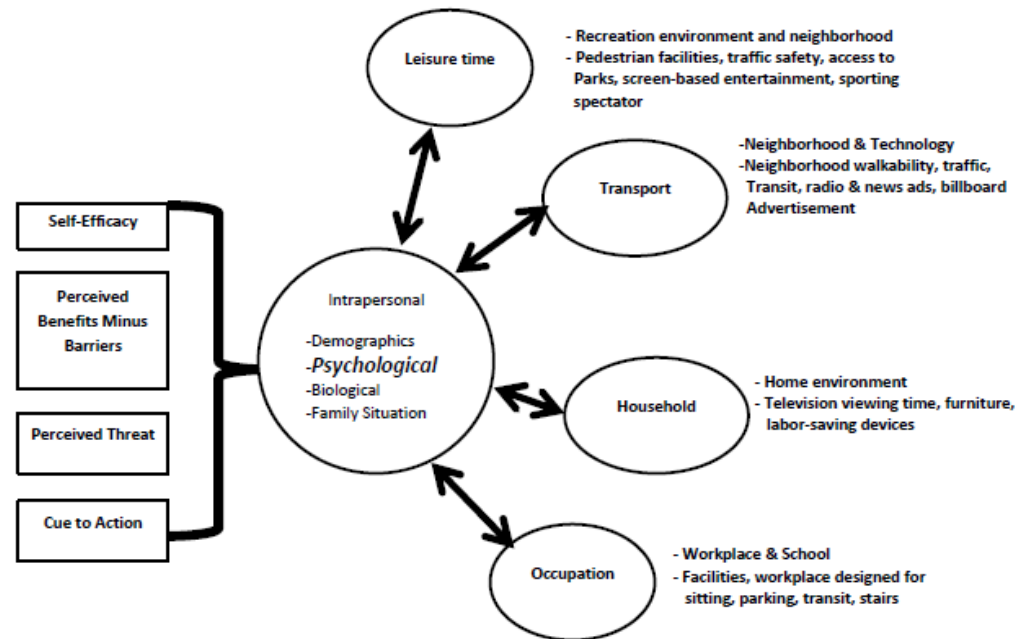
Figure 1. Targeting sedentary behavior: Eco-behavioral framework

Nature of the Study

The nature of this study is qualitative with a descriptive phenomenological approach. I explored the perceptions of medical record coders living in an occupational sedentary environment. I also explored the coders' opinions of the effects of sitting for 8 hours per day. The themes of the perceptions of the coders and the decision-making process to act against sedentary behavior were captured and used to provide insight into the phenomenon of occupational sedentary behavior.

Definitions

The following terms are used in this study:

Coders: Workers classified in job classification 29-2071, United States Department of Labor, who code patient health information to record treatment history for insurance billing, registries, and databases (Bureau of Labor Statistics, 2016).

ICD-10-CM Classification System: System used to assign codes to diagnoses and procedures that a patient had during hospital inpatient care (McDermott & Coplan-Gould, 2013).

Medical records and health information technicians: Workers classified in job classification 29-2071, United States Department of Labor, who perform jobs in the health information management profession (Bureau of Labor Statistics, 2016).

Mortality: The proportion of deaths to a population (Biswas et al., 2015).

Outsourced coders: Medical record coders who work for a vendor contracted by a hospital to code the hospital's medical records (Saponaro, 2016).

Sedentary behavior: Any waking behavior characterized by an expenditure of energy ≤1.5 metabolic equivalents (METS) while sitting or reclining (Tremblay et al., 2017).

Assumptions

Underpinning this study was the assumption that coders who work at home would voluntarily share their lived experiences as they pertain to the phenomenon of working remotely in an occupational sedentary environment for long periods of time. I assumed that there are perceived effects of sitting for 6-8 hours, and it may affect the health of medical record coders. In addition, I assumed that coders would express their perceived strategies for decreasing sedentary behavior and these strategies may facilitate the reduction of sedentary behavior. I assumed that the findings of this study could increase visibility of occupational sedentary behavior and compel lawmakers and employers to adopt policies that facilitate the reduction of sedentary behavior. I assumed that the information obtained from the participants will add to the body of knowledge of health information professionals to improve the quality of life of this workforce and other sedentary workforces around the world.

Scope and Delimitations

This study was limited to credentialed medical record coders who are certified coding specialists, or certified professional coders with 4 or more years of coding experience working in a remote home environment. This study included coders who work for hospitals, sit for 6-8 hours per day, do not use active workstations, and code inpatient hospital records. Excluded from this study were hospital-based medical record coders and

coders who work for outsourced companies. Outsourced coders work for an outsource

company and this study was focused on the perspective of coders who work for hospitals.

In this study, I emphasized the need to obtain the coder's perceived effects of working in

a sedentary environment and addressed the perceived wellness of remote coders. This

study may be transferrable to other sedentary jobs for telecommuters in the healthcare

industry as well as jobs outside the healthcare industry. The experiences of medical

record coders will be utilized to improve sedentary behavior for the global workforce.

Limitations

The design of the study may be a limitation. I invited coders who work in New

Jersey, New York, Pennsylvania, and Florida to participate in this study; therefore, the

study may not be generalized to all coders in the United States. My current knowledge as

a manager of remote coders and my role as the primary study instrument presented a

possible risk for bias. I used the process of research reflexivity and bracketing which is

careful thought and constant awareness of my own bias which may influence the outcome

of the research. To avoid bias, the process of reflexivity and bracketing allowed me the

opportunity to ensure that the voice of the respondents was the focus of the research.

Significance

These study results provide knowledge of the perceived lived experiences of

medical record coders on extensive sitting which may lead to poor health outcomes.

Studying the perceived lived experiences of coders is important to the healthcare industry

due to the coders' responsibility for submitting ICD-10 diagnostic and procedural codes

that are used to generate the hospital bill and provide statistical information for medical

research globally (Bureau of Labor Statistics, 2016). As the U.S population ages, there

will be a 15% increase in the employment of health information technicians from 2014 to

2024 (Bureau of Labor Statistics, 2016; Dimick, 2012). To become proficient in coding, a

year of continuous work is necessary to gain knowledge and skill which requires a

significant investment in coders by employers. Therefore, it was essential to study the

health of coders from an environmental perspective by asking those in the work

environment how they perceive their environment from a sedentary behavior and health

perspective, to develop best practices and policies.

This study has the potential to provide information that may be used to establish

best practices and policies for the occupational environment of remote medical record

coders. This study provides useful information to make recommendations to the industry

on developing requirements for counteracting sedentary behavior. The results of this

study may be used to inform policymakers on public health guidelines, state, and federal

labor policies that address sedentary behavior in the workplace. The results of this study

may also be an impetus for legislation by labor relations and The Joint Commission

requirements for human resources in hospitals. The healthcare industry may be

particularly interested in health outcomes of its workforce adding the results of this

research to the body of knowledge that my influence changes in employee wellness

practices. Information found through the results of this research may provide information

to influence turning sedentary environments into active ones.

Positive social change implications are significant for the medical record coding

profession. Research conducted for the first time on the sedentary behavior of medical

record coders who work at home is needed. This study provides an avenue to hear coders express how they perceive their work environment and how they feel about the effects on their health. The plan is to disseminate study results at healthcare conferences so that widespread knowledge can take place and effect positive social change on how employers develop workspaces. The study will be presented to peer reviewed journals for publication and further dissemination to a global audience.

Summary

Chapter 1 included an introduction to sedentary behavior and the phenomenon of the perceptions of the lived experiences of medical record coders in a sedentary work environment. Background information was outlined to explain the early research on sedentary behavior in the workplace, the statement of the problem, purpose of the study, and the research question was posed. The eco-behavioral model of sedentary behavior was introduced, the nature of the study, and definitions to highlight key concepts. The assumptions underpinning the study, the scope and delimitations, limitations, and the significance of the study to the healthcare industry was outlined.

Research findings have revealed that occupational sitting is a major contributor to sedentary behavior however there has been little to no studies on the perceived lived experiences of coders who work at home in a sedentary environment. This study reviewed the medical record coding profession that has experienced a trend of employees working at home. This is a gap in the sedentary behavior literature which reveals a lack of understanding of the phenomena of lived experiences of medical record coders who work at home in a sedentary work environment. There was a need to study the

occupational sedentary behavior of medical record coders due to the link between

sedentary behavior and the risk of death (Parry & Straker, 2013). Chapter 2 is a

comprehensive literature review which supports the need to address the gap in the

literature. Chapter 3 outlines the design of the study which includes an introduction, the

research design, role of the researcher, the methodology, participant selection criteria,

instrumentation, analysis of data, issues of trustworthiness, and ethical procedures.

Chapter 4 outlines the results of the study including the field study, the setting, the

demographics of the participants, the data collection process, and the study results. The

evidence of trustworthiness, credibility, transferability, dependability, and confirmability

are also outlined in Chapter 4. Chapter 5 includes key findings, interpretation of the

findings, limitations of the study, recommendations, implications for positive social

change, and the final conclusions.

Chapter 2: Literature Review

Chapter 2, the review of current literature, includes an exhaustive search of scholarly works related to occupational sedentary behavior. Chapter 2 consists of five sections. Section 1 outlines the search strategy that was used to collect the needed articles. The second outlines the underpinnings of the theory that guides this study. The third describes literature related to sedentary behavior and mortality, chronic illnesses, sedentary behavior of medical record coders, and strategies to decrease sedentary behavior. The fourth section outlines qualitative studies involving lived experiences with a phenomenological approach. The fifth section provides a summary of the literature review.

Sedentary behavior may be an occupational hazard. Occupational sedentary behavior accounts for most of the exposure to sedentary behavior in a 24-hour day; thus, the study of occupational sedentary behavior is essential (Parry & Straker, 2013). A qualitative study of a segment of the healthcare workforce, such as medical record coders, has potential to provide information on the lived experiences of coders, which may be used to affect positive social change. Qualitative studies on the reduction of sedentary behavior have not focused on the lived experiences of medical record coders or other employees who work in a sedentary home environment (see Coenen et al., 2017; Cole et al., 2015, Hadgraft et al., 2016, Waters et al., 2016). The goal for this study was to provide information as stated by coders on the lived experiences of coders working in a sedentary home environment.

The perceptions of employees who work in a home environment may be added to the body of knowledge through this study. This information is needed to maintain the medical record coding workforce due to increased demand for employment of coding professionals over the next ten years (Bureau Labor Statistics, 2016; Dimick, 2012). Over the next decade, medical record coding functions will continue to be performed in the home of coders increasing the need to study the work environment (Dimick, 2012). Examining the perceptions of medical record coders provides information that may contribute to the knowledge of how coders view their work environment and how it affects their health.

Some hospital-based jobs require sitting for more than 6 hours per day. Medical records and health information technicians, job classification 29-2071, Bureau of Labor Statistics (2016), are an ideal group of hospital employees to target for interventions to reduce sedentariness. Medical records and health information technicians review the accuracy, availability, quality, and security of electronic health records, and code patient health information to record treatment history for insurance billing, registries, and databases (Bureau of Labor Statistics, 2016). In 2014, medical records and health information technicians primarily worked in hospitals or physician practices and held approximately 188,600 jobs (Bureau of Labor Statistics, 2016). As the U.S population ages, there will be a 15% increase in the employment of health information technicians from 2014 to 2024 (Bureau of Labor Statistics, 2016; Dimick, 2012). This study affects social change by focusing on the perceptions of coders who spend hours sitting in front of computers coding diagnostic information recorded in electronic health records.

Medical records and health information technicians are at health risk due to increased sedentary behavior resulting from the implementation of electronic health records (EHRs). As of 2015, 95% of critical access hospitals and 93% of small rural hospitals in the United States have adopted EHRs (Office of the National Coordinator for Health Information Technology, 2016). EHR adoption has caused the function of retrieving and filing paper medical records to be obsolete, resulting in a significant decrease in physical work activity for medical records and health information technicians, including coders (Dimick, 2012). EHR adoption has affected the sedentary behavior of coders, a subclassification of health information technicians, as well. The purpose of this descriptive qualitative study is to gain an understanding of coders' health beliefs; the lived experiences of coders who work from home in a sedentary work environment, and how they perceive the effects of sitting for 8 hours per day. The information obtained from this study fills a literature gap regarding recommendations to reduce sedentary behavior of coders who work remotely for hospitals. This study also informs other hospital employees in sedentary jobs on how to decrease sedentary work behavior. Information discussed in this chapter includes the introduction, literature search strategy, the eco-behavioral theoretical framework, occupational sedentary behavior and obesity, the sedentary work environment of medical records and health information technicians, strategies to decrease occupational sitting, summary, and conclusion.

Literature Search Strategy

I searched multiple databases to identify literature about the sedentary behavior of coders. The initial search was with the Thoreau database, which includes a broad range of

articles and journals. The databases included Academic Search Complete, CINAHL Plus with Full Text, MEDLINE with Full Text, SAGE Knowledge, SAGE Premier, SAGE Research Methods Online, ScienceDirect, SocINDEX with Full Text, Springer e-books, Taylor and Francis Online, Teacher Reference Center, Walden Library Books, and Web of Science (Walden University, 2016). The search also included the Health Science database, which represents Medline, CINAHL Plus with text, ProQuest Nursing and Allied Health Source, ProQuest Health, and Medical Complete, PubMed, and Science Direct (Walden University, 2016). The search in all databases was limited to full-text peer-reviewed articles published from January 1, 2012, to January 1, 2018. The keywords searched were *electronic health records, sedentary behavior and occupational and health care workers, health information management (HIM) professionals, medical records health information technicians, HIM professionals and sedentary work environment, HIM professionals and sitting, HIM professionals and sedentary behavior, sedentary behavior and computers adults, obesity costs workplace, and sedentary behavior workplace costs, sedentary behavior occupational, sedentary behavior and workplace, and qualitative*.

Theoretical Foundation

The theoretical framework for this study was the eco-behavioral model of sedentary behavior that combines the health belief model and the ecological model of sedentary behavior. The health belief model was established in the 1950s by social psychologists employed by the United States Public Health Service to explain changes in and maintenance of behaviors and why people did not wish to participate in preventive

disease programs (Das & Evans, 2014; Kohler, Nilsson, Jaarsama & Tingstrom, 2017).

Sallis, Cervero, Asher, and Henderson (2006) developed the ecological model including

four domains of active living, occupational activities, household activities, active

transport, and active recreation to apply to the promotion of physical activity. Owen et al

(2011) built upon the ecological model of active living by developing the ecological

model of sedentary behavior which outlined the four domains where sedentary behavior

is likely to occur: leisure time, household, transport, and occupational. The health belief

model and the ecological model of sedentary behavior were combined and adopted by

Thosar and Gabbard (2013) to create the eco-behavioral model of sedentary behavior.

Sedentary behavior is behavior that involves prolonged sitting, which is not counteracted

by physical activity (Thosar & Gabbard, 2013). Adults who participate in physical

exercise or meet the World Health Organization 2016 guidelines of 150 minutes of

moderate to vigorous exercise per week do not decrease the effects of prolonged sitting

and are still at risk for poor health outcomes due to sedentary behavior (World Health

Organization, 2016).

The eco-behavioral model of sedentary behavior includes the sedentary behavior

domains of leisure time, active transport, household activities, and occupational activities

that are useful in developing interventions for short-term sedentary behavior reduction

(Thosar & Gabbard, 2013). The design also incorporates the health belief model, which

provides long-term solutions to reduce sedentary behavior (Thosar & Gabbard, 2013).

The health belief model is widely used in research to guide interventions for health

behavior. Research has shown that it is an excellent model for long-term solutions for

sedentary behavior reduction (Kohler et al., 2017). The health belief model has several key constructs that predict why an individual will initiate action to control and prevent illness, such as susceptibility, severity, also referred to as perceived threat, benefits, barriers, prompts to action, and self-efficacy (Das & Evans, 2014; Hoseini, Maleki, Moeini, & Sharifirad, 2014). Factors such as age, gender, ethnicity, knowledge, action on a health behavior that they perceive as a threat to health (Thosar & Gabbard, 2013). The beliefs of coders may affect their perception of sedentary behavior on their health status and may influence their ability to initiate action to reduce sitting time. Coders who work at home may develop a community of support that the health belief model along with the ecological model may provide insight. This may result in opportunities to make long-term changes to sedentary behavior in the workplace.

The ecological model of sedentary behavior focuses on interaction with the environment. I focused this study on the home-based work environment and the effects of the environment on sedentary behavior. The ecological model takes into consideration the influences of many factors including interpersonal, intrapersonal, community, organizational, and policy on health behavior in the environment (Andersen, Gustat, & Becker, 2015; Peek, Ferguson, Roberson & Chin, 2014; Thosar & Gabbard, 2013). Researchers linked barriers to physical activity such as the lack of parks, sidewalks, crime, and grocery stores to sedentary lifestyles, diabetes, and obesity (Peek et al., 2014). The ecological model of sedentary behavior addresses environmental factors of the workplace that may include furniture designed for standing, access to public transportation, neighborhood walking design, and building design and offers multiple

levels of interventions to change behavior and produce changes in the sedentary behavior of populations (Ding et al., 2012). Likewise, the sedentary work environment of medical records and health information technicians may have barriers to physical activity which may contribute to sedentary behavior. Identifying and using community and organizational resources to obtain alternative workstations, scheduled sitting breaks, or computer prompts may support employees in making behavioral changes.

Researchers used the ecological model to study factors that influence the sedentary behavior of four focus groups at senior centers in Canada where participants were engaged in sedentary and physical activities (see Tam-Seto, Weir, & Dogra, 2016). Researchers found that strategies to reduce sedentary time should consider the accumulated sedentary time domain as well as programs with a motivational mental stimulant to change behavior (Tam-Seto et al., 2016). Identifying sedentary behavior within the occupational domain does not address the necessary action required by the population to change behavior. The ecological model that has been used by the federal government for smoking, diet, and physical activity is ideal for developing interventions for populations (Ding et al., 2012; Thosar & Gabbard, 2013). One constraint is that the ecological model does not account for why the individual decides to participate in a health behavior.

The eco-behavioral model, which combines the ecological model of sedentary behavior and the health belief model gives researchers an opportunity to make environmental changes in the domains in which they occur (Thosar & Gabbard, 2013). I focused this study on the occupational domain and the cognitive changes needed to make

long-term behavior changes (see Ding et al., 2012; Thosar & Gabbard, 2013). The eco-behavioral theory requires research which will apply the newly developed theory to interventions to determine the effectiveness of the theory (Thosar & Gabbard, 2013). The eco-behavioral theory was selected as an ideal theory to study the work environment for coders who work in sedentary jobs. I focused my study on long-term solutions to change behavior by addressing the occupational domain of the environment and reviewing the perceived threat to employees. The eco-behavioral model may review interventions that address the occupational domain of the workplace such as the design of the furniture and building, sitting breaks, and other workstations.

The health belief model incorporation may be used to determine the perceived susceptibility of coders for sedentary behavior and the perceived severity of sedentary behavior for risk of chronic illnesses and death. The eco-behavioral model may also address cues to action such as reminders to use the stairs or take breaks from sitting; with guidance on occupational lifestyle, changes may increase (Thosar & Gabbard, 2013). Coders may also identify benefits to decreasing sedentary behavior as well as occupational barriers. The eco-behavioral theory may be used to develop strategies to reduce identified sedentary behavior in the workplace.

Strategic development may include reviewing the occupational domain and inquiring on the perceived challenges of working with electronic health records by examining the theory model, furniture designed for sitting, building design, and stairway design. The eco-behavioral theory can ground the question of what the perceived susceptibility and severity or threat is for sitting for 8 hours per day and what can be

implemented to decrease the health risks of sedentary behavior. The theory model may

provide an understanding of the perceptions of medical record coders by framing

questions regarding workplace environments and the decision-making process to act

against the sedentary behavior. The eco-behavioral model of sedentary behavior was

recently developed and is not widely tested. Due to the newness of this model, this study

will provide application of the eco-behavioral model of sedentary behavior and determine

effectiveness and suggestions for improvement of the model. This study will also provide

information on the effects of consistent sitting.

<div align="center">**Sitting**</div>

The chair is the source of sedentary behavior. Chair sitting can be lethal; sitters

have a 50% greater chance of dying when compared with those who are more active

(Levine, 2015). Occupational sedentary behavior is the major contributor to overall

sedentary behavior and is primarily a result of sitting. Levine (2015) found that a

worker's occupation is a dominant factor in their non exercise activity thermogenesis

(NEAT). NEAT is the energy expended during movements that are part of everyday

functions such as walking to work, using the stairs, yard work, or housework, which does

not include sports or gym-like activities (Levine, 2002). Lerner et al. (2013) also found

that NEAT increases resting energy expenditure and abdominal fat deposits.

Cardiovascular disease, Type 2 diabetes, obesity and other chronic diseases are a result of

excessive sitting (Levine, 2015). Reducing sedentary behavior may require a reduction in

the use of the chair over the course of a day.

Eliminating chair sitting may improve mobility. Suthar (2014) suggested that sitting is the new smoking and agreed with Levine (2015) that there is a NEAT defect in obese individuals due to energy intake being greater than the expenditure of energy. According to Hart (2015), sitting is the new smoking when referring to practitioners asking patients about their medical history. Asking patients if they smoke when collecting medical history is very important, and researchers suggest that asking patients how many hours in a day are spent sitting is equally as important (Hart, 2015, Villablanca et al., 2015). The use of chairs has caused individuals to limit the use of their legs and to be at risk for premature death and chronic diseases; researchers suggest that society must start moving (Suthar, 2014). A NEAT certified device, the HOVR provides a way to exercise legs using this under the desk device, while sitting throughout the day (Horswill, Voorhees, & Scott, 2017). Researchers found that use of the HOVR resulted in a 17.6% increase in metabolic rate when compared to sitting and a 7% increase when compared to standing (Horswill et al., 2017; Koepp, Moore, & Levine, 2017). Using the HOVR in a sitting position may enhance NEAT.

Sit-stand desks have been assessed on health benefits. One approach to reducing sitting time is the use of the sit-stand desk which allows workers to sit or stand while working (Shrestha, 2016). A systematic review of 20 studies revealed that the health benefits of sit-stand desks are uncertain and there is limited evidence to substantiate that standing at work can counteract the effects of a sedentary lifestyle (Shrestha, 2016). Since standing does not involve the expenditure of energy, a sit stand desk may not be effective in weight loss (Shrestha, 2016). Chau et al. (2016) assessed sit stand desks on

sitting, physical activity, and productivity and found that sit-stand desks increased standing time without reducing productivity. Ojo, Bailey, Chater, and Hewson (2018) conducted a systematic review of 3,303 articles to determine if active workstations affected the productivity of workers. The study revealed that sit-stand desks did not adversely affect performance however desk treadmills and cycling workstations hindered performance (Ojo et al., 2018). Studies have shown that excessive sitting can lead to chronic illnesses and devices such as sit-stand desks and other NEAT certified devices may decrease sedentariness.

Mortality

Sedentary behavior increases the risk of mortality. In a study of middle-aged females from high-income countries, researchers found that sitting for 10 hours per day increases the risk of death by 34% (Chau et al., 2013). Diaz et al. (2017) studied a population of middle-aged to older U.S. adults and found that the risk of death is increased with sedentary time and uninterrupted sedentary time, regardless of physical activity. Interrupting sedentary time in 30-minute intervals may counteract the effects of sedentary behavior (Diaz et al., 2017). Matthews et al. (2012) found that spending greater than 12 hours per day in sedentary time increased the risk of mortality in the black and white population by 20%-25% and increasing physical activity could be effective in reducing the risk of mortality among black men and women in the United States. Decreasing and interrupting sedentary time may decrease the risk of mortality.

Occupational sedentary behavior is a contributing factor in overall daily sedentary time. An examination of Japanese primary industry workers revealed that those working

in agriculture, forestry, and fishing had an increase in all-cause mortality with occupational sitting (Kikuchi et al., 2015). In another study of a Japanese population, researchers reviewed the association between mortality from cardiovascular disease and patterns of occupational physical activity and found that sitting has an adverse impact on mortality (Hayashi, Iso, Cui, & Tamakoshi, 2016). Standing and walking occupational physical activity is associated with a reduction in the risk of cardiovascular disease mortality for overweight individuals (Hayashi et al., 2016). The occupational physical activity of standing only, in physically inactive adults was associated with higher cardiovascular mortality (Hayashi et al., 2016). In a study of a multi-ethnic Singapore cohort, researchers focused on leisure, occupational, and other sitting domains to determine the factors that affect sedentary behavior, and revealed the need to focus on specific domains of sitting such as leisure and occupational, to determine the factors that affect sedentary behavior (Uijtdewilligen, Yin, Van der Ploeg, & Muller-Riemenschneider, 2017). The amount of occupational sedentary time may be a factor in reducing mortality.

There are studies which revealed that sitting time may not affect all-cause mortality. Researchers conducting the Whitehall II longitudinal study on British Civil Service employees reviewed sitting done at work, television sitting, leisure non television sitting, other leisure time sitting, and total sitting time over a 16-year period (Pulsford, Stamatakis, Britton, Brunner & Hillsdon, 2015). Previous researchers focused on single sitting time indicators or combined total sitting time only (see Chau et al., 2013). Researchers conducting the Whitehall II study reviewed an association between mortality

and five sedentary behavior indicators and found no association between mortality risk

and sitting time in this group (Pulsford et al., 2015). The high level of energy expended

among British Civil Service employees was due to active transport among London

employees (Pulsford et al., 2015). Mortality risk may not be related to the study group

due to the high activity level of employees in the transport sedentary behavior domain.

Chronic Illnesses

The risk of breast cancer may be increased with sedentary behavior. In 2014,

2,141 men and 236,968 women were diagnosed with breast cancer resulting in 465 and

41,211 deaths respectively (Center for Disease Control, 2018). The second most common

cause of death for White, Black, Asian, and American/Alaskan Natives is breast cancer

(Center for Disease Control, 2018). Researchers conducting a longitudinal study found

sedentary behavior is linked with depression, pain, and fatigue in survivors of breast

cancer and found a higher association among breast cancer survivors with low levels of

exercise (Trinh, Lancombe, Amireault, & Sabiston, 2015). Zhou, Zhao, and Peng (2015)

reviewed 21 qualitative studies and found the risk of breast cancer was increased with

sedentary behavior, with occupational sedentary behavior having a significant statistical

impact. Researchers found 66% of African American women who were breast cancer

survivors perceived that breaking up sedentary time would improve their health (Paxton,

Anderson, Sarkar, & Taylor, 2016). Increased sedentary behavior may have an adverse

effect on the risk of breast cancer.

Several cancers are affected by sedentary behavior. Colorectal cancer ranks

second in cancer deaths in the U.S. and in 2014, 139,992 people were diagnosed with

colorectal cancer (Center for Disease Control, 2018). There were 51,651 deaths in the U.S. due to colorectal cancer, 27,134 men and 24,517 women (Center for Disease Control, 2018). Researchers suggested that adopting physical activity and standing in the place of sedentary behavior improves the quality of life of colorectal cancer survivors however, further studies are needed to substantiate this (Van Roekel et al., 2016). Sedentary time reduction may impact colorectal cancer.

Sedentary behavior affects cardiovascular disease. Researchers found that in rural Americans a 30 minute per day reduction in sedentary behavior reduces the risk for cardiovascular disease (Saleh et al., 2015). Researchers found that standing for 5 minutes or more and doing light physical activity for 30 minutes or more are associated with low risk cardiovascular disease (Vasankari et al., 2017). Reducing sedentary behavior in the occupational domain may have an impact on cardiovascular disease globally.

The obesity problem has adversely affected the U.S. workforce. There has been a 2.5% increase in obesity in the United States from 25.5% to 28.0% during the years 2008-2015 that represents an increase of approximately 6.1 million obese adults (Healthways, 2016). Obese Americans cost $1,580 more per person in healthcare costs per year, overweight persons $378 totaling $142 billion each year for individuals who are above their normal weight (Healthways, 2016). One in four U.S. workers is obese with increased absenteeism, increased healthcare expenses, and lower productivity (Healthways, 2016). Targeting obesity and sedentary behavioral interventions for specific occupations has the potential to reduce costs for employers, employees, and the economy.

Obesity may hurt the attendance of workers. Obesity is responsible for 6.5%-12%

of the total amount of workplace absenteeism (Andreyeva, Luedicke, & Wang, 2014).

Researchers found that female employees with a body mass index (BMI) greater than 40

are absent one week more than their counterparts with normal weight (Andreyeva et al.,

2014). Researchers doing further study also found that obesity not only affected

absenteeism, but the effect was greater when the severely obese employee had diabetes

(Howard & Potter, 2014). Also, other researchers found that employees with a BMI

greater than 30 had the lowest productivity and the greatest number of short-term

disability days and expense (Kleinman, Abouzaid, Andersen, Wang, & Powers, 2014).

Targeting interventions which reduce obesity rates may improve employee attendance,

productivity, and reduce the number of days spent on disability.

A sedentary work environment affects obesity in women. Researchers

investigating the association between occupational sitting and BMI in working adults

revealed that for women, there was an increase in BMI when there was an increase in

sitting time when observed over a five-year period (Eriksen, Rosthoj, Burr, &

Holtermann, 2015). There was no association in occupational sitting and BMI for men.

However, men are interested in interventions which reduce sitting time (see Eriksen et al.,

2015). Focus groups of male university employees aged 35-64, revealed that participants

felt that physical activity should be incorporated into the culture of the university as a

necessary activity at work to promote healthy behavior, recognizing that physical activity

should be encouraged and endorsed by management (George, Kolt, Rosenkranz, &

Guagliano, 2013). Although occupational sitting effects obesity in women rather than

men, findings reveal that men welcome physical activity at work and feel that

management should support it.

Obesity prevalence varies from occupation to occupation. Associations between

obesity and work factors were reviewed to determine the obesity prevalence ratio

(Luckhaupt, Cohen, Li, & Calvert, 2014). Obesity is associated with employment in the

healthcare industry and office and administrative occupations, at a 32% prevalence rate

(Luckhaupt et al., 2014). This percentage is surpassed only by the utility occupation at

34.1%, transportation and warehousing at 33.1%, information industry at 33.1%, and

public administration at 36.3%, according to the 2007 North American Industry

Classification System (NAICS). The government and businesses in Mexico, Canada, and

the United States utilize NAICS to classify businesses (Luckhaupt et al., 2014).

Researchers revealed that the healthcare industry consists of many sedentary jobs and

reviewed the prevalence of obesity using the Standard Occupational Classification (SOC)

system from the United States Bureau of Labor Statistics.

When the NAICS system that includes workforces in the U.S., Canada, and

Mexico, and the SOC system that includes the U.S. workforce, were reviewed, there were

slightly different classifications, but both revealed that the healthcare industry is an ideal

group to study to bring about social change in sedentary work environments. Within the

NAICS system, the healthcare and social assistance industry, classification 62, represents

the highest number of people with a population of 17.8 million of which, 5.7 million

workers are obese (Luckhaupt et al., 2014). Within the SOC system, healthcare

practitioners and technical occupations in the 29-classification series, (which includes

coders, medical records and health information technicians, job classification 29-071),

had an obesity prevalence rate of 22.0%. (Luckhaupt et al., 2014). The healthcare support

occupations in the 31-classification series of the SOC system had an obesity prevalence

rate of 34.8%, with a population of classification 29 and 31 totaling 9.9 million workers,

which included 2.5 million obese workers (Luckhaupt et al., 2014). Medical

transcriptionists are also classified in category 31 which indicates that hospitals and

healthcare institutions are ideal environments to target obesity and sedentary behavior

among these work groups (BLS, 2016; Luckhaupt et al., 2014). Healthcare workers who

sit for extended periods of time are ideal for possible interventions which address

sedentary behavior.

Associated with many health-related issues is the sedentary work environment.

Occupational sitting is one major factor affecting the obesity epidemic in the United

States causing a 7% risk for overweight and obesity for every 2-hour increase in sitting

time (Tudor-Locke, Schuna, Fresham, & Proenca, 2014). Chronic illnesses associated

with obesity, high blood pressure, diabetes, depression, high glucose levels, and

musculoskeletal disorders are also associated with sedentary behavior which increases the

risk of poor health (Chau et al., 2015; Selby, 2015). After 90 minutes, sitting restricts the

blood flow to the lower body, fat breaking enzymes decrease function by 90%, electrical

nerve function in leg muscles decrease, calorie burn is reduced to one calorie per minute,

regardless of the amount of exercise per day (Selby, 2015). Moderate to vigorous

physical activity does not counteract the effects of sedentary behavior (Matthews et al.,

2012). However, researchers agree that exercise for 30 minutes and five days per week

for 150 minutes is recommended (see Levine, 2015). Sitting for long periods without taking a break compromises health, and medical record coders who work for hospitals will increase their sedentary behavior as hospitals continue to adopt EHRs.

Medical records and health information technicians employed by hospitals sit for 8 hours per day in the performance of job duties which is an occupational health hazard that contributes to obesity. Sedentary behavior accounts for 81.8% of worked hours, and the sedentary work environment impacts the health outcomes of employees (Parry & Straker, 2013). Health promotion counseling previously focused on moderate to vigorous exercise with little results, however, non exercise activity thermogenesis (NEAT) results in energy expenditure of an extra 2,000 kcal per day (Levine, 2015). Occupational NEAT assists in expending calories to improve individual obesity, decreases all-cause mortality, decreases cardiovascular problems, and should be included in physician-patient recommendations for care (Villablanca et al., 2015). NEAT promoting workstations are a viable intervention that may be implemented to reduce sedentariness and reduce obesity.

Research has shown that office work is hazardous to health due to the impact of sedentary time. Therefore, the reduction of obesity in the workplace may involve the interruption of sedentary time. Workers may use stepping device workstations, tags with walk and talk meeting in progress, printers and copiers away from workstations, using the stairs, walking to work, using standing desks, standing or pacing when using the telephone, and walking to lunch (Levine, 2015). Adhering to NEAT over time is more promising than adhering to exercise as evidenced by a Chinese study which compared NEAT and exercises to find that NEAT was easier to maintain than exercise for

adolescents (see Levine, 2015). These studies suggest that a reduction in occupational sitting time or sedentary behavior may reduce obesity.

Transportation workers who sit for extended periods of time are at risk for obesity and chronic illnesses associated with obesity due to the sedentary nature of the job. Thirty-three inner-city bus drivers in Queensland, Australia were recruited for a study to determine if workplace educational interventions were effective (Naug et al., 2016). Qualitative results revealed a heightened awareness of health and behavioral changes due to the educational intervention that reduced metabolic risks and improved the health outcomes of transportation workers (Naug et al., 2016). Workers became aware of the health risks associated with sitting for extended periods of time while at work. This qualitative study reveals that an inquiry of medical record coders towards interventions to reduce sedentariness may be feasible.

Sedentary Behavior of Medical Records and Health Information Technicians

This study will focus on medical records and health information technicians, job classification 29-2071, United States Department of Labor. Specifically, this study will target coders who work from home and are classified within job classification 29-2071, workers that code patient health information to record treatment history for insurance billing, registries, and databases (BLS, 2016). Medical Records and health information technicians work with electronic health records and have become sedentary with 95% of critical access hospitals and 93% of small rural hospitals in the United States adopting EHR's (Office of the National Coordinator of Health Information Technology [ONC-HIT], 2016. As the population ages, the demand for health care will increase creating a

15% increase from 2014 to 2024 in the employment of medical records and health

information technicians (BLS, 2016; Dimick, 2012). This study will focus on medical

record coders who are employed by hospitals but perform their duties at their home as

remote workers. The remote or home occupational environment is sedentary with coders

sitting for 8 hours per day in the performance of their duties.

Coders begin their workday by sitting at their computer to access electronic health

records and other computer systems to review clinical information (American Academy

of Professional Coders, 2017). There are two established coding professional

organizations, the American Academy of Professional Coders (AAPC) and the American

Health Information Management Association (AHIMA). The certified professional coder

(CPC) and the certified coding specialist (CCS) are the recognized coding credentials

required for employment in physician offices and hospitals (AAPC, 2017; AHIMA,

2017). The diagnostic and procedural information is coded by assigning ICD-10-CM

classification codes and entering the codes into a financial system that generates the

patient bill. This process is repeated during the 8-hour shift with interruptions only for

breaks and lunch and productivity standards are based on the type of records being coded.

Interventions may need to address the home physical environment for reducing

occupational sedentariness.

The physical layout of office and home space is an important factor in reducing

occupational sedentary behavior. The United States building specifications and codes do

not include criteria for promoting health and when there are campaigns to use the stairs,

buildings often are not in optimal condition to support efforts (McGann, Jancey, & Tye,

2013). Researchers found that occupational sedentary behavior policies and interventions should be tailored to individual occupations (Yang et al., 2017). This study will address the occupational sedentary behavior of coders who work from home since research reveals that occupational sedentary behavior policies and interventions will not be the same for each occupational group (Yang et al., 2017). The home environment of coders may be reviewed via interview for a self-report on the home environment regarding space layout and the effects on the health and sedentariness of coders.

Occupational Safety Health Policies and Guidelines May Improve Sedentariness

Workers may provide valuable information on the use of devices designed to decrease sedentary behavior. Researchers collected qualitative information on "Little Nudge" computer software which prompted workers to move or stand up (Tims, 2015). Researchers found that qualitative feedback provided evidence of increased self-reporting of movement (Tims, 2015). Researchers also found through qualitative inquiry that 66% of participants would use sit stand desks if offered by employers (Graves et al., 2015). Another group of researchers suggested that the perceptions of employees and employers should be considered when instituting changes that reduce sedentary behavior in the workplace (Cole et al., 2015). An additional study outlined the perceptions of workers on decreasing sedentary time in the office with similar themes being helpful with health promotion strategies (Hadgraft et al., 2016). Interviewing workers has been found to be effective in providing insight into the perceptions of workers on reducing sedentary behavior.

There are sedentary behavior interventions that may not be effective in certain work environments. Researchers found that qualitative inquiry of workers in a call center revealed that the demands of the job took precedent over adopting interventions that were designed to reduce sitting (Chau et al., 2016). However, another qualitative study outlined the views of employees and supervisors which revealed that sit/stand workstations were effective in the reduction of extensive sitting and was one of the first qualitative studies involving supervisor's and employees (Jancey & Leavy, 2016). Researchers reviewed office workers responses to a public health statement that indicated office workers should stand 2-4 hours per day and take breaks from sitting (Gardner et al., 2017). The qualitative responses from this study revealed employees questioned the validity of the guidance because they did not perceive sitting to be harmful (Gardner et al., 2017). Qualitative studies may be effective in revealing perceptions of office workers regarding sedentary behavior.

Medical record coders work at home and perform work duties in a sitting position which may result in poor health outcomes. This qualitative study may provide insight into the lived experiences of coders which may be useful in improving the sedentary work environment of coders who work at home. This study is needed due to the shift in workers moving to home based work environments, in isolation and often forgotten about by organizations. This may fill the gap in the literature due to the lack of information and research on the lived experiences of coders in a home environment.

Strategies to Decrease Sedentary Behavior

Interventions to counteract the effects of a sedentary work environment are essential to the viability of the hospital coding workforce. Researchers found that sedentariness is linked to health problems including cancer, premature death, heart disease, and metabolic syndrome which affect insurance costs, absenteeism, and work performance (Koepp et al., 2013). Researchers found that 20 overweight and obese physicians were willing to use treadmill desks which increased their daily activity and helped with weight loss; however, the effects on productivity were not reviewed (Thompson, Koepp, & Levine, 2014). Desk treadmills replaced traditional desks for one year, for employees with sedentary jobs to encourage physical activity and it was found that there was a decrease in sedentary time without affecting productivity (Koepp et al., 2013). Researchers found that cycling workstations facilitated physical activity without affecting typing performance (Elmer & Martin, 2014). Employees in Great Britain participated in a three-month pilot using the Power Plate Fitstop whole body vibration equipment which reduces the effects of sedentary behavior and is designed for use while wearing normal work clothing (Selby, 2015). The Power Plate Fitstop and similar equipment may help overweight and obese adults achieve a long-term reduction in sedentary behavior.

Interventions may have a positive effect on reducing sedentariness. Researchers tested an intervention on occupational sedentary behavior and work productivity, musculoskeletal discomfort, and biomarkers of cardiometabolic disease on overweight and obese adult workers in sedentary jobs who were randomized to two groups (Carr et

al., 2016). Ergonomic workstations and three emails per week were given to a health

protection group to promote variation and breaks (Carr et al., 2016). The health

protection/promotion group received the same intervention in addition to a seated activity

workstation which allows employees to pedal slowly while allowing computer typing

(Carr et al., 2016). The health protection/promotion group increased physical activity in

the workplace with activity workstations to levels that could compensate for occupational

sedentary time with adherence to the intervention resulting in increases in productivity

and health of employees (Carr et al., 2016). Sit-stand workstations were also found to

improve decreases in sitting time and continued use over a long period may improve

cardiometabolic risk in the workforce population (Carr, Swift, Ferrer, & Benzo, 2016;

Graves et al., 2015). Implementation of active workstations may reduce sedentariness.

Physical office layout and space may assist in reducing sedentariness. When

reviewing the impact of physical space on activity levels among white-collar workers,

researchers found that office workers are less sedentary when workstations are located

away from shared amenities such as copiers, the kitchen, restrooms, conference rooms,

and printers (Hua & Yang, 2014). Researchers found that the design of buildings in the

workplace addressed the impact of environmental interventions on sedentary behavior

such as the use of stairs (McGann, Jancey, & Tye, 2013). Inquiry into the physical office

layout of coders may reveal attitudes towards physical work environments.

Scheduled breaks designed to interrupt sitting may reduce sedentariness.

Researchers provided routine scheduled booster breaks designed to interrupt sitting in the

morning and the afternoon, and then administered open-ended questions regarding the

experience (Taylor et al., 2013). Based on qualitative responses, the booster breaks reduced stress, provided enjoyment, increased change in behavior, increased health awareness and improved interactions in the workplace including a hospital setting (Taylor et al., 2013). Researchers found that introducing passive prompts through the computer which required employees to stand up, was effective in increasing energy expenditure and reducing sitting time (Pedersen, Cooley & Mainsbridge, 2014). Mailey, Rosenkranz, Casey, and Swank (2016) also found that an effective strategy for reducing occupational sedentary time was taking frequent brakes. Providing booster breaks to coders may reduce sedentariness.

Coders may benefit from occupational motivational counseling for weight management. Across countries and companies, obese employees utilize more sick time and have higher costs than their non obese counterparts (Ford, Haskins, & Wade, 2014). Researchers found that employer sponsored motivational counseling for weight management could have an impact on the productivity and economic costs related to the population of obese workers (Ford et al., 2014). By 2030, obesity will affect 42% of the adult population (Lankford, Lang, Bowden, & Baun, 2013). Strategies included in the National Prevention Strategy that employers may implement to combat obesity are reducing sedentariness, adopting fitness breaks, walking paths, and exercise facilities (Lankford et al., 2013). Coders may provide information about interventions via qualitative inquiry.

Strategies may be suggested to coders in a qualitative focus review to determine their attitudes towards possible implementation of active workstations. The systematic

review of the literature showed that adults were willing to use active workstations which

indicates possible future changes in behavior (Torbeyns, Bailey, Bos, & Meeusen, 2014).

They further found that active workstations have a positive effect on energy expenditure,

waist circumference, and fat percentage and could contribute to decreased sitting time

and overall health but performance on computers and other cognitive functions was not

conclusive (Torbeyns et al., 2014). The systematic review of height adjustable

workstations revealed that for office workers, all studies showed a decrease in

occupational sitting (Tew, Posso, Arundel, & McDaid, 2015). Other researchers found

that activity workstations were an acceptable means of reducing sedentariness without

impacting work and health outcomes (Neuhaus et al., 2014). There was a lack of firm

conclusions on the effect of installing height adjustable workstations on sedentary

behavior therefore the effects on health outcomes were undetermined (Tew et al., 2015).

Stability balls and standing desks reduce sitting behavior but do not generate a

meaningful difference in energy expenditure (Tudor-Locke et al., 2014). Interventions are

effective in reducing sedentariness, therefore asking coders their opinions on

implementation in the homework environment may provide valuable information.

Descriptive Phenomenology

This study used the process of descriptive phenomenology which allows

individuals to describe their lived experiences of a phenomenon. Phenomenology

provides the framework for individuals to give meaning to the events in their everyday

life by describing their lived experiences and what it means to be human within the

context of the phenomenon (Harvey, Robinson, & Welch, 2017). Bacon (2017)

conducted a descriptive phenomenological study to describe the lived experiences of

hospital nurses treating surgical patients who died due to failure to rescue. Fourteen

nurses received semi-structured interviews ranging from 30-90 minutes using Colaizzi's

method for data analysis with the use of Husserl's bracketing method to eliminate any

preconceived ideas about the failure to rescue (Bacon, 2017). The study showed that the

time lapse between the failure to rescue incident and the time of the interview might

affect the accuracy of the participants recall and follow-up interviews resulted in only a

50% participation rate to validate responses (Bacon, 2017). This information highlights

the effectiveness of capturing lived experiences for incidences that occur before the study

and the possible participation rate to validate responses.

This current study collected data during the time that the participants were

experiencing coding from home who will be able to recall information. The Colaizzi data

analysis method also requires the seventh step which is to follow up with participants for

validation to ensure that what they intended to reveal is correctly stated (Edward &

Welch, 2011). A study on the lived experiences of 10 international students whose

family remained at home used a descriptive phenomenological approach in the tradition

of Edmund Husserl with interviews recorded and transcribed using Colaizzi's approach

to data analysis (Harvey et al., 2017). The study met credibility, dependability,

transferability, and trustworthiness research rigor, reaching data saturation after

interviewing eight participants and validating the last two participants (Harvey et al.,

2017). This study interviewed participants and ceased when saturation was reached.

Researchers conducted a descriptive phenomenology study using Husserl's approach on the lived experiences of Chinese women which provided new insight into the perceptions of immigrant Chinese women accessing Canadian maternity care (Lee et al., 2014). Interviews were conducted in the participants' language with bracketing which allowed for the stories to be told without language barriers (Lee et al., 2014). The researcher who conducted the interviews was fluent in Mandarin and translated and analyzed the data with other researchers (Lee et al., 2014). When interviewing immigrants, the credibility of the data increased when collected in the native language and avoided the possibility of misinterpretation. Descriptive phenomenology may be used in this study to allow coders to describe the phenomenon of lived experiences of working at home in a sedentary environment.

Summary

This study will inform the healthcare industry of suggestions to decrease sedentary behavior for coders. Coders are in a job classification that ranks high in the prevalence of obesity compared to other occupations. Therefore, coding is an occupation to target for reducing sedentariness. This study focused on coders who code diagnostic information. The inquiry into the sedentary environment may fill the gap in the literature on how to counteract the effects of a sedentary work environment for coders. Strategies to reduce sitting time include the use of treadmill desks, sit-stand desks, cycling workstations, vibration equipment, stability balls, seated activity workstations, automatic emails to signal breaks, fitness breaks, and booster breaks. Qualitative interview sessions grounded in the eco-behavioral theoretical model were used to query coders on their

attitudes and their suggestions toward interventions. The themes were evaluated to fill the gap on sedentary behavior interventions for coders who work from home. Open-ended questions were utilized to collect information to respond to the research questions.

Conclusion

Sedentary behavior has a significant prevalence among health care workers classified as coders, due to the sedentary nature of the job. This study focused on coders who worked from home to reduce occupational sedentariness. Coders should be aware of the health risks of sedentariness and should have the opportunity to provide input into strategies that will improve their work environment, reduce sedentariness and improve their overall health. This study helped gain an understanding of the lived experiences of coders who work from home and their perceived effects of sitting for 8 hours. This fills a gap in the literature regarding perceptions of coders who work from home. It is anticipated that sedentary behavior will increase as the health care industry provides options for coders to work from home. Occupational sedentariness is a phenomenon that is a global issue that affects many workers around the world.

Chapter 3: Research Method

Introduction

The purpose of this qualitative study was to gain an understanding of the lived experiences of coders who work from home in a sedentary work environment, their perceived beliefs about the possible effects of sitting for 8 hours per day, and their own suggested strategies to decrease the sedentary work environment. The information obtained from this study may begin to fill a literature gap regarding recommendations to reduce sedentary behavior of coders who work from home. This study may also inform other hospital employees in sedentary jobs on how to determine interventions that will reduce sedentary work behavior for their job classification and may contribute to a decrease in national and global occupational sedentariness. Information included in this chapter include the research design and rationale, the role of the researchers, methodology, issues of trustworthiness, and the summary.

Research Design and Rationale

A descriptive phenomenological design was used in this study to describe the lived experiences of medical record coders working in a sedentary homework environment. Phenomenology is a research methodology for the investigation of phenomenon as it presents in lived experiences (Abalos, Rivera, Locsin, & Schoenhofer, 2016). I selected a descriptive phenomenology design due to my focus on capturing descriptions from the coder's perspective on their lived experiences. Descriptive phenomenology was founded by Husserl who developed the method of phenomenological reduction or suppressing biases, beliefs, and assumptions about a

phenomenon under investigation, by removing from the researcher what is already known about the phenomenon (Abalos et al., 2016). Descriptive phenomenology consists of four steps. The first step is bracketing or removing anything that is already known about the phenomenon from the consciousness of the researcher (Abalos et al., 2016; Wuytack & Miller, 2011). Bracketing or transcendental subjectivity means shedding prior knowledge allowing for only a slight review of the literature to allow for unbiased or pure description (Abalos et al., 2016).

The second step of descriptive phenomenology is analysis (Abalos et al., 2016). Many studies that use Husserlian descriptive phenomenology employed Colaizzi 's method of data analysis (Abalos et al., 2016; Bacon, 2017; Lee et al., 2014). The data analysis method of Colaizzi includes seven steps (Edward & Welch, 2011). The first step of the Colaizzi method began with transcribing the interviews to capture information on the participant descriptions and then returning to the participant to validate the accuracy of the transcribed data (Edward & Welch, 2011). The second step included extracting key statements about the phenomenon from the narratives; the third step, arranging information in meaningful categories, and the fourth step, organizing categories into themes (Edward & Welch, (2011). The fifth step involved integrating results into a description of the phenomenon or coding statements, the sixth step involved rigorously analyzing the information, making an exhaustive description of the phenomenon (Edward & Welch, 2011). The seventh step, validating the findings by sending information back to the participants for review and validation (Abalos et al., 2016).

The third phase of the descriptive phenomenology method is intuiting or developing a sense of what it is like to experience the phenomenon (Parungao, Bautista, Mariano, Bonifacto, & Aguinaldo, 2014). The final phase of Husserlian descriptive phenomenology is describing the phenomenon in detail as outlined by participants (Abalos et al., 2016).

Research Questions

RQ1: What are the lived experiences of coders who work remotely, at home, in an occupational sedentary environment?

RQ2: What are coders perceived effects of sitting for 6-8 hours per day on their health?

RQ3: What strategies, as perceived by coders, can be implemented to decrease sedentary behavior in the home-based sedentary work environment?

In this qualitative study, I explored the phenomenon of working remotely from home in a sedentary environment for coding professionals who work for hospitals. The research tradition is descriptive qualitative phenomenology and I gained an understanding of the lived experiences of telecommuting coders. This tradition was selected to provide the framework for information on the experiences of coders in a sedentary work environment. I was the study instrument in the role of researcher.

Role of Researcher

As the researcher, I played the role of study instrument with involvement in every aspect of the study. Due to my prior knowledge, I ensured objectivity and was aware of potential bias during the interview process through reflexivity and bracketing which

involved putting aside any prior knowledge to allow for a pure description of information provided (Abalos et al., 2016). I designed the study, selected interview participants, transcribed and analyzed data, documented the findings, and interpreted the results for final presentation. Meeting the standards of the Institutional Review Board (IRB) by submitting an IRB application and obtaining approval before interviewing participants was essential. As the researcher, I also maintained the confidentiality of individual participants and ensured the protection of privacy throughout the study. I ensured that I did not have any personal or professional relationships with participants including supervisory, teaching, or any relationship that would constitute power.

Methodology

Participant Selection Logic

The population that I studied was medical record coders credentialed by AHIMA who have 4 or more years of coding experience working in a remote home environment. The years of experience is an indicator of knowledge with the phenomena and coders with 4 years of experience will be able to share their perceptions based on enough longevity. The medical record coders are those who sit for 6-8 hours per day, do not use active workstations unless they have been working for 2 years in a sitting position, and code inpatient hospital records. Excluded from this study are hospital-based medical record coders and coders who work for outsourced companies unless it is not their primary job. The exclusion of outsourced companies allowed for the focus to be on hospitals only. Participants were solicited from AHIMA's website which provides opportunities to post requests for study participants. I posted a recruitment letter asking

members who meet the criteria to contact me for screening. The communities that I selected were professionals from the Pennsylvania Health Information Management Association, Florida Health Information Management Association, New York Health Information Management Association, and New Jersey Health Information Management Association.

Purposive sampling was used to select participants. Purposive sampling which is based on the study objectives and the characteristics of the population allowed me to select medical record coders who have experience with working remotely in a sedentary environment (van Rijnsoever, 2017). Saturation is obtained when the researcher observes all codes in a population and saturation was at my discretion based on the exhaustion of new codes (van Rijnsoever, 2017). I interviewed 12 medical record coders who work at home or until saturation was achieved and the data gathering discontinued once saturation was reached. I posted the Recruitment Announcement (Appendix A) onto the state communities of the AHIMA Engage website to solicit participants from members of AHIMA. The interested participants were contacted by telephone for a screening interview and a face to face interview time was issued to the selected study participants. Face to face interviews were conducted after the letters of intent (Appendix C) and the informed consents were signed.

Instrumentation

The data collection instrument and source were an interview guide consisting of eight open-ended questions based on the research questions which are underpinned by the eco-behavioral model of sedentary behavior. A field study was conducted by three

experts in the health information profession who reviewed the interview questions to

determine the feasibility of the questions. The selected experts have 10 years of

experience as a hospital inpatient coding manager. Once the review was completed, the

interview guide was used to interview participants. I conducted face to face interviews of

each participant. I also audio-taped and then transcribed each interview.

Procedures for Recruitment, Participation, and Data Collection

Twelve participants were recruited from the AHIMA. The recruitment

announcement was posted on the AHIMA Engage community. The recruitment

announcement instructed potential participants to contact me for study information. A 10-

minute screening interview took place and participants were selected based on the

responses to the participant screening questionnaire (Appendix B). Once 12 participants

were selected and confirmed, an interview time was arranged with each participant.

Participants were interviewed using the participant screening questionnaire which

consisted of eight questions. Participants obtained a copy of the recorded information to

determine if it properly represents the information that they provided during the

interview. Participants were given an opportunity to contact me for revisions. All

participants were satisfied with the transcripts as issued, with no changes.

Data Analysis Plan

The questions in the interview guide were connected to a research question. The

Nvivo software and Colaizzi's seven step method of data analysis was utilized to analyze

the participants' description of the lived experiences. NVivo was used to code statements

of study participants and categorize themes pertinent to the lived experiences of medical record coders.

Step 1: Transcription of taped interviews were obtained from each participant (Edward & Welch, 2011; Hernandez-Hons & Woodley, 2012).

Step 2: Extraction of key statements of coders on working in a remote sedentary environment (Edward & Welch, 2011; Hernandez-Hons & Woodley, 2012).

Step 3: Formulation of meanings from extracted key statements (Edward & Welch, 2011; Hernandez-Hons & Woodley, 2012).

Step 4: Creation of groups of themes from formulated meanings (Edward & Welch, 2011; Hernandez-Hons & Woodley, 2012).

Step 5: Developed an exhaustive description from groups of themes created from the lived experiences of coders who work in a remote sedentary work environment (Edward & Welch, 2011; Hernandez-Hons & Woodley, 2012).

Step 6: Analyzed the exhaustive description to develop a statement that identifies the phenomenon of lived experiences of coders who work in a sedentary work environment (Edward & Welch, 2011; Hernandez-Hons & Woodley, 2012).

Step 7: Compared interview audiotapes with the transcribed documents to validate accuracy. Participants reviewed transcripts to ensure proper reflection of their statements (Edward & Welch, 2011).

Issues of Trustworthiness

Qualitative research must be dependable, reliable, and trusted. Trustworthy qualitative research conducted with rigor ensures that data analysis is exhaustive and

determines credibility by revealing detail about the analysis method (Nowell, Norris, White, & Moules, 2017). Putting outcome research knowledge into practice is essential. Therefore, trustworthiness assists researchers and stakeholders in having confidence in research to put it into practice (Nowell et al., 2017). Credibility, transferability, dependability, as well as confirmability are indicators of qualitative research trustworthiness (Nowell et al., 2017).

Credibility

To establish credibility of data, I used triangulation. Triangulation establishes credibility of data and reduces bias by using multiple sources of data to interpret findings (Renz, Carrington, & Badger, 2018). To further ensure credibility, I forwarded the interview questions to experts in the health information profession for review. Selected experts included coding managers with 10 years of experience supervising inpatient coders. This review process assisted me with ensuring that the data collected accurately responds to relevant research questions. I utilized triangulation or the adoption of several data sources to understand the lived experiences of medical record coders.

Transferability

Transferability or the generalization to other populations was determined once the findings were complete. Transferability to other sedentary jobs for telecommuters in the healthcare industry as well as jobs outside the healthcare industry may be possible. The experiences of medical record coders may be utilized to improve sedentary behavior for the global workforce.

Dependability

The design, approach, rationale, and methodology were outlined to explain

dependability and the quality of the collection of data. I used triangulation or the cross

validation using two or more sources.

Confirmability

To establish and maintain confirmability of results to ensure that the data is

obtained from the perspective of the participant, I used bracketing and reflexivity.

Bracketing is a process that addresses preconceptions that may interfere with the research

process (Tufford & Newman, 2012). Writing memos throughout the data collection and

analysis to examine and reflect upon my feelings about the research process to face

preconceptions rather than suppressing them was essential (Tufford & Newman, 2012).

Reflexivity and examination of one's preconceived notions, how they affect the

relationship to the participant, and impact answers to questions was considered (Hsiung,

2010). I was aware of the dynamics between the participant and I the interviewer.

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Ethical Procedures

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This research involved gathering information from human subjects which requires

approval from the IRB at Walden University. Obtaining IRB approval was done prior to

contacting participants. The Research Ethics Review Application requesting approval to

conduct research collects information that ensures the research is conducted following

ethical procedures. The IRB process ensured the integrity of the study. According to the

IRB process, participants were not permitted to be recruited, contacted, or consented

prior to IRB approval. This formal IRB process ensures compliance with Walden

University, regulations of the Federal Government, the protection of the human subject

study participants, as well as the protection of the university. The Walden University IRB

found this research to be acceptable and issued approval code 12-07-18-0073742 for this

study. The National Institute of Health (NIH), Office of Extramural Research certified

that I successfully completed training on protection of human subjects and issued a

certificate of completion, certificate #2366538. This certification demonstrates an

understanding of required ethical procedures.

A Recruitment Announcement, (Appendix A), was posted on the AHIMA engage

website for members to view. The Recruitment Announcement is a request to consider

participating in the study and outlines the participant criteria as well as the stipend that

will be given for participation. The Screening Questionnaire (Appendix B), was

forwarded by the researcher, to members who express an interest in participating. Once

the Screening Questionnaire was received by the researcher and reviewed for compliance

with the criteria, the possible applicant was contacted and forwarded a The Letter of

Intent (Appendix C). The Letter of Intent outlines the interview process and gives

potential participants an outline of what the study process entails and ensures

confidentiality. The Letter of Intent pointed the participant to the Informed Consent form.

The Letter of Intent outlines the study purpose, what will be asked of the participant,

including an outline of sensitive information to be asked. The Letter of Intent discussed

the nature of the study, the risks and benefits of participating, how confidentiality and

privacy is maintained, and contact information for future questions. The participant and

the researcher signed the Informed Consent form to represent their agreement to become a study participant.

The Qualitative Interview Guide (Appendix D), served as a guide to the interview process for obtaining information that responds to the research question "What are the lived experiences of coders who work remotely, at home, in an occupational sedentary environment?" The questions were designed to encourage the participant to share their personal story.

Collected data and information are stored in a secured system for 6 years with confidentiality and privacy maintained through de-identified information. A summary was provided to the study participants and research results will be available through Walden University designated databases. The study will be disseminated through a peer-reviewed health journal and through conferences where I will present findings.

Summary

Included in Chapter 3 is an introduction of the research method beginning with the purpose of the study. The research design and rationale were reviewed describing the phenomenon of the lived experiences of medical record coders working in a sedentary home work environment. Also outlined is the role of researcher, the methodology and issues of trustworthiness. Chapter 4 includes the analysis of the study results, followed with Chapter 5 which outlines conclusions and recommendations.

Chapter 4: Results

The purpose of this descriptive phenomenological qualitative study was to understand the lived experiences of medical record coders who work at home in a sedentary environment, to better understand how to sustain the workforce of the medical record coding profession, and to present knowledge that will assist in the reduction of occupational sedentary behavior. This study evolved from researchers who suggested that occupational sedentary behavior is a major contributor to a worker's overall sedentary behavior (Parry & Straker, 2013). Researchers also suggested that there is a direct association between sedentary time, colon, breast, endometrial, ovarian and colorectal cancer incidence, mortality incidence, and cardiovascular disease mortality (see Biswas et al., 2015; Boyle, 2012; Thorpe et al., 2011). A survey of coders revealed they sit continually 66% of the time and projections indicate that by 2025, coding functions will transition to a home-based environment (Dimick, 2012). From 2014-2024, there will be a 15% increase in the employment of medical record coders (Bureau Labor Statistics, 2016; Dimick, 2012). My research was based on the lived experiences of medical record coders working in a sedentary home environment to understand the challenges they face with sedentary behavior.

Chapter 4 is divided into sections including the field study, setting, demographics, data collection, data analysis, evidence of trustworthiness, results, and summary. In the first section, I will outline the field study which was conducted to ensure that the research instrument contained the necessary elements that experienced health information management professionals felt were appropriate based on their experience managing

coding professionals. This section also describes the research setting, demographic information of participants and the collection of data, followed by the data analysis, results of the study, evidence of trustworthiness, and the summary.

Field Study

Prior to conducting my study, I performed a field study to ensure that the research instrument, which consisted of eight open ended questions, was appropriate for the study (Appendix D). The field study was initiated with the recruitment of three experienced HIM professionals with coding management experience who were active members of AHIMA for at least 10 years. Each professional forwarded their resume for review to ensure that they met the criteria to review the study questions. The three experts reviewed the research questions. Two experts found the research questions to be suitable for the survey, one expert suggested including demographic data such as age, gender, years in healthcare, and years working remotely. This information was previously included in the demographic screening document. Another recommendation was to add questions about employers providing technology to decrease sedentary behavior. The question regarding recommended strategies to decrease sedentary behavior is open ended and designed to capture technology provided by employers, therefore the research questions were accepted as written. After the questions were confirmed for use, participants were recruited for the research study.

Setting

The interviews were conducted in a private office with no interruptions possible during the interview process which allowed participants to freely share their experiences.

Demographics

The population selected for this study was medical record coders who are credentialed by AHIMA, code inpatient hospital medical records, have 5 or more years of experience as a medical record coder, work for a hospital but work remotely at home for at least 4 years, do not work for an outsource company as their primary job, and do not use active workstations unless they have 2 years of working remotely in a sitting position. Table 1 displays the demographic information of each participant in the research study.

Table 1

Participants' Demographics

No.	Age	Gender	Active Workstation	Yrs. Coding	Yrs. Remote	Credential
001	41-50	Female	No	19	15	CCS
002	51-60	Male	No	16	8	CCS
003	61-70	Female	No	19	8	CCS
004	41-50	Male	No	20	4	CCS
005	41-50	Female	No	29	6	CCS
006	61-70	Female	No	25	7	CCS
007	51-60	Female	No	20	6	CCS
008	41-50	Male	No	18	4	CCS
009	51-60	Female	No	20	10	CCS
010	41-50	Female	1 year	20	13	CCS
011	51-60	Male	4 years	13	6	CCS
012	51-60	Female	No	15	8	CCS

Data Collection

The data for this study was collected using an interview guide instrument consisting of eight open ended questions. The interview questions were based on research questions which were underpinned by the eco-behavioral model of sedentary behavior. Three experts in the health information profession reviewed the interview guide instrument to determine the feasibility of the questions. Once the review was completed, the interview guide was used to interview participants. Thirteen participants were interviewed in a private office over a period of 8 weeks. One participant could not be used in the study due to not meeting the criteria. The interviews lasted an average of 30 minutes per session. I used the NVivo 12 Plus QSR International software to organize data and establish themes from the interview transcripts.

Descriptive phenomenology was used in this study to describe the lived experiences of medical record coders. A conscious effort was made to deploy the method of phenomenological reduction by suppressing what I already know about the phenomenon under investigation. Bracketing or shedding prior knowledge was employed to allow for unbiased description of experiences. Colaizzi's seven step method was used to analyze data and intuiting or developing a sense of what it is like to experience the phenomenon was employed (Abalos et al., 2016). The final phase of the Husserlian descriptive phenomenology was describing what was outlined in detail by the participants. While reading and reviewing the transcribed interviews, I used Colaizzi's method to identify main messages from the interviews which helped me to develop codes and themes.

Step 1: Transcripts

Each interview was taped and transcribed in the same format and reviewed seven times to fully understand the interview. I made notations on the transcribed interviews indicating ideas, repeated word phrases and comments, and any possible bracketing concerns. Twelve interviews were imported into the NVivo 12 plus qualitative program software in a Microsoft Word format.

Step 2: Significant Statements

Significant statements and phrases pertaining to the lived experiences of medical record coders who work remotely in a sedentary home environment were identified in this phase of the analysis. During this process, I identified significant statements that were repeated in each transcript and grouped them as significant, attaching a unit of meaning to those significant statements.

Step 3: Formulated Meanings

Units of meanings, which were developed from the significant statements of coders, were obtained from the textural data and developed into brief summarized explanations that described the excerpts. Nodes were assigned to the textural data and organized under the study research questions. Table 2 outlines the units of meanings that were developed from the significant statements.

Table 2

Significant Statements of the Lived Experiences of Medical Record Coders Working in a Remote Sedentary Environment and Strategies to Counteract the Effects of Sedentary Behavior

Significant Statements	Units of Meaning
I get back pain, neck pain, numbness and weakness in my hands, weight gain, it's a battle.	Participant's Experience with Sedentary Behavior. Participant views sedentary behavior as impacting health conditions.
I don't think it's had a negative impact on my health, it does make me and I do feel forced to go to the gym as soon as work is over so that I can get that movement in because I am not at a hospital running around but being sedentary here does push me to go to the gym a little bit more.	Participant's method of coping with sedentary behavior. Participant copes with sedentary behavior by counteracting the effects by going to the gym and using other strategies to generate movement.
Well as far as sitting and having the right furniture, you have to have that, you can't use any chair, you can't. You need to have that support, that's very important. You have to have the right type of furniture, with seating, and make sure, you're comfortable, that is kind of what I feel. I think it is good for people who are remote to get together at the local association level and at the national level and have support groups because this is growing and taking a life of its own. It is an important aspect of coding, it is a different type of atmosphere and it is good to share ideas and have these symposiums of remote coders, that would be sharing ideas, concerns, complaints and this way it can be channeled to the right people and I am sure there would be a lot of people giving ideas, giving recommendations and I would encourage more support groups and organizing them at these meetings, get a group of remote coders and have them share their ideas and complaints and how it can be made better by their employers.	Participants Strategies for decreasing sedentary behavior. Participants perceive that support for medical record coders on the local association level and national level would provide an an avenue to share ideas regarding sedentary behavior. Participants perceive that the proper equipment and regulations will improve sedentary behavior.

Step 4: Categories

Clusters and meanings were developed from the units of meanings obtained from the lived experiences of medical record coders. The purpose of Step 4 was to categorize the data into themes that reflect the experiences of medical record coders. In Step 4, the units of meanings were clustered to group similar units together into an overall experience. Table 3 displays how clusters were developed. I organized the units of meaning from significant statements of medical record coders into formulated clusters. The clusters which emerged were physical changes, social experiences, emotions, strategies, barriers, regulations, equipment, support, workload, diet, comparison to hospital based, daily routine and training. The formulated clusters were grouped into five themes that describes the lived experiences of medical record coders. Table 4 reflects the development of themes from formulated clusters which include the health impact of sedentary behavior, coping with sedentary behavior, the effects of the workload on sedentary behavior, strategies to decreasing sedentary behavior, and suggestions to decrease sedentary behavior.

Table 3

How Clusters Were Developed

Unit of Meaning	Developed Clusters
Back problems, manifestation of chronic health conditions, pain, weight gain, numbness, weakness in hands, decrease in blood pressure	Physical Changes
Loneliness, lack of social interaction, loss of friendship, isolation	Social Experiences
Calm, less stressed, determination, proper mindset, anxiety to produce, pressure, less distractions, fewer interruptions	Emotions
Stretching, exercise consistently, timing every ½ hour, sit near a window, getting dressed for work, adhere to a healthy routine, create atmosphere to avoid sedentariness, proper shoes for support, get up when record complete, walk for 30 minutes at mall after work for 7000 steps, in park weather permitting, gym membership, yearly physical	Strategies
Sitting all day, access to food, long stay record, eat while working, production affects breaks, heavy work load	Barriers
Regulate breaks, screen freeze twice a day to force getting up, app on phone, inspect coders worksite, standardize worksite, lock office, send video every 2 hours to force breaks, productivity goals compared to other hospitals, design regulations to help the individual	Regulations

Table 3 (continued).

Set up of computer, standing desk, shifting chair, blue ray protective glasses, VARIDESK, position of desk, eye & chair, good ergonomics, purchased own equipment to be healthy, purchased bigger screens, a standing desk and chair, vertical mouse	Equipment
Support groups at local & national association symposiums of remote coders, share ideas and complaints, communicate to employers, management has lunch and learn seminars at hospital which allows interaction with co-workers	Support
Diversity in charts, adjust distribution to include a variety of easy to difficult, distribution to avoid long term sitting, 10 difficult charts at times, I don't take a break like I should if I have a big volume chart	Workload
Eat small portions such as yogurt, apple or banana, tend to eat more at home, have a very small meal in evening, drink lots of water	Diet
Working from home you can create the atmosphere, temperature, desk, computer, lights, people come to work sick in hospital, more time to devote to exercise routine	Comparison to hospital based
Strict routine before work	Daily routine
Training about OSHA requirements and maintaining posture	Training

Table 4

Themes Developed from Clusters

Developed Clusters	Themes
Physical Changes, social experiences emotions, diet	Health Impact of Sedentary Behavior
Equipment, support, workload, daily routine	Coping with Sedentary Behavior
	Effects of the Workload on Sedentary Behavior
Strategies, barriers, regulations, comparison to hospital based, training, suggestions	Strategies to Decrease Sedentary Behavior
	Suggestions to Decrease Sedentary Behavior

Step 5: Exhaustive Description of the Phenomenon

In Step 5, the themes that were identified were used to describe the experiences of medical record coders with sedentary behavior. The results of the data analysis were described in an exhaustive description of the phenomenon of sedentary behavior.

Step 6: Fundamental Structure

In Step 6, the core themes were validated by the quotes from the participants.

Step 7: Validation of Exhaustive Description and its Fundamental Structure

In Step 7, I mailed the transcript to each participant with a mail tracking to ensure delivery. To ensure that statements were accurately reflected, I emailed each participant and asked for an email response within 7 days. There were no requests for changes to the transcripts.

Evidence of Trustworthiness

Qualitative research must be dependable, reliable, and trusted. Trustworthy

qualitative research conducted with rigor ensures that data analysis is exhaustive and

determines credibility by revealing detail about the analysis method (Nowell et al., 2017).

Trustworthiness assists researchers and stakeholders in having confidence in research to

put it into practice (Nowell et al., 2017). Credibility, transferability, dependability, as

well as confirmability are indicators of qualitative research trustworthiness (Nowell et al.,

2017).

Credibility

To establish credibility of data, I forwarded the interview questions to experts in

the health information profession for review. Selected experts included coding managers

with 10 years of experience supervising inpatient coders. This review process assisted me

with ensuring that the research questions were unbiased. The comments obtained from

the experts were reviewed and the research questions were accepted as written. I utilized

the Colaizzi seven step method to ensure the rigor of the data collection and the data

analysis process. To ensure a systematic process, the steps taken to contact participants,

conduct interviews, transcribe interviews, and annotate themes was outlined. I included

direct quotes from the participants transcribed text, in the data analysis of each research

question. I then forwarded the transcripts to participants for their review to ensure that

their comments were accurately reflected. I gave a deadline date for return of responses

and there were no requests for changes to the transcripts.

Transferability

Transferability or the generalization to other populations was determined to be possible once the findings were complete. Transferability to other sedentary jobs for telecommuters in the healthcare industry as well as jobs outside the healthcare industry is applicable. The strategies and suggestions of the participants may be utilized to improve sedentary behavior for the global workforce.

Dependability

The design, approach, rationale, and methodology were outlined to explain dependability and the quality of the collection of data. I used triangulation or the cross validation using two or more sources. Each participant was consistently asked the same interview questions. I depicted the lived experiences of medical record coders by using numerous quotations from their interview. The research design was outlined and the process was followed.

Confirmability

To establish and maintain confirmability of results to ensure that the data is obtained from the perspective of the participant, I used bracketing and reflexivity. Bracketing is a process that addresses preconceptions that may interfere with the research process (Tufford & Newman, 2012). Writing memos throughout the data collection and analysis to examine and reflect upon my feelings about the research process to face preconceptions rather than suppressing them was utilized (Tufford & Newman, 2012). I presented direct quotes from the transcripts to further ensure that the data was obtained from the perspective of the participant.

Study Results

During this study, the goal was to answer three research questions to gain an understanding of the lived experiences of medical record coders working in a remote, sedentary environment. During the analysis, five themes emerged.

Research Question 1

The following is in response to research question number one, "What are the lived experiences of coders who work remotely, at home, in an occupational sedentary environment? The participants in this study reported a range of experiences with working in a sedentary environment. The experiences varied according to their lifestyles and home situations however there were two themes that emerged from this question:

- Coder's Methods of Coping with Sedentary Behavior

- Effects of the Workload on Sedentary Behavior

Theme 1: Coder's methods of coping with sedentary behavior. Participants described their experiences of coping with sedentary behavior, sitting for long periods of time and in most cases 8 hours per day. Participants described coping mechanisms that counteract the effects of a sedentary environment. Most participants indicated that they get up and walk around after coding a few charts.

Participant 002M8 stated,

Well it's not that different than sitting at work because the nature of our work is, we have to sit for long periods time. I discovered that the best way to deal with this is every two charts, especially every two inpatient charts, you have to stand

up and maybe walk around. I live in a two-story family house and what I do is walk to the second story of my house.

Some participants indicated that they compensate it with a lot of activities such as physical exercise, walking, and going to the gym. Some indicate that working at home gives more opportunity to stand up. Some cope by using a kitchen timer to track the time. Participant 003F8 discussed coping methods stating,

I compensate it with a lot of activities, because I feel like I need to be active, compensate it with physical exercises and I get up early, like an hour and a half before I start working and I do exercise. Then I exercise when I finish work, I go to the gym. Yes, I take a walk at night with my husband, he likes walking, so we both walk at night. Sometimes I do exercise when I come back from gym, at home. I do special exercises for my back, I do yoga.

Participant 004M4 described coping methods used to counteract the effects of a sedentary environment by stating,

I don't really have much of a problem with it because I do have a daily routine because my hours are 2:00 pm to midnight, and as soon as my son leaves to school, I go to the gym for approximately an hour and a half to 2 hours where I do weight training and run about two miles a day so as far as being sedentary the rest of the day, it really hasn't affected me.

Participant 006F7 described methods of coping with sedentary behavior, stating,

Yes, I take out 15-minute breaks to get up and walk around and it does get me so that I am not stuck in that one position because I am sitting. I find I feel better

with my legs. I need to get up every 15 minutes unless I am in an account that is quite detailed, I will stay and finish it and then get up. Usually 15-20 minutes, walk around, go back to my chair, and that seems to work out well for me. It is challenging but I arrange my shift to be in the latter half of the day because I do all of my walking, all my exercise before 4 pm and then from 4 pm until midnight that's my work time. So that works for me. I find that starting the day at an 8-4 shift is not going to work for me, I don't have the ambition to exercise and do other things after the day shift. I find that the night shift is very good for me and it helps keep my weight down, I notice I am not gaining weight because I am doing all that activity before my shift which starts at 4 pm to midnight.

Participant 012F8 stated that coping is accomplished through short rest breaks, indicating,

I do not feel any negative impact from working remotely as an inpatient coder. I think that working remotely in the coding field is very beneficial. Working from home gives me a chance to stand up much more often and stretch and make very, very short rest breaks. Probably things that I wouldn't do working in a hospital.

Theme 2: Effects of workload on sedentary behavior. Participants describe the effects of productivity quotas, the length of inpatient records and their effects on break periods, and the issuance of diversity in length and type of records.

Participant 002M8 described the effects of the workload on sedentary behavior stating,

Sometimes when you have a productivity quota that you have to complete and thank God my employer prefers to have more of a quality than a quantity, but if

you are in a scenario where you have a productivity quota to complete, maybe at that point you may have to stay sitting for a longer time in order to complete your productivity. But if you are lucky enough to get in an environment that prefers quality than quantity, that can be your save. I work in inpatient so what I discovered is that charts for inpatient can be extremely longer, it can be in the middle or it can be really short. I would say that when it is a really long chart, I will say I try to complete half of the chart and then stand up and maybe go to my second floor and try to move. When there are short charts, maybe I can complete two or three short charts and use a kitchen timer that you use to cook. I set it up for maybe 20 minutes at a time, because one of the things that happens with coding is that you lose concentration with the time, it can be an hour and you don't even know it. The timer helps me out, it tells me every twenty minutes, it beeps, and I reset it and I count more or less how long I am spending in a chart.

Participant 003F8 described the effects of the workload on sedentary behavior and states,

Well it's the nature of the work, you have to sit, you have to eat, you can't do anything else while you are working. We have our productivity standards, I have to sit and read and that's what it is.

Participant 004M4 indicated,

You know the responsibilities of work, achieving the required productivity, things like that, it hasn't been a problem as I am able to focus more and there is less distractions. I am pretty good with my productivity and if I want to get up and walk around, I find more time like this.

Participant 005F6 described the effects of the workload, stating,

Well, if I have a big chart, I don't take a break as much, I will just continue

reading and getting my codes so that is probably one of the problems, I don't take

a break like I should if I have a big volume chart or a long day stay so that's the

only thing.

Participant 009F10 described the workload, stating,

Well this is the thing, if I have a large record like a long day stay, 50 or 80 day

stay, I like to get that done before getting up, if I have to finish it I will take my

time to finish it and then get up. I don't get up every 15, 20 minutes or every half

hour, I wait until I'm done with what I have to do and then get up.

Participant 010F13 described the workload, stating,

Productivity, that pressure, it's not like they pressure you directly but there's

pressure, and you feel it. I love my supervisor, but we have this much work and it

has to get done. They like to say that you have to take your break but if you want

the work done then I have to end up sitting through my break or grabbing

something to eat and sitting down in front of the computers and working and

eating at the same time.

Participant 012F8 discussed the distribution of the workload, stating,

At home, the complexity of the inpatient chart that we are coding, if it is a

difficult long stay chart, when I am coding the long complex inpatient chart I

avoid stopping and I try to finish coding this chart to the end. We as the coders are

always asking for the diversity in charts, we are not choosing our charts, the

charts are distributed to us and for the inpatient coder, it is very important to get

different charts, some easy, some difficult, some mothers and babies, some same

day surgeries so there are days when we are getting 10 very difficult charts, it

happens so this is the biggest barrier. Our happiness as a coder depends on the

people distributing the charts mostly, they are fair but sometimes it happens.

Research Question 2

The following is in response to research question number two "What are coders

perceived effects of sitting 6-8 hours per day on their health? The participants in this

study reported the effects of sedentary behavior on their health. There was one theme that

emerged from research question number 2.

- The Health Impact of Sedentary Behavior

Theme 1: The health impact of sedentary behavior. Participants described the

impact of sedentary behavior on their health as loneliness, weight gain, back pain,

overactive bladder, eye conditions, to no impact due to a daily routine and being able to

regulate the environment, decreased stress level and decreases in blood pressure.

Participant 001F15 described being at home alone stating,

Sometimes there is loneliness because I don't have anybody else around me that I

can turn to and "how was your day" or somebody that's just another person being

here because my kids are at school and my husband is at work, it's just me. So

there is loneliness associated with this. I don't think I've noticed any physical

changes.

Participant 002M8 indicated,

> No not physically, but I would say maybe I gained a little bit of weight because
>
> here in my house I have my fridge, my food, I kind of maybe gained a few pounds
>
> because I experienced food more than I would in another kind of environment.

Participant 004M4 described the impact of a daily routine indicating,

> I haven't really experienced anything different because now that I'm working
>
> from home, I actually have more time to devote to the exercise routine in the
>
> morning and I am actually in much better shape now than I was before when I
>
> worked on site. Sedentary work environment has not affected my health for the
>
> reasons I stated before, that I maintain a strict routine during the day in the
>
> morning before I start work. It hasn't affected me physically.

Participant 005F6 described weight gain, stating,

> I think I did gain a couple of pounds. I'm not as active but I do try to do the same
>
> thing as I said earlier like get up and walk or go to the ladies' room. I think at
>
> home I tend to eat more at my desk.

Participant 006F7 describes being proactive indicating,

> There has not been any significant physical changes because I try to get a hold on
>
> it before it gets out of hand. When I start to gain weight that means I am not
>
> exercising, so I watch my diet, I eat very light from 4 pm to midnight, I have a
>
> very small meal, I drink a lot of water and that helps with that. So that is the
>
> physical impact. The emotional impact, that I find, because I am isolated, I don't
>
> have that social interaction with my co-workers, and I do miss that. I get a yearly

physical and my blood pressure is excellent so with my weight, the doctor

commented that I lost 14 pounds from the last time. I had seen this one particular

doctor, that was two years ago, so I got a handle on that, I changed my diet to

mostly vegetarian until I can lose the weight and of course drink more water, and

I signed up for a program at the Y so I kind of have a handle on it right now, so I

feel pretty good about that.

Participant 007F6 describes the health impact, stating,

My stress level has gone down, my blood pressure has gone down. Physically,

there has been some weight gain from being at home and sitting. As far as my

health, there has been some weight gain because I have easier access to food, to

my kitchen but as far as my blood pressure, it has gone down and my pressure

was very high before when I had to travel and work in the office and now it is

lower. I actually feel more calm and less stressed.

Participant 008M4 indicates why there is no effect on health stating,

It hasn't because I try to stay very active, I work a lot, I keep getting up through

the day to drink water, staying hydrated, so those are the steps I take usually to do

my workday.

Participant 009M4 indicates,

It does affect my health in a way that I am the type of person that I sit 2-3 hours

before getting up, so I have what you call over reactive bladder and that's the

effect on me.

Participant 010F13 states,

I get back pain, neck pain, numbness and weakness in my hands, weight gain, it's

always a battle. I am trying to get back into the routine of exercising. When you work

from home sometimes and especially for myself, I work fulltime and part-time and I

could sit in front of the computer for 14 hours, sometimes and I also have kids and a

home, so exercising, fitting it in is hard sometimes. I can set a time, but I have to be

consistent.

Participant 011M6 also describes weight gain and counteracting the affects indicating,

Well mostly physical, when I was working on site I usually had to walk and since

I started working from home I realized that my weight gained a little bit, it was

creeping like another 5 pounds, 10 pounds so I decided I had to do something

about that so I had to create that home gym. I have a home gym downstairs, and I

have a stationary bike, I have a Bow flex system and I can exercise after work.

Emotionally, I am not that depressed because I have my co-workers if I need to

talk to them. I have several co-workers that I chat with, talk about work. It's not

more emotionally, I think mostly physically. Weight gain, I gained a bit of weight

after working from home but after a year of working from home I had to change

my lifestyle. After 10 hours of work I get out from home after I have my dinner I

go to the mall and walk for 30 minutes and I have a pedometer and I make sure I

have a minimum of 7000 steps per day to maintain my weight. If not, it's

depressing, if you don't go out, and stay home, after working 10 hours, it's going

to be depressing, especially when my wife works from 2 pm and I am alone. What

I do is go to the mall regularly after work and walk to clear out my mind and

that's the routine that I do every day. If the weather is nice, I go to the park, walk

in the park, there is a school nearby, there is an oval, I walk there for 30 minutes

if the weather is nice. That's how I maintain my healthy lifestyle. If I don't do

that, I know my health will deteriorate sitting down. Most of the time I stand up.

Half of the 10 hours I spend standing. I have to go to my ophthalmologist. I am

taking artificial tears from now on, after years of working the computer it affected

my eyes so badly that I have like a dry eye condition, chronic condition that I am

treating with artificial tears but that is the only way to stop taking tears is to stop

working.

Participant 012F8 described being in control of the environment and adjusting counteract the effects stating,

I think there is no such a thing as sedentary work if you are working from home, it

depends on the person. If you are giving rest to your eye, if you are stretching

your body, if you are eating small portions, it all benefits to the positive

perception, I don't feel that I am a sedentary worker and again I am working from

home and I am creating everything to my taste.

Research Question 3

Research question 3 was "What strategies, as perceived by coders, can be

implemented to decrease sedentary behavior in the home-based sedentary work

environment? There were many strategies and suggestions reported by medical record

coders based on their own personal experiences. Two themes emerged from this research question.

- Strategies to Decrease Sedentary Behavior
- Suggestions to Decrease Sedentary Behavior

Theme 1: Strategies to decrease sedentary behavior. Participants described several strategies that they use to decrease sedentary behavior including doing housework when taking breaks, getting up to stretch, get up once an hour, exercise, walking, yoga, going to the gym, weight training, going outside to get air. Other strategies included changing the diet, obtaining ergonomic furniture, riding a stationary bike, going out to lunch, walk outside to get fresh air, drinking water, obtain a standing desk with a shifting chair to make motion in core, obtain 32" screens to avoid eye strain, walk 7,000 steps, us an application to prompt movement, and stand up after coding every two charts. Participant 001F15 describes strategies to decrease sedentary behavior, stating,

> One of the things that I do is I work through and take my breaks towards the end of the day. Maybe splitting my day up more and having my lunch in the middle and then on my breaks, when I do stop and take a 15-20 minute break, I'll run around and make beds or do dishes or do something where I am not just sitting in the chair for 15 minutes until it's time for me to get back on the computer. I definitely have to get up and stretch. I am not sitting constantly. I do get up maybe once an hour to stretch my legs or go to the bathroom. You have to, otherwise you become glued.

Participant 002M8 indicated,

> I live in a two-story family house and what I do is walk to the second story of my
>
> house. I work in inpatient so what I discovered is that charts for inpatient can be
>
> extremely longer, it can be in the middle or it can be really short. I would say that
>
> when it is a really long chart, I will say I try to complete half of the chart and then
>
> stand up and maybe go to my second floor and try to move. When there are short
>
> charts, maybe I can complete two or three short charts and use a kitchen timer that
>
> you use to cook. I set it up for maybe 20 minutes, the timer, because one of the
>
> things that happens with coding is that you lose concentration with the time, it can
>
> be an hour and you don't even know it. The timer helps me out, it tells me every
>
> twenty minutes, it beeps, and I reset it and I count more or less how long I am
>
> spending in a chart.

Participant 003F8 stated,

> I compensate it with a lot of activities, because I feel like I need to be
>
> active, compensate it with physical exercises and I get up early, like an hour and a
>
> half before I start working and I do exercise. Then I exercise when I finish work, I
>
> go to the gym. Yes, I take a walk at night with my husband, he likes walking so
>
> we both walk at night. Sometimes I do exercise when I come back from the gym,
>
> at home. I do special exercises for my back, I do yoga, this and that and I like it.

Participant 004M4 described strategies,

> I don't really have much of a problem with it because I do have a daily

routine because my hours are 2:00PM to midnight, and as soon as my son leaves

the school, I go to the gym for approximately an hour and a half to two hours

where I do weight training and run about two miles a day so far as being

sedentary the rest of the day, it really hasn't affected me. For people to maintain a

routine and just because you work from home doesn't mean you should stop

doing some things. I make it a point to take a shower, get dressed as if I were

going to the office. Be prepared and if you do take a small break, step outside and

get some air and not staying in your pajamas all day and feeling more sluggish or

something.

Participant 006F7 indicated,

I changed my diet to mostly vegetarian until I can lose the weight and of course

drink more water, and I signed up for a program at the Y so I kind of have a

handle on it right now, so I feel pretty good about that. With the breaks of course

also, there is a desk where you can stand, I haven't tried that, I don't know if that

is any benefit versus sitting, it is an interesting concept to stand but I don't know

about that. So I make sure I have a comfortable chair that has good back support

because sitting properly with my feet flat on the floor, my computer at the right

eye length where I am not bending my neck down too much because I do have

some cervical vertebrae stenosis also so I try to align my eyesight, my back and

that helps a lot if you are going to be sitting. You need to have good ergonomic

conditions and it is worth investing in that and making sure you adhere to that. I

get no headaches and I attribute that to having my eyes checked, getting updated

on my vision prescription but also just sitting properly and taking my breaks from

that sitting position and doing everything to make yourself more comfortable and

conducive to work.

Participant 007F6 stated,

Getting up even if it is for a minute or two every hour just walking

back and forth little stretching and then when taking a break doing a little exercise

just walking or riding my sedentary bike or going out during my lunch time or

even just walking outside in the back for a few minutes to get fresh air.

Participant 008M4 indicated,

I also wear blue ray glasses to protect me from exposure to the monitors

for a long period of time, just try to stay fresh, awake and alert because reading

some of the electronic records that are very long, can make you very sleepy so

you have to pace yourself. Those are some of the challenges just right off the bat.

I work a lot I keep getting up through the day to drink water, staying hydrated, so

those are the steps I take usually to do my workday. I don't think I have any, I

think what is more important is determination, you have to make sure you stick to

a healthy routine when you work from home for instance getting up at the same

time every morning and some people feel it is necessary to take a shower and get

dressed in a certain way so I would say have the proper mindset. I would

recommend getting a standing desk and a shifting chair to help get not too

comfortable and to keep a little motion in your core. I think it has to do more with

the way you approach working from home, I think it is a personal thing, it is not

something that should be so much regulated. It is more in the attitude and the

approach that can help you remain an effective coder in an otherwise healthy

environment.

Participant 009F10 indicated,

I am thinking about getting the VARIDESK where you can stand up and sit and

also exercise. Avoid snacking too because the fridge is right next to you so going

to the fridge, avoid snacking. Well since I know the type of job that I do, sitting

all day, I do have a membership at the gym and as soon as I am done working, I

go to the gym. Getting up every hour or two would be a good thing.

Participant 011M6 stated,

 I decided to get a work sit stand desk and my chair and even brought some

computer screens, before my hospital gave me a 27 inch screen I decided to buy

my own 32 inch dual screen that I can use for my own self so my eyes will not be

strained because since working from home I developed dry eyes. Since I started

working from home I realized that my weight gained a little bit, it was creeping

like another 5 pounds, 10 pounds so I decided I had to do something about that so

I had to create that home gym, I have a home gym downstairs, and I have a

stationary bike, I have a Bow flex system and I can exercise after work. After 10

hours of work I get out from home after I have my dinner, I go to the mall and

walk for 30 minutes and I have a pedometer and I make sure I have a minimum of

7000 steps per day to maintain my weight. I figured it out, after a year of working

from home I figured it out. My cousin who used to be in California works at a

desk all day and she was the one who told me why don't you have a sit stand desk and I saw that desk so I ordered it right away, that's for me, I need that, I don't mind spending that money, I will put it in as a write-off on my tax as expenses. I know that the hospital will not provide it, we mentioned it to them, but they are not going to spend $400.99 for the desk. Even for the chair, I spend like almost about $700 brand new, I went to the used office warehouse and I got it for $250.00, it is a lift chair, it is a very nice ergonomic chair, it is being used in the hospitals I think, I just have to upgrade the pneumatic tube and I brought the ring and I brought the ring at the bottom so I can put my leg, so it's working fine and I love it and I have been suggesting it to my co-workers but some of them don't want to spend that kind of money to upgrade but I told them it's your health. I have a co-worker that has an app on her phone that every hour she has to drink water, move around, but for me I do it on the hour by 11:00, 12:00, I step out from my desk, walk around, get some water, go back to work. You can't just sit for three hours.

Participant 012F8 described strategies,

I do not feel the negative effects of sitting 8-10 hours working in the computer because I am stretching, I am taking frequent breaks, even taking a 1-minute break helps a lot. I don't feel any negative effects. I would recommend frequent small portions such as yogurt, apple or banana, we usually have a lunch break and we were overeating because you are coming back from break you will not have the luxury to have a snack every 40 minutes or 1 hour so my recommendation

would be small portions, very small portions, I mean the yogurt, juice, water and

of course stretching. Sometimes I am reminding myself that after every two coded

charts I have to stand up and stretch.

Theme 2: Suggestions to decrease sedentary behavior. Participants described

suggestions to decrease sedentary behavior including regulations requiring coders

to get up every 50 minutes and walk around, annual training on posture,

ergonomics, etc., to teach employees how to be healthy in the home environment.

Other suggestions included holding functions at the hospital for AHIMA

continuing education credits and socialization, emailing videos to coders to

provide mandatory breaks, freeze screens to provide forced breaks, develop

productivity standards that support sedentary behavior, provide a standing desk

and shifting chair to keep motion in the core of the body, purchase own standing

desk and chair, and organize remote coder support groups at AHIMA and local

organizations to share ideas and complaints.

Participant 001F15 described suggestions to decrease sedentary behavior, indicating,

Maybe they could regulate that every 50 minutes you get up for 10 minutes and

walk around or move around and you incorporate that into part of your workday

as you actually physically have to get up and move around, otherwise you forget.

Participant 002M8 suggested,

I would say, we get once a year, different kinds of training let's say,

about HIPAA regulations, OSHA requirements and this and that and I would say

it would be good to include this, I know there are some modules for example in

YouTube that emphasize that you have to keep your posture, keep your arms in a

correct way. I have this kind of protector for the wrist and keyboard and probably

most people know that but if it could put in one idea to have a refresher that

would be good. We get to the point that we have so many requirements and

regulations that it has to be something that it has to be looking a way that we

really want to help the person. The mouse I tried to get is a vertical mouse, it is

different than the normal mouse, to keep your hands a little bit vertical. That's

what I think for example that it could be regulated to teach in a way that everyone

is on the same page, it can help many employers.

Participant 003F8 stated,

Medical advice or suggestions, if you lead a sedentary style and you sit

for your work, every hour you have to get up and walk or stand for five minutes, I

think its medical advice, unofficial, I don't know. It would be good if hospitals

would implement that. Employees have to take lunch, let's say in our hospital

Human Resources says if you are working 5 hours you have to take lunch, 30

minutes for lunch and it could be like that for sedentary style, it could be if you

work sedentary every day, every hour you have to get up for five minutes and

walk, stand or something.

Participant 004M4 stated, "Mandatory breaks every so often to get up and stretch your

legs, walk around."

Participant 006F7 indicated,

> I will also reach out to my supervisor, so I do have a reach out system, but I do miss that social interaction with co-workers. My management does help alleviate that by having functions at the hospital where I can come in for a luncheon and with a luncheon comes a seminar s this way, I get my AHIMA points, I interact socially and educationally with my co-workers. It is an important aspect of coding, it is a different type of atmosphere and it is good to share ideas and have these symposiums of remote coders that would be sharing ideas, concerns, complaints and this way it can be channeled to the right people and I am sure there would be a lot of people giving ideas, giving recommendations and I would encourage more support groups and organizing them at these AHIMA meetings, get a group of remote coders and have them share their ideas and complaints and how it can be made better by their employers.

Participant 008M4 indicated,

> "I would recommend getting a standing desk and a shifting chair to help get not too comfortable and to keep a little motion in your core. I think it is a personal thing, it is not something that should be so much regulated. It is more in the attitude and the approach that can help you remain an effective coder in an otherwise healthy environment.

Participant 009F10 stated, "Getting up every hour or two would be a good thing."

Participant 010F13 stated,

"Maybe a screen freeze at certain times. The way our system is set up, if we're in

a record and you take too long, you get kicked out of the system and everything is

recorded and we are told that your every move, everything you look at, every

page they know how long you've been on it, people that are work conscious, it

gives me anxiety and I want to produce for them so it's always on my mind. If

they would at least twice in an 8-hour day, put a freeze on the system and that

forces you to get up and walk around.

Participant 011M6 described,

"I don't smoke and I want to have a healthy lifestyle so I decided on my own to

purchase the sit down standing desk that I can move down or up and I also

brought a nice ergonomic chair, it is a LIFT chair which is the brand, it is very

expensive but it is ergonomic that you can look for support in a chair, it's for my

own safety, the hospital does not provide them but I provide it for myself because

it is for my own health anyway. The hospital can send an email and sometimes

they send a video every two hours they do dancing for 5-10 minutes to take a

break. For us who work from home you do it for yourself.

Participant 012F8 indicated,

"I would like to have a productivity goal since we have a high productivity

expectation which makes us coders sit more and work more and other hospitals,

even the big hospitals in the area do not have the same high productivity

requirements."

Summary

The analysis of this study consisted of the review of the findings from three research questions to understand the lived experiences of medical record coders who work in a sedentary work environment. Working in a sedentary work environment affects the health of employees and participants in this study outlined some of the effects on their health. Many of the participants developed and implemented strategies to counteract the effects of a sedentary environment to maintain their health. The study participants also provided suggestions that employers could implement to improve the health of remote workers.

Summary of Research Question 1

RQ1: What are the lived experiences of coders who work remotely, at home, in an occupational sedentary environment?

There were two themes that emerged from the research to answer this question. The first theme was the coders method of coping with sedentary behavior. Participants discussed similar methods of coping and reported that they stand up, walk around, take short rest breaks, do physical exercise, go to the gym, train with weights, and use a timer to remind themselves to get up. Some participants also indicated that they don't see a problem with sedentary behavior because they have instituted a daily routine, they can set the environment to their liking and they are able to move more at home than working at the hospital.

The second theme that emerged was the effects of the workload on sedentary behavior. Participants describe the effects of productivity quotas on their ability to get up

and take a break. Participants reported that lengthy inpatient medical records create the barrier of having to remain seated until completing the coding of the record. Participants reported that a variety of record types such as easy, less complex and complex records are what is needed. When doing larger complex records, you have to meet productivity standards which may require delaying, not taking a break, or eating while working. Participants reported that they get up after the larger chart is complete and it may not be every 15 or 20 minutes. Participants indicated that they ask for diverse charts, mom and baby records which tend to be short hospital stays, some easy records and some difficult. One participant reported, there are times when ten difficult charts are distributed and that is a barrier to getting up.

Summary of Research Question 2

RQ2: What are coders perceived effects of sitting 6-8 hours per day on their health?

The theme that emerged from research question number 2 was the health impact of sedentary behavior. Participants described the impact of sedentary behavior on their health as loneliness, weight gain due to access to the refrigerator, overactive bladder, eye conditions, back pain, neck pain, numbness and weakness. Participants also reported decreased stress due to being at home, decreased blood pressure, no impact due to a daily routine and being able to regulate the environment.

Summary of Research Question 3

RQ3: What strategies, as perceived by coders, can be implemented to decrease sedentary behavior in the home-based sedentary work environment?

Two themes emerged from the research for this question. The first theme was strategies to decrease sedentary behavior. Participants described several strategies that they use to decrease sedentary behavior including doing housework when taking breaks, getting up to stretch, get up once an hour, exercise, walking, yoga, going to the gym, weight training, going outside to get air. Other strategies included changing the diet, obtaining ergonomic furniture, riding a stationary bike, going out to lunch, walk outside to get fresh air, drinking water, obtain a standing desk with a shifting chair to make motion in the core of the body, obtain 32" screens to avoid eye strain, walk 7,000 steps, obtain an electronic application to prompt movement, and standing after coding every two charts.

The second theme to emerge from the research was suggestions to decrease sedentary behavior. Participants described suggestions to decrease sedentary behavior such as regulations requiring coders to get up every 50 minutes and walk around, annual training on posture and ergonomics, to teach employees how to be healthy in the home environment. Other suggestions included holding seminars at the hospital for AHIMA continuing education credits and socialization, emailing videos to coders to provide mandatory breaks, and freeze screens to provide forced breaks. Other suggestions included developing productivity standards that support sedentary behavior, purchase standing desks and chairs to provide motion in the core of the body, organize remote coder support groups at AHIMA and local organizations to share ideas and complaints regarding working remotely. In Chapter 5, I discuss findings, suggest recommendations present the conclusion of the study.

Chapter 5: Discussion, Conclusion, Recommendations

Sedentary behavior is harmful to the global population who continues to be sedentary during working hours causing sedentary behavior to be a major component of public health concern. This study was conducted due to a direct association between sedentary time, colon, breast, endometrial, ovarian, and colorectal cancer incidence, mortality incidence, and cardiovascular disease mortality (see Biswas et al, 2015; Boyle, 2012; Thorpe et al., 2011). The risk for Type 2 diabetes is decreased for adults who spend less time in sedentary behavior (Wilcot et al., 2012). Since medical record coders sit for 8 hours per day, this study was conducted to contribute to the existing body of knowledge that is used to evaluate how to sustain the coding workforce and secure the future health of the medical record coding workforce.

I conducted this study due to the importance of sustaining the vital workforce of medical record coders. Occupational sitting is a major health concern with 80% of all jobs being sedentary (Bush, 2018). The demand for healthcare caused by an aging United States population will create a 15% increase in the employment of medical record and health information technicians from 2014-2024 (Bureau Labor Statistics, 2016; Dimick, 2012). As the demand for the coding workforce increases, the effects of sedentary behavior become vital to the future of the health care industry. The work that medical record coders perform determines how population statistics, research, and reimbursement in the United States continues to be captured in a timely manner and at a high quality.

I sought to understand the coder's perception of working in a sedentary home environment and the perceived effects of sedentary behavior on their health. The study

was also conducted to determine if there are strategies and suggestions that coders may offer to decrease sedentary behavior. The nature of the study was qualitative with a descriptive phenomenological approach. I explored the coders' opinion of sitting for 8 hours per day. The themes of the perceptions of the coders and the decision-making process to act against sedentary behavior were captured and used to provide insight into the phenomenon of occupational sedentary behavior.

Key Findings

In this descriptive phenomenological study, I explored the lived experiences of medical record coders working in a remote sedentary environment. Five themes emerged through the analysis of the coder interviews which were presented in Chapter 4. In this chapter, I discuss the key findings, by themes. The analysis of the first theme, coder's methods of coping with sedentary behavior, revealed that coders have taken action to cope with and counteract the effects of sedentary behavior by taking short rest breaks, standing up and walking around, doing physical exercise, going to the gym, training with weights, and using a timer to alert movement. Some participants indicated that they do not see a problem with sedentary behavior because they have instituted a daily routine to counteract the effects, they set their environment to their liking to allow for more movement. Coders indicated that they are able to move more at home than working in a hospital.

The second theme, the effects of the workload on sedentary behavior, revealed that the productivity quotas and the distribution of medical records affect the ability to get up to take a break. When coding larger complex records, participants indicated that they

remain seated until completing the larger medical records which may contribute to sedentary behavior. Larger complex medical records affect the ability to meet productivity standards which may cause a delay in taking a break, not taking a break, or eating while working. Participants indicated that in the distribution of records they see a lack of a combination of diverse medical records such as short stays, mother and baby records, records that are easy to code, and some difficult records as a barrier to taking a break from the workstation. One participant indicated that there are times when 10 difficult charts are distributed and that is a barrier to taking a break.

The third theme, the impact of sedentary behavior on the health of coders, was described by coders as loneliness, weight gain, back pain, overactive bladder, eye conditions, neck pain, numbness, and weakness. Participants also reported a decrease in stress and blood pressure due to having a daily routine and being able to regulate their environment.

The fourth theme, strategies to decrease sedentary behavior, were strategies that the coders have implemented to reduce sedentary behavior. Strategies included doing housework when taking breaks, getting up to stretch, getting up once an hour, exercising, walking, yoga, going to the gym, weight training, and going out to get air. Other strategies included obtaining ergonomic furniture, riding a stationary bike, going out to lunch, setting a timer while coding, drinking water, obtaining a standing desk with a shifting chair to decrease sitting, obtaining 32" screens to avoid eye strain, walking 7,000 steps per day, obtaining an electronic application to prompt movement, and standing after coding every two charts.

The fifth theme, suggestions to decrease sedentary behavior, were suggestions that the participants described to decrease sedentary behavior, based on their experiences. Suggestions included regulations requiring coders to get up every 50 minutes to walk around, annual training on posture and ergonomics to teach employees how to be healthy in the home environment. Other suggestions included emailing videos to coders to provide mandatory breaks, freeze computer screens to provide forced breaks, holding seminars at the hospital for AHIMA continuing education credits and socialization, developing productivity standards that support decreased sedentary behavior, organize remote coder support groups at AHIMA and local organizations to share ideas and complaints regarding working remotely, and purchase standing desks and chairs to provide motion in the core of the body.

Interpretation of Findings

This qualitative study provided insight into the lived experiences of coders which is useful in improving the sedentary work environment of coders who work at home. Levin (2015) indicated that cardiovascular disease, obesity, and other chronic diseases are a result of excessive sitting. Participants in this study reported health conditions such as back pain, overactive bladder, eye conditions, neck pain, weight gain, numbness and weakness, which are similar. Other participants reported decreases in stress, blood pressure, and the lack of sedentary behavior due to their adoption of strategies to decrease sedentary behavior such as doing housework when taking breaks, getting up to stretch, getting up once an hour, exercising, walking, yoga, going to the gym, weight training, and going outside to get air. Other strategies included changing the diet, obtaining

ergonomic furniture, riding a stationary bike, going out to lunch, walking outside to get fresh air, drinking water, obtaining a standing desk with a shifting chair, obtaining 32" screens to avoid eye strain, taking 7,000 steps, using an application to prompt movement, and standing up after coding every two charts. This is consistent with research that found that interrupting sedentary time in 30-minute intervals may counteract the effects of sedentary behavior (see Diaz et al., 2017). The qualitative information provided by coders established the body of knowledge of the perception of medical record coders on the effects of sedentary behavior and the action they have taken to counteract perceived risks of sedentary behavior.

A longitudinal study revealed sedentary behavior is linked with depression, pain, and fatigue in survivors of breast cancer and found a higher association among breast cancer survivors with low levels of exercise (Trinh et al., 2015). When observed over a 5-year period, the BMI in working female adults was associated with an increase in occupational sitting (Erikson, Rosthoj, Bun, & Holtermann, 2015). Participants reported the increase in weight gain with sitting and those participants that reported no effects from sitting had implemented strategies to counteract the effects of sedentary behavior. Chronic illnesses associated with obesity, high blood pressure, diabetes, depression, high glucose levels, and musculoskeletal disorders are associated with sedentary behavior which increases the risk of poor health (Chau et al., 2015; Selby, 2015). Participants reported the presence of illnesses due to sitting such as back pain, overactive bladder, eye conditions, neck pain, weight gain, and numbness and weakness. This study established

the body of knowledge on the illnesses that medical record coders perceive are a result of their sedentary occupational environment.

The findings of this study were analyzed within the context of the eco-behavioral model of sedentary behavior which combines the ecological model and the health belief model to target the environment of the sedentary behavior and the decision-making process used to decrease sedentary behavior. The eco-behavioral model focuses on four domains where sedentary behavior is likely to occur: leisure time, household, transportation and occupational (Thosar & Gabbard, 2013). This study focused on the occupational domain. The eco-behavioral model gave me an opportunity to focus on the occupational domain and the cognitive changes needed to make long term behavior changes (see Ding et al., 2012; Thosar & Gabbard, 2013).

The eco-behavioral theory grounded the question of what the perceived susceptibility and severity or perceived threat was for sitting for 8 hours per day and what can be implemented to decrease the health risks of sedentary behavior. The model provided an understanding of the perceptions of medical record coders by framing questions regarding workplace environments and the decision-making process to act against the sedentary behavior. The cognitive processes of the eco-behavioral model included the susceptibility and severity or the perceived threat of sitting for 8 hours per day and awareness of the seriousness of the impact of sitting on health. The perceived threat moved most of the participants to self-efficacy and results showed that participants had the confidence to take action to decrease sedentary behavior. Participants report that they have purchased equipment, use timers to monitor sitting time, take breaks every two

charts, do housework during breaks to avoid sitting, and use an app to indicate it is time to stand.

The perceived barriers to decreasing sedentary behavior have been expressed by coders as the workload and work distribution. They indicated that the distribution of medical records may impact sedentary behavior resulting in the inability to take breaks and short rest periods if records are very large and complex. They also indicated that sedentary behavior was affected by productivity standards and the need to meet quotas. The coders indicated that they have applied strategies to their occupational environment that may assist with decreasing sedentary behavior as well as interventions that they have suggested. Coders have executed self-efficacy by way of adopting strategies to decrease sedentary behavior and results show the coder's confidence to act based on their strategies and suggestions.

The eco-behavioral model of sedentary behavior addresses the cognitive process of reducing sedentary behavior in addition to the environmental setting of the sedentary behavior. The perceived barriers identified by the coders such as workload and work distribution of various types of records could decrease sedentary behavior with environmental changes such as desks, the use of timers, mandatory short breaks, and freezing of computer screens.

Theme 1: Coder's Methods of Coping with Sedentary Behavior

The findings showed that coders used several approaches to cope with sedentary behavior and sitting for 8 hours per day. Participants described strategies that they use to cope and counteract the effects of sedentary behavior. Coders recognized the threat of

sitting and took action to decrease sedentary behavior. Methods to cope with sedentary behavior included getting up after coding every two records, walking to the second floor of the home, compensating with activities such as physical exercise, walking, going to the gym, using a kitchen timer to track time, weight training, and running. Many reported that the strategies that they use to cope with sedentary behavior has resulted in the perception that sedentary behavior has not had a negative effect on their health. Other coping methods include working the evening shift to be available during the day to be active.

Medical record coders are knowledgeable about disease processes, medical terminology, clinical medicine, and anatomy and physiology. They read medical records and are experts in various chronic illnesses. They understand the perceived threat of sitting and being sedentary, therefore the findings of this study indicates that the medical record coders have the cognitive ability to understand the threat and the confidence to take action to decrease sedentary behavior through various coping methods.

Theme 2: Effects of Workload on Sedentary Behavior

Participants perceive the workload as a barrier which increases sedentary behavior. Long patient stays or complex medical records require sitting for longer periods of time to meet productivity standards. Participants report that they are often forced to eat at their desks to ensure that they meet productivity quotas. Participants indicated that although they are encouraged to take their breaks, the distribution of the types of records may be a barrier to having the time to take a break. Changing the distribution of work could decrease the workload barrier in the sedentary behavior occupational domain.

If the distribution of medical records is not diversified to include a combination of short stays, longer stays, mother and baby records, and same day surgery, the coders may be forced into prolonged sedentary behavior. The action that coders are taking to meet productivity is forcing them into prolonged sedentary behavior which cannot be rectified without changes in work distribution.

Theme 3: The Health Impact of Sedentary Behavior

Participants are at various levels regarding the impact of sedentary behavior on their health. Participants described the impact of sedentary behavior as loneliness, weight gain, back pain, neck pain, numbness and weakness, cervical vertebrae stenosis, overactive bladder, and eye conditions. Some participants reported no impact on their health, decreased stress level, and decreases in blood pressure due to a daily routine and being able to regulate the environment. Participants indicate a creeping weight gain due to access to food and a lack of activity and movement. Most participants perceive the threat to their health and have taken action to modify their environment or change their behavior.

Theme 4: Strategies to Decrease Sedentary Behavior

Participants described several strategies that they used to counteract sedentary behavior. Participants were cognizant of the fact that sitting is a threat to their health and have taken action to counteract the effects by implementing strategies. The implementation of strategies was brought on by the participants perception that the benefits of their behavior change outweighed the perceived threat. Some of the strategies impacted productivity and therefore some of the participants adopted strategies which

were performed after the work time such as walking 7,000 steps, going to the gym, weight training, and going to the YMCA. Some of the participants adopted strategies such as doing housework when taking breaks, walking to other parts of the house, getting up to stretch, getting up once every hour, stretching, exercising, going outside to get air, changing the diet to vegetarian, obtaining ergonomic furniture, riding a stationary bike, going out to lunch, drinking water, obtaining a standing desk with a shifting chair, obtaining 32 inch screens to avoid eye strain, standing up after every two charts, using a timer set for 20 minutes to prompt movement and using an application to prompt movement.

When coding larger charts, strategies also included coding half of the chart and then standing up and walking. Some of the participants possess self-efficacy which dictates the confidence that they can carry out the behavior required to decrease sedentary behavior. Other participants reported they do not feel the effects of a sedentary environment because they have taken action to control their environment with their ability to implement strategies to decrease sedentary behavior.

Theme 5: Suggestions to Decrease Sedentary Behavior

Participants offered suggestions to decrease sedentary behavior which were in addition to the strategies to decrease sedentary behavior. Suggestions to reduce sedentary behavior included regulations requiring coders to get up every 50 minutes to walk and receive annual training on posture and ergonomics. Other suggestions included seminars at hospital employment sites offering AHIMA continuing education credits to allow for collaboration, socialization, and continuing education credits. Participants also suggested

the emailing of videos to coders which would pop up on computer screens to provide

mandatory breaks, freezing computer screens to provide forced breaks, provide standing

desks, and the development of productivity standards that support sedentary behavior

such as the distribution of a diverse type of record. Participants suggested that the

individual coder should have the proper attitude and approach to be an effective coder

and this cannot be regulated but rather something that coders must do to be effective in an

unhealthy environment. Implement standard ergonomic equipment such as the vertical

mouse. Participants also suggested that remote coders have symposiums and support

groups to share ideas, concerns, and complaints, which would be organized at local, state,

and national AHIMA meetings.

Limitations of the Study

There were two limitations of the study. The first involved the small sample size

of medical record coders who work remotely in a sedentary work environment. The

coders invited to participate in the study were those who work in New York, New Jersey,

Pennsylvania, and Florida. The study may not be generalized to all coders in the United

States. The second limitation was my risk for bias as the primary study instrument due to

my prior experience as a Director of Coding. I utilized and relied heavily on the

transcripts of participants when analyzing the data. The transcripts were forwarded to the

participants for review and comment. There were no requested revisions to the transcripts

which ensured that the voice of the participants was the focus of the study.

Recommendations for Further Research

Occupational sedentary behavior continues to count for the most exposure to sedentary behavior in a 24-hour period. By the year 2025, there will be an increase in the employment of medical record coders (Dimick, 2012). This study found that coders expressed loneliness, weight gain, back pain, neck pain, numbness and weakness, cervical vertebrae stenosis, and eye problems. Further research is needed to expand the body of knowledge of chronic illnesses experienced by coders using a larger sample of coders to gain an understanding of common illness caused by sedentary behavior.

One limitation of this study was the small sample size of medical record coders who work remotely in a sedentary work environment. The coders invited to participate in the study were those who work in New York, New Jersey, Pennsylvania, and Florida. Future research should include coders from all over the United States and a larger sample so that generalizations may be made to all coders.

This study revealed that some coders manage sedentary behavior but may have trouble when there fails to be distribution of a combination of different types of records such as long stay, short stay, mother and baby records. The distribution of records may affect the ability to take breaks if there are productivity quotas that require a certain number of records to be coded. Further research is needed on the productivity and work distribution such as coding all large records or all combinations of records to determine the effect on sedentary behavior. Future research is also needed on the effects of forced screen breaks and getting up every 50 minutes, on productivity and sitting. Future research is needed to explore the methods for managing sedentary behavior to determine

which methods are feasible for decreasing sedentary behavior with coders without affecting productivity. This may reveal how to maintain productivity and decrease sedentary behavior. Future research is needed on the survey of medical record coders on the feasibility of having support groups for remote coders at the local, state and national health information management associations. Future research is also recommended for the survey of medical record coders on sit stand desks, and annual training for ergonomics and posture.

Future research is also needed on the lived experiences of other professionals who work remotely in a sedentary environment, to explore their work distribution and methods of coping with sedentary behavior. This will affect global occupational sedentary behavior.

Implications

Positive Social Change

This study will make positive social change for the entire U.S. healthcare industry by focusing on the lived experiences of coders who are responsible for submitting ICD-10 CM/PCS diagnoses and procedure codes that provide statistical health information for reimbursement, medical research, and public health globally (Bureau of Labor Statistics, 2016). This study affects positive social change for the U.S. healthcare delivery system by contributing to and developing the body of knowledge that supports the health of medical record coders since they are critical to the success and sustainability of the U.S. healthcare reimbursement and research systems. Dissemination of dissertation findings will be the initial step in bringing about positive social change. I will do presentations at

the local and state health information management associations across the United States and will also contact international associations. This information can effect positive social change by informing healthcare organizations and professional organizations in the United States on how to support medical record coders who work remotely with reductions in sedentary behavior, to develop best practices and policies.

This study will also inform policy makers on public health guidelines for sedentary workers such as state and federal labor policies that address sedentary behavior in the workplace. This study can also be used as an impetus for legislation by labor relations and the Joint Commission standards for human resources in a hospital to mandate review of remote sites of workers. The results of this study may also be used by the healthcare industry particularly those interested in the health outcomes of its workforce by adding the results of this research to the body of knowledge that influences changes in employee wellness practices. This study provides information to influence turning sedentary environments into active ones.

Policies and legislation regarding sedentary behavior may also be created and informed for sedentary behavior of coders and employees in the United States and globally. This study may lead to other research that can go deeper into suggestions and strategies posed on a larger population that can produce results that affect changes in sedentary work environments.

This study may contribute to best practices and policies based on strategies and suggestions to decrease sedentary behavior, information on workload distribution, and coder perceptions of the effects on sedentary behavior. This study created positive social

change by outlining strategies that coders use to cope with sedentary behavior. Some of the strategies which included getting up after every two records, walking to the second floor of the house, physical exercise, walking, going to the gym, using a kitchen timer to track time, weight training, and running, can be used by society to reduce sedentary behavior. This study affected positive social change by outlining the effects of the coder's workload on sedentary behavior and revealing the need to have a mixture of record types to allow for breaks. This study provides the health information management profession information needed to conduct additional studies on the workload as well as develop guidelines for work distribution based on sedentary behavior and break inclusion. This study affects positive social change by offering information on the impact of sedentary behavior on the health of coders. Health issues perceived by coders as being developed from sedentary behavior include loneliness, weight gain, back pain, neck pain, numbness and weakness, cervical vertebrae stenosis, overactive bladder, and eye conditions. This information will help society by offering information to do further research into the health impact on coders to determine what action can be taken to change the health impact of sedentary behavior.

Other positive social change can be attributed to strategies and suggestions identified by participants which can be implemented on a global basis including walking 7,000 steps, doing housework on breaks, getting up to stretch, getting up every hour, going outside to get air, changing diet to vegetarian, obtaining ergonomic furniture, riding a stationary bike, obtaining a standing desk with shifting chair, obtaining 32 inch screens to avoid eyestrain, standing up after two charts are coded, and using a timer and

computer application to prompt movement. When coding larger charts, coders may code one half of the chart then stand or walk. These strategies may be adopted by the national coding profession and may lead to decreases in societal sedentary behavior.

Social change may be affected by bringing the remote coders together to participate in support groups at the local, state, and national level and ultimately at global levels, providing the platform for coders to discuss their ideas, concerns, and complaints about sedentary behavior. Positive social change will be brought about by expanding, through further research, the population studied to include the United States and the world.

This is the first research that has been conducted to hear remote medical record coders express how they perceive their work environment. This study will have a positive social change on the health information management profession and other professions through dissemination at healthcare conferences, health information management conferences, human resource conferences, business conferences, church conferences, and occupational safety conferences so that widespread knowledge can take place on how employers develop active workspaces. This study will be presented to peer review journals for further dissemination to public, national, and global audiences.

Recommendations for Practice

There are several recommendations for practice that emerged from this study. Recommendation #1: This study found that medical record coders understand the threat of sedentary behavior and take action to counteract the perceived threat. Strategies include getting up after coding two records, walking to the second floor of the home,

using a kitchen timer to track time, purchase of a sit stand desk with a shifting chair, compensating with physical exercise, and going to the gym. These strategies will be introduced at conferences to the HIM profession.

Recommendation #2: Distribution of large longer stay medical records results in difficulty with taking breaks and therefore perpetuates sedentary behavior. Recommend individual organizations review workload distribution to determine if workload is causing coders to forego breaks to meet productivity standards. This study created positive social change by outlining strategies that coders use to cope with sedentary behavior. Recommend the study of the financial impact on the hospital, of strategies the coders have adopted to manage sedentary behavior.

Recommendation #3: Conduct further research on a large population of remote coders to determine the perceived effects of sitting on their health, soliciting the types of health conditions contributing to sedentary behavior, to expand the knowledge.

Recommendation #4: Conduct further research on a large population of remote coders to determine additional strategies and suggestions to decrease sedentary behavior to expand the knowledge.

Recommendation #5: Forward results of the study to the Occupational Safety and Health Association (OSHA) for heightened awareness of strategies to advocate for timed breaks every 50 minutes for remote coders.

Recommendation #6: Partner with AHIMA to advocate for remote coder support groups. Conduct presentations at AHIMA local, state, and national associations.

Conclusion

Approximately 3.2 million people die each year, globally, due to sedentary behavior (WHO, 2010). There is a direct association between sedentary time, colon, breast, endometrial, ovarian, and colorectal cancer incidence, mortality incidence, and death due to cardiovascular disease (Biswas et al., 2015). Researchers found that over a 3-year period, there was an increase in the risk of dying by 40% in people who sit more than 10 hours in one day compared with individuals sitting less than 4 hours (Van der Ploeg et al., 2012). Occupational sitting is a major contributor to the overall exposure to sedentary behavior accounting for 81.8% of an employee's hours worked (Coenen et al., 2017). Medical record coders sit for 8 hours per day when performing the job of coding medical records.

This study was conducted to contribute to the body of knowledge that is used to evaluate how to sustain the medical record coding workforce. The demand for healthcare in the United States population, from 2014-2024, will create a 15% increase in the employment of health information technicians (Bureau of Labor Statistics, 2016). As the demand for the coding workforce increases, the effects of sedentary behavior become vital to the future of the health care industry. The work that medical record coders perform determines how population health statistics, health research, and healthcare reimbursement in the United States continues to be captured in a timely and high-quality manner. This study explored the lived experiences of medical record coders working in a remote sedentary environment.

The goal of the study was to answer three research questions to gain an understanding of the lived experiences of medical record coders working in a remote, sedentary environment. Research question number one, "What are the lived experiences of coders who work remotely, at home in an occupational sedentary environment?", yielded a range of responses. Two themes emerged from question number 1, the coder's method of coping with sedentary behavior and the effects of the workload on sedentary behavior. Participants discussed methods of copings with sedentary behavior while others didn't see a problem with sedentary behavior because they have instituted a daily routine, they create their environment and are able to move more at home.

The second theme that emerged from research question number one was the effects of the workload on sedentary behavior. Participants described the effects of productivity quotas on their ability to get up to take a break. Participants reported that lengthy inpatient medical records create the barrier of having to remain seated until completing the coding of the record. Participants indicated when coding larger complex records, productivity standards may require delaying a break, not taking a break, or eating while working. Participants indicated that they ask for diverse records which tend to be short stays, some easy records and some difficult records.

Research question number two, "What are coder's perceived effects of sitting 6-8 hours per day on their health?", yielded one theme, the health impact of sedentary behavior. Participants indicated that several health conditions including weight gain, back pain, overactive bladder, eye conditions, neck pain, numbness and weakness, and loneliness were a result of sedentary behavior. Some participants also reported decreased

stress due to being at home and being able to regulate the environment has resulted in sedentary behavior having no impact on their health.

Research question number three, "What strategies, as perceived by coders, can be implemented to decrease sedentary behavior in the home-based sedentary work environment?" Two themes emerged, strategies to decrease sedentary behavior and suggestions to decrease sedentary behavior. Participants described strategies that they use to decrease sedentary behavior due to the perceived threat to their health and their self-efficacy or confidence that they could change their behavior within the context of their environment. Participants also made regulatory, professional practice, and environmental suggestions based on their experience.

This study will have positive social change for the entire the U.S. healthcare industry by contributing to the body of knowledge that supports the health of medical record coders and other sedentary employees by providing insight for the development of best practices and policies for decreasing sedentary behavior. This study will also inform policy makers on public health guidelines that address sedentary behavior for coders and other telecommuters. The impact on the wellness of employees on a global scale who work in sedentary and remote environments will support changing sedentary environments to active ones in every area of employment once this information is disseminated. This study may influence how employees who sit for 8 hours per day function in the occupational environment and also contribute to the shift towards active work areas which consist of less sitting.

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Appendix A: Recruitment Announcement

Are you a medical record coder who works at home?

Are you willing to share your experience with working in a home sedentary environment? If so, please consider participating in this research study which is focused on learning about your perceptions of occupational sedentary behavior.
You may qualify to participate in this study if you:

□ Are you a medical record coder?
□ Do you code inpatient hospital medical records?
□ Do you have five years of experience as a medical record coder working in a remote home environment?
□ Do you work for a hospital but work remotely at home?
□ Are you a family member of the researcher?
□ Do you work for an outsource company?
□ Do you use active workstations or other similar devices?
□ Are you able to read, write, and speak the English language?
□ Do you agree to be recorded during the interview process?

Your participation in this study is completely voluntary and you may withdraw from the study at any time and for any reason without consequences. There also will not be any consequences for not participating and you may choose not to respond to this letter. Participation in this study involves a 10-minute telephone eligibility screening questionnaire for completion by those who are interested in participating in this study. Your confidentiality will be maintained before, during, and after the research is reported. You will receive a $10.00 gift card for your participation as a token of appreciation which will be issued at the end of the interview session.

Kindly contact me if you have any questions at

The Walden University Institutional Review Board found this research to be acceptable and issued approval code for this study is 12-07-18-0073742 and is valid through 12/06/2019.   .

Thank you for considering participating in this study.
Sincerely,

Theresa Deans Jones, MHA, RHIA, FAHIMA

Appendix B: Participant Screening Questionnaire

Theresa Deans Jones, MHA, RHIA, FAHIMA
Date: February 12, 2018

This questionnaire will be used to determine if study participants meet the study criteria and are eligible to participate in the study.

Recruitment Screening Questions:

Question purpose: To identify a self-reported occupation of medical record coder.
Question: Are you a credentialed medical record coder? __Yes   No_____

Question purpose: To identify the type of records that the participant codes.
Question: What types of records do you code and what percentage of your work time do you code them?

Question purpose: To determine how many hours the participants sits while working.
Question: How many hours do you sit while at work?

Question purpose: To determine if the participant has 5 or more years of experience as a medical record coder working in a remote home environment.
Question: How many years of experience do you have as a medical record coder working in a remote home environment?

Question purpose: To identify the type of organization in which the participant works.
Question: What type of organization are you employed?

Question purpose: To determine if the participant's hospital employment is through an outsourced agency.
Question: Do you work for an outsource company?

Question purpose: To determine if the participant uses active workstations such as desk treadmills, etc.
Question: Do you use active workstations or other similar devices?

Question purpose: To determine if participant can read, write, and speak the English language.
Question: Are you able to read, write, and speak the English language?

Question purpose: To identify agreement with recording of the interview.
Question: Do you agree to be recorded during the interview process?

Appendix C: Letter of Intent

Theresa Deans Jones, MHA, RHIA, FAHIMA
Student, Ph.D. Health Services – Community Health
Walden University

February 12, 2018

Dear Study Participant:

My name is Theresa Jones, and I am a doctoral student at Walden University in the Health Services Program, specializing in Community Health. I am completing the final stages of the program which includes doctoral research. The study that I am conducting involves collecting information on the lived experiences of medical record coders who work at home in a sedentary environment.

Please consider participating in this study. Your participation in this study is completely voluntary and you may withdraw from the study at any time and for any reason without consequences. There also will not be any consequences for not participating and you may choose not to respond to this letter.

The study will consist of a 45 minute in-person interview at a mutually agreed upon location. The interview will be recorded and then I will transcribe your responses. I will then compare the audiotape recording to the written transcription to ensure that I accurately captured the information that you have provided.

Your confidentiality will be maintained before, during and after the research is reported. You will receive a $10.00 gift card for your participation as a token of appreciation which will be issued at the end of the interview session.

Kindly read and complete the attached informed consent form and email the form to me at   . Please feel free to forward any questions that you may have, and I welcome your participation. The Walden University Institutional Review Board issued approval code for this study is 12-07-18-0073742 and is valid through 12/06/2019.   .

Thank you for considering to participate in this study.

Sincerely,

Theresa Deans Jones, MHA, RHIA, FAHIMA

Appendix D: Qualitative Interview Guide

This questionnaire serves as a guide to the interview process for obtaining information that responds to the research "What are the lived experiences of coders who work remotely, at home, in an occupational sedentary environment?" These questions are designed to encourage the research participant to share their personal story to provide insight into the lived experiences with occupational sedentary behavior. Sedentary behavior is any waking behavior characterized by energy expenditure ≤1.5 metabolic equivalents (METS) while in a sitting or reclining posture (Sedentary Behavior Research Network, 2012). I will inquire as needed to ensure the responses of the participant are clarified and stay on the topic.

> 1Q1: Opening question: How would you describe your experience with occupational sedentary behavior during your work shift (sitting during your work shift)?

> IQ2: What do you think about when I say, "sitting while working most of the day"?

> IQ3: What emotional or physical changes have you experienced that resulted from you sitting during your work-day?

> IQ4: How do you compare your home sedentary work environment to working in a hospital based sedentary work environment?

> IQ5: How has the sedentary work environment affected your health?

> IQ6: What do you perceive as barriers to decreasing sedentary behavior in the home-work environment?

> IQ7: What strategies would you recommend for decreasing sedentary behavior in your home-work environment?

> IQ8: What regulatory requirements could be helpful in decreasing sedentary behavior for workers who work at home?

Appendix E: National Institute of Health Training Certification

Certificate of Completion

The National Institutes of Health (NIH) Office of Extramural Research certifies that **Theresa Jones** successfully completed the NIH Web-based training course "Protecting Human Research Participants".

Date of completion: 05/11/2017.

Certification Number: 2366538.