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Qualitative Exploration of the Impact of Bed Bug Infestation in Rural Settings

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Abstract

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Bed bugs have been common household insects for centuries and are a challenge to eradicate, but the extent to which bed bug infestations psychologically impact individuals and families is largely uninvestigated. The purpose of this phenomenological study was to investigate the lived experiences of families in rural areas in Nevada who had experienced bed bug infestations. The transactional model of stress and coping was used as a framework for this research. Participants were recruited using posters placed in public areas, and semi-structured interviews were conducted with ten participants to gather data. Major and minor themes and meanings were derived from participant narratives using the van Kaam method of phenomenological analysis, and member-checking was used to validate the data. Overall, the data revealed devastating psychological and physical impact on the participants. Major themes included: (a) bed bug infestations impacted every aspect of family life, (b) the experience was traumatic to the whole family, (c) action and agency were used as coping mechanisms, and (d) significant health, psychological, and social impacts added to emotional distress. Participants identified that bed bug infestations made it difficult to perform daily routine tasks and care for their children. The results of this study have potential implications for positive social change that include indicating the need for the development of effective interventions to mitigate the impact of infestations on families and their children, expansion of awareness of the impact of the phenomena, and identification of useful resources within communities.

How Individuals in a Rural Area Experience the Impact of Bed Bug Infestations

by

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Dedication

I dedicate this study to my beloved late father, Jerzy Krotkiewicz, who was longing to see this project upon completion and who was so eager to see me graduate with my doctorate. The loss of him to the devastating effects of COVID-19 deeply ingrained and sorrowed all our hearts. His inspiration, encouragement, and exceptional love were motivating forces throughout my study. His strength and dedication were constant reminders that impossible is possible and that hard work always pays off. Kochany Tato, thank you for your incredible love and believing in me; you will forever live in my heart. Love you always.

"A father's love is forever imprinted on his child's heart." —Jennifer Williamson

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Table of Contents

List of Tables

Chapter 1: Introduction to the Study

Introduction

The rapid increase in the rate of bed bug infestations in recent years represents a serious health hazard for the public (Goddard & de Shazo, 2012). The Centers for Disease Control and Prevention (CDC, 2016), the U.S. Environmental Protection Agency (EPA, 2018), and the National Pest Management Association (NPMA, 2019) all have described bed bug infestations as an emerging public health issue throughout the United States. Bed bug infestations are on the rise worldwide and are present in all states across the United States (Alalawi, 2014; Goddard & de Shazo, 2009; Goddard & de Shazo, 2012; Wang et al., 2016). The increase in bed bug outbreaks affects all 50 states, with one out of every five Americans reporting a bed bug infestation in their home (NPMA, 2019). Bed bugs are communicable environmentally, causing widespread ill-health and affecting the overall well-being, daily life, and social functioning of individuals across the country (Goddard & de Shazo, 2012; Wang et al., 2016).

According to NPMA (2019), the incidence of bed bugs is three times higher in urban areas than in rural areas due to factors such as larger population size, apartment living, and increased mobility, all of which are conducive to the rapid spread and breeding of bed bugs. Because of the higher prevalence of bedbug infestations in urban areas, the research that has been conducted regarding their psychological impact has largely focused on urban populations (Doggett et al., 2012; Goddard & de Shazo, 2012; Hwang et al., 2005; Susser et al., 2012; Wang et al., 2016). Low-income communities are

also more severely affected than middle- and upper-income communities (Wang et al., 2016).

Rural areas, towns, and cities are dealing with the resurgence of bed bug infestations without most residents possessing the knowledge of what bed bugs are or how to effectively prevent and treat infestations (Midwest Pesticide Action Center [MPAC], 2015). Moreover, individuals and institutions in low-income and rural communities are at higher risk than more affluent communities to experience recurring problems due to lack of funds for prevention and treatment (MPAC, 2015; NPMA, 2019). These communities experience an increased prevalence of exposure to bed bugs and have fewer social and psychological supports (MPAC, 2015).

This phenomenological qualitative study aimed to examine and better understand the lived experiences of bed bug infestations in residents of rural communities in the state of Nevada. I also aimed to explore and identify: (a) coping mechanisms of individuals who have been through bed bug infestations, (b) individuals' beliefs regarding the impact of bed bug infestations on their families, and (c) the social and psychological impact of bed bugs on school-aged children (preschool through 12th grade) as described by their parents. This research sought to fill a gap in understanding how individuals in rural areas perceive, experience, respond to, and cope with bed bug infestations (Ashcroft et al., 2015; Kaylor et al., 2015; Scarpino & Althouse, 2019; Susser et al., 2012; Wang et al., 2016). I adopted an in-depth, phenomenological approach, allowing participants to describe their experiences from their unique perspectives.

This study uniquely contributes to the literature in providing a detailed and broad description of the phenomena by examining the lived experiences and coping mechanisms of the participants. The study also explored how the community stigma is influencing stress among affected individuals, as well as the social and mental health effects of bed bugs on families living in rural communities. I aimed to directly explore the experiences that families from rural communities have with regard to bed bug infestations and to explore the impact of bed bug infestations on individuals and their families.

The need for a study on the lived experiences of families who have gone through or are undergoing bed bug infestations and their perceptions regarding the coping strategies and challenges experienced by them and their school-aged children from rural communities is substantial given the limited amount of research. Previous research indicates that the impact of bed bug infestations can be multifaceted (e.g., Ashcroft et al., 2015; Bandyopadhyay et al., 2014; Kaylor et al., 2015; Liu & Pennington-Gray, 2015; McMenaman & Gausche-Hill, 2016; McNeill et al., 2017; Salazar et al., 2015; Scarpino & Althouse, 2019; Susser et al., 2012; Wang et al., 2016), and infestations in rural areas can be substantially and qualitatively different from infestations in urban areas (Doggett et al., 2012; Kaylor et al., 2015; MPAC, 2015; NPMA, 2019) where the majority of research has been focused. The following chapter will provide an overview of this study by highlighting the background of the present study, the problem statement and purpose of study, research questions, theoretical framework, significance, nature of study, definition of key terms, assumptions, limitations, and delimitations. I will also present the

theoretical model that guides the research. I will conclude the chapter with a discussion of the potential significance of the study as bounded by its scope.

Background

In recent years, the rapid increase in the rate of bed bug infestations represents a serious health hazard for the general public (Goddard & de Shazo, 2012). Various agencies, such as the CDC (2016), the EPA (2018), and NPMA (2019) have reported an increase in bed bug infestations as an emerging public health issue affecting all 50 states throughout the United States. Bed bug infestations have been noted to be one of the most difficult infestations to treat and eradicate by pest management professionals, as effective pesticides are not readily in supply (NPMA, 2019). According to a survey conducted in 2018, 97% of all pest professionals reported they have provided services to treat bed bugs within the past year; 91% of U.S.-based extermination professionals reported finding bed bugs in single-family homes, 89% reported finding them in apartments and condominiums, and 68% reported finding them in hotels and/or motels (EPA, 2017; NPMA, 2019). Also, according to the NPMA (2019), 20% percent of Americans reported knowing individuals who encountered bed bugs in their home or a hotel. There is significant evidence that bed bug infestations are on the rise worldwide, and the prevalence of bed bug infestations may be closely associated with socioeconomic status, as low-income communities are more severely affected than middle- and upper-income communities (Alalawi, 2014; Goddard & de Shazo, 2012; Wang et al., 2016). Due to bed bugs being environmentally communicable, they are known to spread ill-health and affect

the daily life, social functioning, and overall well-being of many individuals in the United States (Doggett et al., 2012; Goddard & de Shazo, 2012; Wang et al., 2016).

The existing studies on bed bug infestations served as a background for this phenomenological research. In various articles and studies, researchers examined the current state of knowledge and concern of the mental health effects of bed bug infestations to identify areas where future research is needed (e.g., Ashcroft et al., 2015; Kaylor et al., 2015). One review identified 51 scholarly articles that examined concerns of the mental health effects of bed bug infestations; numerous mental health concerns were indicated in the findings including severe psychiatric symptoms, as well as anxiety, stress, shame, and disgust (Ashcroft et al., 2015). However, the majority of the examined articles were only commentary papers (n = 31), and only five original research articles were identified on the mental health impact of bed bug infestations (Ashcroft et al., 2015).

Among the reviewed publications, 28 (54.9 %) referred to psychological distress accompanied by flashbacks and nightmares as well as overall stress caused by bed bug bites following infestation (Ashcroft et al., 2015). Furthermore, 26 articles (50.9 %) asserted that exposure to frequent bed bug bites is linked to a range of psychological and behavioral symptoms, including insomnia, sleep disturbance, mood changes, panic, nervousness, agitation, hypervigilance, delusions, posttraumatic stress disorder (PTSD) symptoms, as well as socio-occupational dysfunction (although the authors of these articles rarely supported their claims with empirical evidence; Ashcroft et al., 2015). The authors suggested that vulnerable populations may be at a greater risk for the deleterious

mental health effects of bed bug infestations, but more research is needed due to limited evidence (Ashcroft et al., 2015). The authors also identified a concerning lack of interdisciplinary collaboration, empirical evidence, and scientific response to these issues, largely because exposed populations often experience marginalization and stigma and may be consequently difficult to reach (Ashcroft et al., 2015).

Kaylor et al. (2015) investigated experiences and concerns about bed bug infestations in a rural higher income village in Ohio as an issue significantly affecting the local community. The researchers used survey methodology with 96 individuals to examine knowledge, prevalence, and concern about bed bugs (Kaylor et al., 2015). The researchers concluded that bed bugs may be an environmental issue disproportionately affecting low-income populations and the elderly residing in the areas of persistent bed bug infestations (Kaylor et al., 2015). Kaylor et al. (2015) concluded that further research studies are necessary to support this claim as an important key to addressing the public health impact. The researchers further asserted that, due to the limitation of a small sample size, further studies are needed to validate their findings (Kaylor et al., 2015).

The socioeconomic background of families may also have significant impact on low-income communities. Bennett et al. (2016) investigated bed bug outbreaks in low-income housing and noted that ineffective pest management practices are associated with limited budgets for pest control within public housing and low-income housing providers. The researchers concluded that efforts to combat infestations should be based on collaboration of multiple community entities, such as federal and state authorities and other providers of rental and public housing, in the effort to aid communities to limit the

spread of infestations (Bennett et al., 2016). Wang et al. (2016) studied the prevalence and experiences of bed bug infestations in residents of apartment housing in New Jersey. The authors used resident interviews, visual inspections, and monitoring to collect data in a community-wide cross-sectional survey. Wang et al. (2016) reported multiple symptoms linked to the effects of bed bug bites in low-income communities that had high infestation rates and experienced a resurgence of bed bug infestations. The authors indicated that low-income communities may be more susceptible to bed bug infestations due to financial constraints and suggested that further research is necessary to assess the health impact of bed bug infestations in these communities, as well as to develop effective bed bug management and educational programs (Wang et al., 2016).

In their study, Goddard and de Shazo (2012) conducted a review of blogs and other internet sites that feature bed bug postings, such as Bedbugger.com, Bedbugresource.com, and Insectgeeks.com. The authors found that 80% of reports of infestations included one or more symptom associated with trauma, such as nightmares, flashbacks, hypervigilance, insomnia, anxiety, avoidance behaviors, and personal dysfunction (Goddard & de Shazo, 2012).

To explore children's experiences as reported by their parents, it is important to examine the specific impact that bed bug infestations have on children, as this experience may be different in relation to other types of infestations (i.e., lice infestations). The only published qualitative research that focused on how children cope with infestations regarded lice. Jamani et al. (2018) conducted a qualitative study using a semistructured questionnaire to investigate the understanding and the impact of lice infestations in the

lives of children in a rural community in Honduras. The questionnaire was administered to the parents of children who were affected and featured knowledge about transmission, control practices, barriers to treatment, and the overall impact of these infestations to children's well-being (Jamani et al., 2018). The authors revealed a lack of understanding regarding lice transmission and stigmatization of infested children (Jamani et al., 2018). These results highlighted the further need to reassess approaches and action combating lice infestations in rural communities under an integrated framework. This study provides a good background for the collection of qualitative data in a related study and served as an example for this phenomenological research.

Compared to lice, bed bugs are more difficult to eradicate. Also, the cost of effectively eliminating bed bugs is significantly higher than the cost of eliminating other pests such as lice (CDC, 2016). Thus, this research significantly differs from similar research on lice infestations, but the logistics of lice research applied well to this study. The need for a study on families' lived experiences of bed bug infestations and its effects on mental health is substantial as it will provide additional perspectives and perceptions regarding the challenges experienced by families and their school-aged children. Therefore, given the limited amount of research in which socioeconomic and other cultural factors have been considered in relation to the effects of bed bug infestations on families and their children, there is further need for studies investigating universal experiences of residents affected by bed bug infestations. I examined the lived experiences of families in relation to the consequences of bed bug infestation on their school-aged children from the perceptions of parents, and the findings contribute to the

literature through generating specific results that may help develop effective interventions for affected families and their children, as well as communities in need.

Problem Statement

The physical effects of bed bugs are bites, evident in red spots and irritated bumps clustered together, which are often accompanied by emotional and psychological symptoms, including hypervigilance, depression, anxiety, social isolation, and insomnia (Rossi & Jennings, 2010). The mental health implications of bed bug infestations feature symptoms suggestive of trauma and may also include a wide range of affective and psychotic symptoms, including paranoia and suicidal behavior (Doggett et al., 2012; Goddard & de Shazo, 2012; Rossi & Jennings, 2010; Susser et al., 2012). Rossi and Jennings (2010) also noted that bed bug infestation may increase the risk of negative health effects, especially among vulnerable populations such as children and the elderly and may cause the worsening of an already existing mental health condition.

The incidence of bed bugs is three times higher in urban areas than in rural areas due to factors such as increased apartment living and mobility and larger population size, all of which are conducive to the rapid spread and breeding of bed bugs (NPMA, 2019). Therefore, due to the higher prevalence of bedbug infestations in urban areas, the research that has been conducted regarding their psychological impact has largely focused on urban populations (Doggett et al., 2012; Goddard & de Shazo, 2012; Hwang et al., 2005; Susser et al., 2012: Wang et al., 2016). However, rural populations are unique in regard to the risk factors and impact of bed bug infestations and require singular focus in order to determine their service needs.

According to the 2010 Comprehensive Global Bed Bug Study (CGBS) conducted by the NPMA (2019), bed bugs are prevalent in all areas, regardless of type of developed environment, and it is necessary to provide information at a national level to reinforce knowledge about the nature of bed bug infestations among communities. MPAC (2015) is a leader in battling bed bug infestations in the city of Chicago and its suburban and rural areas and has reported that organizations and governmental agencies in rural areas are left without adequate knowledge, resources, and policies to deal with the bed bug crisis. Thus, there is a significant need to focus on rural communities to effectively provide resources and interventions to help affected areas in an effort to prevent and treat infestations. It has also been noted that bed bugs have a significant impact on quality of life and that infestations impact all developed environments from rural communities to cities (MPAC, 2015). The authors of the MPAC study highlighted the magnitude of this problem and the critical need for educational materials, training, and community outreach, especially in rural areas, as these communities have experienced increased exposure to bed bugs and have fewer social and psychological supports (MPAC, 2015). Moreover, individuals and institutions in low-income and rural communities are at higher risk for recurring infestations than more affluent communities due to a lack of funds for prevention and treatment (MPAC, 2015; NPMA, 2019).

The impact of bed bug infestations is not limited to individuals, but also is a factor affecting families and members of the community (Alalawi, 2014; Goddard & de Shazo, 2012; Wang et al., 2016). Authors of pilot studies and surveys have suggested there is a need to extend the research to elicit opinions and perspectives reflecting on rural

populace's knowledge of, experience with, and social concerns regarding bed bugs (Kaylor et al., 2015). There is currently limited research investigating the lived experiences of individuals and families who live in rural communities on this topic, and it is important to address this gap because bed bug infestations are becoming a more significant problem throughout the United States (Goddard & de Shazo, 2012; Kaylor et al., 2015; MPAC, 2015; NPMA, 2019).

Purpose of the Study

The purpose of this phenomenological qualitative study was to better understand the lived experiences of individuals who have experienced bed bug infestations in rural communities in the state of Nevada. The phenomenon was explored on individual, familial, and community levels. Participants were adults who have experienced bed bug infestations and who are the parents of minor children who live with them. I explored participants' lived experiences of bed bug infestations, the experiences of their children, and their perceptions of community impact to investigate themes related to their unique points of view. Individuals were interviewed to gain a detailed understanding of their perceptions of the phenomenon, and the data were examined for patterns that would help develop knowledge in this field.

Research Questions

To understand and describe the specific elements of the phenomena through the perceptions of the individuals, the following research questions were used:

RQ1: What are the lived experiences of individuals who have been through bed bug infestations in a rural community in Nevada?

Subquestion 1: What are the coping mechanisms of individuals who have been through bed bug infestations in a rural community in Nevada?

Subquestion 2: What do individuals believe the impact of bed bug infestations is on their family?

RQ2: How do parents describe social and psychological impact of bed bug infestation on school–aged children (preschool–12th grade) living in a rural community in Nevada?

Theoretical Framework

Qualitative researchers frequently employ theories drawn from the humanities and social sciences. Theories are used as a lens through which researchers look at complex and complicated problems and social issues or different aspects of the data and provide a framework for conducting scientific analysis (Reeves et al., 2008). In this study, the goal was to explore the lived experiences of families and their children who previously experienced or who are currently going through a bed bug infestation in their home to gain insight into underlying themes related to the impact that bed bug infestations have on families and their school-aged children. This study attempted to explain how bed bug infestations impact someone's functioning internally and socially in the context of a family and local environment. The study also attempted to explore how families cope with the stressful event of a bed bug infestation, how they adapt, and how some of them even thrive or succumb when faced with stressful situations or conditions (McCubbin & Patterson, 1982).

The transactional model of stress and coping (TMSC) was used to help evaluate possible harm, threat, and challenges related to the individual experiences of bed bug infestation and in connection to the process of participants' coping with stressful events (Lazarus, 1966; Lazarus & Folkman, 1984). Lazarus and Folkman (1984) developed the transactional theory of stress and coping to emphasize the transactional nature of stressful encounters in which the path from stressful situation to outcome is a process that is situationally specific, highly individualized, and inseparable from the cognitions that accompany person's particular experience. The transactional theory of stress and coping posits that acute and chronic stress responses and outcomes are contingent upon individual and environmental factors. As such, relationships between exposure to stress and stress responses are mediated by how benign, threatening, harmful, or challenging those factors are deemed by the individual (primary appraising) and the degree to which the individual feels capable of dealing with threatening, harmful, or challenging appraisals (secondary appraising, which includes coping self-efficacy; Lazarus & Folkman, 1984). In turn, these appraisals, are mediated by the coping strategies an individual enlists to adapt to other than neutral appraisals.

According to Lazarus and Folkman (1984), psychological stress is a particular relationship between a person and the environment that is appraised by the person as taxing or exceeding their resources and endangering their well-being. This relationship goes through two important phases: (a) cognitive appraisals and (b) coping. The TMSC was chosen to explain the way individuals or members of a family respond to and cope with stressful events (Lazarus & Folkman, 1984). Therefore, this model aligns with this

research study as it will help to organize data in regard to how individuals experience and cope with the stress of bed bug infestations. I used this model to organize the narrative data regarding how exposure to the environmental stressor of bed bug infestations may be related to psychological effects and coping responses (Matthieu & Inavoff, 2006).

Families who are affected by bed bug infestations are exposed to many challenges and environmental stressors that can result in deleterious physiological and psychological effects (Ashcroft et al., 2015; Goddard & de Shazo, 2012; Kaylor et al., 2015; McMenaman & Gausche-Hill, 2016; Wang et al., 2016). Stress and coping within Lazarus and Folkman's transactional model will be used as a basis for describing the participants' responses to the experience of the bed bug infestation. The TMSC can help describe coping strategies and whether these are adaptive or maladaptive (Folkman & Lazarus, 1985). In this study, I attempted to discover strategies used to reduce stress and maximize families' coping while dealing with a bed bug infestation in the home. I used TMSC to both guide the interview questions and to organize the data.

Nature of the Study

The study was a phenomenological qualitative study as this method allowed me to explore the experiences of the participants and gain a better understanding of the perceived impact of bed bug infestations on families in rural areas of Nevada. Phenomenology relies on experiences and feelings, which is consistent with this study's scope (Husserl, 2002; Smith, 2007). In research, the purpose generally is to answer a question or address a problem, specifically a problem of interest to the researcher and the researcher's audience (Booth et al., 2003). Phenomenological research methodology is

employed to capture the lived experiences of participants, to explain the essence of a phenomenon, and to discover how individuals give meaning to social phenomena in their everyday lives (Moustakas, 1994; Reeves et al., 2008; Smith, 2007). Qualitative research aims to understand social reality and the lived experiences of individuals and allows for a detailed understanding of human experiences and attitudes (Creswell, 2014). According to Sullivan and Sargeant (2011), qualitative researchers usually attempt to study individuals and their interactions in their natural environments to investigate questions that begin with why and how. My intent was to provide a clear understanding of the phenomenon (the experience of bed bugs infestation) and describe it from the participants' eyes (Shenton, 2004).

A qualitative research study provides richness of data through interview (Moretti et al., 2011). Semistructured interviews were used for data collection from participants in a rural community in Nevada. Adults who have personally experienced a bed bug outbreak while living in that community, who have minor children that reside with them, and who have lived in that community for at least 3 years were recruited to participate in this study. As part of this approach, I gathered participants through announcements posted on social media sites and in newspapers, churches, libraries, and schools. Data were gathered using semistructured interviews with open-ended questions. Data gathered from interviews were digitally recorded and transcribed. NVivo software was used to assist in the data analysis.

Definitions

For this research study, the following terms are used with these specific meanings:

Bed bug: Cimex lectularius are small, flat, parasitic insects that feed solely on the blood of people and animals while they sleep. Bed bugs are reddish-brown in color, wingless, range from 1 mm to 7 mm (roughly the size of Lincoln's head on a penny), and can live several months without a blood meal (CDC, 2020).

Cognitive appraisal: The "process of categorizing an encounter, and its various facets, with respect to its significance for well-being" (Lazarus & Folkman, 1984, p. 31).

Coping: Actual strategies an individual has employed to mitigate the effects of a perceived stressor and regardless of the perceived success or failure of the action to alleviate the stressor (Carver et al., 1989; Lazarus, 1999).

Coping mechanism: Any conscious or nonconscious adjustment or adaptation that decreases tension and anxiety in a stressful experience or situation. Modifying maladaptive coping mechanisms is often the focus of psychological interventions (APA Dictionary of Psychology, 2020).

Infestation: The state of being invaded or overrun by parasites (Definitions, 2021).

Lived experiences: Experiences subjectively recalled by participants and are obtained through interviews in the form of verbalized statements (Creswell, 2003).

Psychological impact: The effects from environmental and/or biological factors on the psychological aspects of an individual (De Oliveira et al., 2013).

Psychological stress: "A particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being" (Lazarus & Folkman, 1984, p. 19).

Rural: The country, country life or people, or country agriculture (Webster Dictionary, 2021).

Stress: The degree to which a person feels overwhelmed or unable to cope as a result of pressures that are unmanageable. Stress is the body's response to pressures from a situation or life event (Lazarus & Folkman, 1984; Mental Health Foundation, 2020).

Assumptions

In this study, I assumed that participants would be truthful in the responses they provided during the interviews and that they had experienced the phenomenon under study. I also assumed that participants would understand the questions and would not intentionally withhold information or misstate responses during the interviews. During interviews, I used open-ended questions to avoid influencing participants' responses with leading questions. Confidentiality and privacy of participants were given emphasis in the informed consent procedure to assure participants that all the information they disclosed would be confidential. The participants were encouraged to be as honest and open as possible during interviews.

Scope and Delimitations

The purpose of the study was to explore and identify lived experiences and coping mechanisms of individuals who have been through bed bug infestations. I also explored individuals' beliefs regarding the impact of bed bug infestations on their families along

with the social and psychological impact of bed bug infestations on their school-aged children (preschool through 12th grade). The research sought to fill a gap in understanding how individuals perceive, experience, respond to and cope with bed bug infestations. It was important to set the focus uniquely on bed bug infestations versus other type of infestations.

The findings of this study could be generalized to other rural areas in the country, but it is less possible to generalize to urban areas. The focus of the study was a particular population as I chose families with minor children who live in rural Nevada. TMSC (Lazarus, 1966; Lazarus & Folkman, 1984) was chosen to ensure that the framework grounding the study would address both the stress and coping aspects of bed bug infestations and would be in relation to the individual's lived and unique experiences.

One of the delimiters of the study was that the data gathered may be limited as parents were the only participants interviewed. The children's experience may be different from parents' representations, as parents may be overstating or understating the impact to their children due to their own feelings about the bed bug infestation. This was unavoidable, as I was using information provided by parents.

The study's results cannot be generalized to the general population, as the research was focused on a specific population. The population was limited to individuals who had school-aged children during a bed bug infestation in their home; all other participants were not in the scope for this study. Participants were recruited from only Nevada, and their experiences cannot be generalized to other areas. Resources available

to assist individuals who have bed bug infestations may vary from state to state, and the local culture may dictate to a significant degree how individuals respond to infestations.

Limitations

The study adopted an in-depth phenomenological approach, allowing participants to describe their experiences from their unique perspectives. Quantitative research methods were rejected, as I sought to gain information that is in depth and understand the subtlety of people's experiences, as little is known on this topic. Qualitative research was a better fit than quantitative research for the study on bed bug phenomena because it allows for a complex, detailed understanding of the issue and exploration of participants' perspectives and their lived experiences. A limitation of this study was that quantitative data were not gathered; quantitative data can be useful in determining general differences in distress between an affected group and an unaffected group. Quantitative methodology also applies to large samples to determine if a population experiences increased distress in association with a particular experience. The focus of this study, however, was on the individual's lived experiences in order to achieve a new understanding of the subject so I could obtain new insights about the study's particular phenomenon, as well as how much stress families affected by bed bug infestations experience.

Significance

This research sought to fill in a gap in understanding how individuals perceive, experience, and respond to bed bug infestations. The study adopted an in-depth, phenomenological approach, allowing participants to describe their experiences from their unique perspectives. The study uniquely contributes to the literature in providing a

detailed and broad description of the phenomena by examining the lived experiences and perceptions of community stigma, as well as the social and mental health effects of bed bugs on families living within rural communities.

The findings of the research may assist individuals and their families as well as communities in promoting understanding of the psychological effects and the social impact of bed bug infestations. The study may assist health care providers and authorities in obtaining funding for community outreach and education grants to combat the bed bug epidemic and may help regional health departments in developing policies for safe housing. In addition, the study may contribute to encouraging community stakeholders to engage with public agencies and extend necessary help to families in need. When adequate steps are taken to assist those who may need care for psychological issues in addition to extermination services, society also benefits from serving the mental health needs of the community.

Summary

Research on the impact of bed bug infestation has been limited. In this chapter, I provided a description of the problem and the purpose of this study, as well as the background. Additionally, I defined research questions and outlined the theoretical framework that guided this study. Also, I presented a discussion of the assumptions, scope, delimitations, and limitations of the study, as well as a discussion of the potential significance of the study as bounded by its unique population.

In Chapter 2, I will review the research that has been conducted to provide a detailed discussion of how bed bug infestations can impact families and their children

living in rural neighborhoods and the psychological consequences it has on them. In Chapter 3, the research methods used for this study will be discussed, including the research design and approach, procedures, instrumentation, data collection and analysis, as well as the ethical considerations and protections.

Chapter 2: Literature Review

Introduction

This chapter provides an overview on bed bug infestation and its significance as an emerging issue impacting societies and communities at large. The purpose of the present study was to examine and better understand the lived experiences of bed bug infestations among the residents of rural communities in the state of Nevada. I used face-to-face and remote teleconference interviews to explore residents' lived experiences of bed bug infestations, their perceptions of the impact of these infestations, and how they have coped with living through an infestation. Gaining a better understanding of how individuals experience this problem will allow for the development of programs that address specific needs in rural areas. Existing research, including pilot interviews and surveys, has suggested a need to extend the research to elicit opinions and perspectives reflecting on the rural populace's knowledge of, experience with, and social concerns regarding bed bugs (Kaylor et al., 2015). The problem investigated in the study was a lack of understanding regarding the impact of bed bug infestations in rural populaces where access to resources and the support of local authorities is sparse (see Goddard & de Shazo, 2012; Kaylor et al., 2015; MPAC, 2015; NPMA, 2019).

There is currently limited research on rural residents' lived experiences of bed bug infestations, and it is important to address this gap because bed bug infestations are becoming a more significant problem throughout the United States (Kaylor et al., 2015; MPAC, 2015; NPMA, 2019). A number of studies have shown that the impact of bed bug infestations is not limited to individuals, but also is a factor on family and community

levels (Alalawi, 2014; Goddard & de Shazo, 2012; Wang et al., 2016). Although Goddard and de Shazo (2012) reported that bed bug infestations were related to elevated anxiety in individual adults, they did not examine the experiences from the broader perspectives of the family and community; thus, it is not known how individuals perceive the interactions of these systems as contributing to their own reactions to bed bugs.

Current research on the public health effects of bed bugs has been limited over the past several decades (Goddard & de Shazo, 2012; Kaylor et al., 2015; MPAC, 2015; NPMA, 2019). Given that there has been an increase in bedbug infestations nationwide, additional research is necessary to determine the reasons for bed bug resurgence, their potential risk to transmit diseases, and their impact on mental and public health (CDC, 2010). The CDC (2010) explained that bed bugs may cause mild to severe allergic reactions and in rare cases anaphylaxis, which is a severe whole-body reaction. Winegar et al. (2013) also noted that the anesthetic chemical released by bed bugs during feeding may cause an atopic reaction, which is a rash or other irritation that may become infected. Bed bug bites may also lead to various secondary infections of the human skin such as ecthyma, lymphangitis, or impetigo (CDC, 2010). In addition, bed bug infestations may increase the risk of mental health problems and may exacerbate preexisting psychiatric conditions such as anxiety, depression, or PTSD; as a result, it may lead to increased anxiety, paranoia, monosymptomatic delusional disorder, tactile hallucinations, or severe depressive episodes that may cause suicidal risk, inpatient hospitalization or might further, result in loss of educational and occupational productivity (Goddard & de Shazo, 2012: Rieder et al., 2012; Winegar at al., 2013). Therefore, health care professionals

seeing patients with bedbug infestation and preexisting psychoses need to be alert, as patients experiencing bed bug infestations can decompensate even if they have been medically stable for a significant period of time (Rieder et al., 2012). Bed bug infestations create a significant burden on society, causing a variety of negative mental health, physical health, and economic consequences (CDC, 2010; Goddard & de Shazo, 2012; Rieder et al., 2012). As the possibility of bed bug contamination increases with populations becoming more mobile, vigilance and knowledge of bed bugs by practitioners, health care professionals and entities, and public health agencies is urgent and necessary (Winegar et al., 2013).

In this chapter, I will discuss the literature search strategy and review the relevant literature in the field. I will also review the theoretical foundation for this research and discuss the different types of methodologies used by researchers in this field. I will conclude the chapter with a brief preview of the research method further described in Chapter 3.

Literature Search Strategy

The strategy used for the literature search included databases from the Walden University library, including PsychARTICLES, PsychINFO, PsychBOOKS, ProQuest dissertations, and Academic Search Primer. The focus of the article search was from the most recent articles back to 2010; however, older scholarly articles were included if they were seminal regarding the topic and the theories used. Phrases and key words included *bed bugs, cimex lectularius, bed bug infestations, crisis, epidemic, resurgence, insects, urban pest control, low-income housing, pest management, psychological effects, bite*

reactions, health effects, epidemiology, pathogenic diseases, phenomenology, lived experience, and *resurgence.* The literature review included relevant peer-reviewed studies published in the past 5 years, as well as older studies that set foundational background for this research.

Theoretical Foundation

The main purpose of the study was twofold. First, the study attempted to understand the lived experiences of the participants and develop perspectives associated with bed bug infestations from individual, family, and community points of view. Lived experiences refer to experiences subjectively recalled by participants and obtained through interviews in the form of verbalized statements (Creswell, 2003). Second, the study attempted to assess the psychological impact and coping responses to the stress that bed bug infestations generate. Psychological impact refers to the effects from environmental and/or biological factors on the psychological aspects of an individual (De Oliveira et al., 2013). Thus, the theoretical framework was chosen to ensure that the framework grounding the study addressed both the stress and coping aspects of bed bug infestations.

Transactional Theory of Stress and Coping

For many decades, the transactional model was a dominant model in the field of psychological stress, generating intensive research on psychological stress and coping strategies (Ben-Zur, 2019). The construct of its cognitive appraisal explained the differences in people's reactions to the same stressor, and the categorization of coping according to function, i.e., problem- and emotion-focused, became apparent (Ben-Zur,

2019). The model significantly advanced research on stress and coping in numerous contexts and was an important breakthrough in psychology during the 20th century (Ben-Zur, 2019).

I chose TMSC (Lazarus, 1999; Lazarus & Folkman, 1984) for this study to help evaluate possible harm, threat, and challenges related to the individual experiences of bed bug infestation and in connection to the process of person's coping with stressful events. The transactional theory of stress and coping, as defined by Lazarus (1966, 1993, 2001, 2007; Lazarus & Folkman, 1984), originated from the historic conceptualizations of stress and developed as an alternate metatheoretical process system from the previous behavioral assertions of stress as stimulus or response. In TMSC, stress occurs as a series of transactions between person, environment, and situation (Lazarus & Folkman, 1984). Thus, depending on the outcome of the transaction, stress can generate measurable acute and chronic psychological and somatic distress (Hellhammer et al., 2009), and based on the appraisal of perceived threat, humans invoke coping responses (Lazarus & Folkman, 1984). Appraisals and coping drive these transactions by providing perceptions of relevance, threat or harm, and ability to adapt (Benight & Bandura, 2004; Carver et al., 1989). Applying the cognitive appraisal and coping components of the transactional theory of stress and coping to mediate the relationship between stress experiences and a person's response to particular stressful events and their outcomes will help determine ways in which future interventions can be established. People's appraisal of stressful events determines both the emotions that arise as a response to stressors and the ways they will cope with them (Ben-Zur, 2019). According to transactional theory, events of

any kind are considered stressors only with respect to the person who experiences them or sees them as relevant to their well-being (Ben-Zur, 2019). Additionally, personal characteristics, such as commitment and motivation, belief in control, optimism, and resources such as economic status, social support, or self-esteem, affect people's appraisals of events (Ben-Zur, 2019).

The transactional model consists of three types of appraisals: primary, secondary, and reappraisal. There are three types of primary appraisal: (a) the event is irrelevant and therefore has no significance for the person's well-being, (b) the event has positive meaning for the person, and (c) the event is characterized as stressful (Ben-Zur, 2019). A stressful event can be perceived as either a loss, a threat, or a challenge. Loss refers to damage that has already occurred in the past, whereas threat is perceived as potential harm or damage to occur in the future (Ben-Zur, 2019). Challenge refers to potential gain or growth in the future, together with potential harm.

Secondary appraisal refers to assessments of what can be done to change the stressful situation (i.e., appraisal of resources and coping capability). The third type is reappraisal: a change in primary or secondary appraisal as an outcome of changes in the environment or in the person's responses. Thus, the concept of reappraisal emphasizes the notion that stress is a process, and therefore appraisals, actions, and outcomes can change from one moment to the next depending on changes in the environment or in the person (Ben-Zur, 2019). For example, Folkman and Lazarus (1985) tested students during three phases of college examination—before the examination, immediately after the examination, and after the grades were announced—and showed the expected

changes in appraisals and coping from one stage to the next. I used this model to organize the narrative data regarding how exposure to the environmental stressor of bed bug infestations may be related to psychological effects and coping responses (Matthieu & Inavoff, 2006). TMSC can help describe coping strategies and whether these are adaptive or maladaptive (Lazarus & Folkman, 1984). I used TMSC to guide the interview questions and to organize the data.

The transactional model of stress and coping is a cognitive model, which conceptualizes stress and coping as a process based on changing cognitive appraisals. Richard Lazarus (1922–2002) was among the 100 most eminent psychologists of the 20th century (Christensen et al., 2004). Lazarus's (2012) work was informed by ideas dating back to ancient Greece and to early Aristotelian philosophical disquisitions, which were later reinterpreted by clinical, social, and personality psychologists. Specifically, Lazarus's (2001, 2012) early conceptualizations of stress, appraising, coping, and emotions was inspired by the works of Lewin, Allport, Murray, and Tolman in the 1930s, Asch, Bruner, Harlow, Herder, Kelly, McClelland, Murphy, Rotter, Sherif, and White in the 1940s and 1950s, and the radical European traditions of the gestaltists, existentialists, and psychoanalysts. During the 1950s and 1960s, Lazarus developed the first version of the transactional model of stress and coping and described it in *Psychological Stress and the Coping Process,* first published in 1966. The intensive research in collaboration with Susan Folkman during the 1970s and 1980s, resulted in the publication of *Stress, Appraisal, and Coping* (Lazarus & Folkman, 1984), which developed the initial model that further shaped and explained the model's main constructs of cognitive appraisal,

coping, and outcomes. In 1999, Lazarus published another book, *Stress and Emotion: A New Synthesis* (Lazarus, 1999), in which he emphasized the role of emotions in the stress process by presenting a cognitive motivational–relational theory of emotions.

In the transactional theory of stress and coping, individuals filter potentially emotional experiences by appraising the extent to which they believe they can reduce loss, minimize harm, or address challenge and engage in behaviors that specifically affect outcomes. Lazarus initially identified two forms of appraising: primary appraising and secondary appraising. Primary appraising refers to the process in which an individual examines the relevance of a situation, the degree to which it interacts with personal beliefs, values, goals, and commitments and potential outcomes if situational investment occurs (Lazarus, 2012). Primary appraising refers to motivational relevance and motivational congruence (Smith & Lazarus, 1993). Motivational relevance refers to the convergence with beliefs, values, and commitments, while motivational congruence refers to the intersection with goals and desires (Smith & Lazarus, 1993). Whereas the secondary appraising takes place when relationships between person and environment have meaning (Lazarus, 2012). During secondary appraising, the individual identifies what options are available for handling the situation.

According to Smith and Lazarus (1993), secondary appraising includes accountability, problem focused coping potential, emotion focused coping potential, and future expectancy. Accountability refers to the assigning of blame or credit for outcomes (Smith & Lazarus, 1993). Future expectancy is the determination of whether the situation and its motivational congruence are likely to change (Smith & Lazarus, 1993). During

secondary appraising, individuals assess their coping self-efficacy, which is an individual's belief in their ability to manage a potentially stressful situation (Chesney et al., 2006).

Lazarus also examined an additional process of reappraising, by which an individual may find their coping abilities and resources are sufficient to mitigate threat or insufficient to meet a challenge. In these situations, the primary appraisal variant and secondary appraisal options may no longer apply. Reappraising is not a distinct form of appraising but rather represents the act of revisiting primary and secondary appraisals as events change (Smith & Kirby, 2011). Further, emotion focused coping mediates the person-environment relationship and appraisals, whereas problem focused coping mediates the situational construal through construction of the situational conditions. The changes in the person-environment relationship as a function of initial appraisal processes and emotion focused coping may mediate the translation of action (Lazarus, 1999).

Although Lazarus's (1999) transactional theory of stress and coping provided a comprehensive theoretical approach for examining stress and emotion process, it has been criticized for its reliance on subjective interpretations of an event. Dohrenwend and Dohrenwend (1974), who endorsed the "stress-as-stimulus concept," stressed the importance of using quantifiable life events without relying on individual interpretation of these events. Hobfoll (1989), on the other hand, emphasized loss of resources as an objective indicator of situational constraints. In addressing criticism, Lazarus (2012) failed to acknowledge that the subjective determination of relevance provides context for loss or event. Loss or event cannot be deemed distressing until after examining the extent

of distress and suffering, making such examinations reliant on subjective appraisal without assessing those cognitions while also employing circular reasoning.

Examining the literature related to the transactional theory of stress and coping, resulted in certain core aspects becoming evident. Particularly, that development and impact of distress depend upon a series of situational and personal characteristics that interact in meaningful ways for an individual. In this research study, I addressed the following research questions: What are the coping mechanisms of individuals who have been through bed bug infestations in the rural community in Nevada? What do individuals believe the impact of bed bug infestations is on their family? The transactional theory of stress and coping provided a model for examining a person's response and outcomes when experiencing a potentially stressful event of bed bug infestation in the home.

The core premises of the transactional theory of stress and coping allowed for an examination of the psychological aspects of stress and responses to stress caused by bed bug infestation in the home. Also, personal characteristics were addressed that play a role in identifying coping mechanisms may emerge, as these traits have not yet been sufficiently researched.

Literature Review

The literature review provides detailed information on the history, biology, and psychological impact of bed bug infestations. I will discuss individual and family stressors associated with beg bug infestations, their impact on children both at home and in the school setting, and the differences among urban and rural areas.

Bed Bug Biology and Impact

The bed bug, also known under its Latin name *Cimex lectularius*, is a small, oval, flat parasite that feeds solely on human blood (Alalawi, 2014; CDC, 2013; Liu & Pennington-Gray, 2015). This parasite's bite can produce allergic reactions, skin rashes, and welts that look similar to a mosquito bite (Susser et al., 2012). This red-brown and wingless insect has a lifespan ranging from 6 to 12 months and reaches 4 to 7 mm in length. An adult female bedbug produces from 200 to 600 eggs throughout her life span (Alalawi, 2014; Studdiford et al., 2012). Bedbugs can survive up to a year in extreme temperatures ranging from 40 °C to minus 10 °C (Alalawi, 2014; Studdiford et al., 2012). Bed bugs are exclusively attracted to the blood of human hosts and discover a blood line by sensing carbon dioxide and warmth (Rieder et al., 2012; Studdiford et al., 2012). Bedbugs hide in dark cracks, beds, walls, and vents during the day, which makes them difficult to detect and exterminate (Borel, 2015).

Bed bugs can affect anyone, and negative experiences resulting from bed bug bites include nightmares, sleep disturbances, flashbacks, hypervigilance, anxiety, avoidance behaviors, emotional stress, allergic reactions, secondary infections, and overall personal dysfunction (Goddard & de Shazo, 2012; Liu & Pennington-Gray, 2015). Goddard and de Shazo (2012) reported that bed bug infestations are linked to major sleep disturbances and severe symptoms of depression and anxiety. Bed bug infestations can also contribute to more serious psychiatric symptoms, such as suicidal behavior and paranoia (Susser et al., 2012). A number of studies have shown that individuals who experience bed bug bites can develop moderate to severe negative

emotional symptoms and should be assessed for symptoms of emotional trauma in order to decrease anxiety and personal dysfunction (Doggett et al., 2012; Goddard & de Shazo, 2012; Rieder et al., 2012; Susser et al., 2012).

In addition to the emotional toll, McNeill et al. (2017) and Winegar et al. (2013) noted that bed bugs are known to carry 40 pathogens that are suspected to be vectors in the transmission of human diseases. Researchers continue to investigate the potential for bed bugs to be vectors for human immunodeficiency virus (HIV) and the hepatitis B virus (HBV) (Winegar et al., 2013). There is evidence that bed bugs transmit *Trypanosoma Cruzi*, a parasite the causes *Chagas Disease*, currently considered to be one of the most deadly and prevalent diseases in the Americas (Doggett et al., 2012; McNeill et al., 2017; Scarpino & Althouse, 2019; Salazar et al., 2015).

The American Academy of Pediatrics (AAP, 2019) provided guidelines on how to control bedbugs and educate families about these insects. To protect households in general, the AAP (2019) recommended individuals should seal cracks in their walls, clean up any bedbug debris with detergent and water, and reduce clutter. To protect school-aged children, they advised that items that travel back and forth between home and school or childcare facilities be limited (AAP, 2019). Various bed bug eradication strategies have been developed and implemented such as Integrated Pest Management, which involves a combination of effective nonchemical strategies that are environmentally sensitive such as maintenance, common sense practices and sanitation followed by pesticides (Abujela-Matt, 2014; AAP, 2019; CDC, 2019).

The CDC (2010) issued a joint statement on bed bug control in the United States with the EPA in order to increase awareness about emerging public health issues associated with widespread bed bug infestations throughout the United States. The Joint Statement noted that the resurgence in bed bug infestations across the United States had reached an alarming level, and that an integrated approach and collaboration of government and local agencies as well as pest management companies and private citizens is necessary (CDC, 2010). The statement also indicated the need for creating new educational and training programs as an effective strategy for reducing bed bug resurgence and its negative impact on health and well-being (CDC, 2010).

History and Resurgence of Bed Bug Infestations

The experts believe that bed bugs have plagued humanity for thousands of years (Potter, 2011; Rieder et al., 2012). It is also believed that bed bugs initially were bat parasites that moved to human habitats in Mediterranean caves (Potter, 2011). Alalawi (2014) noted that bed bugs favor the blood of human hosts but can also feed off the blood of other animals such as bats, cats, or dogs. Bed bugs were discovered at archeological sites of societies that existed more than 3500 years ago (Potter, 2011). In ancient times, it was thought that bed bugs cured snakebites or diseases when consumed in a cocktail with eggs, wine, or beans (Potter, 2011). Early Greek writings dating back 2400 years to the era of Aristotle first mentioned bed bugs in their scripts for medicinal purposes (Potter, 2011; Rieder et al., 2012).

With the development of commerce and the spread of human civilization, bed bugs expanded to Asia and Europe. These pests reached Italy by around 77 of the

Common Era (C.E.), and later China in 600, Germany by the 11th century, and France by the 13th century, and were for the first time mentioned in medieval European texts (Potter, 2011; Rieder et al., 2012). In 1583, bed bugs were first reported in England and later became common in the 17th and 18th century. Bed bugs are thought to have been brought to America on the ships of the first explorers and pioneer settlers (Potter, 2011). In every location, once established, bed bugs have been a common household pest that is difficult to exterminate due to lack of effective remedies.

The noticeable increase in the number of these pests originated with World War II. The marked increase of bed bugs was recorded not only across the world but also among the troops of the American Army (Potter, 2011; Wang et al., 2016). In the United States, bed bugs were almost completely exterminated by the mid-1950s with the use of DDT (pesticide dichlorodiphenyltrichloroethane), which was an inexpensive and highly effective treatment (Potter, 2011; Rieder et al., 2012). DDT was banned completely in 1972 due to its toxic and harmful effects on human health such as nausea, dizziness, headaches, confusion, lethargy, incoordination, fatigue, vomiting, tremors, increased risk of pancreatic cancer, non-Hodgkin's lymphoma, breast cancer, impaired lactation, as well as negative effects on the environment and wildlife (ATSDR, 1994; ATSDR, 2002; Longnecker et al., 1997; Potter, 2011; Rieder et al., 2012; Winegar et al., 2013).

For the past 70 years the incidence of bed bug infestations has been gradually increasing, with a dramatic increase in the last 15 years as elevated numbers of infestations were recorded across the United States, Australia, Canada, Europe, and Asia (Potter, 2011; Wang et al., 2016). The increase in international travel and tourism, the

lack of effective bed bug monitoring and management, a lack of global awareness, and insecticide resistance are likely to blame for the rapid resurgence of bed bug infestations (Goddard & de Shazo, 2012; Liu & Pennington-Gray, 2015; Wang et al., 2016). According to the CDC (2010), the EPA (2010), and the NPMA (2013), the number of complaints in the United States has been overwhelming as the number of reported cases has been climbing consistently since the mid-1990s.

Effects of Infestations

Bed bugs are a major public health issue, causing human discomfort, health problems, secondary infections, and psychological and emotional stress (Liu & Pennington-Gray, 2015; Wang et al., 2016). Bed bugs are communicable environmentally, causing widespread ill-health and affecting the well-being, daily life, and social functioning of individuals across the country (Goddard & de Shazo, 2012; Wang et al., 2016).

Individual Stressors

Goddard and de Shazo (2012) maintained that infestations are linked to major sleep disturbances and severe symptoms of depression and anxiety, while other symptoms of bed bug infestations include itchiness, pain, pruritus and rash, psychological distress, sleep loss, avoidance behaviors, and personal dysfunction (Abujela-Matt, 2014; Susser et al., 2012; Wang et al., 2016). The physical effects of bed bugs are bites, which are evident in red spots and irritated bumps clustered together (Rossi & Jennings, 2010). The bites are often accompanied by emotional and psychological symptoms among which anxiety, hypervigilance, depression, nervousness, social isolation, and insomnia

are common (Dogget et al., 2012; Rossi & Jennings, 2010). Some individuals may experience severe symptoms from bites but may also suffer from dysphagia, lethargy, difficulty breathing, chest tightness, bed bug-related psychopathology, psychiatric illness, psychotic episodes, mood lability, decreased appetite, hopelessness, difficulty concentrating, financial distress, increased alcohol consumption, fear and lack of sense of safety, suicidality, or PTSD (Abujela-Matt, 2014; Rieder et al., 2012; Wang et al., 2016).

Symptoms vary among individuals. Other consequences feature social impairments due to fear or shame such as minimizing social activity, isolation from family, friends, and peers, job loss, or overall loss of social supports (Goddard & de Shazo, 2012; Rieder et al., 2012; Wang et al., 2016). The mental health implications of bed bug infestations feature symptoms that are suggestive of trauma and may include a wide range of affective and psychotic spectrum illnesses including paranoia, psychiatric hospitalization, and suicidal behavior (Doggett et al., 2012; Goddard & de Shazo, 2012; Rossi & Jennings, 2010; Susser et al., 2012). A bed bug infestation may also worsen an existing mental health condition or increase the risk of other negative health effects, especially among vulnerable populations such as children and the elderly (Rossi & Jennings, 2010).

Family Stressors

Wang et al. (2016) pointed out that families and individuals face complex social and medical consequences including denial of health care by service providers or denial of public services due to fear of bed bugs. Liu and Pennington-Gray (2015) indicated that families also face increased expenses connected to the extermination of these resistant

pests; often, they need to discard furniture and belongings. Liu and Pennington-Gray (2015) also noted that, aside from the high cost of monitoring and bed bug treatment, families face social stigma and scourge as family friends start keeping their distance and withdraw quickly.

Interventions

Potter (2011) reviewed the history of prevention methods employed to manage and control bed bugs. Some interventions were extreme, including 18th century exterminators instructing the public to fill the cracks of their beds with gunpowder and set them on fire, as well as to douse cervices and cracks with boiling water and oil, sulfur, arsenic, mercury chloride, turpentine, pyrethrum, or pyrethrum powder (Potter, 2011). In 19th century Europe, it was estimated that one-third of the dwellings in major cities were severely infested with bed bugs, which were seen crawling from house to house through exterior windows and doors, or along gutters, pipes, and walls (Potter, 2011). The means of combating bed bug infestations at that time included slum clearance campaigns, organized propaganda to increase bed bug awareness, and the introduction of cleansing stations with the use of steam disinfectors and fumigation with hydrogen cyanide (Potter, 2011).

In the United States, during the World War II, bed bugs were so abundant in the U.S. Army that Congress proposed solutions including fumigating barracks with hydrogen cyanide, hydrocyanic acid gas, or Zyklon B (Potter, 2011). The use of these fumigants proved to be lethal and resulted in the injury or death of both professionals and civilians (Potter, 2011). DDT was invented as a safer and more economical bed bug

control method (Potter, 2011). At the start of the 20th century, bed bugs were found in U.S. theaters, hotels, restaurants, hospitals, shops, laundries, buses, taxis, trains, airplanes, prisons, libraries, office buildings, nursing homes, doctor's offices, schools, and households (Potter, 2011). Wide-spread efforts were made nationwide to replace wooden beds with metal frames, and the additional bed bug mitigation measures that were suggested included frequent examination of beds, furniture, laundry and clothing for infestations (Potter, 2011; Winegar et al., 2013).

In the mid-1950s and 1970s, National Pest Management in the United States recommended the use of malathion along with other chemical substances such as lindane, diazinon, chlordane, and dichlorvos as alternatives to DDT, which was banned from public use in 1972 due to its toxicity (Potter, 2011). The epidemic of bed bugs prompted research by government agencies and universities to study pest management, disease transmission, and the ecology of bed bugs. The prevalence of bed bugs also ushered in a new era of insecticides, which proved to be only temporarily effective (Potter, 2011). Current bed bug extermination methods focus on de-cluttering, washing bedding and clothing, wide-spread use of insecticides and glue traps, insect interceptors, lethal temperatures, detection in the early stages, and public education. Unfortunately, bed bug resistance to insecticides such a pyrethroids develops at a rapid rate (Potter, 2011).

The 2010 Comprehensive Global Bed Bug Study was conducted by the NPMA (2019) in collaboration with scholars from the University of Kentucky to investigate the extent of bed bug infestations in the United States. The authors surveyed 1000 U.S. and international pest management agencies and reported that 80% of responding pest

management companies had treated infestations in suburban areas, 71% reported treating infestations in urban areas, and over 50% of the responding pest management companies reported treating bed bug infestations in rural areas. The study provided information at the national level and reinforced the fact that bed bugs are prevalent in all areas, regardless of type of developed environment (NPMA, 2019).

The Midwest Pesticide Action Center (MPAC, 2015) is a leader in battling bed bug infestations in the city of Chicago and its suburban and rural areas and reported that organizations and governmental agencies in rural areas are left without adequate knowledge, resources, and policies to deal with the bed bug crisis. MPAC (2015) also noted that bed bugs have a significant impact on quality of life and in all developed environments from rural communities to cities. As reviewed earlier in this chapter, the impact is known to spread psychological and physical ill-health affecting the daily life, overall well-being, and social functioning of many individuals in different environments and settings (Abujela-Matt, 2014; Doggett et al., 2012; Goddard & de Shazo, 2012; Rieder et al., 2012; Rossi & Jennings, 2010; Susser et al., 2012; Wang et al., 2016). The authors of the MPAC study highlighted the magnitude of the problem and the critical need for educational materials, training, and community outreach.

The Integrated Pest Management (IPM) intervention program recommended by the CDC and the EPA is a new approach in effective control of bed bug infestations as it relies on a number of methods such as heat treatment, vacuuming, using non-chemical pesticides, using monitoring devises/interceptors, removing clutter, and sealing cracks,

but is also careful about the use of chemical pesticides (MPAC, 2015; NPMA, 2019; Winegar et al., 2013).

McMenaman and Gausche-Hill (2016) indicated that the IPM has been demonstrated to be the best method for bed bug infestation control, as it elicits collaboration between residents, housing managers, pest control professionals, and local government agencies. IPM provides both non-chemical and chemical solutions to bed bug infestations (McMenaman & Gausche-Hill, 2016). Bed bug sniffing dogs are also employed to detect bed bug infestations (Winegar et al., 2013). The National Entomology Scent Detection Canine Association must certify the dogs that are used to detect and combat bed bugs (Winegar et al., 2013).

Bedbug Infestations in Rural Versus Urban Communities

According to the NPMA (2019), the incidence of bed bugs is three times higher in urban areas than in rural areas due to factors such as larger population size, apartment living, and increased mobility, all of which are conducive to the rapid spread and breeding of bed bugs. Because of the higher prevalence of bedbug infestations in urban areas, researchers have largely focused on urban populations (Doggett et al., 2012; Goddard & de Shazo, 2012; Hwang et al., 2005; Susser et al., 2012; Wang et al., 2016).Rural populations, however, are unique with regard to the risk factors and impact of bed bug infestations and require singular focus in order to determine their service needs. Individuals and institutions in low-income and rural communities are at higher risk than more affluent communities of experiencing recurring problems due to lack of funds

for prevention and treatment (MPAC, 2015; NPMA, 2019). These communities also have fewer social and psychological supports (MPAC, 2015).

The studies that addressed these issues, along with conducting pilot interviews and surveys, have suggested there is a need to extend the research in order to elicit opinions and perspectives reflecting the knowledge, experience, and concerns of the rural populace regarding bed bugs (Kaylor et al., 2015). Currently, there is limited research investigating the lived experiences of individuals in rural communities on this topic. It is important to address this gap because bed bug infestations are becoming a more significant problem throughout the United States (Kaylor et al., 2015; MPAC, 2015; NPMA, 2019).

This study uniquely contributes to the literature in providing a detailed and broad description of the phenomena by examining the lived experiences and perceptions of community stigma, as well as the social and mental health effects of bed bugs on families living within rural communities. The prevalence of bed bug infestations is closely associated with socio-economic status. Bed bug infestations are on the rise worldwide and occur in all 50 states across the United States (Alalawi, 2014; Goddard & de Shazo, 2012; Wang et al., 2016), but low-income communities are more severely affected and disproportionally burdened than middle and upper economic status communities (Wang et al., 2016). The lack of financial resources for prevention, ineffective pest management practices, and a lack of collaboration among residents significantly contribute to persistent and long-standing chronic bed bug infestations (Wang et al., 2016).

Bed Bugs Within the School Setting

The EPA (2016) issued the "Bed Bugs Go To School" report to alert school staff on how to identify and respond to bed bug infestations in schools highlighting the necessity of maintain ongoing communication with students and parents about infestations. The EPA included guidance on how school staff should monitor for bed bugs at schools such as observing students' book bags, outer garments, and clothes for signs. The presence of bed bugs in a school can be emotional and generate anxiety in parents, students, and school staff. The EPA pointed out the necessity for schools to be proactive in dealing with bed bugs: the key is to educate everyone including students, parents, teachers, and stakeholders. Policies and procedures must be developed at the school district level and followed with an effective plan of action (EPA, 2019).

Impact on Children

McMenaman and Gausche-Hill (2016) also stressed the need for physicians and mental health providers who care for children and their families to recognize and understand the psychological, social, and medical implications of bed bug bites following the infestations. The authors further indicated that children and family members affected by bed bug infestations should be referred by medical providers to the appropriate mental health agencies for follow up to address any symptoms of depression, anxiety, stress, or may present with self-injurious behaviors due to scratching followed by the bed bug bites and home infestation incidents (McMenaman & Gausche-Hill, 2016).

In one particular study, Bandyopadhyay et al. (2014) reported on the outbreak of the tropical bed bug, *Cimex hemipterus,* in the 80-bed neonatal unit in New Delhi. Thirty-

nine individuals were affected in this outbreak including mothers and their infant babies. The newborns experienced distress, an inability to sleep, and extensive crying while the adult mothers suffered from papular rashes and itching (Bandyopadhyay et al., 2014). The authors further reported that some of the mothers required emollient and antihistamine treatment, as well as antibiotics for the control of folliculitis. The outbreak resulted in a 2-week closure of the unit before it returned to being fully operational (Bandyopadhyay et al., 2014). The authors further highlighted that there has been significant underreporting of bed bug infestations in medical facilities due to the negativity of public reports and unfavorable press that these reports may generate (Bandyopadhyay et al., 2014). They concluded that bed bugs not only cause significant disruption of medical services and increased health risks, but also psychological stress in patients and medical providers along with considerable economic burden (Bandyopadhyay et al., 2014). Thus, the impact of bed bug infestations is not limited to individuals, but also is a factor for the family and the community (Alalawi, 2014; Goddard & de Shazo, 2012; Wang et al., 2016).

Summary

Chapter 2 provided a review of the literature and an overview of the problem of bed bug infestations, but also highlighted the gaps in the literature and rationale for this research study. The chapter featured three sections in which the literature search strategy, theoretical foundation of the study, literature review on bed bug phenomena and its historical evidence were presented. This review showed the lack of research on the lived experiences of individuals, families, and their school-aged children who were affected by

home bed bug infestations. I also provided information on the impact of bed bug infestations on families and their children living in rural neighborhoods, along with the psychological consequences.

On the basis of the problem and gaps in the literature identified in this chapter, the study was conducted to explore the lived experiences and the impact of bed bug infestation on families and their school-aged children specifically in a rural setting. In Chapter 3 the methodology for this present study is provided including a discussion of the research methods, research design and approach, recruitment procedures, instrumentation, participation, data collection and analysis, as well as the ethical considerations, trustworthiness, and protections that will be used for this study.

Chapter 3: Research Method

Introduction

The purpose of this study was to examine and better understand the lived experiences of bed bug infestations in residents of rural communities in the state of Nevada. This study further explores and identifies: (a) coping mechanisms of individuals who have been through bed bug infestations, (b) individuals' beliefs regarding the impact of bed bug infestations on their families, and (c) the social and psychological impact of bed bugs on school-aged children (preschool through 12th grade) as described by their parents. Gaining a better understanding of how individuals experience this problem will allow for the development of programs that address specific needs in rural areas and may also inform treatment. This chapter provides a description of the research approach and design, as well as the justification for its use. In this chapter, I describe the rationale for the research design as well as the sample selection and the measures taken for ethical protection. I also outline the methodology for collecting and analyzing the data.

Research Design and Rationale

Research design is arguably one of the most crucial elements of a research study. The research design navigates the direction of the study and determines how the findings are provided. The research design distinguishes the data collection methods and analysis, instrumentation, and interpretation (Frankfort-Nachmias et al., 2015). The study used a phenomenological qualitative research method that allowed for exploring and discovering underlying reasons for certain experiences and behaviors and describing the patterns of these behaviors (Creswell, 2009). A qualitative approach is appropriate to obtain broad

and deep meaning and understanding of behaviors, feelings, perceptions, and experiences from study participants (Frankfort-Nachmias et al., 2015).

The phenomenological approach is used to further a topic and gain insight into transformational aspects of a phenomenon that may go unnoticed by quantitative measures (Thomas & Pollio, 2002). Quantitative research methods were rejected for this study, as I sought to gain information that is in depth and to understand the subtlety of people's experiences, as little is known on this topic. The intention of this study was to gather information that would only be evident to the participants, to explore the meaning of the phenomenon to the participants, and to preserve the context of the phenomenon as part of the lived experiences of the participants. The phenomenological approach was the best to use in this project as the study's aim was to learn from the lived experiences of others and to seek to describe the essence of a phenomenon by exploring it from the perspectives of those who have experienced it (Creswell, 2014; Moustakas, 1994). Research methods traditionally used in quantitative studies, such as questionnaires, surveys, and scales, were not used in this research, as they would not have allowed for the exploration of individuals' unique experiences (Donnelly & Trochim, 2008; Moustakas, 1994). Qualitative research was a better fit than quantitative research for this study on bed bug infestations because it allows for a complex, detailed understanding of the issue.

Among the four traditions that fall under the qualitative umbrella, a phenomenological design was ideal for exploring and accomplishing the objective of this study (Patton, 2002a, 2002b). The other three qualitative designs include ethnography,

case study, and grounded research theory. Ethnography focuses on an entire cultural group through participant observation of the group as the researcher becomes engaged in the individuals' daily lives while conducting interviews and observing the participants (Creswell, 2014). In this way, the meaning of language, behavior, and interaction among group members is thoroughly investigated by a researcher (Creswell, 2007). Ethnography requires extensive fieldwork in environments that allow for direct observations of the activities of the group participants (Moustakas, 1990; Moustakas, 1994). This research design was not appropriate for this study as the nature of the study is not an anthropological inquiry.

As described by Creswell (2014), case study design focuses on a group of participants or a single participant over time involving detailed data collection with multiple sources of information; in a group of participants, the behavior is explored as a whole. Yin (2014) indicated that case studies have also been used to test theory. The main focus of a case study is to develop an in-depth analysis and description of a single case or multiple cases (Creswell, 2007). This approach did not fit the purpose of the current research study because the goal of this research was to seek themes and patterns of the lived perceptions of a common experience. Thus, the phenomenological approach was more appropriate for this study as it explores the lived experiences of the study participants through their own expressions and perspectives, which was the main focus of this research inquiry.

Faggiolani (2011) posited that the construction of theory through data analysis is referred to as grounded theory. Creswell (2007) explained that grounded theory research

aims to move beyond descriptions to generate or discover a theory that could be developed to provide a framework for future research (Creswell, 2007). Moustakas (1994) highlighted that the theory is generated during the research process and from the data being collected. The grounded theory approach was not chosen for this study because the purpose of this research was not to develop or discover a theory on the bed bug phenomena, but rather to understand and describe the specific elements of the phenomena through the perceptions of the individuals.

The following research questions were used to address this goal:

RQ1: What are the lived experiences of individuals who have been through bed bug infestations in a rural community in Nevada?

Subquestion 1: What are the coping mechanisms of individuals who have been through bed bug infestations in a rural community in Nevada?

Subquestion 2: What do individuals believe the impact of bed bug infestations is on their family?

RQ2: How do parents describe social and psychological impacts of bed bug infestation on school-aged children (preschool-12th grade) living in a rural community in Nevada?

The central phenomenon researched was the life experiences of the residents of rural communities in Nevada who have experienced bed bug infestations. The main focus of the study was to explore bed bug infestations as significant life stressors, describe the social and psychological impact on the families and their school-aged children, and identify any potential patterns in coping strategies used in families impacted by

infestations. The data gathered during the course of the study were expected to lead to a better understanding of the impact of these experiences on the families and their children. The data would also allow for a better understanding regarding how the families may respond to the bed bug infestations as a perceived stressor in the context of psychological symptomology. A phenomenological approach was chosen because of its emphasis on understanding the meaning of the lived experiences of a group of individuals and the ability to identify patterns in those experiences. Lived experiences refer to experiences subjectively recalled by participants and obtained through interviews in the form of verbalized statements (Creswell, 2003). The study attempted to gather narratives regarding the psychological impact and coping responses to bed bug infestations and organize those narratives into patterns.

Role of the Researcher

The main purpose of qualitative research is to gather data and gain in-depth understanding of human behavior and the underlying reasons of such behavior (Ravitch & Carl, 2016). Researchers conducting qualitative studies attempt to understand a variety of complex behaviors, motivations, and experiences of people who strive from different environments (Ravitch & Carl, 2016). A researcher plays a central role in qualitative research as its primary instrument (Ravitch & Carl, 2016). A researcher's identity is also central in qualitative design and viewed as a vital part of the qualitative inquiry itself (Maxwell, 2013; Ravitch & Carl, 2016). Thus, a researcher's role requires interaction with each study participant to obtain in-depth understanding of the phenomenon under study (Creswell, 2014). Further, a researcher is interested in understanding, describing,

and analyzing the processes, meanings, and understandings that people have and make within their experiences in their natural setting as they share certain perspectives and their unique points of view (Ravitch & Carl, 2016).

My role as the researcher in this study was complex as I was the sole investigator in this project, and I was selecting the participants, scheduling interviews, conducting the interviews, and analyzing the data. To avoid conflict of interest and to assure ethically unbiased data, it was important that the study participants did not have any personal or professional relationship with me as the researcher in this study. I explained the purpose of the study to the participants and informed participants about their right to withdraw and their right to review the transcript and a summary of tentative interpretations. Throughout the process of coding, classifying, and identifying major themes, I attempted to stay true to the outcome of gathered data as best as possible and to the best of my abilities.

As an individual who previously worked with families affected by home bed bug infestations, I observed firsthand the impact of bed bug infestations on families and behavior of their children, and I developed my own understanding of how bed bug infestation can influence people's view of themselves, view of their own family, and the view of the world around them. My responsibility is to minimize personal bias in understanding the participants' experiences and feelings as I might expect that participants will report things consistent with what I have personally experienced in the past. Therefore, I needed to take steps to avoid letting my understanding of the impact of bed bug infestations impact the data. I encouraged the participants to share their feelings

honestly and openly. The semistructured and open-ended interview question format allowed participants to elucidate and express their lived experiences and help me avoid asking leading questions.

I also used bracketing in this phenomenological study as a methodological device to deliberately put aside my own beliefs about the phenomenon under investigation or what I already know about the subject prior to and throughout the phenomenological investigation (Carpenter, 2007). As a researcher in this project, I needed to put aside my personal beliefs, values, and experiences to accurately describe participants' lived experiences. In addition, I used member-checking to ensure I had honestly and clearly transcribed the interviews. This was also important to allow study participants to verify transcripts and to further assure that my personal values, interests, intrusions, biases, or preconceived opinions were suspended. These steps also allowed for the study findings to be as neutral as possible in promoting truthful responses as revealed by the study participants. To allow for the broadness of a qualitative study, I employed a holistic approach to the phenomena under study (Creswell, 2003).

Methodology

This research project sought to fill a gap in understanding how individuals perceive, experience, and understand bed bug infestations. I employed an in-depth, phenomenological approach, allowing participants to describe their experiences of bed bug infestations from their own unique perspectives. The study methods provided a detailed and broad description of the phenomena by examining and investigating the lived experiences and effects of bed bugs on families in rural communities. In a

phenomenological study, a researcher seeks to understand the nature and essence of the phenomena being investigated (Moustakas, 1994). Thus, the goal of this phenomenological research was to "obtain comprehensive descriptions that provide the basis for a reflexive structural analysis that portrays the essence of the experience" (Moustakas, 1994, p. 13).

Participant Selection Logic

Moustakas (1994) highlighted that to better understand a phenomenon, participants in a phenomenological study should have experienced the phenomenon under study. Thus, the criteria for participant selection in this study were individuals with lived experiences of the phenomena or purposeful criterion selection. Because the research was focused on rural family impact and perceptions, the participants were the parents of school-aged children, preschool through 12th grade, who were living in a rural community in Nevada. Participants were those willing to participate in interviews and consented to have the interviews recorded and the data published (Moustakas, 1994, p. 107). Furthermore, participants needed to be able to articulate their lived experiences (Creswell, 2007, p. 122).

The participants in this study were recruited using different strategies. One strategy involved the use of flyers that included a brief summary for potential participants (see Appendix A). These flyers were posted on public billboards that do not require approval. I also asked permission to post flyers in local churches or community food banks. In addition, I posted notices on social media such as town pages or Facebook. Another strategy involved snowballing to seek individuals with lived experiences of bed

bug infestations as potential participants. I asked study participants to inform other individuals in their communities who have experienced home bed bug infestations about the study and provided them with the flyer to pass on to other families.

The participants were selected using a purposeful sampling strategy, which is defined as a nonprobability sampling, in which participants are selected based on a list of criteria (Welman & Kruger, 1999). I selected participants who could purposefully inform an understanding of the research problem and central phenomenon in the study. In phenomenological studies, criterion sampling is effective when all individuals studied represent people who have experienced the phenomenon. Everyone experiencing the same phenomenon is useful for quality assurance (Creswell, 2007, pp. 126-128). I recruited 10 participants who met the inclusion criteria as detailed interviews with up to 10 participants is considered sufficient to reach saturation (Creswell, 2014).

Instrumentation

I used a demographic form to collect information such as age, race, gender, ethnicity, education level, marital status, and age of participant's child/children after participants consented to participate (see Appendix B). This information was used to describe the sample and to compare the sample demographics to previous research.

The main instrument to collect data for this study was an approximately 60-minute semistructured interview including open-ended questions that were used to solicit the participants' experiences relating to bed bug infestations. The interviews were conducted in a professional manner at a private and quiet place convenient to the study participant. I developed interview questions consistent with the research questions to

guide the data collection. The interview questions are included in Appendix C and were reviewed by my dissertation committee members to make sure they addressed the research questions and were appropriate for the study.

All interview questions focused on what home bed bug infestations were like for the participants and their children, how they assign meaning to their experiences, and how they coped with the infestation. I allowed the participants to describe their own story while avoiding transferring meaning from one interview to the next (Seidman, 2006). I also avoided escorting and conducting interviews in the manner that could distort or influence study participants' views, opinions, or experiences (Thomas & Magilvy, 2011).

Recruitment Procedures and Participation

The criteria for selecting participants were based on inclusion criteria of participants who had a lived experience of the phenomenon under study, using the recruiting procedures described above. I sought to recruit 10 participants, as this number of individuals is deemed sufficient to reach saturation (Creswell, 2014). Fusch and Ness (2015) suggested that data saturation does not specifically depend on the number of the participants in the study, but on the depth of the information gathered from the study participants. I found that 10 participants were sufficient to reach saturation in this research.

Participants who contacted me were screened to make sure they met the inclusion criteria of the study, which is that they were adults with school-aged children who have experienced a bed bug infestation. The interviews were scheduled at a reasonable and convenient time for the participant and were conducted in person or through video

conferencing software. Prior to the interview, I explained the nature of the study, and an informed consent form (Appendix D) was provided to each participant to review and sign. The informed consent form included an outline of the study, the methodology, and what was required from the study participant.

In the process of collecting consent forms, I used different formats for face-to-face, online, and phone interviews. When consent was obtained via e-mail, I informed the participant to reply to my email with the words, "I consent." For a face-to-face consent process, the participant provided consent by signing the consent form. During videoconference or phone interviews, I audio recorded the entire consent process and asked the participant to state, "I consent," on the audio recording. As a gesture of appreciation, the participant was offered a $25 grocery gift card for participating in the study.

Data Collection

Ravitch and Carl (2016) highlighted that the data collection process and the method chosen is the key component of qualitative research and is critical to upholding the value of substantial quality research. The best approach and method depend on the questions being asked (Sullivan & Sargeant, 2011). It was necessary, prior to the data collection procedure, to obtain Institutional Review Board (IRB) approval. It was in the researcher's best interest to establish a rapport and climate for the interview as that would allow the participants to feel comfortable, which may enhance honest and genuine responses (Moustakas, 1994). For this study, I used a data collection method that is consistent with qualitative inquiry procedures. Thus, the interviews were guided by a

semistructured interview, and, if necessary, follow-up questions would be asked for clarification during the interview.

In case the participant did not understand the question, it was important to clarify or reword the question. Prior to each interview, the recorders were checked for appropriate functioning. Each participant in the face-to-face interviews was presented with an informed consent form to read and sign, and I was available to answer any questions about the study. Each participant was assigned a number to replace their full name and protect their identity. Only I had access to the participants' identifying information in a key code, which was destroyed after data collection was completed.

I audio recorded all interviews and took written field notes, which included my observations and impressions from the interview. I transcribed the data verbatim and coded the data before conducting analysis. Data collection involved an approximately 60-minute interview with each study participant. It is recommended in qualitative studies that the interviews are face-to-face and in-person, but interviews that are conducted by phone or online video chats are also effective ways to collect data (Fisher, 2013; Riessman, 2008; Zhang et al., 2021). The participants were given the option of video or phone interviews in case they were unable to attend an in-person interview, although it was the least desirable method. The interview questions asked participants to describe their lived experiences of a bed bug infestation, how they and their families coped with that infestation, and what they perceived to be the impact of the infestation on their children. The interview was semistructured, which allowed me to ask follow-up questions for further probing. At the end of each interview, I thanked the participant and offered an

opportunity to reflect upon the interview as well as address any questions they may have had regarding their participation in the study. The participants were offered a $25 grocery gift card to compensate them for their time participating in the study.

The interviews were recorded using two digital recorders: one recording device and one in my laptop. I used a transcription service to transcribe recorded interviews. A transcribed copy of each participant's interview was forwarded to them for member-checking. The transcript provided participants the opportunity to correct or change their initial response. I followed up with each participant to verify if the transcript accurately reflected their experience. I offered to conduct a follow up interview over the phone with participants who wish to correct their transcript.

Data Analysis Plan

Ravitch and Carl (2016) indicated that the processes of data collection and analysis are not separate aspects of conducting research, and that research design and data collection methods are essential to the quality of the data obtained in a study. I was accountable for reporting data and for presenting or legitimating study findings. The quality of the results of a particular research project is based on the researcher's ability to present valid study findings and argumentation to participants (Ravitch & Carl, 2016). As a researcher, my intention was to provide a clear understanding of the phenomenon (the nature of bed bugs infestation) and describe it from the participant's point of view; it served as a legitimate judgment of the credibility of the study results (Shenton, 2004).

The process of data organization and analysis began with the transcribed interviews. The integrity of the data was enhanced by employing an objective third party

to conduct the transcribing. I also used member-checking to allow the study participants to go through the transcripts by sending participants summaries of their rich descriptions of the interview transcriptions. This allowed the participants to go over and to analyze the data allowing the participants to provide additional feedback if there was anything they would like to add.

The data analysis procedure was guided by the van Kaam method of phenomenological analysis (Moustakas, 1994). The analysis was conducted in accordance with the following steps: (a) horizontalization, (b) reduction and elimination, (c) clustering and thematizing, (d) validation of invariant constituents, (e) individual textural description, (f) individual structural description, and (g) composite description (Moustakas, 1994). The data was horizontalized, with every horizon or statement relevant to the topic being regarded as having equal value. The transcripts were reviewed, and codes were assigned to interview excerpts. From these horizontalized statements, the meaning or meaning units were first listed, then clustered into common categories or themes. As part of the clustering and categorizing process, units were coded using emergent and in vivo codes. During this process, overlapping and repetitive statements were removed. These clustered themes and meanings were then used to develop textural descriptions of the experience, which were then used to develop structural descriptions. Through the integration of textural and structural descriptions, the meanings and essences of the phenomenon are constructed (Moustakas, 1994, pp. 118–119).

The compound description included the final report of the meanings of the participants' lived experiences with a primary focus on the experiences as a whole rather

than through individual participants (Moustakas, 1994). The qualitative software NVivo was used to analyze the data. NVivo is qualitative data analysis software that guides the researcher in coding and keeping tabs on the data. The data was collected, read, examined, and re-examined to reach data saturation while searching for patterns. The data patterns were analyzed according to how they generated themes and categories as a means to address the research questions. After the themes and categories were established, I asked a peer to review the transcript, along with its emerging themes and categories to minimize researcher bias.

I took field notes during the interviews to use later for data analysis in accordance with the Heideggerian hermeneutic research approach where no bracketing of ideas is required. Heideggerian hermeneutic approach aims to interpret data while searching for common meanings in the narrated lived experiences without bracketing the researcher's own preconceived notions (Crist & Tanner, 2003). Interpretation of data collected from the participants' narration of their lived experiences then extracting the essence is the objective of the Heideggerian hermeneutic approach (Laverty, 2003).

Issues of Trustworthiness

Shenton (2004) maintained that ensuring the accuracy of collected data determines the trustworthiness of the study. Shenton further maintained that the trustworthiness of the study can be obtained by prolonged engagement, persistent observations, triangulation, referential adequacy, peer debriefing, or member checks. According to Sullivan and Sargeant (2011), trustworthiness and rigor establish credible findings. One technique used to enhance trustworthiness and rigor is triangulation, in

which multiple data sources (observation, interviews, recordings), multiple analytic methods, or multiple researchers are used to study the question.

Ensuring that collected data is accurate determines trustworthiness of the study (Shenton, 2004). To ensure trustworthiness, credibility, transferability, dependability, and conformability must be maintained (Shenton, 2004). The overall goal is to minimize and understand potential bias while ensuring the researcher's truthfulness of interpretation (Sullivan & Sargeant, 2011). The concepts of credibility, precision and transferability are key aspects of evaluating a qualitative study and ensuring the quality of the study (Sullivan & Sargeant, 2011).

To establish the trustworthiness of a phenomenological study, the credibility of the data needs to be examined. This can be achieved by employing member-checking, a process of sharing or sending (e-mailing) co-researchers (participants) copies of the researcher's textural and structural descriptions of their experiences. Then, co-researchers can carefully examine the descriptions and make additions and corrections if necessary (Moustakas, 1994, pp. 110–111). Through member-checking, the data as well as analytic categories, interpretations, and conclusions are tested with the members from whom the data was originally collected. Member-checking is an effective follow up method by which the participants are allowed to add, correct, or change their initial response (Bradbury-Jones et al., 2010). Member checks provide the researcher with the opportunity to assess for what the respondent intended by providing certain information. This process also gives the respondent the opportunity to correct errors of fact and to challenge interpretations made by the researcher that are perceived to be wrong, or to

agree they are correct. Furthermore, through member checks, the respondent can volunteer additional information. Finally, the respondent can give an overall assessment of the adequacy of the interpretation (Lincoln & Guba, 1985, p. 314).

I enhanced the reliability of the study by making sure I thoroughly and completely documented data including field notes, memos, and research journals. The participant selection process was crucial, and the data was not generalized beyond this population of study. All correspondence between myself and the study participants (co-researchers) was kept as data. Shenton (2004) maintained that certain criteria need to be present to ensure the trustworthiness of the research study to assure: credibility, transferability, dependability, and confirmability of the study. Shenton (2004) defined the terms as follows: credibility – presenting results, peer review and random sampling; transferability – using historical research to back up the current study; dependability – the use of multiple methods of data collection that provide consistent results; confirmability – reduction of research bias and acknowledgement of shortcomings. Further, Shenton suggested it is the responsibility of a researcher's chosen method to ensure trustworthiness is followed by researchers undertaking a qualitative inquiry. Shenton indicated that when addressing credibility, researchers attempt to demonstrate that a true picture of the phenomenon under scrutiny is being presented.

Sullivan and Sargeant (2011) highlighted that qualitative researchers need to show that their findings are credible; concepts of precision, credibility, and transferability are key aspects of evaluating a qualitative study. The credibility criteria allow the outcome of the qualitative research to be believable from the perspective of the study participant's

(Shenton, 2004). The purpose of qualitative research is to describe or understand the phenomenon of interest from the participant's perspective, as the participants are the only ones who can legitimately judge the credibility of the results (Shenton, 2004). Generally, qualitative research is concerned with cases and understanding differences in response due to opinions, views, and beliefs. In-depth interviews and open-ended questions are often employed.

A variety of attributes and abilities of the researcher are also important in the research such as: creativity, flexibility, reflexivity, and inquisitiveness (Hunt, 2015). I used member-checking, data saturation, and reflexivity to increase the internal validity of this study. For external validity, I provided detailed descriptions of the phenomenon for the readers to assure the generalizability of the study findings and further allow readers to draw their own conclusions and ideas from this study as these may be applied across different populations, settings, treatments, and outcomes (McDermott, 2011; Shadish et al., 2002). Qualitative research, by its nature, has limited generalizability; however, employing consistent inclusion criteria ensures that the population of study has been sampled.

Ethical Procedures

While conducting studies with human subjects, researchers are expected to adhere to the highest ethical standards. Participant recruitment and data collection was conducted only after IRB approval was granted for this study. Following the ethical policies of the IRB, I aimed to ensure confidentiality to protect the participants. Throughout this qualitative research inquiry, the names of the participants were replaced with non-

identifying numbers to protect the participants' identities, and all data was connected to this number rather than any identifying information. Furthermore, The American Psychological Association's (APA) Ethical Code (APA, 2019) was followed. All the participants were recruited voluntarily. The participants were briefed and provided with a written informed consent form in accordance with IRB protocol before participating in this study.

To protect confidentiality, all collected data was stored in a safe, password-protected personal computer, which only I have access to. I had knowledge of the identity of each participant, which was required in order to contact the participants; however, I used a key code sheet to keep track of which numbers represented which participant, and this document was passcode protected in a database on the same password protected personal computer. The data was subsequently deleted. All email interactions and addresses from participants were also deleted after data analysis was completed and the findings had been communicated to them. All the data will be kept in a secured locked cabinet in the researcher's personal office and disposed of five years after the completion of this study.

To assure the privacy of the study participants the location of face-to-face interviews was in a private area, where the conversation could not be overheard by other people. Privacy could not be guaranteed for internet interviews, and the participants were informed of the risks of hacking. The study participants interviewed via the internet or phone were asked to set themselves up in a secure and private place where other people could not overhear them. Further, participants were informed that they were welcome to

allow other family members to be present during the interview if they wished. The transcription service agency was also bounded by ethical and confidentiality procedures in this study.

All study participants were informed that the participation and interview process was voluntary, and they were able to withdraw at any time without penalty, even if they were in the middle of the interview or had completed it. I explained the purpose of the study to the participants before they agreed to participate and reviewed potential risks they could face as a result of their participation. Due to the sensitive subject matter of this study and the psychological distress the interview questions might prompt, participants were provided with additional resources for follow up including local mental health agencies and local health district facilities that offer educational materials and referrals (see Appendix E).

The study participants were explained their rights as participants, such as the right to confidentiality, the right to withdraw, and the right to review the transcript and a summary of the findings. They were also informed that consent is a process, and they may decide to withdraw from the study at any time, even in the middle of an interview. The participants had the opportunity to request a summary of the study findings. Also, to assure ethical behavior, all risk factors and benefits of participation in this research project were addressed prior to data collection process. Thus, the highest ethical aim of this research project was to achieve sound and unbiased science.

Summary

This chapter provided a description of the research rationale, methodology and design, instrumentation, procedures, and ethical considerations of the research project. I explained my responsibilities as the sole researcher of this study. I described the target population and sampling strategy, the development of the instruments to be used in the study, and the data collection and analysis. I also described the ethical procedures and trustworthiness of the study including an explanation of the techniques to be used such as peer reviewing and member-checking. In addition, I explained how I reduced the risks to participants. Chapter 4 describes the process of data collection and analysis and presents the findings of the study.

Chapter 4: Results

Introduction

The purpose of this qualitative phenomenological research was to investigate the lived experiences of individuals who lived through or are living through a bed bug infestation in their homes in the rural areas of Nevada. The aim of the study was to gain insight into the participants' unique experiences and perceptions of the impact of bed bug infestations on the participants and their families and children. The van Kaam method by Moustakas (1994) was employed to examine the experiences of the participants and address the research questions. NVivo (Version 12) was used to systematize and organize the themes of the study. There were two research questions:

RQ 1: What are the lived experiences of individuals who have been through bed bug infestations in a rural community in Nevada?

RQ 2: How do parents describe social and psychological impacts of bed bug infestation on school-aged children (preschool-12th grade) living in a rural community in Nevada?

This chapter presents the study results, a description of the analysis and findings including emergent themes, codes, and subcodes and their underlying descriptions. I describe the demographic characteristics of the sample as well as the results of the phenomenological analysis of the data collected from 10 interviews conducted with the participants. This chapter also includes a discussion of the trustworthiness of the findings, and an overall summary of the chapter.

Setting

Nine interviews were conducted in participants' homes in rural communities in the state of Nevada, and one interview was conducted remotely via videoconference. Although I offered all the participants the option to conduct interviews remotely due to the global COVID-19 pandemic, most preferred to be interviewed at home. I maintained safety precautions of wearing a mask and keeping a 6-foot distance from participants throughout all interviews conducted inside participants' homes. I recruited participants according to the original plan discussed in Chapter 3 by posting flyers on public billboards that did not require approval, local food banks, and churches in rural areas in Nevada, as well as via social media, such as Facebook, town pages. I also asked study participants to inform other individuals in their communities who have experienced home bed bug infestations about the study, and I provided them with additional flyers to pass on to other families.

Demographics

The participants were selected using a purposeful sampling strategy based on a list of criteria. Ten participants were recruited and interviewed, which is generally sufficient to reach saturation (Creswell, 2014). All 10 participants were women. The participant code and gender of each participant is presented in Table 1.

Table 1

Participant Demographics

Participant	Age (years)	Ethnicity	# of children	Children's ages
1	53	Caucasian	1	16 years
2	51	Caucasian	3	3 months, 5 years, 10 years
3	55	Caucasian	2	11 and 17 years
4	64	Caucasian	2	13 and 17 years
5	45	Caucasian	1	13 years
6	38	Caucasian	3	5, 7, and 9 years
7	53	Caucasian	3	13,14, and 17 years
8	29	Hispanic	2	6 and 8 years
9	51	Caucasian	2	10 and 13 years
10	33	African American	3	1, 6 and 13 years

Data Collection

Data were collected through semistructured interviews conducted with 10 participants. Each interview lasted approximately 60 minutes. I asked follow-up questions and used probing for clarification during the interviews. All interviews were recorded, and participants' consent was obtained. Nine of the 10 participants signed the written consent form and one participant, who was interviewed remotely, provided consent via recorded statement. Recruitment of the participants started on June 8, 2021,

after IRB approval was granted, and data collection was completed on August 26, 2021. The IRB approval number for this study is #06-07-21-0625365.

I used two audio recording devices: a portable audio voice recorder and an audio recording feature on my laptop computer. I also used field notes to record the participants' facial expressions and body positioning as well as my personal reflections and thoughts. Once each interview was completed, the collected data from the interviews were transcribed using a transcription agency. All the participants were contacted to follow up with member-checking procedures. Among the 10 participants who were interviewed for the study, six indicated they did not wish to review the transcript. Three out of 10 participants reviewed the transcript and communicated that no changes were needed. I was unable to follow up with one of the participants, whose phone number was no longer in service.

Data Analysis

According to Bergman and Coxon (2005), quality concerns play a central role throughout the qualitative research from the inception of a research question and data collection to the analysis and interpretation of research findings. The process of data organization and analysis for this study began with an objective third party conducting the transcribing of interviews to assist with the integrity and to enhance the objectivity of the collected data. The data analysis procedure was guided by the van Kaam method of phenomenological analysis (Moustakas, 1994). The analysis was conducted in accordance with the following steps: (a) horizontalization, (b) reduction and elimination, (c) clustering and thematizing, (d) validation of invariant constituents, (e) individual

textural description, (f) individual structural description, and (g) composite description (Moustakas, 1994).

Horizontalization

The horizontalization step of the van Kaam method by Moustakas (1994) was the initial noting and preliminary grouping of the experiences from the 10 interviews. This practice of listing the relevant points of the participants' experiences is known as the horizontalization process of the data analysis where the meaning or meaning units are first listed, and then clustered into common categories or themes (Moustakas, 1994).

Reduction and Elimination

During the reduction and elimination stage, I read and reread the data to determine the relevant responses related to each of the research questions. The data were further classified and labeled based on necessity and constituent sufficiency for understanding as a horizon of the experience. Expressions that did not meet these requirements were eliminated. Also, overlapping, repetitive, and vague expressions were eliminated or presented in more descriptive terms (Moustakas, 1994).

Clustering and Thematizing

As part of the clustering and categorizing process, I coded meaning units and phrases using emergent and in vivo codes. During this process, overlapping and repetitive statements were removed. These clustered themes and meanings were then used to develop textural descriptions of the experience. The grouped and categorized invariant constituents and themes were then analyzed further and transformed as the core themes of the study (Moustakas, 1994). NVivo (Version 12) was used to determine the core themes

of the study through the systematic organization and tabulation of the manually coded themes.

Validation of Invariant Constituents

The validation step of the analysis featured the verification of the invariant constituents and themes established from the earlier step of clustering and thematizing of the analysis (Moustakas, 1994). This step aimed to confirm the completed invariant constituents and themes, comparing and associating the participants' responses with the newly formed study results in regard to whether the themes and invariant constituents were expressed explicitly in the transcription and were or were not explicit or compatible. If these were not relevant to the participant's experience, they were deleted (Moustakas, 1994).

Individual Textural Description

In the individual textural description step, the authenticated invariant constituents and themes were employed to create the individual textural descriptions of the participants. Verbatim examples of the interviews were essential in examining and determining the findings from each of the participants (Moustakas, 1994). These clustered themes and meanings were then used to develop textural descriptions of the experience. These textural descriptions were then used to develop structural descriptions.

Individual Structural Description

In the individual structural description step, the experiences shared by all 10 participants along with their supporting responses were used to uncover invariant constituents and themes. This step allowed for validation of the overall results of the

study in line with the thematic categories and main research questions of the study. Through the integration of both textural and structural descriptions, the meanings and essences of the phenomenon were constructed (Moustakas, 1994, pp. 118–119).

Composite Description

The final and concluding step of the data analysis involved summarizing the results of the study. The composite descriptions feature the report of the meanings and essences of the experience, with thematic descriptions that represent the group (Moustakas, 1994). The composite description featured the final report of the participants' lived experiences with the primary focus on the meanings and essences of the experience not through each participant, but rather as a whole (Moustakas, 1994). I used the field notes from the interviews in the data analysis in accordance with the Heideggerian hermeneutic research approach, where no bracketing of ideas is required (Laverty, 2003). The objective of the Heideggerian hermeneutic approach is to interpret the collected data from the participants' narration of their lived experiences and its meanings and then extract the essence (Laverty, 2003).

Evidence of Trustworthiness

According to Sullivan and Sargeant (2011), concepts of precision, credibility, and transferability are key aspects ensuring the quality of a qualitative study. Polit and Beck (2010) indicated that credibility pertains to the researcher's confidence in the authenticity of the data being reported. In addition, Lincoln and Guba (1985) noted that the four criteria used to ensure the trustworthiness of the study are credibility, transferability, dependability, and confirmability.

The experiences of the participants and their perceptions of the experiences of their children were the main source of data. A member-checking technique was employed to enhance the credibility of the study data by providing all participants the opportunity to review their interview transcripts and make edits or changes if needed. Bradbury-Jones et al. (2010) opined that member-checking is an effective follow-up method in which participants are allowed to add, correct, or change their initial responses. Shenton (2004) noted that ensuring that collected data are accurate determines trustworthiness of the study.

According to Sullivan and Sargeant (2011), credibility, precision, and transferability are key aspects of evaluating a qualitative study and ensuring its quality. The credibility criteria allow the outcome of the qualitative research to be believable or credible from the perspective of study participants (Shenton, 2004). Confirmability was reinforced by analyzing and presenting the unique and actual voice of the participants and not the personal biases of the researcher (Polit & Beck, 2010). This study was a qualitative inquiry that required accurate, deep, and rich data to better understand the phenomenon being explored. Recorded interviews allowed me to conduct an objective and more thorough analysis of the data (Simon & Goes, 2013).

In addition, triangulation was used to aid the study's credibility. Yeasmin and Rahman (2012) pointed out that researchers use triangulation to generate data for the purpose of completeness. Triangulation aims to combine several procedures that researchers can use to enhance the validity of a study (Ravitch & Carl, 2016). In this

study, I triangulated study participant interviews as well as secondary data of field notes to aid in enhancing the credibility of this research study.

Results

According to Leedy and Ormrod (2016), qualitative research is focused on a phenomenon that is happening or has happened in a natural setting. The aim of a phenomenological study is to understand the perspectives and the insights of people in relation to their specific circumstance (Leedy & Ormrod, 2016). There were two central research questions that guided the study and explore the phenomena under this investigation:

RQ1: What are the lived experiences of individuals who have been through bed bug infestations in a rural community in Nevada?

RQ2: How do parents describe social and psychological impacts of bed bug infestation on school-aged children (preschool-12th grade) living in a rural community in Nevada?

In this qualitative analysis, I used open coding to determine possible categories, patterns, and themes, as described by Patton (2015) and Strauss and Corbin (1998). Further, the thematic analysis was conducted as consistent with the qualitative method of perusing a set of data to find repeated patterns that become meaningful as outlined by study participants (Braun & Clarke, 2006). I used NVivo (Version 12) to organize the themes of the study. Based on the data analysis two main thematic categories emerged.

Research Question 1: Lived Experiences of the Participants

Though the participants interviewed had varied experiences and perceptions on the effects of bed bug infestations on their children, several themes and subthemes that emerged in the analysis were experienced by all the participants. For example, all 10 participants reported that bed bug infestations affected every aspect of family life. They all also reported physical impacts such as pain, discomfort, and bites everywhere on their bodies. In addition, all the participants reported that they used action and agency as coping mechanisms. All the participants also reported moving out and discarding their possessions and goods noting that these strategies were the most successful strategies for bed bug elimination. Further, all participants reported that the experience of bed bug infestation was traumatic to the whole family, causing severe emotional stress and isolation, which added to their distress.

There were three major themes that I identified in the data that addressed the first research question; they are presented and described in Tables 2-7. The first major theme that emerged from the data was that beg bug infestations impact every aspect of family life (Table 2).

Table 2

Theme 1 for Research Question 1: Bed Bug Infestations Impact Every Aspect of Family Life

Minor theme and subtheme	Participants	References
Daily activity changes	6	17
Family pets affected	2	3
Family time impacted	3	5
Having to be secretive	1	1
Lack of sleep	4	8
Experiencing financial strain	8	11
Family doubt and denial of issue	3	4
Physical impacts	10	19
Bites everywhere	2	3
Pain and discomfort	10	16

Note. Overall, there were 252 references from 10 participants for Research Question 1 (lived experiences). There were 51 references from 10 participants for Theme 1.

Major Theme 1 for RQ1: Bed Bug Infestations Impact Every Aspect of Family Life

According to McNeill et al. (2017), bed bug infestations occur in places where humans live and congregate including hospitals, college dorms, apartments, day-care centers, movie theaters, and churches but also in people's homes where bed bugs affect multiple aspects of family life. This conclusion was also reflected in the first theme that emerged from the data, as indicated by all ten study participants. The theme "bed bug

infestations impact every aspect of family life" was referenced during the interviews a total of 51 times, as reflected in the minor themes described below.

Minor Theme 1: Daily Activity Changes. The first minor theme under *bed bug infestations impact every aspect of family life* was *experiencing changes in family daily activities*. Two participants reported that their family pets were affected. Participant 6 stated that "inside the travel cage, they had infested there, too," and that the animals, "were scared as they were getting bit. They bit the dogs." Participant 7 noted that bed bug interventions were posing a risk on the family animals during fumigation and highlighted that "their lives changed completely."

Family time was also impacted. Participants 1, 7, and 5 indicated significant impact as the kids had to spend more time cleaning the house. Participant 7 noted that the kids "hated it…. They had to get their rooms all done, but we had a lot of bedding … dragging it back and forth to the laundry. They all had to work, every one of us." This participant also indicated that all family members were involved "it seemed like just when we got it put away, it was time to do it again. It was crazy, absolutely crazy. We had no time."

The third subtheme that emerged under *daily activity changes* referred to the family *needing to be secretive* about bed bug infestations; however, only one participant noted this. Participant 2 stated that the family had to be cautious because they did not want their children to announce to others "we have bed bugs," and noted that they "were pretty secretive about things, like a dirty little secret, which was kind of shameful."

Yet another subtheme that impacted daily activities was *lack of sleep*. Participant 9 highlighted feeling "very uncomfortable because of not being able to sleep at night." Participant 5 reported "awaking few times during the night for a few days with incredible feeling of itch."

Minor Theme 2: Experiencing Financial Strain. The second minor theme under the major theme *bed bug infestations impact every aspect of family life* was that constant cleaning, throwing furniture away, or moving out *costs a lot of money*. Participant 9 reported that the family had to finally "move out of the place" and required financial help from other family members. Participant 7 noted that "it was financially consuming, it cost a lot just to move. And then, doing the laundry, about a hundred loads of laundry in your house every other week." Participant 3 indicated that it was "a financial problem all the way through, financial toll, it was financially depleting, and mentally and emotionally defeating to clean, exterminate, and throwing the furniture away." Participant 2 commented that bed bug infestation required "extra money for a lot of [cleaning] products."

Minor Theme 3: Family Doubt and Denial of Issue. The third minor theme was *family doubt and denial of issue*. Participant 2 indicated that it caused a strain on her marriage. She reported, "It affected mine and my husband's relationship a little bit because he kept telling me it was all in my head until he got bit, and once he got bit we had bedbugs, but he didn't take my word for it." Participant 5 noted that her family members were not concerned because "they weren't aware and they didn't really believe that something like that was happening at the house as anything like that never happened

in the house before and they really couldn't, they didn't want to believe me that they had bedbugs, that these were bed bugs' bites, marks on the body."

Minor Theme 4: Physical Impacts. The fourth minor theme emerged as all ten participants reported experiencing *physical impacts*, noting bug bites all over themselves and their families as well as the pain and discomfort of those bites. Participant 3 noted, "It looked like we were bit up, mostly around our ankles, back and arms seemed to be the most hit spots they bit on" causing "constant itch and sores all over." Participant 1 reported "welts, like a bee sting, the embarrassment of the painful bites." Participant 3 indicated that "the pain felt like a little prick type thing, and then it itched" and that it caused scars adding, "I've got all of these scars up and down my arms from scratching and picking because of this … it kind of devastated me for probably two years of my life." Participant 7 stated, "They're almost like a poison, like a chigger; you have a chigger in your leg and it just drives you crazy. That's what it feels like, and it doesn't stop itching." Participant 8 described the bites as "red spots on the body and they're very noticeable. I couldn't wear certain clothes … I didn't want nobody to see my body and I wanted to scratch all the time, every scratch you get, it gets bigger." Participant 5 noted that "extreme not comfortable feelings just kept haunting me all day and all what I tried to think is how to ease my pain as I was scratching myself."

Major Theme 2 for RQ1: Action and Agency as Coping Mechanisms

The second major theme that emerged for the first research question was employing *action and agency as coping mechanisms*, as indicated by all 10 and referenced in the study 89 times. They all employed active strategies including taking

steps to eliminate the bed bugs, cleaning their homes, finding information about what actions were the most effective, and taking care of themselves and their families. *Action and agency as coping mechanisms* were reflected in several minor themes and subthemes as listed in Table 3 and described below.

Minor Theme 1: Caution About Re-exposure. Seven of the participants reported being *cautious about re-exposure*. Most participants employed some preventive actions to reassure themselves such as redundant spraying and monitoring the bed bug situation in the home, avoiding visitors and visiting others, avoiding job duties knowing that clients had bed bug infestations of their own, and spraying or decontaminating anything that was gifted by others and brought to the house. Participant 2 reported that when her husband, a plumber, went to a job at a house he thought had bed bugs, he was paranoid that he would bring them home again. Participant 1 indicated that her son "would like take this can of the Raid, and just spray along the baseboards. So, I think that would make him happy. Yeah." Participant 3 indicated she had "distrust" letting people into her home. Participant 6 noted, "When I'm bringing anything outside in anymore…. You got to close it, tie it off in a bag for 10 days. It has to be decontaminated." She further stated that bed bug infestations "affected us forever, because we'll forever now be careful with our fabrics."

Table 3

Theme 2 for Research Question 1: Action and Agency as Coping Mechanisms

Minor theme and subtheme	Participants	References
Caution about re-exposure	7	9
Helping others	1	2
Information seeking-separating truth from myths	7	11
Conducting research	3	4
People bring it on themselves	3	3
Sleep tight-bed bug myths	4	4
Moving out and discarding goods most successful strategies for elimination	10	46
Constant cleaning	5	12
Discarding furniture and other household items	9	13
Moving	7	13
Professional exterminator	3	5
Using heat-suffocation	3	3
Seeking counselling	2	3
Self-care and buffering impacts	5	18
Caring for body-bites	4	11
Separate rooms-spaces	3	5
Soothing strategies	1	2

Note. Overall, there were 252 references from 10 participants for Research Question 1 (lived experiences). There were 89 references from 10 participants for Theme 2.

Minor Theme 2: Helping Others. The second minor theme that emerged was *helping others* who asked for advice. Participant 2 stated, "Whenever I see somebody on Facebook and they post, 'How do we get rid of bedbugs?' I private message them this is what we did…. I wanted to help them get rid of it as quick as possible so they wouldn't have to go through it as long as we did." She noted that she was "more than willing to help anybody that struggles with that in any way, but I guess I'm still a bit ashamed."

Minor Theme 3: Information Seeking and Separating Truth From Myths. The third minor theme that emerged under *action and agency as coping mechanisms* was *information seeking and separating truth from myths*, which was mentioned by seven participants. Participants read articles online and reevaluated their previously held beliefs. Participant 1 stated that she would "read up on articles on the internet and realize that it is very common" contrary to her previous belief. Participant 7 noted that she realized "it was a myth" for bed bugs "to only come out at night as they come out all day long and everywhere." Participants also indicated how their beliefs about bed bugs had changed. Participant 1 noted that she had "thought that people bring it on themselves ... and my outlook totally changed on that." Participant 7 noted that previously she thought only poor people had bed bugs, but her view changed: "Well, the higher society is the ones that actually have them out back East, you know."

A subtheme that emerged from the *information seeking and separating truth from myths* referred to the *sleep-tight bed bug myth*. Four participants indicated previous disbelief about the existence of bed bugs and thought that "sleep tight, do not let the bed bugs bite" was just a saying. Participant 3 indicated, "I didn't think bed bugs were real. I

grew up teaching my kids, sleep tight, don't let the bed bugs bite ... my mom said that to me going to bed at night and I said that to all my children." Participant 7 indicated, "I thought it was just a myth ... don't let the bad bugs bite. Just like fireflies until you witness a firefly."

Minor Theme 4: Moving Out and Discarding Goods Most Successful Strategies for Elimination. The fourth minor theme that emerged referred to *moving out and discarding goods as the most successful strategies for the elimination of bed bugs*. 84or84 was mentioned by all the study participants and was referenced a total of 46 times in the interviews. Under this minor theme, there were five subthemes that emerged: *constant cleaning, discarding furniture and other household items, moving out, using a professional exterminator,* and *heat-suffocation.* Participant 1 noted, "I soldiered on … I would spray constantly and clean." Participant 9 noted " I would be extra clean because I would think that is because the house was dirty, but it wasn't."

Nine participants reported that they *discarded furniture and other household items*. Some participants reported having to repurchase items multiple times. Participant 7 stated, "I've thrown away furniture, I've thrown away clothing ... and they just kept coming back and coming back. It got to where we were just to nothing.... Having to get rid of everything helps." Participant 10 also shared, "What little we did have, we had to throw in the trash a lot." Participant 4 also stated, "for three times … I buy brand new mattress, brand new, one sofa and dishes and clothes for my sons for winter and we needed drop it one more time. For three times, we needed drop everything." Seven participants indicated that *moving out* was the only effective way to get rid of the bed

bugs as one participant indicated, “I ended up moving. I no longer live in the same place.... Moving, it was the only thing, actually. I mean, we did the other steps. I paid for the other stuff. I did what I could, but nothing worked, and I felt defeated. Moving was the only way we got it under control.... This was ridiculous.”

The fourth and fifth subthemes that emerged under this minor theme were *using a professional exterminator* and *heat-suffocation*. Participants 3, 4, and 6 noted that they used a professional exterminator. Participants 2, 5, and 6 indicated heat-suffocation was used to eradicate bed bugs: “We tried bagging up our clothes. We put them in the dryer. We put them in black garbage bags out there on the front lawn ... and it’s like a hundred and eighteen, a hundred and twenty out here and direct sunlight ... we would even light them up on fire.”

Minor Theme 5: Seeking Counseling. The fifth theme that emerged under the major theme of *action and agency as coping mechanisms* was *seeking counseling* which was indicated by two participants. Participant 3 noted, “Staying in counseling.... Mental health...Yeah. I still get counseling.” Participant 9 stated, “I was doing counseling for a while because it was just so stressful. I couldn’t deal with it anymore.”

Minor Theme 6: Self-Care and Buffering Impacts. The final minor theme that emerged under the major theme of *action and agency as coping mechanisms* was *self-care and buffering impacts* with the subthemes of *caring for body-bites*, *separate rooms/spaces*, and *soothing strategies*. These themes were referenced 18 times during the interviews. Among the remedies used to treat bites were alcohol, hand sanitizer, lotion (calamine lotion), cream, oils, ointments, nail polish, spray against insect bites, vitamin

C, calcium, and topically applied chamomile tea bags. Most of the participants used combinations of home remedies. One participant reported using a calamine lotion and two participants reported getting an ointment from a physician.

Among other techniques to limit the spread and effects of bed bug infestations, participants reported using different spaces in the house to separate themselves from the areas that were most infected. Participant 2 noted, "When we realized we had them in our room we didn't let the boys come in our room. Our laundry was not put in the laundry room with the boys' laundry. We kept everything as separate as we could.... We tried to separate it as much as we could." Participant 8 shared, "We try to avoid sleeping in those areas ... tried not to sleep on the couches, we tried to sleep on the tile floor, not to be on carpet or the bed." Participants also noted using soothing strategies to help themselves or their children to cope with infestation. Participant 9 indicated that the children were soothed by "making them look under everything and showing them that there's nothing there no more, so they can feel better about it ... we would always put waterfall music on for them at nighttime.... Giving them a nice hot tea at night so to help them sleep."

Major Theme 3 for RQ1: The Experience Is Traumatic To the Whole Family

The third major theme of the study that emerged and was reported by all the participants was that the *experience is traumatic to the whole family*. This theme was referenced in the interviews 112 times. All the participants reported severe *emotional distress*, nine indicated that they were *struggling to find and eliminate the source of bites*, and five indicated the necessity of *a range of supports that would be helpful in battling the infestations*. Further, all the participants also indicated that *struggling in isolation*

contributed to their distress. The minor themes and subthemes under this major theme are listed in Table 4 and described in detail below.

Table 4

Theme 3 for Research Question 1: Experience Is Traumatic to Whole Family

Minor theme and subtheme	Participants	References
A range of supports are needed for families	5	8
Struggling to find and eliminate the source	9	19
Severe emotional distress	10	38
Constant fear-hypervigilance	3	4
Depression and anxiety	5	11
Fear and disgust	6	6
Helplessness-despair	5	6
Shame and embarrassment	6	9
Triggered even after issue resolved	2	2
Struggling in isolation adds to distress	10	47
Lack of general resources for issue	8	13
Lack of housing-admin support	5	9
School-admin response	6	10
Socially isolating	8	15

Note. Overall, there were 252 references from 10 participants for Research Question 1 (lived experiences). There were 112 references from 10 participants for Theme 3.

Minor Theme 1: A Range of Supports Are Needed for Families. The first minor theme that emerged was that 50% of participants had concerns related to availability or lack of access to necessary supports. Participant 6 noted, "They're not going to help me. They aren't going to help. They aren't going to do anything about it.... I think the bug inspector needs to come into your apartment every few months and just spray and check ... bedbugs are a real thing in {}, and you need what you need." Participant 7 also pointed out, "You would wish that for maybe other people that live in the community that there would be some kind of information, what to do, how ... we have a cleaning crew sort of like the ones after fires, something like that, come in and help." Participant 8 indicated that financial assistance, psychological help, and access to information and resources would be necessary and especially for single parents.

Minor Theme 2: Struggling to Find and Eliminate the Source. The second minor theme that emerged from the major theme *the experience is traumatic to the whole family* was that participants indicated their families *struggled to locate and eliminate the source of bites.* Nine of the participants reported this struggle. One participant noted, "I didn't realize for quite a while that I had them. We could not find the source. It took a long time. It took like a year and a half. We called the exterminator three times.... I thought it was either mosquitoes or fleas … but later on when I seen them on the bed and then I started looking up on the phone and everything and that's when I seen that it was bedbugs."

Minor Theme 3: Severe Emotional Distress. The third minor theme that emerged under the major theme of *the experience is traumatic to the whole family* was

severe emotional distress. Emotional distress was mentioned by all the study participants and referenced 38 times throughout the interviews. Under this minor theme, six subthemes emerged: *constant fear/hypervigilance, depression and anxiety, fear and disgust, helplessness/despair, shame and embarrassment,* and *distressing feelings even after the infestation was resolved.*

Four participants noted fear and hypervigilance. Participant 6 stated, "Well, they're a parasite, so I'm sure that I did, in fact, suffer, feeling uneasy, unable to sleep. That's for sure. Scared. Just constantly scared. Just anxious. It was nerve-wracking.... I was being invaded, and I had no idea why.… It was scary. They're like little vampires." Participant 7 noted, "You look like leprosy all over you. I mean, {M}, she was tore up. It was terrible. Absolutely terrible. To this day, I'm still afraid to accept a piece of furniture from anybody or clothing or anything.... I'm scared. Absolutely scared of them. They're nasty." Participant 5 stated, "I had trouble sleeping. I was awaking few times during the night for a few days with incredible feeling of itch and I couldn't sleep."

Under the second subtheme of *depression and anxiety*, participants reported the experience had affected their mood leading them to shut down and avoid others while isolating in their homes. Participant 1 indicated feeling "depressed, embarrassed. I look back at it now, and I thank God it's over.... It affects you emotionally, stress." Participant 3 indicated feeling "angered, depressed. Defeated. Oh, yeah, defeated.... My state of mind, big time." Participant 7 also reported feeling depressed: "Depression. We all went through depression because we all had to stay home ... depression sets in big time when you can't be around anybody ... and the anxiety and oh, my God."

The third subtheme under the minor theme of *severe emotional distress* was *fear and disgust*, which was reported by six participants. Participants noted they were terrified seeing bed bugs crawling over the ceiling or walls. They communicated these feelings and fears in nonverbal language (face and body expressions) while talking about it during the interview. One participant reported, "Disgusting the way it feels, disgusting the way it looks, disgusted at your own home.... Oh, yeah, and the scars that it left. Self-esteem problems that it caused for my daughter." Participant 6 stated her children "were scared to go to bed. It's scary. It's scary." Participant 10 identified feeling "invaded, being on my body, it's disgusting. Any type of insect on my body is disgusting." Participant 5 reported being in shock realizing that her bites were caused by bed bugs: "So it was a shock. I just really didn't know what to do. It was so uncomfortable, so uncomfortable."

Subtheme four, *helplessness/despair*, was reported by five participants. Participant 6 stated, "I felt helpless. I felt helpless against it." Another described their experience as "horrible.... It was very stressful because when you have children, hearing them cry and complain about the bumps all over their body, and why is it happening to them? And it's very stressful because you're trying to look for words to explain to your children."

Shame and embarrassment were indicated by six participants. Participant 2 noted, "We had to watch what we said around the kids … kids have big mouths, we didn't want him to be like, 'We got bedbugs in our house!' type thing, you know." Participant 7 noted that the experience was "degrading." Participant 5's embarrassment was also related to beg bug bites: "I was just really feeling embarrassed when I was going to the public

places that just by being marked like that all over my arms … clothes that are appropriate for summertime make me feel almost like I had to go put jeans on and I was not comfortable also with that. I was hot."

The sixth and the final subtheme of *severe emotional distress* related to *distressing feelings even after the infestation was resolved*. Participant 2 noted, "I still have the feeling of them crawling on me. Like, as we sit here talking, I was trying to itch my back. I know it's in my head. I do. I told you it's in my head." Others noted being cautious about their surroundings after the infestation: "It's long term. It's stressful. Even the kids … they'll look through stuff. They'll want me to check their animals, tie them up, put them away." Participant 7 stated, "I have nightmares to this day."

Minor Theme 4: Struggling in Isolation Adds to Distress. All ten participants reported the added distress of struggling with bed bug infestations in isolation. There were four subthemes that emerged: *lack of general resources*, *lack of housing-administration support*, *school administration response*, and *socially isolating*. Eight participants noted that they were not aware of any available resources or did not know where to ask for help, as they did not have sufficient financial means to eradicate bed bugs on their own. Some of the participants reported that embarrassment and shame influenced their reservations to seek resources, even if resources were available to them. Participant 8 stated, "I reached out for help. There was really no help offered." Participant 4 noted, "In the town, nobody helped nothing, nothing ... nothing. Not asking for food, not asking for if I needed one mattress or whatever, nothing. Nothing."

The second and third subthemes that emerged were *lack of housing administration support* as indicated by five participants, while six participants indicated *lack of school administration support*. Participants noted that in case of other infestations, such as cockroaches, there were interventions available, but not for bed bug infestations. Participant 1 noted, "They could call the office and be all like, 'we've seen some cockroaches, 'and we'd be like 'Alright. We'll go spray for that.' But if it was bedbugs ... That was the residents' responsibility to take care of that." Participant 6 noted difficulties at the complex where she lived: "There isn't much help or resources. Nobody said anything.... Maintenance here sucks.... They're not being helpful."

Multiple parents also mentioned either the lack of school response or school responses that were not helpful. One study participant noted that the children would be sent home from school when they had a bed bug infestation in the home or when they noticed bites on the children's bodies. Participant 3 noted, "They'd send them home.... They ridiculed them. It's embarrassing to be, I mean, especially for a child.... Treat you like you have the plague." Participant 8 stated, "Before they go in a classroom, they would make them take their backpacks off outside and shake them off before they come in the classroom because they didn't want them to bring in bedbugs in the classroom." Participant 9 stated, "Once they started seeing the bites on them, they asked questions and we had to answer them, what was going on. Right away they thought they had lice. So, then they told us that we had to keep the girls home.... Yeah, we kept them home. We would have to go pick up their packets of homework and stuff or they would have someone from school send their work over."

The fourth theme that emerged under the minor theme of *struggling in isolation adds to distress* was that the experience was *socially isolating*, which was indicated by eight participants. Participants reported that they felt embarrassed to disclose their experiences and did not tell relatives and neighbors, and that once others knew they felt judged and ostracized. Participant 2 reported, "I think I've probably only told three or four people … and I think it's because I didn't want them to look at us different." Participant 3 commented, "You see who your true friends are when something like that happens. People look down on you, people you thought were your friends talk about you behind your back.... I didn't want to see people anymore. I just started locking myself in my room." Participant 7 indicated of their friends and the friends of the children, "They didn't want you to visit.... No, they wouldn't visit us and no, everybody that knew it and knows what they are, would not come over."

Research Question 2: Impact of Bed Bug Infestations on Children

The second research question focused on *the impact of bed bug infestation* in the home on the participants' children. From the thematic analysis of the interviews, three major themes, and fourteen subthemes emerged. All participants reported significant *impact on their children*. Other minor themes referenced significant *health impacts* on children as reported by six participants. Nine participants reported *psychological impacts* on their children, and nine also reported that *social impacts of bed bug infestation added to emotional stress* in their children. Tables throughout the sections that follow display the themes in relation to the health effects of bed bug infestation on the school-aged children.

Major Theme 1 for RQ 2: Health Impacts

Three subthemes emerged under the major theme of *health impacts* on children: *bites everywhere, hospital-medical intervention,* and *lack of sleep*. Six participants had concerns related to the *health impacts* of the bed bug infestation on their children. Participant 6 indicated, "They were scared to sleep. They had got bites by their ears. They had got bites by in between their fingers, in between their toes.… Then they were all down their backs ... and I remember looking at my baby in the dark, and then I'd turn on a flashlight, and there was bugs on them. That was scary." Participant 5 recalled finding bed bugs on the body of her son "when I turned the light on, he is full, the body that ... Full. Full, full. And I would say, wake up, the bed bugs, and he would say, 'Oh, Mommy,' and kept crying." Parents noted that children had visible marks on their bodies and that their sleep was significantly disturbed due to itchiness and emotional distress. Table 5 displays subthemes for the first major theme for RQ 2.

Table 5

Theme 1 for Research Question 2: Health Impacts

Subtheme	Participants	References
Bites everywhere	4	5
Hospital-medical intervention	2	4
Lack of sleep	5	7

Note. Overall, there were 71 references from 10 participants for Research Question 2 (impact on children). There were 16 references from six participants for Theme 1.

The second subtheme that emerged was *hospital-medical intervention*. Participants 7 and 8 both took their children to hospitals. According to Participant 7, "I've been back and forth to the hospitals with these kids and it's crazy. It's crazy.... The doctor that look at my daughter said, those are called kissies or whatever and that's a sign of lupus... then when {M} broke her leg … that was crazy because they bite you down inside there and there was no way of taking care of it... It's crazy to live it, have to go through it all." Participant 8 also stated that she had to take her children to the hospital because "they really got sick because of the infestation."

The final subtheme that emerged was a *lack of sleep* that significantly impacted the children. Participant 6 stated, "We would go to school late, because they were up all night, or I would have to move them from one area to the other, get them up, shake them off, make sure that they had nothing on them ... they were tired, yes ... they fell asleep in class sometimes." One participant noted, "My daughter was scared to go to sleep with that ... they have trouble sleeping and then in the middle of the night they would wake up scared, crying, because they ... guess they're having nightmares, dreaming about the bugs. It took them a good six to seven months to get over that, over the nightmares."

Major Theme 2 for RQ 2: Psychological Impacts

The second major theme that emerged under *impact of bed bug infestations on children* related to *psychological effects* of infestation on the well-being of a child. The subthemes that were identified under this major theme included *depression-anxiety, losing valued objects, picking up parental stress, shame-humiliation, upheaval and separation*. Table 6 displays subthemes for the second major theme for RQ 2.

Table 6

Theme 2 for Research Question 2: Psychological Impacts

Subtheme	Participants	References
Depression-anxiety	6	13
Losing valued objects	5	6
Picking up parental stress	2	3
Shame-humiliation	1	1
Upheaval and separation	4	7

Note. Overall, there were 71 references from 10 participants for Research Question 2 (impact on children). There were 30 references from nine participants for Theme 2.

Participant 3 noted that her children displayed "behavior problems, depression. Oh, yeah. Depression, emotional outbreaks." She also noted that the children were "mad more, more getting upset and mad at the situation because it was out of our control." Participant 6 indicated that her children "were scared. They were scared to sleep ... they'd be scared of bugs at school ... they were stressed to come home, because they didn't know what was on their stuff. We'd take away their toys, their blankets, put them away for 10 days. They hated that.… At night, it was an issue. Everybody wanted to tell me 'We don't want to go to bed yet.' After a while, they wanted to sleep together.... We had to sleep with them."

Participant 7 indicated seeing her children "moping and eating a lot" as they did not want to go outside or do anything. The participant also noted that her children experienced "emotional issues, they became depressed, isolated." The participant highlighted how worried she was about the well-being of her children: "I thought

something was very, very wrong.… They had to get counseling." Participant 8 reported, "My kids, they started to get emotional a lot. They used to cry a lot and they thought they had bed bugs on their body, inside their skin, but I told them they don't, but they got really sick on me ... mood swings, nightmares, and bad dreams."

Participant 9 recalled her children became "emotional because they have trouble sleeping and then in the middle of the night, they would wake up scared, crying, because they... guess they're having nightmares, dreaming about the bugs. It took them a good six to seven months for them to get over that." Participant 4 indicated of her son that "he had too much anxiety and sometimes cried because of that ... and the stress or the worry, he felt sad, he had problems because of the depression. He was more depressed when we were infected with the bed bugs."

The second subtheme that emerged under this major theme was parents reporting that the children had to *let go of their valued objects*. Participant 6 indicated that as the family realized that the children's toys were also infected by bed bugs, they had to throw these away: "We started to find them on their toys, on the ears of the toys, you know the floppy toys, in the toys, on the side, in the little holes where the buttons are for the eyes. It'd be in those cracks.… We'd take away their toys, their blankets, put them away for 10 days. They hated that." Participant 7 recalled, "We had to throw away the furniture ... all of her things that she is, like awards she stacked up." Multiple participants further reflected on how difficult it was to explain to their children why their clothes, toys, and other items needed to be discarded. Participants highlighted that despite their effort to clean up household items bed bugs still thrived: "We cleaned it up, two weeks later, there

was still bedbugs ... and he was wondering where they're coming from. They were coming from the toys. So, we had to throw all the toys."

The third subtheme that emerged was the *children picking up on parental stress.* Participants indicated that their children became more stressed seeing their parents experiencing distress. Participant 1 noted that for her son "it was stressful because I was stressed." Participant 5 also noted that her daughter became worried: "She was really worried about me ... and looked a little bit uncertain and she was stressing trying to look what kind of insect could be that she was worried about me a little bit."

The fourth subtheme that emerged was *shame/humiliation* as described by the children's parents. The participants noted how humiliating it was for their children when "they had to go to school with the marks.... They see the scratch on you. They knew what was going on. There was no way to mask it so that they wouldn't get teased." The final subtheme that emerged under *psychological impacts* was *upheaval and separation* as reported by four participants. Participant 3 noted that bed bug infestation not only had effects on individual members of family but "it affected the family, it dispersed us, it tore my family up." Participant 7 stated that the ongoing infestation forced the family to relocate, and shared, "My boys didn't want to leave. And then when they got to {O}, they didn't want to leave {O} to come back here.... Well, this has been my home since '76, {L} is my area. I've lost a lot of stuff here, but I'm still here."

Participant 9 also noted, "The girls are wondering why are we throwing their toys away? Kids, they don't understand when they're little, they don't understand any of that. And it's hard to explain to them, and you try to do the best as you can as a parent to

explain what's going on. Why is this happening? It affected us a lot because of the moving and everything. The girls were already stable in the place they were living. And then, we had to move somewhere else where they going to have to start getting new friends and stuff."

Major Theme 3 for RQ 2: Social Impacts Add to Emotional Distress

The third major theme that emerged under impacts on children was the social impact and how it adds to the emotional distress of a child. Five subthemes emerged under that theme: *being at home as little as possible*, *children's disclosure might impact treatment by others*, *isolated from friends*, *kept out of school*, and *teasing and bullying*. Table 7 displays subthemes for the third major theme for RQ 2.

Table 7

Theme 3 for Research Question 2: Social Impacts Add to Emotional Distress

Subtheme	Participants	References
Being at home as little as possible	2	3
Children's disclosure might impact treatment by others	1	1
Isolated from friends	5	13
Kept out of school	1	2
Teasing and bullying	4	6

Note. Overall, there were 71 references from 10 participants for Research Question 2 (impact on children). There were 25 references from nine participants for Theme 3.

Participants identified how the ongoing bed bug infestation caused their children leaving home or being at home as little as possible. Participant 5 noted that her daughter

"started spending a little bit more time with her cousins outside of the house and in other family members' place and she was just doing her things."

The second subtheme that emerged was that the *children's disclosure might impact their treatment by others*. Participant 2 noted, "I definitely think ... if he would say something it would probably affect his friendships." Five of the participants indicated the bed bugs infestation caused them to be isolated from their friends due to stigma. Participant 3 noted that her children "lost friends over it due to parents not allowed to spend the night at their house, being welcomed at their house anymore … it wasn't just invitations stopped, but they were literally shunned" and how the parents of children's friends "would make them not be allowed to hang out because of the bed bug situation ... it ruined a lot of friendships, especially due to their friend's parents." Participant 7 stated "I and my kids couldn't be active in the community, just sit home and watch TV and watch the computer games.... They're just isolating. They still doing it today ... they went from outgoing kids to very indoor kids."

The third sub-theme was the social isolation of children from their friends. Participant 8 identified increased isolation and limited peer interactions as her children were mostly "just staying home, away from other people ... they only wanted, you know, wear clothes that cover their body because they didn't want people to see their arms or their legs, you know, the spots. They thought it would scare them." Participant 4 also noted that bed bug infestation affected her son's interactions with friends: "When the friends came to visit him, he would say, be careful we're having bed bugs in the home" and that prevented friends from sleepovers or health concerns: "One girl stayed in the

house and next day needed to go to the doctor because she had allergy for the bed bugs' bite."

The fourth and fifth subthemes that emerged under the major theme of *social impacts add to emotional distress* were *kept out of school* and *teasing and bullying.* There were two references to keeping children away from school while going through the bed bug infestation at home. Participant 8 noted "they had to be out of school for at least two to three weeks because of the bed bugs, the bites were so bad that the teacher said I won't have to teach them." The same participant indicated that having bed bug infestation "somewhat" affected her children's academic success/progress and daily functioning at school. Participants also identified children having difficulties at school due to lack of sleep, itchiness, being scared and crying at night, as well as having nightmares. Further, four participants indicated that the bed bug infestation contributed to their children being bullied and teased in the school by peers or their neighbors. Participant 3 stated that it caused "humiliation" to the kids as "there was no way to mask it so that they wouldn't get teased" and it caused "problems with friends and being teased" or being treated "like they had the plague" and that it is "worse on a child than an adult to be shunned." Participant 6 also stated that her child was made "fun of" due to visible "rash, bumps, and itchiness." Participant 8 noted that other children at school were "mean about it" and she told her children "not to pay attention to what people say." Participant 9 further indicated that other children were "cruel" and how her children were sensitive to being labeled by other children in the school: "Girls are very sensitive, so they get their feelings hurt right away."

Summary

In this chapter, I presented the results of the phenomenological analysis of ten interviews conducted with individuals who were parents of school-aged children (preschool-12th grade), who lived in a rural community in the state of Nevada, and who had experienced bed bug infestation in their homes. This chapter also included a description of the study setting, demographics, data collection and analysis, evidence of trustworthiness, and detailed presentation of the study results. Data for this study was collected using semi-structured face-to-face interviews, including one interview conducted remotely, with ten participants who met the inclusion criteria for this study such as: having the experience of home bed bug infestation, being a parent of school-aged children (preschool-12th grade), and living in a rural area of Nevada. The Van Kaam method (Moustakas, 1994) was employed to generate six major themes and two thematic categories to address two research questions addressing the lived experiences of parents and their children who experienced bed bug infestations in their home. The chapter also presented and discussed how individual experiences impact the coping of the parents, their school-aged children, and the family as a whole. In Chapter 5 the interpretation of the study findings including the themes is further described and integrated with the literature presented in Chapter 2. The final chapter also includes limitations of the study, recommendations for future studies as suggested by this researcher, implications of the results, potential impact for positive social change at the individual, family, and community level, as well as recommendations for practice. The conclusion is also found in the following chapter.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The objective of the study was to gain insight into the unique experiences and perceptions of the impact of bed bug infestations on the family as a whole as well as their underage children. The focus of a phenomenological research design is on the profound understanding of individual's peculiar experiences. Thus, this study's primary focus was to capture the essence of the phenomenon by selecting participants who experienced the phenomenon and to further investigate and understand the impact of their experience. Participants described in detail their unique lived experiences and the impact of home bed bug infestations on their family and their school-aged children. Data analysis revealed six major themes. Three major themes addressed the first research question of lived experiences of bed bug infestations: (a) bed bug infestations impact every aspect of a family life, (b) action and agency were used as coping mechanisms, and (c) the experience was traumatic to the whole family. Three major themes were identified to address the second research question of the impact on children: (a) health, (b) psychological, and (c) social. In this chapter, I review the results in the context of previous research, discuss how the results relate to the theoretical framework, and recommend future directions for continued research in this field. I will also discuss the limitations of this study and the social change implications for the findings.

Interpretation of the Findings

From the thematic analysis, 62 themes (six major, 14 minor, 40 subthemes, and two thematic categories) were generated that relate to the impact of bed bug infestation

on families and their school-aged children. Overall, the findings indicate that the effects and consequences of bed bug infestation on the family and their underage children are devastating, with a scope that encompasses all aspects of life. All the study participants reported that bed bug infestations impacted every aspect of family life, including changes in daily activities or in performing daily tasks.

As indicated by multiple researchers, the impact of bed bug infestations can be multiple and affect the daily life of an individual (e.g., Ashcroft et al., 2015; Bandyopadhyay et al., 2014; Doggett et al., 2012; Goddard & de Shazo, 2012; Kaylor et al., 2015; Liu & Pennington-Gray, 2015; McMenaman & Gausche-Hill, 2016; McNeill et al., 2017; Salazar et al., 2015; Scarpino & Althouse, 2019; Susser et al., 2012; Wang et al., 2016). MPAC (2015) also indicated that bed bugs have a significant impact on quality of life. Multiple studies have addressed that bed bug infestations may influence overall personal dysfunction (Abujela-Matt, 2014; Doggett et al., 2012; Goddard & de Shazo, 2012; Rieder et al., 2012; Susser et al., 2012; Wang et al., 2016). Zhang et al. (2021) indicating that bed bugs severely reduce quality of life by causing discomfort, sleeplessness, anxiety, and ostracism. These conclusions were supported by my findings, as all the participants described severe physical and psychological symptoms as a result of beg bug infestations. The majority of the study participants also noted that bed bug infestations led to significant financial challenges causing prolonged financial strain on their families, which is consistent with the work of Borel (2015) and Liu and Pennington-Gray (2015).

All the participants reported that action and agency were used to cope in managing the harmful effects of bed bug infestations. Personal and psychological coping mechanisms have not been a focus of previous literature, as the vast majority of researchers have instead focused on ways to eliminate the infestation itself rather than on how individuals cope with the impact of the infestation. Based on the literature review, the most effective control of bed bug infestations included heat treatment, vacuuming, using nonchemical pesticides, using monitoring devises/interceptors, removing clutter, sealing cracks, or discarding furniture and belongings (Liu & Pennington-Gray, 2015; MPAC, 2015; NPMA, 2019; Winegar et al., 2013). All the study participants reported that, in general, discarding goods was the most successful strategy for bed bug elimination. Further, 90% of the participants noted that discarding furniture and other household items was the most effective; although, all the participants indicated they ended up moving out after a prolonged effort battling the infestation in the home. This step was also implemented as a cautionary measure as well, as 70% of the participants reported moving because they were cautious and fearful about reexposure.

Overall, Lazarus and Folkman's (1984) TMSC provided a useful theoretical approach for examining stress and coping in this study. TMSC describes stress as a series of transactions between person, environment, and situation (Lazarus & Folkman, 1984). If an event is appraised as stressful, the event is assessed to determine what coping strategies might be useful for the situation (Lazarus & Folkman, 1984). All the participants characterized their resources as insufficient, and they all appraised their situation as stressful. Emotional responses encompassed a wide range of negative

emotions, as participants described experiencing frustration, shame, embarrassment, fear of reexposure, hopelessness, pain, and discomfort. In response to the cognitive appraisal that bed bug infestation was a threat, participants employed various coping strategies. Both behavioral and cognitive coping strategies were important for participants in minimizing the negative impact and the effects of bed bug infestations.

The majority of study participants (70%) described that separating truth from myth about bed bugs, information seeking, and conducting research were influenced by their lived experiences of the phenomena. Participants indicated that they discovered that common beliefs such as people bring it on themselves or sleep tight do not let bed bugs bite were myths; therefore, these beliefs were reevaluated or abandoned and reported as inaccurate. These myths, however, were possibly still present in the communities where the participants lived, and they felt judged by others around them. The majority of participants also reported that they were struggling to find and eliminate the source of infestations in the home, which significantly contributed to their frustration and distress. Between the judgments of others and their own struggles to eliminate infestations that kept returning, the participants all expressed helplessness and a lack of control over their lives at the time of the infestation.

All the participants described the experience of bed bug infestation in the home as traumatic to the whole family, indicating that severe emotional distress was a result of bed bug infestations. Helplessness, despair, shame, embarrassment, depression, anxiety, constant fear, hypervigilance, and disgust were all dominating feelings and symptoms resulting from the infestations. This is consistent with the work of Abujela-Matt (2014),

Doggett et al. (2012), Goddard and de Shazo (2012), Rieder et al. (2012), Rossi and Jennings (2010), and Wang et al. (2016). Some participants also expressed that these feelings and symptoms were triggered even after the infestation resolved. In their work, Doggett et al. (2012), Goddard and de Shazo (2012), Rossi and Jennings (2010), and Susser et al. (2012) suggested that the mental health implications of bed bug infestations featured symptoms that were suggestive of trauma and might include symptoms of paranoia. My findings supported this claim and indicated that the psychological needs of the individuals who participated in this study, as well as the needs of their children, were largely unmet.

All the participants indicated that struggling in isolation added to their overall distress of the experience of bed bug infestation. I identified subthemes that included a lack of general resources, a lack of housing-administration support, and school administration responses that were socially isolating. The majority of participants in this study (80%) noted that they had no knowledge of any available resources and did not know where to ask for help. Embarrassment and shame also prevented individuals from seeking counseling, resources, or help. This finding is consistent with the survey conducted by MPAC (2015), which reported that rural areas have fewer social and psychological supports, and their organizations and governmental agencies are left without adequate knowledge, resources, and policies to deal with bed bug infestations in their communities. I also found that a lack of housing administration support was an issue, as indicated by 50% of participants; 60% indicated lack of school administration support. Given the scope of impact of bed bug infestations, a range of supports are

needed for families. In this rural community, many individuals did not know the availability of those supports, did not have access to those supports, or were too embarrassed or ashamed to seek them out.

All participants reported significant impact on their children. Among these effects, parents described the lack of sleep and visible bites everywhere. A small number of participants (20%) noted that they sought hospital–medical intervention and counseling services. McMenaman and Gausche-Hill (2016) recognized the variety of health impacts, including psychological, social, and medical implications, and indicated that children and family members affected by bed bug bites and home infestations should be referred for follow up by medical professionals. In addition, psychological impacts were described by the majority of parents, among which the following were predominant: depression, anxiety, picking up parental stress, shame and humiliation, upheaval and separation, and losing valued objects. This was consistent with the findings of McMenaman and Gausche-Hill, who noted that depression, anxiety, and stress in children often accompany home infestations.

The majority of participants (90%) described the social impacts of infestations on their children. Social isolation from friends and teasing and bullying by peers were common. Some participants indicated that, as a result of infestations, children wanted to spend as little time as possible at home and instead spend time with relatives or friends; other children were kept out of school and were unable to socialize with peers. One respondent noted that they were concerned about disclosure of the infestation and how it might impact their child’s treatment by others. The graphic descriptions of the

experiences and damaging effects of bed bug infestations on participants and their children were significant. These effects included but were not limited to ruined friendships; poor academic success/progress; significant social isolation from peers, friends, family members, and neighbors; being teased and made fun of; being laughed at; being labeled and ostracized; being shunned and humiliated; and being avoided as one participant indicated as "having the plague." One respondent expressed feeling as a "bad mom," and others described feelings of helplessness and their powerlessness related directly to their inability to protect the children and assure them emotional safety from bed bug bites and infestations in general.

Researchers have described the severe impact of bed bug infestations in the past (Ashcroft et al., 2015; Doggett et al., 2012; Goddard & de Shazo, 2012; Rossi & Jennings, 2010; Susser et al., 2012; Wang et al., 2016); however, my study's findings represent a unique contribution to the field and existing research as they present the severity, intensity, and scope of the impact bed bug infestations have on individuals and their families. The detailed descriptions of participants' experiences provides a more in-depth meaning of the phenomena that previous research has neglected. Given my findings, and presuming they are representative of the population the participants were recruited from, there is a clear need to address the psychological impact and devastation that bed bug infestations can have on daily human life. Providing public education about the significant impact of bed bug infestations would allow individuals to understand those who have experienced them in a less judgmental manner and understand their unique experiences from a better perspective.

Limitations of the Study

This phenomenological study had some limitations. The data were limited, as parents were the only participants interviewed, and were asked to relay the experiences of their children. The children's experience may have differed from their parents' representations, as parents can have different perceptions and interpret the impact on their children based on their own distress. The research was also focused on a specific population – individuals who were parents of school-aged children (preschool-12th grade) who lived in rural communities in the state of Nevada – and thus cannot be generalized to the general population. I also could not verify the severity or scope of the infestations independently and relied solely on the accounts of the participants. The participants volunteered to participate in the study and may have had their own motives for wanting to tell their stories. It is possible that the individuals who contacted me represented people whose experiences were more extreme than the average bed bug infestation. This self-selection bias may have influenced the findings of the study.

Another limitation to this study was that the data reflected the perception of one parent, and all the participants were women. The voices of fathers and men were not included in the research and their perspectives would have been beneficial. In addition, although according to Creswell (2014), detailed interviews with up to ten participants are generally sufficient to reach theme saturation, a larger number of participants, including more men in particular, may have presented a wider variety of perspectives.

Recommendations

Most of the research on bed bug infestations has been conducted with populations in urban settings (e.g., Dogget et al., 2012; Goddard & de Shazo, 2012; Hwang et al., 2005; Susser et al., 2012; Wang et al., 2016). Bed bugs are disproportionately prevalent in urban communities across the country; however, rural communities face the added challenge of fewer psychological and social supports as well as a lack of knowledge and resources regarding how to effectively prevent and manage infestations in the home (MPAC, 2015; NPMA, 2019). There are limited studies exploring the impact of bed bug infestations in depth, and this research aimed to fill that gap. I sought not only to understand how individuals in rural areas experience bed bug infestations but also their unique perspectives of how they perceive, respond, and cope with bed bug infestations as they live through the phenomena. Based on the findings of this study, the impact of bed bug infestations on adults and children is staggering and traumatic as it affects nearly all the areas of their life including daily functioning in the home, school, and social settings. The devastation these families describe is significant, including financial hardships, having to move out of their homes and away from family, and destroying prized possessions.

As noted in the limitations, the voices of men were absent in this research. One suggestion for further study may be to collect the perspectives of men, both as individuals and as fathers, regarding bed bug infestations in their home. Given my findings, I would recommend further research be conducted on how parents help their children cope and seek to mitigate the impact of bed bug infestation. Further research may focus on

children's experiences as reported in their own words rather than as reported by their parents, as protective parental feelings may have colored the responses of this sample.

Further, the perceived impact of the phenomena on children should be exclusively assessed in the therapeutic and/or school setting through counseling. Along with this recommendation, it would be beneficial to interview children directly. It should be noted that parents might have a different perspective of how they view the impact as opposed to their children. Further, the study focused on rural areas of the state of Nevada; thus, future research examining the impact on rural populations across the United States would be beneficial. Also helpful would be an exploration into how school boards and policy holders across the states could mitigate the impact on families and school-aged children as that could contribute to developing more effective interventions and to better assist rural families in alleviating and reducing the impact of bed bug infestations. Given my findings of the wide scope of damage and lack of resources associated with bed bug infestations, a Delphi study might be useful to address what would be the most effective methods to provide resources, educate the public about those resources, and dispel myths about bed bug infestations that prevent individuals from seeking assistance. Moreover, the findings of this research may be used to develop a quantitative assessment of anxiety, depression, and stress associated with bed bug infestations to further develop research into the distress related to such infestations.

Finally, further research could collect quantitative data to be combined with the qualitative narrative to generate more generalizable results. Quantitative data can be a useful tool in determining general differences in distress levels between an affected

sample size compared to an unaffected sample size. Quantitative methodology also applies to larger samples to determine if a chosen population experiences increased distress in association with a particular experience. Collecting data, including quantitative measures of distress, may allow for a more generalizable measure of distress that could then be compared to narrative accounts. Quantitative measures could also be used to determine if distress is elevated in this population even long after the infestation has resolved, as several of the participants in this research indicated that memories of bed bugs continued to affect them even after they moved to a new location.

Implications

This research study explored the phenomenon of the impact of bed bug infestations on rural communities through the unique perspectives and perceptions as viewed by children's parents. My findings may aid social change by bringing more awareness to rural communities affected by bed bug infestations in their households, as well as highlighting the wide range of issues experienced by affected populations. This is particularly important as individuals and families who are exposed to bed bug infestations are best placed to explain the deleterious psychological, physiological, and environmental stressors and effects of bed bug infestations.

If the individuals included in this research were representative of the population of interest, there is a significant lack of services and an inadequate understanding of what is helpful for individuals who have experienced bed bug infestation in their home. Informing practice includes drawing attention to the importance of creating programs that allow the affected families to openly express their feelings and share their devastating

experiences in a safe and nonthreatening therapeutic environment. Individuals who are experiencing or who have experienced bed bug infestations should be assessed for psychological distress in order to address those needs.

Most participants in this study did not engage in therapy or reach out for help from community resources. This means that primary care providers and teachers may be a good first line of assessment, but mental health providers should also be aware that the psychological impact of bed bug infestation is significant and needs to be addressed on par with physical needs. The findings of this research can be used to benefit individuals by noting that those who are impacted by bed bug infestations may not attend to their psychological needs, which are clearly significant for many. Hopefully, this study will draw attention to the importance of psychological support for individuals and families who are going through infestations. The findings can also be used by healthcare professionals, who need to know that their clients who are battling bed bugs may not reach out for the psychological assistance for themselves or their children. Professionals working with these families should inquire about the psychological impact and the family's needs because this may not be the foremost concern of those living with bed bugs in their homes.

Given the increasing rate of bed bug infestations nationwide (Alalawi, 2014; CDC, 2016; EPA, 2018; Goddard & de Shazo, 2012; NPMA, 2019; Wang et al., 2016), community level interventions are also necessary. The current study may generate social change by encouraging stakeholders at the community level to better organize resources including physical, financial, and psychological, so that they are more accessible to those

in need. The data from the current study suggests the need is urgent. Policy makers can use the findings from this research to generate change on a large scale.

Conclusion

There is a significant need to understand the impact bed bug infestations have on children, as well as understanding further implications on multiple levels of an individual's life and within their social network. Every participant in the study voiced devastating and significant impact from bed bug infestations. The study allowed for a detailed and broad description of the phenomena by examining the lived experiences, perceptions, mental health, and social effects of bed bug infestation. Participants described the effects of community stigma on families and their school-aged children (preschool-12th grade) living within rural communities. The findings of this study were consistent with other research that bed bug infestations were significant in a variety of areas of life. I added to this research greater detail on the unique personal stories of participants.

Although this study provided a unique contribution to the field, further research is needed to inform treatment and determine effective interventions. Such research is needed to help parents, school boards, and policy makers identify and develop effective interventions to mitigate the overwhelming effects of bed bug infestations on the well-being of individuals, children, and families. This research offers valuable insight to guide other researchers by providing a direction to explore the phenomena as well as to assist providers in developing and determining effective treatments, potential resources, and supportive networks.

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Appendix A: Recruitment Flyer

VOLUNTEERS NEEDED FOR A RESEARCH STUDY ON

THE EXPERIENCE OF BED BUG INFESTATIONS

Dorota A. Krotkiewicz, a doctoral student at Walden University, is conducting this study as a part of a doctoral requirement. Individuals who are the parents of school-aged children (preschool through 12th grade) living in rural Nevada who have experienced home bed bug infestations are invited to participate.

Volunteers will be interviewed on the impact bed bug infestations have had on them and their children. The goal of the study is to understand individuals' experiences of bed bug infestations as well as how they coped with this experience.

As a participant, you would be asked to describe your experience of the bed bug infestation as well as how your child or children reacted to the experience. Some of the questions include, "What is it like to experience bed bug infestation at home?" and "Do you think having a bed bug infestation affected your child in any way at home?"

The interview will take approximately 60 minutes to complete. As a gesture of appreciation, the participant will be offered $25 grocery gift card for participating in the study.

If you are interested, please email or call. Thank you!

Appendix B: Demographic Form

Participant Number: _____

Gender: Male☐ Female☐

Age: _____

Ethnicity: Native Hawaiian or Other Pacific Islander ☐ Asian☐

American Indian or Alaska Native ☐ White☐

African American/Black☐

Education Level: Less than High School Diploma ☐

High School Diploma or GED ☐

Some College/ Two Year Degree ☐

Bachelor's Degree☐

Post Graduate Education ☐

Marital Status: Single☐ Married☐

Household income: $0-$24,999☐ $25,000-$49,999☐

$50,000-$74,999☐ $75,000-$99,999☐

$100,00-$149,999☐ $150, 000 or more☐

Age of child and/or children:

Child 1: _____

Child 2: _____

Child 3: _____

Appendix C: Interview Questions

1. What was it like for you to experience bed bug infestation at home?
2. What is it like to experience bed bug bite?
3. How did this infestation make you feel?
4. What did you do to help yourself get through with the bed bug infestation?
5. Did those strategies help? If so, what strategies helped the most and how much did they help?
6. Do you think that people (e.g., extended family members/friends/neighbors) thought of you and your family any differently knowing that you have gone through bed bug infestation at home? How did they react?
7. How do you think bed bug infestation affected your family?
8. Do your children attend school?

   If yes, did people at the school, including other children, teachers, or administrators know about the bedbug infestation? If so, what was their response to the situation? Did the bed bug infestation affect your child's relationships at school (e.g., problems making friends, any trouble with peers, etc.)? If so, how?
9. Do you think having a bed bug infestation affected your child in any way at home (e.g., problem behaviors, emotional issues, etc.)? If so, how?
10. How did your children cope with the bed bug infestations? Did those strategies help? If so, what strategies helped the most and how much did they help?

11. Do you think living in the country affects the experience of having a bed bug infestation (e.g., availability of resources, getting help or support, etc.)?

Appendix D: Study Consent Form

CONSENT FORM

You are invited to take part in a research study about the individuals' experiences and the impact of bed bug infestations in rural area. The researcher is inviting participants who are living in the rural communities in the State of Nevada and who are the parents of school-aged children, preschool through 12th grade. The purpose of this research is to investigate the impact and the lived experiences of families and their school-aged children in rural areas in the state of Nevada who lived through bed bug infestation in their home. This form is part of a process called "informed consent" to allow you to understand this study before deciding whether to take part.

This study is being conducted by a researcher named Dorota Krotkiewicz, a doctoral student at Walden University.

Background Information:

The purpose of this proposed research is to investigate the impact and the lived experiences of families and their school-aged children in rural areas in the state of Nevada who lived through bed bug infestation in their home.

Procedures:

If you agree to be in this study, you will be asked to participate and complete an approximately 60-minute semi-structured interview including open-ended questions that will be used to solicit the participants' experiences relating to bed bug infestations. Here are some sample interview questions that the participant will be asked during the interview:

1. What was it like for you to experience bed bug infestation at home?
2. What is it like to experience bed bug bite?
3. How did this infestation make you feel?

Voluntary Nature of Study:

This study is voluntary. You are free to accept or turn down the invitation now or at anytime throughout the study. There is no penalty to discontinue participation.

Risks and Benefits of Being in the Study:

Being in this study involves some risk of the minor discomforts that can be encountered in daily life, such as becoming irritated or upset. However, being in this study would not pose risk to your safety or wellbeing. Should you feel upset at any point during or after completion of the survey and feel the need to talk to someone in confidentiality you can call the National Suicide Prevention Lifeline at 1-800-273-8255 or Nevada Crisis Line at 775-784-8090 which is available 24 hours a day, 7 days a week. Additionally, The National Alliance of Mental Illness (NAMI) can be reached at 1-800-950-6264 so that you can be connected with your local state NAMI for support services.

By participating in this study, there may not be any direct benefit to you, however, you will provide valuable information regarding the impact and the unique experiences of bed bug infestations.

Payment:
The participant will be offered $25 complimentary grocery gift card for participating in the study.

Privacy:
The researcher is required to protect your privacy. Therefore, any information you provide will be kept confidential. However, to maintain confidentiality, it is strongly suggested that you, the participant, complete the interview in a private and comfortable setting as a further safeguard. The researcher will not use your personal information for any purpose outside of this research study. Also, the researcher will not include your name or any other information that could identify you in the study reports. If the researcher were to share this dataset with another researcher in the future, the researcher is required to remove all names and identifying details before sharing; this would not involve another round of obtaining informed consent. Data will be kept in a secured and password protected media storage. Only the researcher, Dorota Krotkiewicz, and the transcription service agency will have access to the records. The report will not have identifying information. Data will be kept for a period of at least 5 years, as required by the university.

Contacts and Questions:
You may ask questions you have now. Or if you have questions later, you may contact the researcher via email. If you want to talk privately about your rights as a participant, you can the Research Participation Advocate at Walden University at 612-312-1210 or by email, irb@mail.waldenu.edu. Walden University's approval number for this study is **IRB APPROVAL NUMBER** and it expires on **IRB EXPIRATION DATE**.

Please print or save this consent form for your records.

Obtaining Your Consent
If you feel you understand the study well enough to make a decision about your voluntary participation, please indicate your consent by signing this form. If the consent is obtained via e-mail, please reply to my email with the words, "I consent." If the consent is obtained during videoconference or phone interview, I will audio record the entire consent process and I will ask you to state, "I consent" on the audio recording.

Printed Name of Participant _____

Date of consent _____

Participant's Signature _____

Researcher’s Signature _____

Appendix E: Resources Provided to Families

Matters of the Mind LLC, Behavioral Health & Life Enhancement Agency
3560 South Pointe Cir. Ste 112
Laughlin, NV 89029
(702) 299-2017
https://mmbehavior.org/

Community mental health practice providing supportive services, such as affordable workshops and group counseling programs for parenting, anger management, teen addiction recovery and adult recovery, grief and trauma recovery, domestic violence and codependency, DUI treatment, and ongoing psychoeducation pertaining to better mental health. Most insurances are accepted.

Southern Nevada Health District (SNHD) -Main Facility
280 S. Decatur Blv.
Las Vegas, NV 89107
(702) 759-1000
After Hours and Public Health Emergencies
(702) 759-1000
snhdpublicinformation@snhd.org

Laughlin Public Health Center - Local SNHD Facility
55 Civic Way
Laughlin, NV 89029
Mon-Fr, 8 am-4:30 pm

Sleep in Heavenly Peace (SHP)
(844) 432-BEDS (2337)
https://www.shpbeds.org/chapter/nv-las-vegas

"No kid sleeps on the floor in our town"
Las Vegas Chapter (building, providing and delivering beds, bed sheets and pillows across the state of Nevada). A national nonprofit organization with chapters spread across the country. SHP is a volunteer organization that builds beds for kids who are sleeping on couches, blankets, or even on the floor, and go without the bed or a pillow to sleep on. Contact SHP in regards to requesting a bunk bed for your child or someone you know at https://www.shpbeds.org/chapter/nv-las-vegas