# THE RELATIONSHIP BETWEEN ENVIRONMENTAL HEALTH STATUS, THE ATTRIBUTES OF FEMALE CAREGIVERS AND THE HEALTH STATUS OF CARE RECIPIENTS IN LOW-INCOME AREAS IN CAPE TOWN, SOUTH AFRICA

**by**

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## DECLARATION

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# ABSTRACT

Informal caregivers play an important role in the well-being of dependent members in a household. The burdens of these caregivers are multiple and pervasive and may contribute to mental health epidemiology as a result of worry, grief, anxiety and stress.

The literature review revealed that studies in caregiving and its various facets began from a pragmatically applied interest rather than from theoretical and intellectual curiosity. The majority of the research on caregiver burden involves meta-analysis of qualitative studies with little quantitative research. Also, many of these studies are concentrated on caregivers of chronically ill patients, such as those suffering from dementia, Alzheimer's disease, and heart disease, without much attention to care burden resulting from caring for those who are not necessarily ill. Similar studies by other researchers did not consider the impact of the physical health of the care recipients or the environmental factors that are critical in the study of female caregiver burden in low-income settings. In addition, existing studies did not adequately evaluate the many potential factors that may vary and influence the lives of the caregivers, especially in a single, comprehensive model. This study attempted to provide a more complete picture of these relationships in low-income and culturally diverse settings.

The study population consisted of black/African and coloured populations living in subsidised or low-cost housing settlements. In each of the two different cultural communities, 100 black/African and 100 coloured female caregivers were selected through a systematic random sampling procedure. In addition, data were also collected from caregivers in Tamale, Ghana to assess differences between the socio-demographic profiles of the caregivers in Cape Town, South Africa and Tamale, Ghana. The theoretical paradigm used in this study is the Stress Process Model by Pearlin et al., (1990).

The study instrument assessed caregiver burden with both objective and subjective measures through the use of a fully structured questionnaire. The information that was collected according to the constructs of the Stress Process Model included personal and role strains and incorporated the physical health of the care recipients and environmental factors such as kitchen and toilet hygiene. Inclusion criteria for the respondents in both Cape Town and Tamale were the principal female caregivers who were present, willing, and able to give informed consent. The Statistical Package for Social Sciences (SPSS Version 22) was used for the analyses. The Chi-square test was used to assess the relationships between environmental health, the socio-demographics of the female caregivers and the health status of the care recipients. The hierarchical regression analysis in the form of a General Linear Model was used to model caregiving burden.

The results showed that the majority of the female caregivers were in the age group 40 – 49 years and in both Cape Town and Tamale, a large proportion was in the low-income group. Also, the majority of the informal caregivers in the two samples were in care tasks as a full-time job, providing more than 40 hours of care per week. Regarding the length of time in caregiving, a large proportion of the caregivers in both Cape Town and Tamale had been in the care role for more than three years preceding the survey, and almost all the caregivers in the Cape Town sample (98.4%) did not use any form of caregiving programme to ameliorate the negative effects of caregiving. Further, the results showed statistically significant relationships between the socio-demographic characteristics of female caregivers (age, education, population group and income status) and the diarrhoea status of the care recipients. Also, a significant relationship was shown between environmental health variables of the home (kitchen hygiene and toilet hygiene) and the physical health of the care recipients. The major predictors of female caregiver burden in the samples were the physical health of the care recipients and access to social grants.

On the basis of the analyses, it was recommended that the government should recognise the importance of the physical health of the care recipients and increase the amounts of social grants to the caregivers since this could improve the circumstances of both the caregivers and the care recipients. In addition, this could aid in improving the standard of living of caregivers in these households. Future research in similar settings should disaggregate the data to compare the burden of caring for caregivers of physically strong care recipients with physically ill care recipients.

***Key words*****:** Female caregiver burden/strain, care recipients, socio-demographic characteristics, Stress Process Model, hierarchical regression modelling.

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## LIST OF ABBREVIATIONS

ADLs: Activities of daily living
CR: Care recipient FCg:
Female caregivers GLM:
General Linear Model
MDG: Millennium Development Goal
SES: Socio-economic status
SRS: Systematic random sampling SPM:
Stress Process Model TMSC: Transactional
model of stress and coping IADLs: Instrumental
activities of daily living
UN: United Nations

## BRIEF EXPLANATION OF HEALTH OUTCOMES KEY TO THIS STUDY

**Chronic conditions:** This study considered all health conditions that hamper the normal functioning of the care recipient in completion of activities of daily living. These included cancer, dementia, Alzheimer's disease, and heart diseases.

**Environmental health:** The study considered hygiene of the physical environment of the household. The hygiene status of the toilet and kitchen were the key variables and were determined by direct observation of the fieldworkers.

**Physical health:** In this study, physical health was considered as a state of physical well- being in which a person is physically fit to perform his or her daily activities without hindrance or difficulty. This means that the person is able to complete daily tasks without depending on others for support in completing these daily activities.

# CONTENTS

# CHAPTER 1
# BACKGROUND TO THIS STUDY

## 1.1 INTRODUCTION

Several studies have documented that care and caregiving occur in different settings in communities, including hospitals, physicians' rooms, workplaces, schools and homes (Silver & Wellman, 2002; Rezende, Coimbra, Costallat, *et al.*, 2010). Caregiving can occur in different forms, ranging from formal to informal (Pletzen & MacGregor, 2013). Formal caregiving can be seen in old age homes and designated facilities, whilst informal caregiving mostly occurs at the household or family level.

Interest in the study of caregiving and its facets began when caregiver burden was first conceptualised by Hoenig and Hamilton in the 1960s. In a study that assessed the families of patients with schizophrenia, these authors delineated between *objective burden* and *subjective burden* (Hoenig & Hamilton, 1966). Hoenig and Hamilton (1966) defined objective burden as the demands and disruptions of the caregiving role, while they referred to subjective burden as the distress experienced in relation to these caregiving demands.

Care and caregiving research began from a pragmatically applied interest rather than from theoretical and intellectual curiosity (Chappell, 2001). Early studies revealed a simplistic definition of caregiving as assistance and began with the assumption that it was beneficial. Yantzi and Skinner (2009) report that care recipients and providers differ in terms of characteristics, such as sex, age, socio-demographics and various economic characteristics. In examining physical health outcomes of caregivers versus non-caregivers, Vitaliano, Zhang and Scanlan (2003) concluded that caregivers had more stress hormones and antibodies, indicating poorer health. Though a number of studies support the overall findings of meta-analyses that conclude that caregivers are prone to experience poorer psychosocial and physical health, some studies have found opposing evidence. The existing research does not provide a convincing rationale to explain why these discrepancies in the findings occur. However, existing studies indicate that the differential findings cannot be accounted for by differences in severity of ailments, time spent on caring or uncertainty associated with the outcomes (Loomis & Booth, 1995; Schultz, Newsom, Mittelmark, *et al.*, 1997).

Several factors help to explain some of the discrepancies in the literature. Studies examining predictors of caregiver well-being tend to be limited in terms of scope because they consider only a narrow set of predictors at one time. The caregiving role is complex and individuals constantly need to adapt to situations with some flexibility as the various caring needs arise. Moreover, there are many interpersonal and contextual variables that influence caregiver well-being, many of which interact with one another, thus creating a distinctively unique experience for each caregiver. In a broader perspective, factors that vary for caregivers include: (i) demands associated with the caregiving role and time spent caring (e.g. help with activities of daily living such as bathing and toileting); (ii) stressors associated with the recipients' reactions to caregiving as well as appraised stressors associated with the caregiving situation (e.g. recipient's expression of anger and/or depression, financial strain); (iii) personal and interpersonal stressors present in the caregiver's life (e.g. family conflict, work status); and (iv) caregiver buffers and coping (e.g. social support, adaptive coping strategies) (Haley, Levine & Brown, 1987). Although these four factors may influence caregiver well-being, few existing studies consider the combined impact of all of the variables at play in an integrated model reflecting the potential caregiver's burden.

Furthermore, many of the studies focus on comparisons between individuals who are caregivers and those who are not caregivers, and this yields little information regarding the determinants of variation among caregivers. In order to address these deficiencies, Vitaliano, Zhang and Scanlan (2003) argue that a theoretical model connecting caregiver stressors to psychological distress needs to be explored

Many of the existing studies do not adequately consider the many factors that may vary in caregivers' lives, especially in a single, comprehensive model. Thus, the understanding of the relationships between predictors and caregiver outcomes may be limited. This study attempted to provide a more complete picture of these relationships in low-income settings across two population groups in Cape Town, South Africa. Data were also collected from a similar setting (Zogbeli in Tamale in the Northern Region of Ghana) to compare the background characteristics of caregivers in the South African samples with the Ghanaian samples, thus serving as confirmation that the variables included surpassed possible South African cultural bias. This was done by examining the impact of a broad array of variables on caregiver well-being, satisfaction and objective health in line with the Stress Process Model (SPM) of Pearlin (Pearlin, Mullan, Semple, *et al.,* 1990) and the Transactional Model of Stress and Coping (TMSC) of Lazarus and Folkman (1984).

The main aim of this research was to establish the relationship between the socio- demographic factors of female caregivers (FCgs), the health status of their care recipients and environmental health. Investigating this is meaningful because of the proposed view that more educated caregivers and high-income earning families live in cleaner and healthier environments, have healthier lifestyles and are, therefore, healthier than low-educated caregivers and low-income earning families. The study is designed to elicit caregiver burden predictors and to estimate a model of female caregiver burden in the selected low-income urban areas in Cape Town, South Africa. The presumption is that in South Africa, as well as in most parts of poorer Africa, female household members often perform caregiving under similar conditions.

## 1.2 DEFINITION OF KEY TERMS

Before reviewing the caregiving literature, it is important to provide operational definitions of key terms relevant to the objectives of this study.

### 1.2.1 Informal caregiver

Informal caregivers are defined as those who provide unpaid care for the aged or for people needing assistance with tasks in the home that may be physically, emotionally, socially or financially challenging and involve much time and energy for long periods of time (Biegel, Sales & Schulz, 1991; Pletzen & MacGregor, 2013). From the literature, it seems that the majority of informal caregivers are women and are primarily members of the same family to whom care is given (Ogunmefun, Gilbert & Schatz, 2011, Chadiha, Adams & Biegel, 2004; Older Women's League, 2001). In this thesis, 'caregiver' refers to an informal caregiver or family caregiver unless otherwise stipulated.

### 1.2.2 Caregiver strain

The terms 'caregiver strain' and 'caregiver burden' are synonymous and is defined as "the responsibilities, demands, difficulties, and negative psychological consequences of caring for relatives with special needs" (Brannan, Heflinger & Bickman, 1997). There has been an upsurge in interest and attention in caregiver research with a postulation that this increase is the result of various factors, including a drive towards deinstitutionalisation aimed at seeing the mentally ill and disabled integrated back into the community. Improvements in medical technology also aid in decreasing morbid conditions and mortality, enabling people with congenital and chronic illnesses to live longer (Sales, 2003). Caregiver strain occurs when caregivers perceive difficulty in performing their tasks, or feel overwhelmed by their tasks (Archbold, Stewart & Greenlick, 1990).

The two dimensions of strain identified above are termed objective and subjective dimensions of caregiver strain (Hoenig & Hamilton, 1966; Montgomery, Gonyea & Hooyman, 1985). Objective strain refers to burdensome events that family and caregivers experience as a result of the relative’s problems. These events may include financial strain, disrupted relationships, interruptions at work and reduced personal time and social contact. Subjective strain encompasses caregivers’ feelings about caring for relatives, that is, anxiety and worry, or anger and resentment.

The demographic and psychosocial characteristics associated with caregiver distress (e.g. depression, general psychological distress and physical strain) include being a woman, being younger in age, being the patient's spouse, having a lower socio-economic status, being employed and lacking personal and/or social support (Kim & Given, 2008). However, there seems to be a lack of uniformity in the literature regarding the terminology used to define caregiver strain. The construct is frequently labelled as caregiver burden, caregiver distress or caregiver stress. These terms are intertwined and generally synonymous although Brannan and Heflinger (2001) found that caregiver strain and caregiver distress are distinctly two different constructs. That being stated, no attempt will be made to disentangle these concepts in this thesis. The term caregiver burden is more frequently used in the literature, but there is negative stigma associated with the word ‘burden’ therefore, the word ‘strain’ will be used interchangeably with burden in this thesis.

### 1.2.3 Caregiver stressors

Caregiver stressors are defined as those life events or occurrences that are of sufficient magnitude to bring about change in the family system (Hill, 1949). “Stress is not seen as inherent in the event itself, but rather conceptualized as a function of the response of the distressed and refers to the residue of tensions generated by the stressor which remain unmanaged” (McCubbin, Joy, Cauble, et al., 1980:857).

### 1.2.4 Health status of caregiver

Caregiver health status refers to substance use and the mental and physical health of the caregiver. Research has found that caregivers with poor mental health report stress, family problems and pessimism regarding their family members to a greater extent, and they have the perception that they have less social support (Finnegan, Dooley & Walsh, 2004). In this thesis, both the ‘objective’ health and ‘subjective’ health are considered as being consistent with the literature in assessing the caregiver health status.

### 1.2.5 Empowerment

Empowerment is “the process of increasing personal, interpersonal, or political power so that individuals, families and communities can take action to improve their situations”. (Guitierrez, 1994). People empower themselves on a personal level in order to deal with social status and racial and ethnic oppression through the development of strong coping abilities (Lee, 2001; Guitierrez, 1994).

### 1.2.6 Household

This is defined as one person or a number of people who occupy the same housing unit as their usual place of residence (Statistics South Africa, 2008). This person or group of persons live together and jointly provide for food and other essentials for living at least four nights per week over a period of four weeks (Statistics South Africa, 2008).

## 1.3 BACKGROUND OF THE STUDY

The importance of females in socio-economic life and the well-being of the family cannot be overemphasised (Cho, 2007). Women are the primary caregivers to new-borns and at some stage in their lives, the majority assume primary caregiver roles in the lives of dependent family members. In appreciation of their role, Kwegyir-Aggrey (1875 – 1927) stated “*If you educate a man you simply educate an individual, but if you educate a woman, you educate a family [nation]*” (African Proverb, 1999). The truthfulness in this saying is amplified by the words of George Washington (1732 – 1799), the first president of the United States, who spoke about his mother saying: “*All I am I owe to my mother … I attribute all my success in my life to the moral, intellectual and physical education I received from her*” (African Proverb, 1999).

In recognition of their important role, the empowerment of woman has been the focus in multiple goals and policies such as the United Nations Millennium Development Goals (MDGs) (United Nations, 2000). The MDGs comprise eight goals, set to be achieved by 2015 in response to the world’s main development challenges. These goals are drawn from the actions and targets contained in the Millennium Declaration that was adopted by 189 nations and signed by 147 heads of state and governments during the United Nations Millennium Summit in September 2000. The overarching goal of the MDGs is related to well-being, and MDG 5 is specifically focused on maternal and child health.

In typical African societies, the role of members of the family in the well-being of the family also cannot be overemphasized. Individuals, and in particular females, typically play multiple roles in life, such as unpaid family roles together with remunerated occupational roles (Yee & Schulz, 2000). Sometimes, these unplanned roles come with inherent challenges such as a lack of resources. This lack of resources and its accompanying burden on informal caregivers could compromise their health and the health of their care recipients. Caregiving may also be influenced by gender and by the expected caregiver roles within a family unit. A meta-analysis of caregiver burden reported that spousal caregivers were more distressed than other caregivers and regarding gender, females were more distressed than their male counterparts (Pinquart & Sorensen, 2003). The reasons for the gender differences seems to be that in general, women tend to perform more personal care tasks, are more likely to assume the primary caregiver role, are less likely to obtain formal help and are more likely to experience cultural and social pressure to become caregivers (Yee & Schulz, 2000).

Although care-dependent household groups such as those with a disabled recipient exist, given the extensive reports on the caregiver burden imposed by disabled and chronically ill care recipients, the focus of this study is on the female caregiver and the health of the child and the elderly as care recipients who are not necessarily living with a particular medical condition (e.g. dementia). This study further aims to establish the relationship between the attributes of female caregivers and the health status of the care recipients together with environmental health. The study concludes with a proposed model of caregiver strain for caregiving in similar circumstances. Developing a model of this nature must take into account the general understanding of the prevailing informal caregiving system with an in-depth theoretical and conceptual encapsulation. Only when this understanding is well established and articulated, will it be possible to narrow the overarching description down to the sector under consideration (i.e. informal or family caregiving).

To undertake a study of this kind, it is imperative to examine all the facets of caregiving, ranging from formal to informal. This study places particular emphasis on the latter as a form of caregiving. Informal caregiving and social network support are helpful in understanding how informal caregivers affect the outcomes of care recipients (Cho, 2007). A review of the environment in which caregiving takes place and female caregivers characteristics/ backgrounds are key in understanding the relationships between constructs and a theoretical model selection and development.

To understand the complex processes of caregiving strain in low-income settings in an urban centre, existing scholarly evidence is first explored critically and objectively. In providing an up-to-date foundation of knowledge and exposing limitations, this research attempted to model caregiver strain in low-income settings predominantly inhabited by low-income earners. Existing theoretical models describing caregiver health are examined in Chapter 2 and critically considered with respect to both established and current knowledge.

Understanding how female caregivers or maternal attributes affect dependents' (children and the elderly) health in the low-income housing settlements in an urban setting would help formulate important development policies and goals such as improvement of women's education and child mortality. It would also aid in planning health programmes for female caregivers, thus improving the health outcomes of the child and the elderly through enhancing the quality of life of vulnerable children and the elderly in the care of home caregivers.

## 1.4 STATEMENT OF THE PROBLEM

The burdens that caregiving present are multiple and pervasive and often contribute to guilt feelings, worry and grief (Rose, Bowman, Toole et al., 2007; Biegel, Milligan, Putnam *et al.,* 1994). The informal caregivers, who are usually female, play an important role in the well- being of dependent members (i.e. care recipients such as children and aged persons) living in the household, and in their caregiving roles, they experience a great burden (Carretero, Garces, Rodenas & Sanjose, 2009). However, most research on caregiver burden has concentrated on caregivers of chronically ill patients such as those with dementia, Alzheimer's disease and heart disease (Demirtepe-Saygili & Bozo, 2011; Adewuya, Owoeye, & Erinfolami, 2011; Matthews, Baker & Spillers, 2003; Biegel, Milligan & Putnam, 1992; Quittner, Glueckauf & Jackson, 1990). As stated earlier academic focus in caregiving is on frail, elderly persons, usually with chronic conditions (Stajduhar, Funk, Toye et al., 2010). There seems to be less focus on the wider caregiver roles, especially regarding caregivers of recipients who are not necessarily sick.

Moreover, majority of the research on caregiver burden involves the meta-analysis of qualitative studies with little quantitative research. Given the fact that quantitative studies, which examine association, causality and the influence of multiples variables on specific outcomes, tend to draw upon large representative samples, this research was largely quantitative to allow for inference of findings and statistical modelling.

The chronic and demanding nature of family caregiving, especially in poverty-stricken households, can lead to a high degree of stress for caregivers (caregiver burden) (Silver & Wellman, 2002) and pressure on household and environmental health resources. For example, majority of the elderly in Lebanon live with their families who provide help when they are impaired, often with little formal resources for support (Seoud, Nehme, Atallah et al., 2007). The problem is compounded with advanced age that comes with associated health concerns and needs for activities of daily living (ADLs). Many of the frail, elderly persons living in the community rely on support from family and friends, which is usually provided by the informal or family female caregiver (Rose *et al.*, 2007).

Most research on family care reports that the caregivers bear the greater burden (Jorge, Rodenas & Carmen, 2010; Carretero*,* Garces, Rodenas & Sanjose, 2009). However, there is a paucity of research exploring the reactions to care for the elderly person, especially regarding the frail, older members in the household. A significant relationship exists between several care characteristics and caregivers who spend a large portion of their weekly time on caregiving and report a low self-perceived health status (Aggar, Ronaldson & Cameron, 2011). These persons are susceptible to immense health and financial problems and disruption to their daily routine (Aggar, Ronaldson & Cameron, 2011). In these circumstances, Julian *et al*. (2007) propose two strategies to improve care reaction when caring for the frail, elderly person. These are (i) financial support to assist carers in improving their lives, and (ii) provision of regular formal support rather than sporadic respite care.

Furthermore, it has been well established that in poverty-stricken communities with household food insecurity, caregivers have a propensity to change their food-consumption patterns to cope, and this results in compromised nutrition (Oldewage-Theron, Dicks & Napier, 2006). Deterioration of caregivers' health and nutrition status as well as the health status of the home environment may diminish caregivers' ability to provide care and may impair the life quality experienced by both caregivers and care recipients (Silver & Wellman, 2002). However, caregivers' attributes/backgrounds, such as age, education and socio-economic status (SES) as well as environmental health may all play an important role in the well-being of the family.

A difficulty inherent in drawing conclusions about relationships between predictors and caregiver well-being lies in making cross-study comparisons. Most studies contain samples that differ in important ways, most notably, the recipient's condition. The majority of existing studies recruit participants based on the recipient's condition. For example, studies regarding caregivers might examine factors affecting the well-being of dementia patients or cancer patients or heart disease patients. Such samples tend to be limited in that they are based on only one recipient condition. As such, results may generalise well to populations of caregivers for dementia patients, cancer patients or heart disease patients respectively. This situation makes the modelling of caregiver burden almost impossible because generalisations for caregivers on the whole, as well as cross-condition comparisons, are limited. If an investigator seeks to generalise results to all caregivers but collects caregiver data from a sample of dementia caregivers only, sampling error would likely have a serious impact on the findings. Although meta-analyses attempt to equate study results by comparing effect size across studies, the caregiver samples being compared often differ greatly based on the recipients' ailments. This study attempted to compensate for known limitations associated with drawing generalised conclusions by using a sample that included only caregivers of children and the elderly.

Few studies considered the dynamic relationship between the caregiver and the care recipient, which could result in another potential constraint affecting the interpretation of results. This research intends to extend the knowledge of caregiver burden on female caregivers resulting from caregiving to chronically ill care recipients to caregivers of children and the elderly who are not necessarily chronically ill at the household level in low-income settings.

## 1.5 OBJECTIVES OF THE STUDY

The main objective of the research is to search for possible relationships between the socio-demographic variables of female caregivers in the main study areas in Cape Town and the health status of the care recipients under their care.

The specific objectives of the study were:

i. To establish the relationship between environmental health and the health status of care recipients in the study communities.
ii. To assess caregiver strain on the female caregivers in the selected dwellings.
iii. To identify the predictors of caregiver strain on female caregivers in the study areas.
iv. To estimate a multidimensional model of caregiver strain in the selected low-income areas in Cape Town, South Africa.

Although the study focused on Cape Town, South Africa, data will also be gathered from a setting in Tamale, Ghana, to evaluate the application of the model in a different setting.

## 1.6 RESEARCH QUESTIONS AND HYPOTHESES

The following are the research questions that acted as drivers for this study and the hypotheses that directed the study.

### 1.6.1 Research questions

The following are the research questions of this study:

1. Is there a significant relationship between the attributes of the female caregivers and the health status of the care recipients under their care?
2. Is it possible to measure the caregiver burden among the selected caregivers?
3. Is there a significant relationship between the environmental health status and the health status of the care recipients in the selected low-income communities?
4. What are the predictors of caregiver burden in the study areas in Cape Town?

### 1.6.2 Hypotheses

The following research hypotheses directed this study:

1. There is a positive relationship between the education level of female caregivers and the health status of the care recipients in their care.
2. Environmental health is positively related to the health status of the care recipients.
3. The social grant provided by the government makes a significant difference in caregiver burden.

## 1.7 RATIONALE OF THE STUDY

The study provides objective measures of the socio-economic and health status of caregivers and their care recipients in the areas of the selected low-income urban communities.

The results can be used to gauge the effectiveness of development and health care policy reforms in improving the standard of living of all South Africans and Ghanaians living in conditions comparable with the targeted populations in the selected areas in this study. The results of the study also help clarify the health status of female caregivers (caregiver strain) and care recipients as well as the environmental health status. The findings could be useful when providing for informal caregivers in planning health policies, such as the National Health Insurance policy in South Africa and Ghana, and future health policies in both low-income and middle-income countries.

In reaching the aforementioned aims, different foci-studies highlighted the above-mentioned caregiver and care recipient dynamics. The foci and their specific objectives as presented in this thesis are stipulated below.

**Focus 1**: Background of female caregiver and caregiving context
The objectives for this focus were to:

- Determine the demographic profile and attributes of the caregiver (e.g. age, formal schooling, job status);
- Determine the socio-economic status of the female caregiver (e.g. income, job status); and,
- Determine care demands and the length of time in caregiving.

**Focus 2**: Relationship between background characteristics of caregivers and selected health outcomes of care recipients.

The objective of this focus was to establish associations between the background characteristics of caregivers and the three selected health outcomes of the care recipients. The health outcomes were (i) chronic conditions, (ii) diarrhoea disease cases, and (iii) physical health status of care recipients.

**Focus 3**: Relationships between environmental health and health status of care recipients
The objective of this focus was to establish the association between environmental health, mainly toilet and kitchen hygiene, and selected health outcomes of the care recipients, including diarrhoea disease cases and the physical health status of care recipients.

**Focus 4**: Assess presence or absence of caregiver strain
The objective was to determine the caregiving impact on caregivers’ mental health by self-report on feelings of ‘giving up’ on care tasks—burden.

**Focus 5**: Establish predictors of caregiver strain
The main objective of this focus was to establish the predictors of caregiver strain in the selected areas, which aided in estimating a multidimensional model for caregiver strain.

The findings from foci 1 – 3 are presented in Chapter 4, and the findings from foci 4 – 5 are presented in Chapter 5.

A questionnaire was designed for the data collection. The data analysis was performed using the Statistical Package for Social Sciences (SPSS Version 22) software.

## 1.8 LIMITATIONS OF THE STUDY

The research instrument contains sensitive personal health questions. It is difficult to seek such information. It was argued that the presence of relatives or other third parties may pose a barrier in obtaining information that the respondents/caregivers may not wish to disclose honestly and accurately. To counter this possibility, interviewers were instructed to negotiate a secure interview environment to elicit as honest and accurate responses as possible.

To overcome possible differences in the language of the respondents and the interviewer, the study recruited interviewers that speak isiXhosa and Afrikaans and are familiar with data collection using the English language. The study captured data that was provided at a specific point in time as the caregiver’s current experience. This limited the ability to generalise findings across time, past and future, with confidence.

It is also important to acknowledge some limitations arising from the questionnaire content. The interview focused on the primary caregiver, including caregivers providing care for only a few hours, for example less than 10 hours per week. Due to the complexity of the caregiving situations noted during feedback from the interviewers, further probing ought to have been done on the caregiving situation, to know who else was present to provide care.

As the study focussed on caregiver strain, less focus was on the availability on the availability of hygienic facilities such as to specifically probe to know if there were detergents such as toilet soap in the house. Also, information on hygiene practices such as washing hands after toileting were not probed for or directly captured in questions. Adding this element would have allowed for a better understanding of the difference between knowledge and practice among caregivers in the study settings.

It seems that the questions on relationships and functional dependence were not properly understood by the interviewers in Tamale, with the result that the data on these two variables were not available in descriptive and multivariate analysis.

This study focussed on female caregiver strain when caring for care recipients, who are not necessarily suffering from chronic sicknesses in low-income urban settings. It also documents the burden of caring for two extremely vulnerable groups (i.e. children and the aged) living in home. Future perspectives of the study will provide opportunities for continuity in research in the area and would be an opportunity to enhance the richness of female caregivers' experiences in caregiving circumstances in the midst of the ever-present structural dynamics.

## 1.9 ORGANISATION OF THE STUDY

This study is organised into six chapters. Chapter 1, which is the introduction, focuses on the background of the study, the statement of the problem, research questions, the rationale of the study, objectives of the study, the conceptual framework, hypotheses, the organisation of the study and the definition of terms. Chapter 2 is dedicated to the review of literature, while Chapter 3 discusses the methodology of the study. Chapters 4 and 5 present the findings of the study. Finally, Chapter 6 presents the conclusions and recommendations. The chapters are followed by Appendix A: Informed consent form, Appendix B: The study instrument/questionnaire and Appendix C: Ethics clearance.

# CHAPTER 2

# LITERATURE REVIEW, THEORETICAL REVIEW AND CONCEPTUAL FRAMEWORK

## 2.1 INTRODUCTION

This chapter presents the review of caregiver strain and briefly describes the theoretical model deducted from the literature review. The conceptualisation of the model is based on an objective and critical review of the caregiver strain literature and relevant theoretical frameworks. Certain models inform the ways in which the study of caregiver strain should be done. The review of the theoretical models in Chapter 2 provides the foundation for the conceptual model proposed in this study. In this study, care recipients are defined as children and older persons being cared for by a female caregiver in the household.

This chapter surveys the state of current knowledge and explores some of the theoretical frameworks that have been used to describe the caregiving process from two diverse fields, paediatrics and geriatrics. This line of study did not incorporate the impact of the physical health of care recipients or the environmental factors that are critical in the study of female caregiver burden. Early works on female caregiver burden specifically assessed burden experienced by caregivers of chronically ill patients such as dementia and Azheimer's disease patients. This study included all care recipients in the care of a female caregiver without restricting inclusion to only chronically ill care recipients at the household level.

There is some evidence to suggest that there is variation in how caregivers adapt to their caregiving tasks (Raina, O'Donnell, Schwellnus *et al.*, 2004). In this regard, other studies have attempted to qualify the association between caregiving and health outcomes of the caregivers.

The caregiver-burden literature is limited to research that uses traditional analytical approaches to examine the relationship between factors and outcomes (Raina *et al.*, 2004). The literature search revealed a lack of dependence on a single theoretical framework. Therefore, to estimate a multidimensional model, this research hypothesised and incorporated other contextual factors (e.g. physical health and environmental health) that could help mitigate or mediate stress within the environment of the study population. In rendering the caregiver services, individuals differ in terms of psychosocial mechanisms that regulate the impact of stress on health and well-being (Raina *et al.*, 2004).

In light of the foregoing, this chapter comprises a discussion of the conceptual framework that guided this study and a review of the female caregiving literature. The conceptual framework proposed is based on the theory of the Stress Process Model (Pearlin *et al.*, 1990:583-594) and presented as an improvement on the Lazarus and Folkman (1984) Transactional Model of Stress and Coping. The review of the literature focuses on the key concepts of the various theories and the constructs of the Stress Process Model (Pearlin *et al*., 1990). It also takes a cursory look at the hypothesised constructs (environmental health and care recipients' health) for improved prediction.

The research is discussed under the following six headings:

1. Background and contexts of female caregivers
2. Stressors and covariates
3. Stress mediators
4. Environmental health status
5. Physical health of care recipients
6. Health outcomes

The caregiver strain and the variables discussed included socio-economic status, care demands, functional impairment and the needs for activities of daily living, impact of financial resources (social grants), caregiver knowledge, coping strategies and the physical health of care recipients. These are discussed under the various constructs. For possibility of improvement, constructs for environmental health and the health of the care recipients are incorporated. The covariates of the background and contexts are age and the socio-economic status of the female caregiver. The stressors comprise both primary and secondary stressor variables. Mediators discussed are mainly resources comprising financial resources, social support and coping styles. The main outcome (i.e. female caregiver strain or burden) is considered a predictor of physical health and emotional distress for the female caregiver.

Through the literature on geriatrics, Chapter 1 established that the two facets of caregiving are (i) the formal caregiving system, and (ii) the informal care provision. The focus of the literature reviews in this chapter is on the latter and gives an overview of the role of informal caregivers as an insight for the foundation of this work.

## 2.2 LITERATURE REVIEW

The literature review is presented by initially investigating the role of the female caregiver in both formal and informal caregiving circumstances. It further investigates the informal caregiving situation in both paediatric and geriatric contexts, giving an overview of the salient stressors. Finally, the review considers some pioneering theories that guided the model selected for this thesis.

### 2.2.1 Role of informal caregivers in a formal caregiving system

From the review of the literature, family caregivers play major roles in both child and aged care. This section takes a look at the roles of paediatric and geriatric care in the study of **female caregiver strain.**

#### *2.2.1.1 Paediatric care*

The most obvious way of maintaining a child's health is through regular maintenance of the child's health card (Road-to-Health Card), a requirement for children in the formal health care system. Children's caregivers hold the key to successful health screening since they provide accurate information needed by health professionals. Also, children need special care depending on their developmental stage (Mendez-Luck, Kennedy & Wallace, 2009:228). Caregivers' competency in maintaining good child health might be influenced by their macro-social and economic environment (Meintjes & Van Belkum, 2013:187-186). The caregivers' enhanced knowledge of childhood development could facilitate early detection and effective treatment of developmental trouble. This might aid in enhancing children's physical, emotional and intellectual accomplishments throughout their lives (Meintjes & Van Belkum, 2013:187-186). Family caregivers do not play a key role only in childcare but also in the care of aged members of the household.

#### *2.2.1.2 Geriatric care*

Elders in communities often rely on informal caregivers for the practical aspects of formal care, for example, managing appointments, transportation and administering medications, as well as communicating symptoms and care goals and aiding in the decision-making about treatments and procedures across health care settings (Boise & White, 2004:12-20). Family caregivers are often present during care recipient encounters with the physician (Haug, 1994:1-12; Silliman, 1989:237-241).

As chronic physical illness and disability increase with advanced age, the aged in communities rely greatly on informal caregivers to enable them to continue to live in the community and maintain function. The family caregivers, primarily spouses and children of the dependents, play a variety of key roles in the care of the frail and the elderly (Haug, 1994:1-12, Musil, Moris & warner, 2003:505-526; Silliman, 1989:237-241). In these roles, the informal caregivers provide extensive assistance to their physically frail, aged relatives and as such, experience the associated stress (Bowman, Mukherjee & Fortinsky, 1994:371-392).

### 2.2.2 Review of caregiver strain: Physical and mental health

The research on caregiver strain has its foundation in the stress and coping literature stemming from the early works of researchers such as Selye's stress research in 1956), Hill's family stress and crisis research in 1949, the family stress and coping research of Lazarus in 1966 and 1968, Lazarus and Cohen in 1977 and Pearlin's research in the late 1970s (Taylor, 2008). The work of Grad and Sainsbury (1963) earned the two authors the credit of being the first scholars to study the impact of burden for those caring for mentally ill family relatives (Vitaliano, Young & Russo, 1991:67-75). Subsequent researchers such as Hoenig and Hamilton (1966) distinguished between subjective and objective dimensions of burden. The early and ongoing works of these researchers from various disciplines have contributed immensely to the understanding of the underlying mechanisms that are associated with the phenomenon of caregiver strain. Whilst much of the caregiver strain research is conducted in the developed world, research in the developing world to investigate the predictors of caregiver burden is equally imperative, particularly in low-income settings.

#### *2.2.2.1 Caregiver stressors*

Many important factors have the potential to influence caregiver strain, including caregiver health status, substance abuse status, mental health status, and relationship to the care recipient. A single factor alone or combinations of factors can be seen as potential contributor/s to caregiver strain. The caregiver's health status, psychological status, and substance abuse status are discussed as impacts on the caregiver as a result of caregiving (considered as outcomes of caregiving). However, the pre-existing status of the caregiver and its influence on the already stressful task of caregiving has not been considered in the literature.

In general, the caregiver's health status refers to the mental health, substance use and physical health of the caregiver. Studies have reported that caregivers with poor mental health reported more stress, more family problems, demonstrated more negativity about their family members and perceived that they had less social support (Finnegan *et al*., 2004:26-43).

Some reports have found that caregivers' financial resources from remunerated roles outside the home also act as predictors for the level of caregiver strain. For example, a low-income grandparent who provides care may experience more strain than a caregiver who is a higher earner (Williams, Forbes, Mitchell *et al.,* 2003:280-291). In a study of children with serious emotional disturbance, socio-economic status proved to be an important predictor of caregiver stress (McDonald, Gregoire & Early, 1997:138-148). In addition, it has been reported that caregivers of children with chronic medical conditions in families with lower incomes report more caregiver distress conditions (Canning, Harris & Kellerher, 1996:735-749). All these studies point to one important key finding, namely that economic resources are an important factor in psychological well-being. Thus, the study fo caregiver strain, particularly on the socio-cultural dynamics and female caregiver strain among low-income societies in developing countries is warranted.

### 2.2.3 Review of health of care recipients

The health of the care receiver is an important predictor of caregiver strain. This section presents a brief review of both child and aged care in the communities.

Extensive literature exists on the variety of stressors, including but not limited to the need for extra services, extra time and money, trauma, accidents, level of symptoms, severity and level of impairment or disability, death, life transitions and legal issues (Taylor, 2008). In paediatric or childcare literature, research regarding the level of influence of stressors on strain differs depending on the type and severity of the child's problems. It has been reported that emotional or behavioural status is predictive of caregiver strain (Brannan, Heflinger & Foster, 2003:78-92).

Furthermore, in a study of children with intellectual disabilities, the negative definition of the situation increases stress, with fathers reacting to social acceptance of the child and mothers to the child's behavioural problems (Saloviita, Italinna & Leinonen, 2003:300-312). In a sample of children with chronic illness, Katz (2002:257-269) found that the father's perception of social support, the negative impact on the family and his ability to function within the family affected appraisal, whereas mothers were concerned with emotional issues and the physical care of the child.

In most Sub-Saharan African (SSA) countries, and within a large part of the South African population, orphans are traditionally cared for by their extended families (Bejane, Havenga & Aswegen, 2013:68-80). Studies in many South African districts found that most orphans, including those infected with HIV, are either cared for by both their grandparents and family members or live alone (Bejane, Havenga & Aswegen, 2013:68-80). These primary caregivers are often elderly women who take care of the children after the death of their parents (Wacharasin & Homchampa, 2008:385).

Although many studies of caregiver strain have incorporated a broad range of measures and family characteristics, researchers have typically addressed the traditional effects of predicator variables on caregiver strain. It has been reported that relevant psychological theory suggests that interrelationships between variables are likely to be critical in understanding the impact of caring for a child with major disabilities on caregiver outcomes (Hastings & Taunt, 2002:116-127).

Whilst much attention is given to child health and adult health outcomes as development indicators, not much attention is given specifically to the health and the unmet health needs of the elderly in low-income areas in urban settings in much of the developing world.

It has consistently been reported that a large proportion of South Africa's population live in absolute poverty or are vulnerable to being poor and are, therefore, inherently exposed to malnutrition, overcrowding and other health issues (Armstrong, Lekezwa & Siebrits, 2008:04-08). These issues are common along racial lines and occur mostly among black and coloured populations (Armstrong *et al*., 2008:04-08). Among the urban poor, there are numerous threats to child and aged health associated with widespread poverty, including unmet health needs of the elderly, poor immunisation coverage for children and unhygienic living conditions. Poverty is a driver of child death and an important driver of aged health since unhealthy living conditions increase exposure to illnesses and injury (Kibel, Lake, Pendlebury *et al.,* 2010). In this context, the individual's coping strategies play a buffering role. Females in demanding caregiving situations with their inherent health challenges exhibit their strengths by their strong coping abilities and styles in the provision of care, which was demonstrated in African American care recipients (Chadiha *et al*., 2004:97-99; Dilworth-Anderson, Williams & Gibson, 2002:237-272). This ability to cope does not necessarily mean that the female caregivers are able to change the negative and stressful caregiving situations into positive ones. Most women experiencing negative outcomes of caregiving need additional strength to cope with such burdens.

### 2.2.4 Overview of caregiving in the South African and Ghanaian contexts

In South Africa, HIV still remains a major health challenge since a large number of the population are living with HIV and its paediatric HIV pandemic. The identified challenges facing the primary caregivers include many factors such as not knowing the cause of the child’s frequent illnesses, accepting the HIV positive diagnosis, ensuring treatment adherence and preventing and managing occurrences of illness. Other major challenges in this situation include the prevention of infection of the primary caregivers and other family members and the accompanied financial hardships (Bejane *et al*., 2013:68-80).

Therefore, it is vital to understand the interaction of the multifaceted spheres of influence in the conceptualisation of caregiving in an all-inclusive manner with in-depth understanding of the elements specific to the South African circumstance. The South African perspective encompasses the need for a broader understanding of the contextual influences and how female caregivers may in turn influence their environment. The burgeoning South African AIDS pandemic has had a devastating effect upon disadvantaged communities. Limited financial and material resources together with other spheres of the environment compound the AIDS pandemic (Demmer, 2007:7-12; White & Morton, 2005:186-200). In South Africa, a substantial section of the population, slightly less than 50%, live in rural areas, and the majority of the rural dwellers are considered poor (Asmah-Andoh, 2009:100-112). The underlying factors are those relating to poverty and powerlessness, particularly among the non-white citizens. These can be considered fundamental elements due to the previous apartheid regimes in South Africa.

It has also been found that in low-income communities where poverty is prevalent, the main sources of reimbursement, either food or transportation costs, were significant predictors of participation in palliative care. For some, the caregiving role is a source of livelihood that needs to be taken into consideration (Swart, Seedat & Sader, 2004:1-15). This is particularly important in South Africa, which has high rates of poverty and deprivation (Clark, Wright, Hunt *et al.,* 2007:698-710). This has significant implications in relation to the individual’s motivation to become a caregiver. In most cases, caregiving is not a choice and in such situations, caregivers are placed at a substantially greater risk in terms of the sense of obligation and distress that is associated with the caregiving (Pearlin & Aneshensel, 1994:373-390). Thus, the contextual factors could pervade the emotional impact within the broader understanding of the caregiving context and experience. In this manner, these factors alter the consideration of the caregiver and the nature of the caregiving experience, especially among less affluent families.

In the Ghanaian context, caregiving has not been placed as a priority for public health, and has not received the necessary attention owing to the notion that it is part of the informal caregiving system of in the country (Sanuade & Boatemaa, 2015). The cultural background of Ghanaians allowed them to identify themselves with part of a larger community, with caregiving as an integral part of aging in the community, and to return the favour received from elderly people during their childhood (Van Der Geest, 2002;17:3e31). However, due to increased globalization, urbanization, Westernization, high cost of care and unfavourable macroeconomic economic conditions, the perceived collectivism begun to fade and an increase in the burden of caregiving in the country is experienced over the last years (Mpofu, 1994).

In a study that examined caregiver profiles and determinants of caregiving burden in Ghana, Sanuade and Boatemaa (2015) report a mean age of caregivers of 61 years, with the majority caregivers without formal education, and an approximately equal male:female ratio. A mismatch between the number of people that needed care (i.e. Sanuade's sample) and the number of people providing care, was reported. This phenomenon begs for provision of financial support to caregivers and establishment of pro-caregiving government programmes and policies geared towards improving caregivers circumstances in Ghana (Sanuade & Boatemaa, 2015).

## 2.3 THEORETICAL FRAMEWORK

This study modified the Stress Process Model (Pearlin *et. al*., 1990) by including environmental health and health constructs of care recipients to give a proper depiction of the South African context without compromising its logical reasoning. For example, for coping strategies, resources included social support as mediators and perceived health (i.e. objective and subjective) as the outcome variable. From this backdrop, for the proposed model of this study, the predictors considered are selected in the light of the caregiver Stress Process Model (Pearlin *et. al*., 1990:583-594).

The Pearlin's model explicitly describes the stress process as composed of many factors, which include the following four main components:

1. The background variables and the context of stress
2. The stressors
3. Stress mediators
4. The outcomes.

In the model, the background variables include age, education level, socio-economic status and history of caregiving (length of time in caregiving, use of programmes, etc.). The second component of the model (stressors) is examined in terms of primary and secondary stressors. The model describes the primary stressors as the caregiving tasks, functioning and problem behaviours of the patient and the daily needs of the care recipient for activities of daily living (Pearlin *et al*., 1990:583-594). Also included in the primary stressors are the caregiving demands on the caregiver ( fatigue, restlessness, etc.) and deprivation such as decrement in the caregiver-patient relationship. The secondary stressors are the role strains and the intrapsychic strains. The role strains include hardships in the care demands that need to be accomplished by the caregiver (Demirtepe-Saygili & Bozo, 2011:585-599). Intrapsychic strains include the problems regarding the self-concept of the caregiver (Pearlin *et. al.*, 1990:583-594). Pearlin *et al*. (1990) posits that as the level of caregiving demands and negative appraisal of caregiving increase, so will the level of role strains and intrapsychic strains as a result of the primary stressors. The Stress Process Model posits that the mediators of the caregiver stress model are resources (such as coping strategies and social support) (Pearlin *et al*., 1990). The interaction of these factors precipitates the outcome (mental health/strain) (Pearlin *et al*., 1990:583-594).

### 2.3.1 Review of early models of stress and coping

Since the first study on caregiver burden by Lazarus and Folkman (1984), there has been an upsurge of interest in the study of caregiver stress, precipitating several theoretical models and conceptual frameworks such as the model proposed by Pearlin *et al*. (1990). In this section, the study provides a survey of relevant empirical models that guided this research. The section also provides an overview of the evolution of the study of stress processes, which formed the basis for the proposition of a model of caregiver burden in low-income settings.

Figure 2.1 shows the evolution of the study of stress processes and demonstrates the theoretical constructs of these models. The reviewed models include the Hill's 1949 ABCX Model, the Transactional Model of Stress and Coping by Lazarus and Folkman (1984) and the Stress Process Model by Pearlin *et al*. (1990). The key for Figure 2.1 presents the constructs that these theories factored in and the constructs that they did not and concludes with a proposed conceptual model.

**Key**:

▬ The theory only dealt briefly with stress resulting from caring for ill patients but did address stress resulting from caring for those who are not necessarily ill.

© The theory was unclear and did not place emphasis on background characteristics.

∞ The theory addressed key contextual factors without environmental health.

↨ The theory included this construct.

® The proposed stress process model in this study registered this construct.

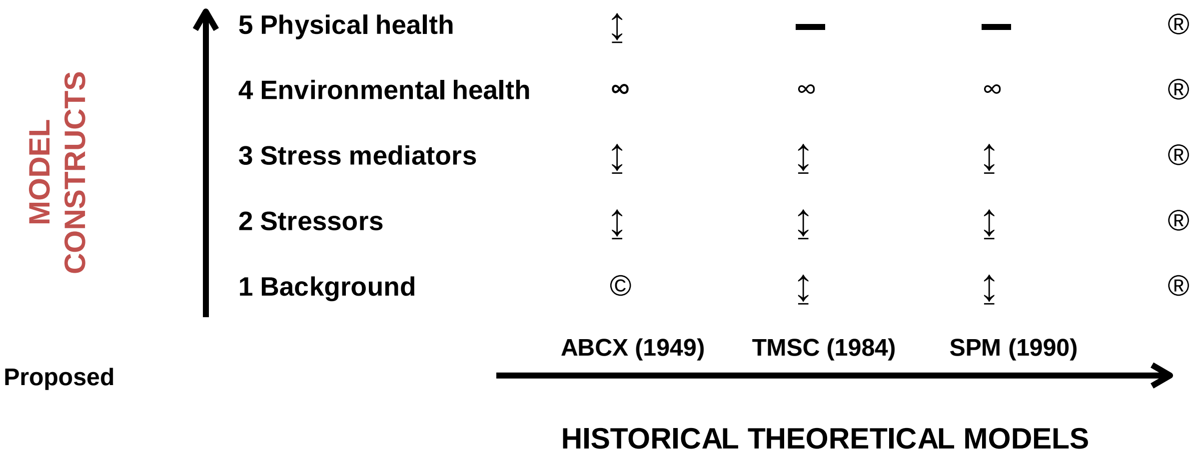

**Figure 2.1: The evolution of the study of stress process and the theoretical constructs addressed in this study.**

The model by Pearlin *et al*. (1990) is the model tested in this work. This study proposes a conceptual model of caregiver burden in low-income areas among the urban poor by including environmental factors and the physical health of care recipients.

#### *2.3.1.1 The pioneering models of stress and coping*

From an in-depth and critical review of the caregiving literature in the field of psychology, it is evident that the stress and coping framework that has been used widely to study caregivers' stress and coping is founded on the report of Lazarus and Folkman (1984). As cited by Chadiha *et al*. (2004:97-99), Rudolf, Moos and Schaefer (1993) report that the framework buttresses the following:

> Stressors and resources, as well as the ability to appraise and cope with stressors, affect a person's health and functioning. Stressors and resources are largely contextual and may be located within the person and environment as well as in life-course events such as life crises and transitions (Moos Rudolf & Schaefer, 1993).

People react to stressors in different ways through using coping strategies that may be helpful in shaping their health and functioning outcomes. The stress and coping models adopted in the literature (e.g. Knight, Silverstein & McCallum, 2000:142-150; Picot, Debanne & Namazi 1997:38-101; Pearlin *et al*., 1990:583-594) have all incorporated various contextual variables, such as gender, race, age and relationship of caregiver to care recipient. Other aspects of the caregiver stress and coping models include the following:

1. The appraisal of the experience as being stressful or satisfying.
2. The mediators of stress, including the person's coping styles and the social support from other members of the community.

3. Caregivers perceptions of caregiving as being perceived as both positive and negative outcomes, such as meaning, mastery and psychological distress.

#### *2.3.1.2 Stress and coping theory*

In a report by Daniels (2001:792-803), Richard Lazarus is hailed as being one of the most influential writers on stress research. The work of Lazarus is a demonstration of the view that individuals' beliefs, attitudes, expectations and motives are the most common influencing factors of people's perceptions of their caregiving environment. This was named the Transactional Framework, which is dependent upon the meaning of the factors to the individual. (Taylor, 2008). The Transactional Model of Stress and Coping became a framework for the evaluation of the processes of coping with stressful events (Taylor, 2008). In the Transactional Model of Stress and Coping, these events are interpreted as person- environment transactions and are dependent upon the impact of an external stressful event or stimulus (stressor) (Taylor, 2008).

In the Lazarus and Folkman model, the variables that would influence caregiver strain could depend on the caregiver's assessment of their caregiving environment. Factors such as age, population group and available social support seem to have significant influence on the experience of caregiver strain (Dunkin & Anderson-Hanley, 1998:53-60).

#### *2.3.1.3 The ABCX Model*

Post the Great Depression, Hill (1949) proposed the ABCX Model to explain how families adapt to stress. The family stress theory posits that the accumulation of these acute stressors can cause family crises (e.g. substance abuse, child abuse, illness). The early works such as Hill (1949) that proposed this model were based on comparisons of post- Great Depression families that survived with those that did not. The ABCX Model includes four variables categorised broadly as: A – family stressors; B – two protective factors; C – family perception, appraisal or meaning; and X – the family crisis that results. The two main protective factors are sufficiently interrelated with the acute stressors and on-going social context of chronic stressors to predict family crises. With an adaptive outcome, caregivers experience some levels of strain, but the resultant outcome may not necessarily be a negative experience. Conversely, if the resultant outcome appears to be maladaptive, caregivers may experience high levels of caregiver strain (Xu, 2007:431-437). The Double ABCX Model presents five major concepts namely: family demands (stressors); family’s adaptive assets (resources); family’s definition (perception); coping (cognitive or behavioural processes that deal with the chronic condition); and outcome (adaptation) (Austin, 1993:4-6).

When caregivers are empowered, they are better equipped and prepared to deal with negative outcomes associated with caregiving. Hence, power is an important resource in mediating the caregiver burden.

### 2.3.2 Review of theoretical constructs

This section presents a review of the constructs of the Stress Process Model by Pearlin *et al*. (1990) and an overview of the hypothesised constructs included in the proposed model. Caregiver stress is approached from a process perspective by Pearlin *et al.* (1990). The notion of a process focuses on relationships that exist among certain major conditions that lead to individuals' stress and how these relationships are managed and change overtime. The four domains/constructs that comprise the process as depicted in the Stress Process Model (Pearlin *et al.* 1990) include: (i) background and contextual variables (e.g. age, socio- economic status, job status and race); (ii) stressors, comprising both primary and secondary stressors; (iii) stress mediators, mainly resources; and (iv) outcomes, including objective and subjective health.

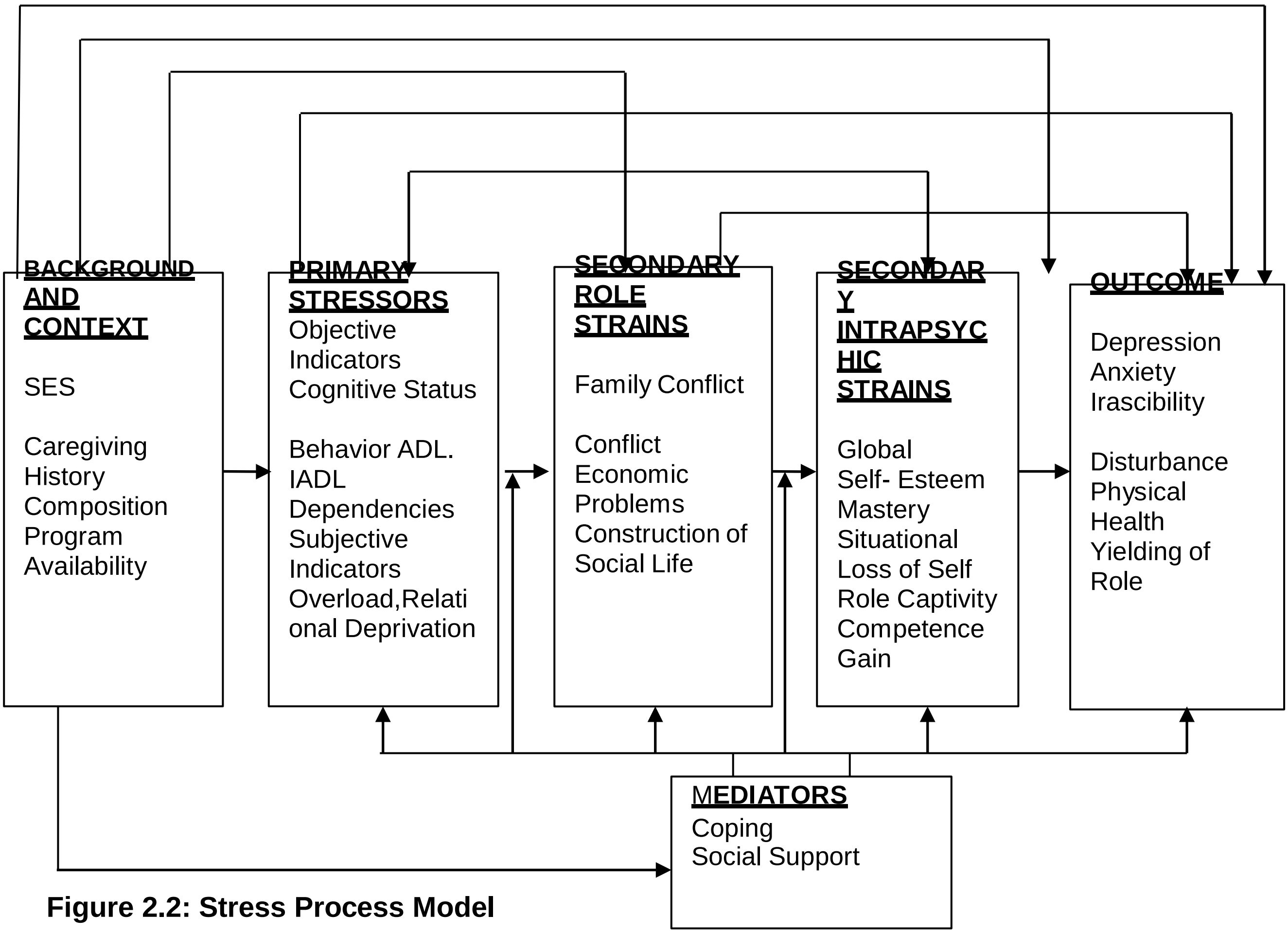

**Figure 2.2: Stress Process Model**

Source: Pearlin *et al.*, 1990

#### *2.3.2.1 Background/context of female caregivers*

Caregivers' characteristics are of paramount importance in the study of the caregiver stress process since caregiving and its consequences are greatly influenced by these. The background variables for informal caregivers include the socio-economic status and the demographics of the caregivers, for example, age, gender, living arrangements and presence of family members or friends to help provide care for care receivers in times of need. The links between economic and social characteristics and other components of the stress process in which the caregivers are found are crucial (Pearlin *et al*., 1990).

The literature on maternal education and household wealth also suggests a positive relationship between maternal education level and child health (Boyle, Racine & Georgiades, 2006:2242-2254). Furthermore, it has been well established that educated mothers have a much better understanding of health education materials (Barret & Browne, 1996), indicating the synergy between hygiene and maternal education. According to Racine and Theodore (2007:1765-1772), higher maternal education, independent of income and race, is also related to improved immunisation rates. However, this effect is minimal in an environment with universal/subsidised immunisation.

Socio-economic factors provide the pathways for mediating the link between maternal education and child nutritional status (Bellessa, Forste & Haas, 2005:395-407). The impact of education is also explained by modern attitudes regarding health care. Among infants of mothers with little or no schooling, deaths related to diarrhoea, pneumonia and other infections are common. This emphasises the significant effect of maternal education on child health, independent of other socio-economic factors (Cesar, Huttly & Barros, 1992:889-905).

#### *2.3.2.2 Stressors*

According to literature, stressors are the essence of the process in which caregiving may occur. Stressors are the activities, conditions and experiences that create problematic situations for people, posing as threats and thwarting their efforts, thereby defeating their dreams (Pearlin *et al*., 1990:583-594). From the review of the literature, the two types of stressors identified are the primary and secondary stressors. Primary stressors are the patient/care recipient factors, such as the cognitive status of the Alzheimer's patient and the problem behaviour of the patient, whereas secondary stressors relate to role strains and the intrapsychic strain embedded in the needs of the patient (Pearlin *et al*., 1990:583-594). The literature indicate that the main stressors caregivers face include social isolation, financial burden, lack of privacy, family conflicts, sleep deprivation, poor physical and emotional health, the amount of time spent caring, greater perceived difficulty of caring, recipient's condition and level of improvement and poor coping. Numerous studies have shown these factors to be predictive of poorer emotional and physical health, as well as lower perceived quality of life (Chadiha *et al*., 2004:97-99; Hastings & Taunt, 2002:116-127).

#### *2.3.2.3 Stress mediators*

In the stress mediator construct of these models, stress is mediated through available resources. These resources include knowledge of caregiving, coping strategies and social support from family and/or friends in the community, with coping and social support being the two main mediators.

Social support provides a buffering effect on caregivers and potentially inhibits the development of secondary stressors. The Stress Process Model identified the main types of social support as: (i) Instrumental (e.g. whether someone is there to assist the caregiver); and (ii) Expressive support (e.g. whether there is a trustworthy person in whom the caregiver can confide) (Pearlin *et al*., 1990:583-594). Social support is defined in several ways in caregiver strain literature. The most common viewpoint in the social epidemiological literature on social support and health is that support provides an immediate buffering effect on stress and its associated destructive somatic consequences. Stress prevention can be mediated through support by making harmful or threatening encounters seem inconsequential (Lazarus & Folkman, 1984:246). The review of the literature reveals that several definitions of social support exist, and all have some element of emotional support, practical services and exchange of viewpoints.

A person is said to be resourceful when he/she has many resources and is capable of finding ways to use them to encounter demands. Resources are something a person draws upon, whether they are readily available to the individual (e.g. money, tools, assistants, needed skills) or whether they exist as competencies for finding the needed resources that are not available (Lazarus & Folkman, 1984:158). In this study, these different meanings are all important for a broader understanding of the effect of social support in the South African context.

Coping is a principal component in the stress mediator construct in the models of caregiving. The literature on coping is extensive, both within and outside the academic field, with researchers being able to identify different types of coping strategies that caregivers are able to use to resist adverse life situations (D'Zurilla & Chang, 1995:547-562). Coping involves actions and emotions. Coping is a key concept in addressing stress, and it can be predictive of adaptive health and mental health because it involves cognitive and behavioural responses (Heflinger, Northrup & Sonnichsen, 1998). Studies demonstrate that emotions, cognitive attributions and coping responses have a direct correlation with physical and psychological health (Hamburg, Coelho & Adams, 1974). Coping is viewed as a dynamic process influenced by environmental and personal factors (Aldwin & Yancura, 2004). Aldwin and Yancura (2004) listed five types of coping strategies that are not mutually exclusive: problem-focused (directed at dealing with the issue), emotion-focused (involve strategies directed at regulating the caregiver's emotional response to the problem), social support, religious and making meaning. Importantly, it has been shown that women are more emotion-focused in their ways of coping whilst men are more problem-focused (Folkman & Lazarus, 1980). It has also been shown that coping styles relate to the caregiver's perception of objective and subjective burden (Olin, 1995:17-20).

#### *2.3.2.4 Outcomes*

The main outcomes of this study, consistent with the effects of interest in the social research and particularly the model adopted for this work are (i) female caregivers' well-being, and (ii) their physical and mental health.

### 2.3.3 Theoretical model selection

Two existing models were selected for this study, the Stress Process Model (Pearlin et al., 1990) and the Transactional Model of Stress and Coping (Lazarus and Folkman, 1984). This research attempts to include multiple facets of the caregiving context using constructs of the Stress Process Model by Pearlin *et al*. (1990). The Stress Process Model (Pearlin *et al*., 1990) is largely consistent with the Lazarus and Folkman's (1984) Transactional Model of Stress and Coping. The Stress Process Model was chosen to assess female caregiver burden in the study settings. Lazarus and Folkman's model provides a framework for explaining the processes involved when a person attempts to cope with stressful events. According to this model, when individuals are confronted with a stressor, they evaluate the potential threats by making a *primary appraisal* that then integrates their judgement regarding the significance of the event (e.g. stressful or not stressful, negative or positive, controllable or uncontrollable). Thereafter, individuals make a *secondary appraisal.* Here, they assess their coping resources and the options at their disposal to help cope with the stressor. Therefore, the secondary appraisals help to address their actions to cope with the stressor. Positive outcomes such as psychological and physical well-being occur when adequate coping resources are available to deal effectively with the stressors, whereas negative outcomes such as mental health problems and illness result when stressors outweigh coping resources (Lazarus and Folkman, 1984).

From the literature, the existing stress and coping models in the caregiving research tend to comprise of six core categories of variables below:

1. Context/demographic variables (e.g. gender, race, age, relationship to recipient)
2. Demands on caregiver (e.g. recipient's functional abilities and time spent caring)
3. Appraised stressors associated with the caregiving situation (e.g. financial strain)
4. Personal demands (e.g. work status, family conflict, privacy)
5. Caregiver appraised buffers (e.g. active coping, social support)
6. Long-term consequences (e.g. emotional distress, physical health outcomes)

However, the majority of the literature focuses only on a subset of the above categories of constructs, and the measurement of these constructs is limited to a few variables. This study takes all of these spheres or contexts into account for in-depth understanding or appreciation of the strain.

# CHAPTER 3
# METHODOLOGY

## 3.1 INTRODUCTION

The main purpose of this study is to illustrate the relationship between the socio-demographic background and caregiving context of female caregivers, environmental health and the health status of the care recipients in their care and to determine the predictors and model caregiver strain in selected low-income areas in an urban setting in Cape Town, South Africa.

This chapter presents the research design and methodology and highlights key components of the research methodology, such as the data collection instrument, study population, sampling techniques, data collection and ethical consideration. It also examines the conceptual constructs, measurements and analytical approaches and concludes with the study limitations.

In this deductive study, the theoretical constructs of the Stress Process Model by Pearlin *et al*. (1990) were translated into a structured questionnaire using the dendrogram technique for questionnaire design (Schutte, 2006). The research used a random systematic sampling technique to select the respondents.

## 3.2 SURVEY

This study was designed to collect data according to the constructs of the Pearlin model (1990) and the Lazarus and Folkman model (1984) (see constructs 1 – 3 in Table 3.2) with the focus on caregiver strain. The two additional constructs integrated to improve upon these models were (i) environmental factors and (ii) physical health of care recipients (see Figure 3.2). Figure 3.2 presents an alternative model of caregiver burden for low-income areas in Cape Town, South Africa.

The data collection instrument was designed (see Appendix B) and used to collect the information through structured interviews with the main female caregiver in each household. This approach helped to explain associations between the constructs of the study (see Table

3.2) and also provided information that aided in estimating a model of caregiver strain in the respective target populations of this study.

Two low-income, black and coloured communities with many old people and children in Cape Town were selected for the study. A pilot survey preceded the main study as a feasibility study to test the study instrument for reliability and consistency in the questions. Research clearance (see Appendix C) was obtained from the ethics committee to proceed with the research.

### 3.2.1 Study population

The study population consisted of black/African and coloured populations living in subsidised or low-cost housing settlements. These are geographical locations where it is known that the majority of the inhabitants belong to the African/black and coloured population group and where many elderly pensioners live. With the help of the South African Social Security Agency in Cape Town, these areas were identified as Gugulethu and Mitchells Plain through a systematic random sampling (SRS) procedure. Within these two communities, New Rest in Gugulethu and New Woodlands in Mitchells Plain were randomly selected as study areas for this study.

### 3.2.2 Sampling technique and sample size

In each of the two different cultural communities (i.e. black/African dominant and coloured dominant settlements), 100 female caregivers were selected through a systematic random sampling (SRS) procedure. This translates to a total of 200 female caregivers in the two study sites in New Rest and New Woodlands. The study focused on data from Cape Town, South Africa. Comparative data were also collected from Tamale, Ghana, using a similar data collection procedure. In Tamale Zobeli was randomly selected to determine possible differences in the background characteristics of caregivers between the two countries. The total sample size for the two study areas in Cape Town was 200 and for Tamale was 100.

*Inclusion and exclusion criteria* for the respondents in both South Africa and Ghana were the main female caregivers who were present, willing and able to give informed consent. A caregiver was defined as *having an elderly person and/or a non-biological childcare recipient/s under her care and living in a formal settlement*. The study focussed on formal settlements and excluded informal settlements. As such any sampled dwelling units that blend into shanty or shack areas were excluded. Also, all such dwelling units that formed part of the pilot study were excluded in the main study.

### 3.2.3 Research instrument

The research instrument (see Appendix B) assessed caregivers' burden (i.e. objective and subjective measures) with structured questions that yielded information on the constructs of the Stress Process Model (Pearlin *et al*., 1990), including personal and role strains. Following the Caregiver Reaction Assessment (CRA)*,* (Given, Give, Stommel *et al.,* 1992:271-283) and consistent with the Stress Process Model (Pearlin *et al*., 1990), strain-related factors, such as self-esteem, lack of family support, finances, schedule and health were reported by the female caregiver and captured. All of these variables were designed to measure both positive and negative reactions to caregiving as a construct.

### 3.2.4 Pilot study

For the South African study, the Tanganyika Consulting & Research company was engaged to carry out the data collection for both the pilot and the main study. The company used fieldwork staff with data collection experience in Cape Town. The fieldwork for the comparative Ghana study was done by a team of bachelor degree graduates who were undergoing their National Service (compulsory internship as required by the State) in Tamale. The teams in Cape Town and Ghana were trained by the researcher according to the researcher's instructions for the data collection.

The pilot study served as a test for the feasibility of the research design, sample design and data collection instrument. Twenty female caregivers in each study site in Cape Town were randomly selected, giving a total sample of 40 participants for the pilot study. The pilot study was also used to gauge the respondents' understanding of the questionnaire and to test the face validity and internal reliability of the structured questionnaire. From the results of the pre-test, the study instrument was refined and certain questions rephrased to allow for a more feasible capturing of data from the returned questionnaires.

### 3.2.5 Method of data collection

The participants in the study were assured of confidentiality and guaranteed that information sourced from them would only be used for the purposes of the study. Although certain questions in the data collection instrument were possibly sensitive for some participants, the research team acknowledged that participants' had the right to privacy, were voluntary participants and had been assured of anonymity (Bless & Higson-Smith, 2000). An environment conducive to sharing information was created by communicating the objectives of the study with the respondents and thereafter, obtaining their consent to proceed with the interview (see Appendix A: Informed consent form). There were no instances reported during the feedback sessions with interviewers in which the respondents felt insecure when sharing information.

### 3.2.6 Ethical concerns

Research clearance was obtained from the Cape Peninsula University of Technology (CPUT) according to the ethical guidelines for protecting human research subjects. The ethical clearance was given by the ethics committee of the Faculty of Applied Sciences of CPUT. A consent form was completed by each individual female caregiver in the study. Funding was sourced from the Research Fund of CPUT for the fieldwork.

## 3.3 DATA MANAGEMENT

The Statistical Package for Social Sciences (SPSS) version 22 was used for data capturing and analysis. A database in SPSS was created. The questionnaires were coded and captured in the database. The data were then cleaned for analysis.

## 3.4 METHODS OF DATA ANALYSIS

The data analysis process, which included univariate, bivariate and multivariate analyses, used multiple approaches. These approaches were according to the study design, research questions and scales used, and the results are reported in the respective chapters.

### 3.4.1 Univariate analysis

Descriptive statistics such as frequency tables were used to show the distribution of the socio-demographic characteristics of the caregivers. At the univariate level, the socio-demographic characteristics of caregivers in Cape Town and Tamale were examined.

### 3.4.2 Bivariate analysis

At the bivariate level, Chi-Square tests and cross-tabulations were used to show the associations between the socio-demographic characteristics of caregivers, the health of care recipients (chronic conditions, diarrhoea cases and physical health) and environmental health status.

### 3.4.3 Multivariate analysis: Hierarchical regression

Results of the multivariate analysis are reported in Chapter 5. At the multivariate level, the hierarchical multiple regression analyses were used to examine the determinants of caregiving strain. Five models were developed to this effect.

- Caregiver socio-demographic variables were included in Model 1.
- Stressor variables, such as duration of care, number of hours in care, activities of daily living (ADLs) and instrumental activities of daily living (IADLs), chronic conditions and diarrhoea status, were included in Model 2.
- Stress mediator variables, such as family support, receipt of social grants, coping strategies and programme use, were included in Model 3.
- An environmental variable (kitchen hygiene status) was included in Model 4.
- The physical health status of care recipients was included in Module 5.

The level of significance in all cases was set at $P \leq 0.05$.

### 3.4.4 Description of measurements

The two main measures (dependent variables) in this study were (i) caregiver strain, and (ii) functional status.

#### *3.4.4.1 Female caregiver strain*

Objective 2 of this study was to assess female caregiver strain/burden. Female caregiver strain was measured using self-report information from the participating caregivers. For this purpose, eight questions were used to assess financial strain, lack of privacy, sleep disturbance, physical strain, change in lifestyle, insufficient level of funds, suffered social life and no control over one’s life. Table 3.1 presents the strain variables and their corresponding question numbers in the questionnaire.

**Table 3.1: Measurement variables for caregiver strain evaluation**

| Dependent variable | Burden variables | Evaluation questions used |
|---|---|---|
| Caregiver strain | Lack of privacy | 15.1 |
| | Sleep disturbance | 15.2 |
| | Physical strain | 15.3 |
| | Change in lifestyle | 15.4 |
| | Financial strain | 15.5 |
| | Insufficient level of funds | 15.6 |
| | Suffered social life | 15.7 |
| | No control over one’s life | 15.8 |

**Female caregivers Self-report**

These elements were all measured on a 5-point Likert scale (1 = strongly agree to 5 = strongly disagree). After conducting the Pearson correlation and reliability analysis (Cronbach’s alpha = 0.XX), these items were transformed into a composite score (caregiver strain) by determining the mean for all the items. The lowest caregiver strain was scored as X and the highest caregiver strain was scored as Y, with the mean caregiver strain XX (SD=YY). These results are presented in Chapter 5.

#### *3.4.4.2 Functional status*

Functional status of the caregiver was assessed by using the activities of daily living and instrumental activities of daily living. The activities of daily living included difficulties caregivers experienced with feeding, cooking, dressing, bathing and washing the clothes of care recipients. The instrumental activities of daily living included user needs of care recipients (i.e. wheel chair, spectacles, walking stick and transport). The activities of daily living and instrumental activities of daily living scores were created by adding the items in each of the functional status assessments. A higher score indicated a more dependent functional status. Further, a principal component factor analysis was performed, and it showed that each of the items for activities of daily living and instrumental activities of daily living measured one latent variable. The reliability test showed that the Cronbach’s alpha for items of activities of daily living was 0.909 and that of instrumental activities of daily living was 0.836.

## 3.5 CONSTRUCTS OF THE STUDY

The constructs used in the study are those of the Stress Process Model (Pearlin *et al*., 1990). However, the constructs of environmental health and health of care recipients were included in order to determine the predictors of caregiver strain to aid in the construction of a multidimensional model of caregiver strain in low-income areas in Cape Town. The data were collected according to the constructs of the Stress Process Model (Pearlin *et al*., 1990) and the two hypothesised constructs (environmental health and health outcomes of care recipients). These included female caregivers' background and caregiving context, stressors, stress mediators, environmental living conditions and health outcomes. These constructs and their variables and the corresponding questions used are presented in Table 3.2.

**Table 3.2: Constructs, variables and measurement questions for data collection**

| CONSTRUCT | VARIABLES | MEASUREMENT QUESTION NUMBER (see Appendix B) |
|---|---|---|
| **(1) Background and caregiving context** | | |
| - Demographics | Age, population group | 1, 2, 3, 4, |
| - Socio-economic status | Education, employment, income | |
| - Length of caregiving and care demands | Total time in the role | 5, 6 |
| | Hours per week in the role | 8, 7.1, 7.2, 7.3 |
| - Programme use | Programme use | 9 |
| **(2) Stressors** | | 10, 15.1, 12, 13, 5, 8 |
| - Primary stressors | Role strain | 15.3, 10, 12, 8 |
| - Secondary stressors | Self-concept | 5, 15.5, 15.6, 15.7 |
| **(3) Stress mediators** | Caregiving knowledge | 16, 17 |
| - Resources | Coping strategies | 18.1, 18.2, 19.1, 19.2, 19.3, 20.1, 21.1 |
| - Care knowledge | Family support | |
| - Coping strategies | Social grants | 22.1, 22.2 |
| - Social support | Water supply | 36.1, 36.2 |
| - Services | Refuse removal | 37.1, 37.2 |
| | Energy use | 38.1, 38.2, 38.3 |
| **(4) Environmental health status** | | |
| - Physical hygiene status | Living area, kitchen, yard | 34.1, 34.2 |
| - Toilet facility/type used | Toilet, toilet type | 34.3, 34.4, 35 |
| (5) Municipal services | | 36.1, 36.2, 38.1, 38.2, 38.3 |
| | Water, energy, refuse removal | 37.1, 37.2 |
| **(6) Health outcomes** | | |
| - Functional status | ADLs and IADLs needs | 12, 13, 14, 31, 32 |
| - Physical health | CR physical health | 29.1, 29.2, |
| - Health record (Children) | Immunisation records | 28.1, 28.2 |
| - Medication use | Chronic medication | |
| - Illnesses reported | Illnesses, diarrhoea | 30.130.2 |
| - Nutrition Status | Breakfast, lunch, supper | 30.3 |

**Refer to Appendix B for the data collection instrument.**

## 3.6 DESCRIPTION OF VARIABLES

This section presents detailed descriptions of the dependent variable (i.e. female caregiver burden) and the independent variables.

### 3.6.1 Dependent variable: Female caregiver strain

Objective 2 as above was to assess caregiver strain/burden on the female caregivers in the selected dwellings. The caregiver strain was measured with the aid of self-reports from the female caregivers (Table 3.1). The questions measured physical strain factors, emotional strain factors and financial hardship.

The multivariate analysis in this study takes the form of a General Linear Model (GLM). The General Linear Model allows for modelling the values of a multiple scale-dependent variable, based on their relationship with categorical and scale predictors (Rawlings, Pantula & Dickey, 1998:75). In this study, the dependent variable, caregiver strain, was multiple scaled with burden inventory into whether there was burden or no burden (see section 3.4.4.1). The mathematical form of the model is expressed in Equation 3.1 (Rawlings *et al*., 1998). The response/dependent variable (caregiver strain/burden) is related to the predictors/covariates and an error term e.

***Equation 3.1***

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \text{.........} + \beta_p X_p + e$

Where:

Y = dependent variable (caregiver strain/burden), and

$X_1$, $X_2$, $X_3$, $X_4$, $X_5$, and e represents the independent variables, background characteristics, environmental health, stressors, function and physical health, mediators and the error term respectively.

In building the model, the constructs were entered in the blocks as follows:

- Block 1 ($X_1$): background characteristics
- Block 2 ($X_2$): environmental health
- Block 3 ($X_3$), stressors
- Block 4 ($X_4$), function and physical health
- Block 5 ($X_5$): mediators, mainly resources

After entering these constructs, Equation 3.1 translates to Equation 3.2.

***Equation 3.2***

$CgStr = \beta_0 + \beta_1 Bgc + \beta_2 Ent + \beta_3 Stres + \beta_4 FnPhy + \beta_5 CgRes + e$

Where;

BgC = Background characteristic of the caregiver
Envt = Environmental health
Stres = Stressors
FnPhy = Function and physical health
CgRes = Caregiver resources
e = Error term

The results of the hierarchical regression model provided the predictors of caregiver strain/burden in the low-income areas selected for this study.

### 3.6.2 Independent variables

The independent variables for the study are the variables in each of the constructs of the model (Table 3.2).

#### *3.6.2.1 Socio-demographic and contextual variables*

Categorised data were collected on socio-demographic variables such as age, population group, education, employment and household income. Additional data were also gathered on caregiving contexts such as number of hours per week in care and length of time in years in caregiving.

#### *3.6.2.2 Stressors*

The stressors were evaluated by key variables, including primary stressors, secondary stressors, role strain and self-concept. In the study instruments questions were posed to the caregivers for data collection on these variables.

#### *3.6.2.3 Stress mediators*

The main mediator was the resources at the disposal of the caregiver. These included caregiving knowledge, coping strategies, social support and services. Table 3.2 presents the questions used to measure these mediators.

#### *3.6.2.4* Health outcomes

The variables measured under this construct included physical impairment, needs for activities of daily living, immunisation records, chronic medication use, reported illnesses, diarrhoea reported in the four weeks prior to the survey and nutrition. Table 3.2 presents the questions used to measure these mediators.

#### *3.6.2.5 Environmental health*

The environmental health status construct measures the physical hygiene status of the yard, living room, kitchen and toilet. Table 3.2 presents the questions used to measure these mediators.

## 3.7 MULTIVARIATE ANALYSIS: SELECTION AND MODELLING OF VARIABLES

From the description of the variables, the proposed stress process model in this study and the hypothesised predictor variables for the regression analysis are presented in this section.

### 3.7.1 Predictors and modelling

Objectives 3 and 4 were to determine the predictors of caregiver strain and to estimate a model of female caregiver burden. In determining the predictors, the constructs in the proposed model were presented in the form of a General Linear Model. Figure 3.1 below presents the form of the model.

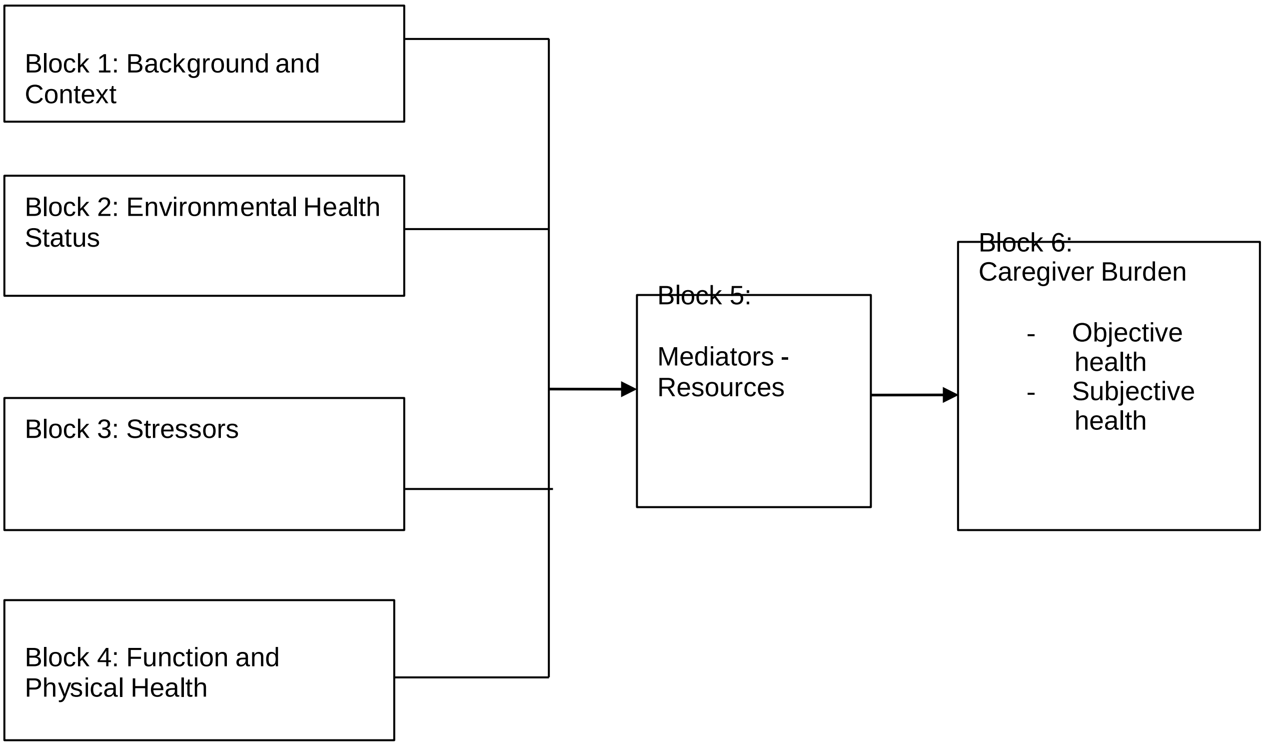

**Figure 3.1: Constructs of the stress model of caregiver strain for this study**

The variables and the question(s) measured in each of the blocks are presented in Table 3.2 in section 3.5. Section 2.4 provided detailed explanations of the components in the blocks.

### 3.7.2 Proposed stress process model for the study areas

From the constructs in Table 3.2 and Figure 3.1 (the proposed model), the key variables included in the hierarchical regression modelling are depicted in Figure 3.2.

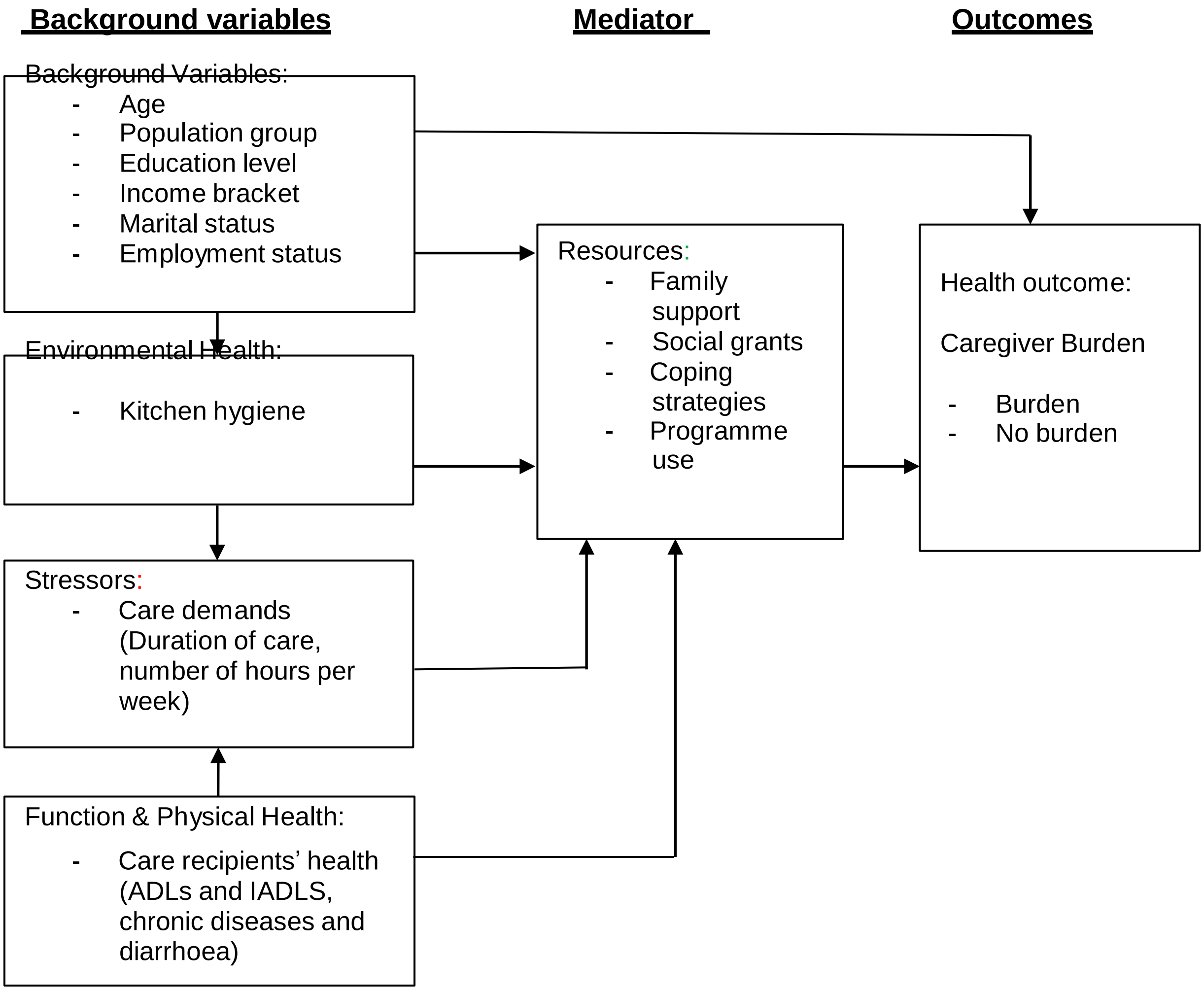

**Figure 3.2: Proposed stress process model of female caregivers in low-income areas**

The conceptual model is composed of background variables, environmental health status, stressors, mediator variables (stress buffers), function/health constructs and the health outcome construct measures the expected outcome to be determined (i.e. burden or no burden). The selection of the constructs for this model was guided by the Stress Process Model (Pearlin *et al.*, 1990).

Figure 3.2 shows the relationship between the background characteristics, environmental health, stressors, functional and physical health of care recipients and caregiver strain. The background characteristics, such as age, population group, education level, income, marital status and employment status affect caregiver burden. Certain studies (Hatch, DeHart & Norton, 2014:412; Moller-Leimkuhler & Wiesheu, 2012:157; Ampalam, Gunturu & Padma, 2012:241-242) show that the caregiver burden for caregivers who are elderly is usually more than that of those who are younger. This could be because those who are older may be retired and may not have the physical abilities required to perform their caregiving duties or to cope with the pressure. However,, research has also shown that caregivers who are older have more knowledge of caregiving, which in turn, helps to minimise the caregiving strain/burden (Rosas-Carrasco, Guerra-Silla & Torres-Arreola, 2014:148). With regard to education, caregivers with a higher level of education are more likely to have lower caregiving burden because it is expected that these caregivers will have more knowledge and probably more resources than those with a lower level of education (Rosas-Carrasco *et al*., 2014:148; Ampalam *et al.*, 2012:239). Further, income may help to minimise caregiver burden because caregivers with a higher income may have increased access to resources that can help reduce caregiving burden (Bejane *et al*., 2013:68-80; Chadiha *et al*., 2004:97-99).

Stressor variables such as duration of care and number of hours of care per week can have a serious effect on caregiver burden (Savundranayagam, Montgomery & Kosloski, 2011:321-322). That is, those who spend many hours per week providing care are more likely to experience increased burden compared with caregivers with less hours (Savundranayagam *et al.*, 2011:328). The Stress Process Model (Pearlin *et al.*, 1990) that guided this study suggests that stressors and resources that affect individuals' well-being exist (Pearlin *et al*., 1990:583-590). In this model, primary stressors, secondary stressors, and mediators interact and eventually have an impact on the individuals' well-being outcomes. When this is applied to caregiving, the Stress Process Model (Pearlin *et al.*, 1990) suggests that 'caregiver burden' takes on the form of a primary stressor, which is affected by the background attributes of the caregiver and the contextual variables of caregiving (Pearlin *et al*., 1990:583-590). The primary stressor, 'caregiver burden', in turn, interacts with secondary stressors, which are mainly role strains and intrapsychic factors (self-esteem, mastery, etc.) and in this case, the secondary stressors may influence outcomes including depression and anxiety. In the Stress Process Model (Pearlin *et al.*, 1990), interactions between the primary stressors, secondary stressors and outcomes are mediated by caregiving resources, such as social resources, family support and coping strategies.

With regard to the functional and physical health of the recipients, it was postulated that caregivers who provide care for recipients with chronic conditions are more likely to experience increased burden (Lin, 2011:97). Hence, the caregivers are usually more burdened compared with those who provide care for people with no chronic condition (Hatch *et al.*, 2014:406).

### 3.7.3 Variables for hierarchical regression analysis

The variables selected under each construct for the hierarchical regression modelling are shown in Figure 3.2. The selection was based on (i) significance at bivariate, (ii) symmetrical measures, and (iii) review of the literature. In the background construct, the variables selected for the hierarchical regression modelling were age, population group, education, income, marital status and employment status. Kitchen hygiene was selected for the environmental health construct. The variables that were selected for the caregiver stressors construct were duration of care and number of hours care was provided per week. In the function and health construct, activities of daily living, instrumental activities of daily living, chronic diseases and diarrhoea were selected. In the stress mediators, the variables selected were family support, social grants, coping strategies and programme use. All of these variables were tested in the bivariate analysis (see Chapter 4) prior to the hierarchical regression modelling. The outcome of interests or output variable was caregiver strain/burden/ (categorised as strain or no strain) and measured by both objective and subjective health. The results of the hierarchical regression modelling are presented in Chapter 5.

# CHAPTER 4
# FINDINGS

## 4.1 INTRODUCTION

The findings in this chapter are presented in two parts. The first examines the background characteristics of the caregivers, and the second presents the results of the Chi-square tests of association between the following variables used in the model: (i) socio-demographic variables of female caregivers; (ii) environmental health status; and (iii) health status of care recipients.

## 4.2 SOCIO-DEMOGRAPHIC CHARACTERISTICS OF CAREGIVERS: CAPE TOWN AND TAMALE

As the caregiver ages, the ability to cope with both the mental and physical stress that come with caregiver roles begins to diminish due to additional responsibilities from careers and personal health *(*Ampalam *et al*., 2012:242). Empirical investigations posit that there is an association between the socio-demographic characteristics of the caregiver and caregiving strain. Reinforcing this, it is reported that caring for a biological parent or child/grandchild and being employed and married are all social roles that involve constant social interaction and obligations that have the potential to compete for the caregiver's time and attention (Bachner, Karus & Raveis, 2009:1032). In this context, the socio-cultural life plays a significant role. The socio-cultural context includes caregiver gender, marital status, education, and employment status (Piercy, Fauth, Norton *et al.,* 2013:922). Further, the socio-cultural life is also associated with the acquisition of resources and social skills that empower individuals to develop and to sustain strong and supportive relationships with others. The social connections and social skills that the educated develop by middle age allow them to sustain their social lives as they approach their older years in ways that are more difficult for both the men and the less educated (Fischer & Beresford, 2015:129).

Table 4.1a describes the background characteristics of female caregivers and the caregiving contexts for the samples from both Cape Town and Tamale. The average age among the female caregivers was 47.9 years for Cape Town and 43.7 years for Tamale. The minimum and maximum ages of the female caregivers were 18 and 77 for Cape Town and 24 and 67 for Tamale. All the participants were females. In terms of population group, the sample from

Cape Town was 50% black and 50% coloured, whereas the Tamale sample was entirely black.

**Table 4.1a: Background characteristics of female caregivers**

| **Characteristics** | **Cape Town** | **Tamale** |
|---|---|---|
| **Mean age in years(SD)** | 47.89 (11.7) | 43.7 (10.6) |

| **Characteristics** | **Cape Town** | | **Tamale** | |
|---|---|---|---|---|
| | **%** | **n** | **%** | **n** |
| **Population Group** | | | | |
| Black | 50.0 | 100 | 100.0 | 100 |
| Coloured | 50.0 | 100 | 0.0 | 0 |
| **Total** | **100.0** | 200 | 100.0 | **100** |
| **Education** | | | | |
| <Grade 7 | 1.5 | 3 | 47.0 | 47 |
| Grade 7/Standard 5 | 9.0 | 18 | 10.0 | 10 |
| Grade 8 − 11 | 54.0 | 108 | 16.0 | 16 |
| Standard 10/(Grade 12) | 31.0 | 62 | 12.0 | 12 |
| Higher | 4.5 | 9 | 15.0 | 15 |
| **Total** | **100.0** | **200** | **100.0** | **100** |
| **Age Group (years)** | | | | |
| <30 | 11.5 | 23 | 12.0 | 12 |
| 30 − 39 | 11.5 | 23 | 23.0 | 23 |
| 40 − 49 | 21.5 | 43 | 39.0 | 39 |
| 50 – 59 | 49.5 | 99 | 20.0 | 20 |
| 60 and above | 6.0 | 12 | 6.0 | 6 |
| **Total** | **100.0** | **200** | **100.0** | **100** |
| **Income** | | | | |
| R0 – R500 | 39.8 | 80 | 26.0 | 26 |
| R501 – R1000 | 18.3 | 36 | 44.0 | 44 |
| R1001 – R2000 | 39.3 | 79 | 23.0 | 23 |
| R2001 and above | 2.6 | 5 | 7.0 | 7 |
| **Total** | **100.0** | **200** | **100.0** | **100** |
| **Marital status** | | | | |
| Never married | 28.1 | 56 | 6.0 | 6 |
| Formerly married | 33.7 | 68 | 32.0 | 32 |
| Cohabitation | 6.0 | 12 | 10.0 | 10 |
| Currently married | 32.2 | 64 | 52.0 | 52 |
| **Total** | **100.0** | **200** | **100.0** | **100** |
| **Hours per week** | | | | |
| < 10 | 23.2 | 47 | 0.0 | 0 |
| 10 – 19 | 20.7 | 41 | 5.0 | 5 |
| 20 – 29 | 6.6 | 13 | 26.0 | 26 |
| 30 – 39 | 8.6 | 17 | 9.0 | 9 |
| 40 and above | 40.9 | 82 | 60.0 | 60 |
| **Total** | **100.0** | **200** | **100.0** | **100** |
| **Characteristics** | **Cape Town (n=200)** | | **Tamale** | |

| | | | (n=100) | |
|---|---|---|---|---|
| | % | | % | |
| **Care duration** | | | | |
| <1 year | 24.0 | 48 | 0.0 | 0 |
| 1 – 2 years | 35.5 | 71 | 12.0 | 12 |
| 3 – 5 years | 23.5 | 47 | 57.0 | 57 |
| 6 and above | 17.0 | 34 | 31.0 | 31 |
| **Total** | **100.0** | **200** | **100.0** | **100** |
| **CR Relationship to caregiver** | | | | |
| Niece | 2.5 | 5 | - | - |
| Cousin | 64.0 | 128 | - | - |
| Brother | 1.0 | 2 | - | - |
| Sister | 15.0 | 30 | - | - |
| Grandson | 17.0 | 34 | - | - |
| Granddaughter | 0.5 | 1 | - | - |
| **Total** | **100.0** | **200** | **-** | **-** |
| **Programme Use** | | | | |
| Yes | 1.6 | 3 | 0.0 | 0 |
| No | 98.4 | 197 | 100.0 | 100 |
| **Total** | **100.0** | **200** | **100.0** | **100** |
| **Functional dependence** | | | | |
| IADLs** | 1.62 (1.60) | | | |

***ADLs: Activities of daily living  **IADLs: Instrumental activities of daily living**

The median age group of caregivers in Cape Town was 50 – 59 years (49.5%), whereas in Tamale, it was 40 – 49 years (39%). The percentage of caregivers aged 60 years and older in both the Cape Town and Tamale samples was 6%. This study found that more than 50% of female caregivers are more than 40 years in age in both Cape Town and Tamale. The study also found that in Cape Town, 55.5% of female caregivers are at an advanced age compared with Tamale at 26%. These figures support similar studies that many of the caregivers in South Africa are older women, emphasising the focus of this study on female caregiver strain (Ogunmefun *et al.*, 2011:85).

The level of education attained by caregivers was also examined. For Cape Town, all female caregivers had completed at least Grade 1. In Cape Town, 1.5% of the caregivers had some primary education but had not completed primary school whereas in Tamale, a large percentage of the caregivers (47%) were reported in this category. In Cape Town, the majority of caregivers (53.5%) had some secondary education (Grade 8 – 11) but had not completed secondary school. Only 16% of the participants in Tamale fell into this category. For caregivers who had completed secondary education (Grade 12), 31% were from Cape Town, whilst 12% were from Tamale. For higher education attainment, Tamale had the highest percentage (15%) compared with Cape Town at 4.5%. The median level of education in Cape Town was Grade 8 – 11 whereas that of Tamale was Grade 1 – 6 (i.e. <Grade 7). These findings indicate that more than 50% of the caregivers in both Cape Town and Tamale did not complete high school (less than Grade 12). In Cape Town, 35.5% of the participants had a matriculation certificate and/or higher level of education, whilst Tamale reported 27% in the same category. The caregivers' level of education such as attending college or a higher educational institution indicates more opportunities to social ties outside the family.

With reference to marital status, 28.1% of participants in Cape Town had never been married compared with 6% of caregivers in Tamale. The percentage of formerly married caregivers in Cape Town was 33.7% compared with 32% for Tamale. About one in three (32%) caregivers in Cape Town were currently married, whereas the same group constituted 52% in Tamale. Only a few of the caregivers, 6% in Cape Town and 10% in Tamale, were cohabiting. However, large percentages (28.1%) of female caregivers in Cape Town were never married.

For income earnings of caregivers, the US Dollar (USD) parity for both the South Africa Rand (ZAR) and Ghana Cedi (GHS) was used. About 40% of caregivers in Cape Town and 26% of caregivers in Tamale earned an income of up to R500, whereas those in the R500 – R1000 income bracket accounted for 18.3% and 44% in Cape Town and Tamale respectively. About 39.3% of caregivers in Cape Town and 23% of caregivers in Tamale earned an income of between R1100 – R2000 whereas those who earned an income of more than R2000 per month accounted for 2.6% and 7% of caregivers in Cape Town and Tamale respectively.

It was also deduced that majority of the caregivers in Cape Town and Tamale earned less than R1001. A key finding of this income-earning characteristic in Cape Town and Tamale that is consistent with the selection of the study area (low-income areas) is that the female caregivers were low-income earners. For caregivers that earned less than R1001, Cape Town constituted 58%, whereas Tamale constituted 70%. Income level is an important indicator of a household's socio-economic status. At a higher income level, households are able to afford resources such as medical equipment and the provision of formal assistance such as a private nurse or other form of formal assistance that could increase the quality of care provided to the ill patient and reduce caregiving burden (Bachner *et. al.*, 2009:1033).

In terms of caregiving demands or contexts, the variables considered were: the number of hours per week the caregiver spent in a caregiving situation; caregiving duration (number of years the caregiver has been giving care to her care recipient); caregiver's relationship to the care recipient who needs the most care; the caregiving programme that the caregiver is currently using to help decrease care strain; and care recipients' needs for activities of daily living and needs for instrumental activities of daily living. Higher scores indicated more dependent functional status (NAC/AARP, 2004b in Kim, Chang & Rose et al., 2012:849). In this study, it was discovered that the median number of activities of daily living in which care recipients required assistance in accomplishing these activities on a daily basis (daily living) was 3.51 (SD = 1.94), and the median number of instrumental activities of daily living was 1.62 (SD = 1.60). The care recipients sampled needed more assistance in activities of daily living than in instrumental activities of daily living.

Studies have equally shown that caregiver burden has been associated with caregiver- specific factors, such as number of hours in the carer role, anxiety and own health status, in addition to sex, family support and relationship with the care recipient (Rosas-Carrasco *et al.*, 2014:146-148). Other reports investigating the relationship between activities of daily living and feeling lonely established that persons who experience loneliness show evidence of greater dependency in order to accomplish activities of daily living (Bondevik & Skogstad, 1998).

The Figure 4.1 presents the results of the comparison of caregiving hours per week between Cape Town and Tamale.

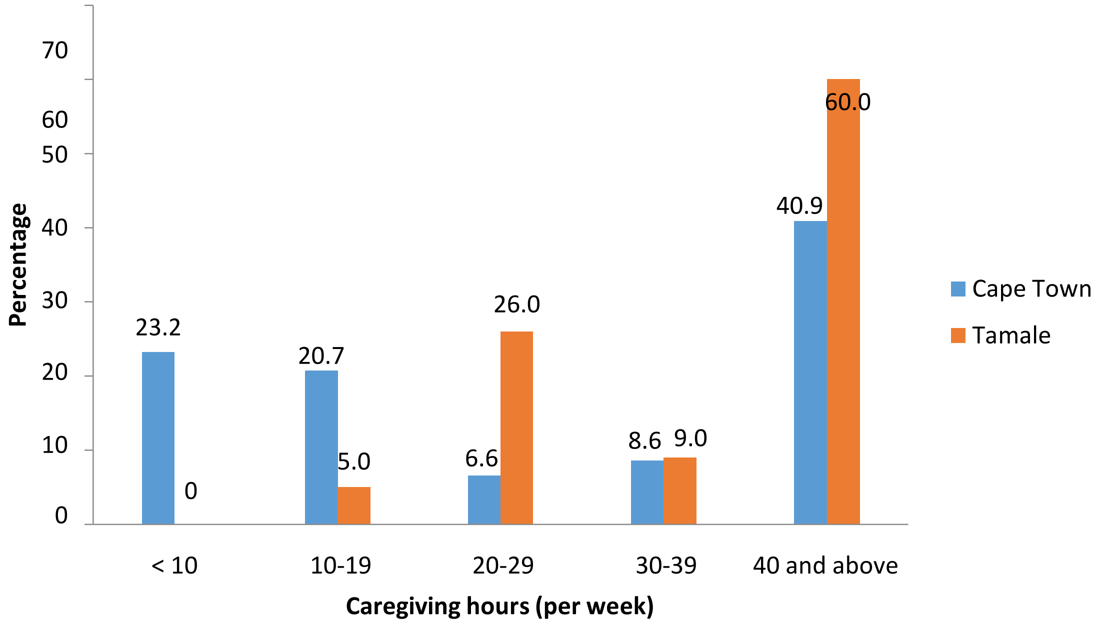

**Figure 4.1: Comparison of caregiving hours per week between Cape Town and Tamale.**

In both Cape Town and Tamale, majority of the caregivers (40.9% and 60% respectively) were in constant care that is, providing care for more than 40 hours per week. The median caregiving hours per week were 30 – 39 for both Cape Town and Tamale. About 50% of the female caregivers in Cape Town provided more than 30 hours per week of care to their care-recipients, whereas in Tamale 69% provided care more than 30 hours per week. The female caregivers providing care more than 30 hours but less than 40 hours per week constituted 8.9% for Cape Town and 9% for Tamale. Specifically, in Cape Town, more than 40% of the female caregivers provided care for over 40 hours per week, whereas in Tamale the percentage providing 40 hours care per week was 60%. This is more of a full-time job. This finding reinforces the assertion that the caregiving roles falls to only one family member, which makes it difficult or almost impossible for her to have other employment, thus obstructing personal life and privacy and thereby increasing caregiving-related burden (Rosas-Carrasco *et al*., 2014:150).

When examining caregiving duration, the median was 1 – 2 years in Cape Town, and more than half (59.5%) of the caregivers had not been in the caregiving role for more than two years. The balance of the caregivers (40.5%) was in medium in term in the caregiving role. In Tamale, 12% had been in caregiving for up to two years. The results show that a large proportion of the female caregivers were not new in caregiving.

Regarding the caregivers’ relationship to their care recipients, in Cape Town, the following was reported: 2.5% took care of their nieces, 1% their brothers, 15% their sisters, 17% their grandsons, 0.5% their granddaughters, and the majority (64%) took care of their cousins. For programme use, 98.4% did not use any form of caregiving programme, with only 1.6% reporting the use of a caregiving programme. In Tamale all respondents reported not using any programme.

Regarding activities of daily living and instrumental activities of daily living, In Cape Town, the average number of activities of daily living in which care recipients needed assistance was 3.5 (SD = 1.94), and the average number of needs for instrumental activities of daily living was 1.62 (SD = 1.60).

Table 4.1b presents the socio-economic characteristics of female caregivers, the caregiving contexts, and the care recipients’ health status for the samples from both Cape Town and Tamale. The results show that in Cape Town, the average burden score was 27.04% (SD = 5.46), with minimum and maximum scores of 13% and 40% respectively, whereas for Tamale the mean burden score was 30.39% (SD = 3.62), with minimum and maximum scores of 23.0% and 40% respectively.

## Table 4.1b: Female caregiving burden mediators for Cape Town and Tamale

| **Characteristics** | **Cape Town (n=200)** | **Tamale (n=100)** |
|---|---|---|
| **Mean burden score(SD)** | 27.04 (5.46) | 30.39 (3.62) |
| Minimum score | 13.0 | 23.0 |
| Maximum score | 40.0 | 40.0 |

| **Characteristics** | **Cape Town** | | **Tamale** | |
|---|---|---|---|---|
| | **%** | **n** | **%** | **n** |
| **Care approach** | | | | |
| Take a walk | 2.5 | 5 | 2.0 | 2 |
| Contact family | 12.0 | 24 | 6.0 | 6 |
| Contact neighbours | 8.0 | 16 | 9.0 | 9 |
| Contact pastor | 14.5 | 29 | 11.0 | 11 |
| Pray over it | 37.0 | 74 | 4.0 | 4 |
| Contact CRs parent | 13.5 | 27 | 5.0 | 5 |
| Other | 12.5 | 25 | 63.0 | 63 |
| **Total** | **100.0** | **200** | **100.0** | **100** |
| **Reliability on family support** | | | | |
| Yes | 64.0 | 128 | 94.0 | 94 |
| No | 36.0 | 72 | 6.0 | 6 |
| **Total** | **100.0** | **200** | **100.0** | **100** |
| **Financial reward/pay** | | | | |
| Yes | 25.6 | 51 | 0.0 | 0 |
| No | 74.4 | 149 | 100.0 | 100 |
| **Total** | **100.0** | **200** | **100.0** | **100** |
| **Receive social grants (CRs)** | | | | |
| **Yes** | **72.1** | **144** | **0.0** | **0** |
| No | 27.9 | 56 | 100.0 | 100 |
| **Total** | **100.0** | **200** | **100.0** | **100** |
| **Chronic condition** | | | | |
| Yes | 33.5 | 67 | 33.0 | 33 |
| No | 66.5 | 133 | 67.0 | 67 |
| **Total** | **100.0** | **200** | **100.0** | **100** |
| **Taking Chronic medication** | | | | |
| Yes | 98.4 | 197 | 35.0 | 35 |
| No | 1.6 | 3 | 65.0 | 65 |
| **Total** | **100.0** | **200** | **100.0** | **100** |
| **Road-To-Health card for child** | | | | |
| Yes | 95.9 | 193 | 19.0 | 19 |
| No | 3.5 | 7 | 81.0 | 81 |
| **Total** | **99.4** | **200** | **100.0** | **100** |
| **Community support** | | | | |
| Yes | 69.0 | 138 | 75.0 | 75 |
| No | 31.0 | 62 | 25.0 | 25 |
| **Total** | **100.0** | **200** | **100.0** | **100** |

In terms of a caregiver approach when something goes wrong with the care recipients, for Cape Town, a majority of the caregivers reported a spiritual approach(contact pastor 14.5% and pray over it 37.0% ), whereas for Tamale, only a a lesser proportion (i.e. contact pastor 11.0% and pray over it 4.0%) approached it spiritually. Whilst a large proportion (63.0%) of caregivers used other approaches in Tamale when they are confronted with problems in their daily care tasks, a comparatively a small proportion in Cape Town (12.5%) made use of such other approaches. In Cape Town and Tamale 20.0% and 15.0% of the caregivers respectively reported approaching their family and/or neighbours and in 13.5% (Cape Town) and 5.0% (Tamale) of caregivers reported contacting the CRs parents directly. In both Cape Town and Tamale, only small proportions (Cape Town 2.5% and Tamale 2.0%) reported taking a walk to relax, as an approach.

For reliability on family support, for Cape Town 64.0% and for Tamale 94.0% reported that they can rely on their family for support, whereas 36.0% and 6.0% respectively reported that they cannot rely on their family for the necessary support. This phenomenon could be the result of cultural driven behaviour.

Regarding receipt of any financial reward/pay for the caregiving task, for Cape Town 25.6% reported *yes* and 74.4 reported *no*, whereas for Tamale all caregivers (100%) reported that they do not receive any pay or financial rewards for their care responsibility.

With respect to receiving social grants for care recipients under their care, a significant proportion of caregivers in Cape Town (72.1%) reported receiving a form of social grant on behalf of the care recipients, whilst 27.9% reported that they do not receive any form of social grant on behalf of the care recipients. The reason being that in Cape Town there do exist official safety nets such as child support grants, whilst in Tamale there is no form of social grants from the government. Hence all the caregivers (100%) in Tamale reported that they do not receive social grants on behalf of their care recipients.

As informal caregiving takes place in the community, this study explored whether the caregivers could rely the social networks within their community to give quality care. Interestingly, larger proportions of 69.0% (Cape Town) and 75.0% (Tamale) reported that they could rely on their communities for support, whereas 31.0% and 25.0% for Cape Town and Tamale respectively reported that they couldn’t rely on their communities for support, if and when needed.

For the childcare recipients health, it is quite striking that as countries seek to achieve full universal coverage of immunization against childhood diseases in an effort to eradicate both infant mortality and child mortality, some communities in parts of Africa are sadly reporting low coverage levels. A large proportion of the Cape Town caregivers (95.9%) reported that they have a “Road-To-Health card” for the children under their care. In the case of Tamale, only 19.0% of the caregivers reported having a (similar) “health card” for the children under their care. The majority (81.0%) reported not having the “health card” for the children they provide care for. It is to be mentioned that a caregiver (respondent) who responded “yes” to having health card for the child, was asked by the interviewer to show it before it was noted as such.

In terms of care recipients’ health evaluation, chronic condition status was used as the health outcome in this study. The caregiver was probed to know if any of the care recipients lived with a chronic condition. For both Cape Town and Tamale, about one third of the respondents (33.5% and 33.0% respectively), mentioned that the care recipient has some or other chronic condition, and two thirds mentioned that the care recipient in his/her care has no chronic condition (Cape town 66.5% and Tamale 67%). Those who responded yes on this question were further probed to know if the care recipients who live with chronic condition were taking chronic medication. For Cape Town 98.4% of this group indicated that those living with these conditions were on some type of chronic medication, whilst in Tamale only
35.0% reported yes to the use of chronic medication. However, this does not mean that the patients do take the chronic medication as a large proportion of the care recipients living with chronic conditions in Tamale (65.0%) do not take any type of chronic medication whilst only a small proportion (1.6%) in Cape Town do not take any type of prescribed chronic medication. As verification for this information the caregiver must have been able to show the container of the medication.

## 4.3 ASSOCIATIONS BETWEEN BACKGROUND CHARACTERISTICS OF CAREGIVERS, ENVIRONMENTAL HEALTH AND HEALTH STATUS OF CARE RECIPIENTS

This section examines the statistical association between the background characteristics of caregivers, environmental health and the health status of care recipients. The Chi-square test was employed to test the statistical associations of the variables. It addresses Question 1 of the study: Is there a significant relationship between the attributes of female caregivers and the health status of the care recipients under their care?

The aim of this study was to show the relationship between the background characteristics of caregivers and caregiving contexts, environmental health/hygiene status and selected health outcomes of the care recipients. The results are presented according to the constructs.

### 4.3.1 Background characteristics of caregivers, caregiving contexts and health status of care recipients

This section focuses on the relationship between the background characteristics of female caregivers, caregiving contexts, environmental health status, the health status of care recipients and the accompanying female caregiver burden.

In this section, the relationship between the background variables of female caregivers and three selected health indicators (i.e. chronic disease, diarrhoea and physical health status) are presented.

#### *4.3.1.1 Female caregiving contexts*

Table 4.2a shows a statistically significant association (P = 0.000) between number of hours spent in providing care and the physical health of the care recipients in Cape Town. The table also shows a statistically significant association (P = 0.000) between number of years spent in providing care and the physical health of the care recipients in Cape Town. A large percentage of caregivers (29.3%) who provided many hours of care per week (40 hours and above) were reported in the category for good to very good physical health of care recipients, whilst 11.6% were reported in the category for bad physical health of care recipients. This clearly indicates that the time caregivers spend in care per week is significantly associated with better physical health outcomes for care recipients (P = 0.000). This depicts a positive relationship between time (hours) spent in care per week and the physical health of care recipients. Regarding the number of years caregivers spend in caregiving, for female caregivers who spent almost one year, a high percentage (21.5%) were reported in the category for good to very good physical health of the care recipient, whereas 2.5% of these caregivers were reported in the category for bad physical health of the care recipient. The highest percentage (32.5%) of caregivers reported in the category for good to very good physical health of care recipients was for caregivers who had been in the caregiving role for
1 - 2 years, whilst the lowest percentage (4.5%) was reported in caregivers who had been in the caregiving role for over 10 years.

**Table 4.2a: Caregiving context and physical health of care recipients in Cape Town**

| Background Characteristics | Very Good<br>n=64 | Good<br>n=104 | Bad<br>n=32 | Total | $X^2$ | P-Values |
|---|---|---|---|---|---|---|
| **Duration of caregiving (years)** | | | | | | |
| <1 year | 2.5 | 19.0 | 2.5 | **24.0** | 34.597 | 0.000* |
| 1 – 2 years | 12.5 | 20.0 | 3.0 | **35.5** | | |
| 3 – 5 years | 9.0 | 8.0 | 6.5 | **23.5** | | |
| 6 – 10 years | 5.0 | 3.5 | 3.5 | **12.0** | | |
| >10 years | 3.0 | 1.5 | 0.5 | **5.0** | | |
| **Total** | **32.0** | **52.0** | **16.0** | **100.0** | | |
| **Care hours per week** | | | | | | |
| <10 hours | 1.5 | 19.7 | 2.0 | **23.2** | 105.1 | 0.000* |
| 10 – 19 | 1.0 | 18.2 | 1.5 | **20.7** | | |
| 20 – 29 | 0.5 | 6.1 | 0.0 | **6.6** | | |
| 30 – 39 | 6.6 | 1.5 | 0.5 | **8.6** | | |
| 40 and above | 22.2 | 7.1 | 11.6 | **40.9** | | |
| **Total** | **31.8** | **52.6** | **15.6** | **100.0** | | |

P < 0.05*

There appears to be a pattern in the relationship between the number of years female caregivers spend in caregiving and the physical health of the care recipient. Table 4.2 suggests a higher proportion of response for the very good category of the physical health of care recipients in relation to increased numbers of years spent in caregiving. Further, increased duration of caregiving, (i.e. 3 - 5 years, 6 - 10 years and 10 years and above), recorded 9%, 5% and 3% respectively for very good physical health condition of the care recipient. Also, for increased years in caregiving (10 years and above), fewer care recipients (0.5%) had a bad physical health condition. Further analysis revealed a significant (P < 0.05) association between number of years spent in caregiving and the physical health condition of the care recipient.

There also appears to be a relationship between the physical condition of care recipients and number of hours caregivers spent per week in care for the care recipient. The descriptive analysis in Table 4.2 reveals that for caregivers who are in caregiving as a fulltime job (40 hours per week), a higher percentage (22.2%) of their care recipients reported very good physical heath of their care recipients. A similar finding was observed in the bad physical health category.

The results in Figure 4.2a show a curvilinear relationship between the number of years spent in caregiving and good to very good physical health of care recipients.

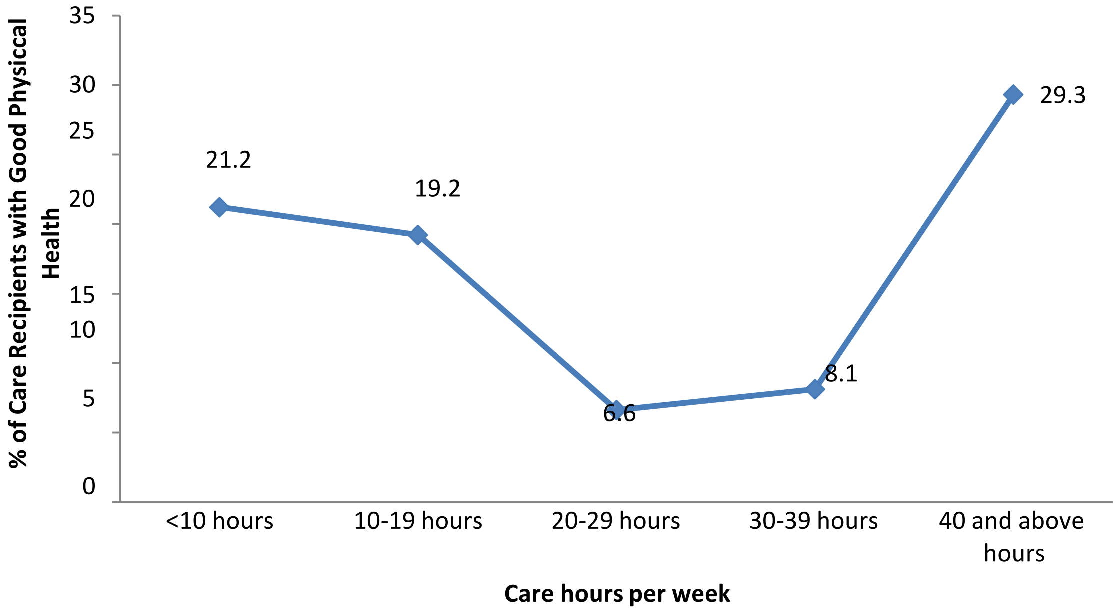

**Figure 4.2a: Care hours per week and physical health of care recipients in Cape Town**

As the number of hours spent in providing care increased from less than 10 hours per week to 10 to 19 hours per week, the percentage of care recipients with good physical health reduced from 21.2% to 19.2% (2.0%) and reached a minimum between 20 to 39 hours of care per week. The percentage with good physical health of the care recipients thereafter improved. The physical health of the care recipients whose caregivers are in the caregiving role in a full-time capacity improved significantly.

For Tamale, there also appears to be a relationship between the physical condition of care recipients and the number of hours the caregivers spent per week in care for the care recipient. Figure 4.2b reveals that for caregivers who are in caregiving as a fulltime job (40 hours and more per week), a higher percentage (59.3%) reported good care recipients' physical heath. This finding supports that of Cape Town where similarly a large proportion (29.3%) caregivers in the caregiving role as a fulltime job, reported good physical health of the care recipients.

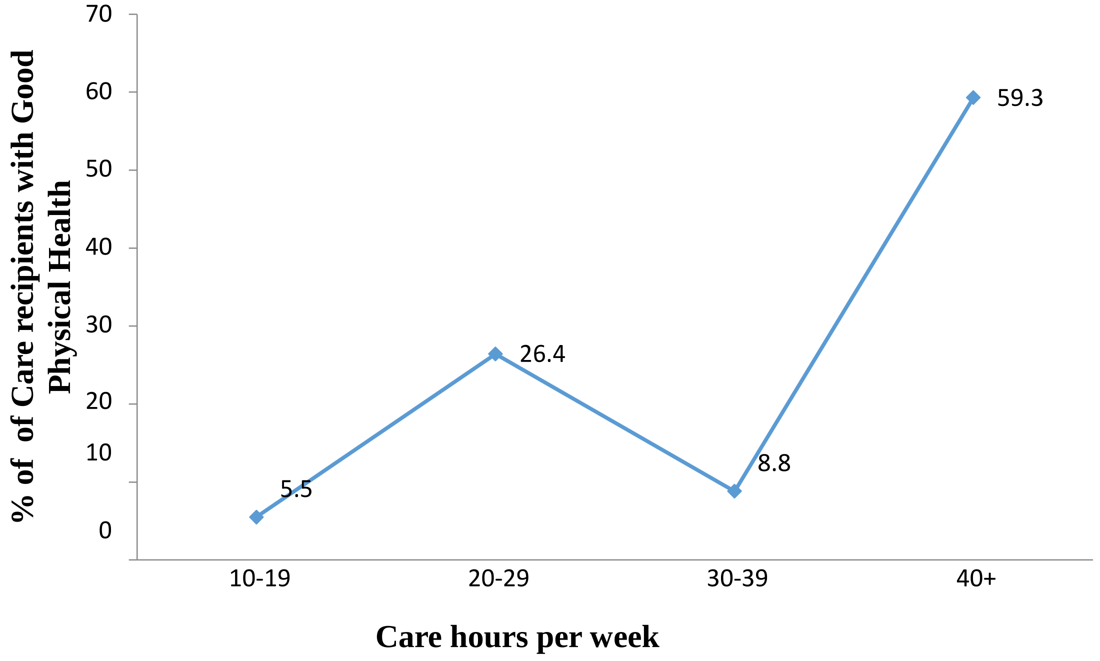

**Figure 4.2b: Care hours per week and physical health of care recipients in Tamale**

Figure 4.2b indicates that as the number of hours spent in providing care increased from 10-19 hours per week to 20 to 29 hours per week, the percentage of care recipients with good physical health reduced from 21.2% to 19.2% (2.0%) and reached a minimum between 20 to 39 hours of care per week. The percentage with good physical health of the care recipients thereafter improved. The caregivers' report on physical health of the care recipients whose caregivers are in the caregiving role in a full-time capacity improved significantly.

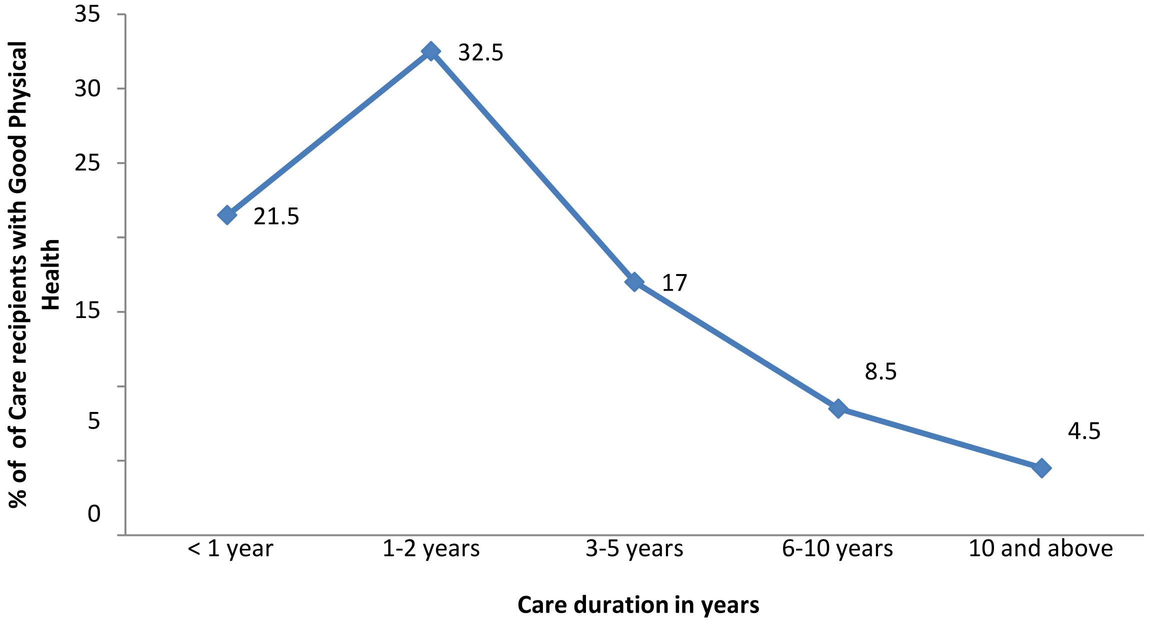

**Figure 4.3a: Care duration in years and physical health of care recipients in Cape Town**

Figure 4.3a demonstrates that a high percentage of the caregivers (21.5%) who were in the caregiving role for less than one year reported good physical health of care recipients. This proportion peaked at two years and thereafter steadily declined. This phenomenon needs further investigation because it is expected that the older and more experienced caregivers would provide better and higher quality care than the young and less experienced caregivers.

For Tamale, the results in Figure 4.3b show a similar curvilinear relationship between the number of years spent in caregiving and good to very good physical health of care recipients.

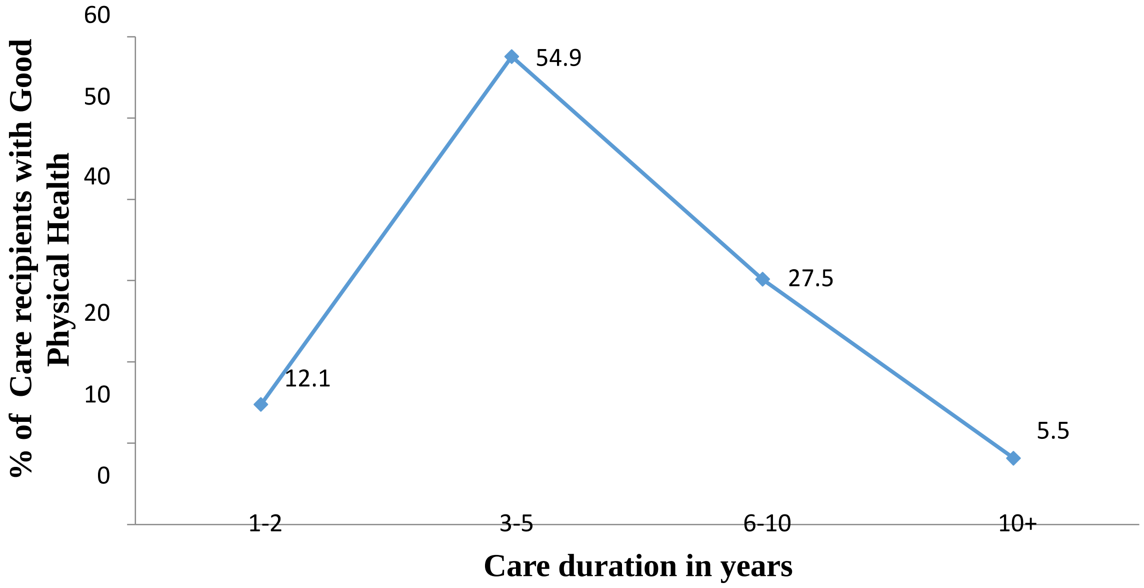

**Figure 4.3b: Care duration in years and physical health of care recipients in Tamale**

Table 4.2b presents the results of the investigation of the relationship between age of the caregiver and access to social grants provided by the state as safety net in South Africa. The results show a significant relationship (p = 0.000) between the age of the caregiver and access to social grants.

**Table 4.2b: Social grants access by age group of caregivers in Cape Town**

| | **Social grants receipts** | | | | |
|---|---|---|---|---|---|
| **Age group** | **% Yes** | **% No** | **Total** | $X^2$ | **P-Value** |
| Less than 20 | 0.0 | 100.0 | 100 | | |
| 20 - 29 | 17.6 | 82.4 | 100 | | |
| 30 -39 | 56.5 | 43.5 | 100 | 53.230 | P = 0.000 |
| 40 - 49 | 80.5 | 19.5 | 100 | | |
| 50 - 59 | 84.7 | 15.3 | 100 | | |
| 60 and above | 83.3 | 16.7 | 100 | | |
| **Total** | **72.1** | **27.9** | **100** | | |

The results specifically show that the younger female caregivers (<20 years) do not access social grants on behalf of their care recipients. In sum, 72.1% of caregivers access social grants whereas 27.9% do not access social grants for nay of their care recipients in the area under investigation in Cape Town. From the table above it is clear that access to social grants peaks at age group 50 – 59 whiles non-access reaches a minimum at this point.

Figure 4.4a show that access to social grants is negatively related to non-access to this form of safety net. From age group 20 – 29 as access to social grants increases and non-access declines.

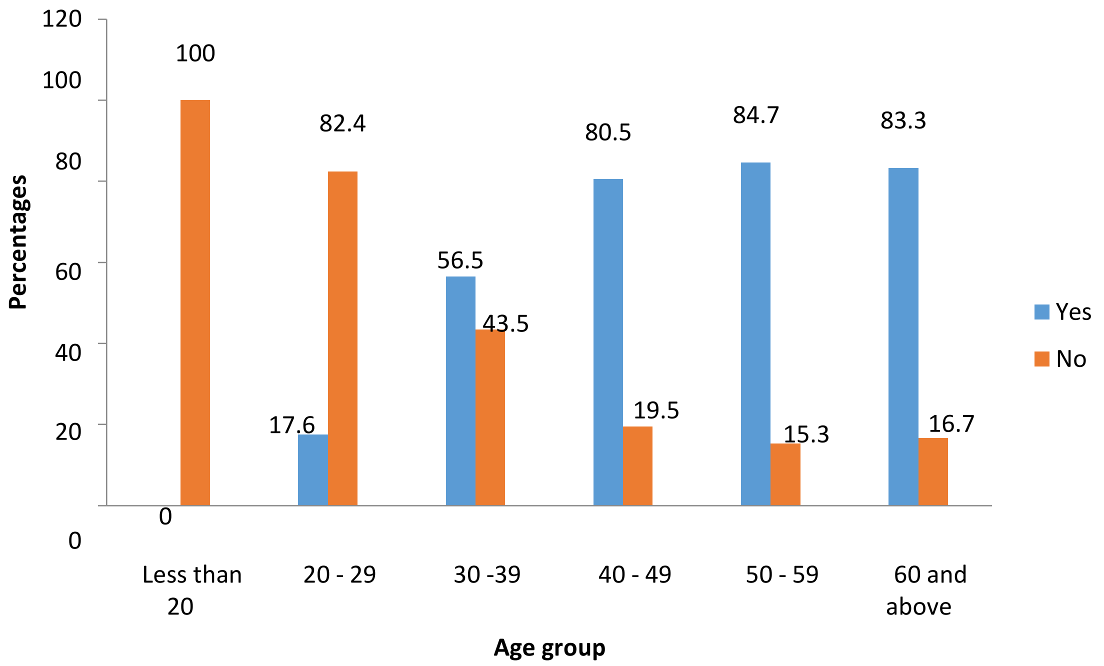

**Figure 4.4a Relationship between access and non-access to social grants in Cape Town.**

Figure 4.4b show female caregivers access and non-access to social grants on behalf of their care recipients.

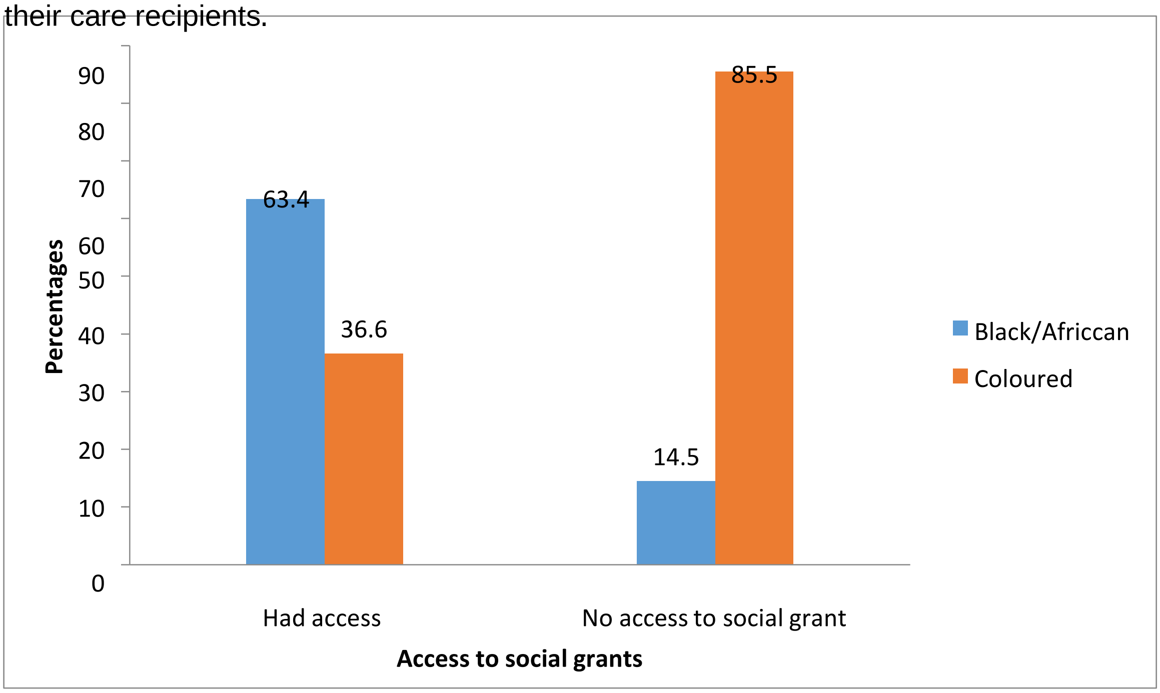

**Figure 4.4b Access and non-access to social grants by population group in Cape Town.**

Figure 4.4b show that in South Africa more Black/African female caregivers (63.4%) had access to social grants on behalf of their care recipients compared to the coloured female caregivers (36.6%). In the case of no access to social grants category, a much lesser proportion (14.5%) of caregivers reported that they do not access social grants on behalf of care recipients when compared with the Coloured population, with a much higher proportion caregivers (85.5%) reporting no access to social grants on behalf their care recipients.

#### *4.3.1.2 Chronic conditions of care recipients*

In Table 4.3, the background characteristics of female caregivers and the chronic condition status of the care recipients are presented. In this study, there was no statistically significant relationship found between the demographic characteristics (age, education, income and employment status) of female caregivers. Although there was a statistically significant relationship found between marital status ($P < 0.015$) and care recipients' health (chronic condition status), this study did not yield enough information to explain this relationship. Specifically, those who were never married (single) had the highest percentage (20.1%) of care recipients living with chronic conditions. The formerly married and currently married categories reported lower percentages, 19.1% and 17.1% respectively. This finding warrants future investigation.

**Table 4.3: Socio-demographic characteristics of female caregivers and chronic conditions of care recipients in Cape Town**

| Characteristics | Yes | No | Total | $X^2$ | P-Values |
|---|---|---|---|---|---|
| | n=113 | n=87 | % | | |
| **Age Group** | | | | | |
| Less than 30 | 9.0 | 2.5 | 11.5 | 7.714 | 0.173 |
| 30 – 39 | 5.5 | 6.0 | 11.5 | | |
| 40 – 49 | 11.5 | 10.0 | 21.5 | | |
| 50 and above | 30.5 | 25.0 | 55.5 | | |
| **Total** | **56.5** | **43.5** | **100.0** | | |
| **Population Group** | | | | | |
| Black/African | 29.5 | 20.5 | 50.0 | 0.509 | 0.476 |
| Coloured | 27.0 | 23.0 | 50.0 | | |
| **Total** | **56.5** | **43.5** | **100.0** | | |
| **Education Level** | | | | | |
| <Grade 7 | 1.0 | 0.5 | 1.5 | 1.467 | 0.832 |
| Grade 7/ Standard 5 | 5.0 | 4.0 | 9.0 | | |
| Grade 8 – 11 | 29.1 | 24.6 | 53.8 | | |
| Grade 12 and higher | 21.1 | 14.6 | 35.7 | | |
| **Total** | **56.2** | **43.7** | **99.9** | | |
| **Income** | | | | | |
| R0 – R500 | 20.4 | 19.4 | 39.8 | 2.591 | 0.459 |
| R501 – R1000 | 12.0 | 6.3 | 18.3 | | |
| R1001 and above | 23.5 | 18.4 | 44.5 | | |
| **Total** | **55.9** | **44.1** | **100.0** | | |
| **Marital Status** | | | | | |
| Never married | 20.1 | 8.0 | 28.1 | 10.414 | 0.015* |
| Formerly married | 19.1 | 14.6 | 33.7 | | |
| Currently married | 17.1 | 21.1 | 38.2 | | |
| **Total** | **56.3** | **43.7** | **100.0** | | |
| **Employment Status** | | | | | |
| Employed | 15.6 | 15.1 | 30.7 | 2.939 | 0.709 |
| Unemployed | 13.6 | 11.6 | 25.2 | | |
| Not economically active | 18.6 | 10.0 | 28.6 | | |
| Housewife | 8.5 | 7.0 | 15.5 | | |
| **Total** | **56.3** | **43.7** | **100.0** | | |

$P < 0.05$*

Caregivers between 30 and 39 years of age had the lowest percentage (5.5%) of care recipients with cases of chronic conditions in their care. The highest percentages of caregivers (30.5%) in the age group 50 years and above were reported living with at least one care recipient with a chronic condition. Regarding the caregivers in the age group 40 – 49 years, 11.5% reported living with a care recipient with a chronic condition.

In terms of population group, 29.5% and 27.0% caregivers of blacks and coloureds respectively have care recipients with a chronic condition. Population group did have a statistically significant influence on the chronic condition status of care recipients.

Female caregivers with an education of Grade 1 – 6 (1.0%), Grade 7 (5.0%), Grade 8 – 11 (29.1%), matric (19.1%) and higher qualifications (2.0%) reported that at least one of their care recipients live with a chronic condition. Hence, caregivers with Grade 8 – 11 education reported the highest proportion of people with a chronic condition.

Regarding income, female caregivers with an income status of less than R500 per month and those earning R1000 – R2000 per month reported higher percentages (20.4% and 22.5% respectively) of their care recipients living with a chronic condition in this category.

Regarding employment status, female caregivers who were unemployed and those not economically active, reported high percentages of care recipients living with a chronic condition (13.6% and 18.6% respectively). Those engaged in a form of employment reported lower percentages of care recipients living with a chronic condition. Specifically, a large percentage (15.6%) of the caregivers who were in a form of employment (permanent or temporary), reported living with a care recipient with a chronic condition.

Although marital status of the female caregiver is strongly associated with the chronic condition status of care recipients, female caregivers who were single or never married reported the highest percentage (20.1%) of care recipients with a chronic condition compared with other marital statuses. This was followed by a similar percentage (19.1%) of caregivers who were formerly married (divorced or widowed). The lowest percentages, 13.6% and 3.5%, were reported for the currently married and cohabitation categories respectively.

#### *4.3.1.3 Diarrhoea status in care recipients*

Table 4.4 presents the background characteristics of the female caregivers and the diarrhoea status of the care recipients in the study areas in Cape Town, South Africa.

The results show statistically significant relationships between the socio-demographic characteristics of the female caregivers (i.e. age, education, population group and income status but excluding marital and employment status) and the diarrhoea status of the care recipients with $P < 0.18$ and $P < 0.067$ respectively. This demonstrates that the age, education level, population group and income earning of the female caregivers are associated with the reported diarrhoea cases.

**Table 4.4: Socio-demographic characteristics of female caregivers and reported diarrhoea cases in Cape Town**

| Characteristics | Yes<br>n=62 | No<br>n=137 | Total | $X^2$ | P-Values |
|---|---|---|---|---|---|
| **Age Group** | | | | | |
| Less than 30 | 1.5 | 10.0 | **11.5** | 11.481 | 0.043* |
| 30 – 39 | 1.5 | 10.0 | **11.5** | | |
| 40 – 49 | 8.5 | 13.0 | **21.5** | | |
| 50 and above | 19.5 | 36.0 | **55.5** | | |
| **Total** | **31.0** | **69.0** | **100.0** | | |
| **Population Group** | | | | | |
| Black/African | 20.5 | 29.5 | **50.0** | 9.350 | 0.002* |
| Coloured | 10.5 | 39.5 | **50.0** | | |
| **Total** | **31.0** | **69.0** | **100** | | |
| **Education Level** | | | | | |
| >Grade 7 | 0.0 | 1.5 | **1.5** | 12.472 | 0.014* |
| Grade 7/ Standard 5 | 4.0 | 5.0 | **9.0** | | |
| Grade 8 –11 | 20.6 | 33.2 | **53.8** | | |
| Grade 12 and higher | 6.6 | 29.1 | **35.7** | | |
| **Total** | **31.2** | **68.8** | **100.0** | | |
| **Income** | | | | | |
| R0 – 500 | 8.9 | 30.9 | **39.8** | 10.822 | 0.013* |
| R501 – R1000 | 5.2 | 13.1 | **18.3** | | |
| R1001 – R2000 | 17.3 | 22.0 | **39.3** | | |
| R2001 and above | 0 | 2.6 | **2.6** | | |
| **Total** | **31.4** | **68.6** | **100.0** | | |
| **Marital status** | | | | | |
| Never married | 7.0 | 21.1 | **28.1** | 4.893 | 0.18 |
| Formerly married | 10.1 | 23.6 | **33.7** | | |
| Currently married | 14.1 | 24.1 | **38.2** | | |
| **Total** | **31.2** | **68.8** | **100.0** | | |
| **Employment Status** | | | | | |
| Employed | 11.5 | 19.1 | **30.6** | 10.314 | 0.067 |
| Unemployed | 10.6 | 14.6 | **25.1** | | |
| Not economically active | 4.5 | 24.1 | **28.6** | | |
| Housewife | 4.5 | 11.1 | **15.6** | | |
| **Total** | **31.1** | **68.9** | **100.0** | | |

P < 0.05*

Regarding the age groups of caregivers, approximately 8.5% in the age group 40 – 49 years and 19.5% of caregivers in the age group of 50 years and above reported that at least one of their care recipients reported diarrhoea in the four weeks preceding the survey. This implies that the care recipients of older caregivers are at a higher risk of diarrhoea infection than the care recipients of the younger caregivers. This relationship needs further studies.

In terms of population group, more caregivers of black recipients (20.5%) compared with caregivers of coloured recipients (10.5%) reported a diarrhoea case in at least one of their care recipients in the four weeks preceding the survey. Diarrhoea cases appear to be more prevalent among the black/African care recipients than the coloured.

With the level of education, caregivers with some primary education (Grade 1 – 6) did not report any case of diarrhoea in the four weeks preceding the survey. Caregivers with Grade 7 (4.0%) and Grade 8 – 11 (20.6%) and those with a higher education (6.5%) reported at least one case of diarrhoea in the care recipient. The incidence of diarrhoea was higher among care recipients of caregivers with Grade 8 – 11 education. The bar graph in Figure 4.5 clearly shows this pattern.

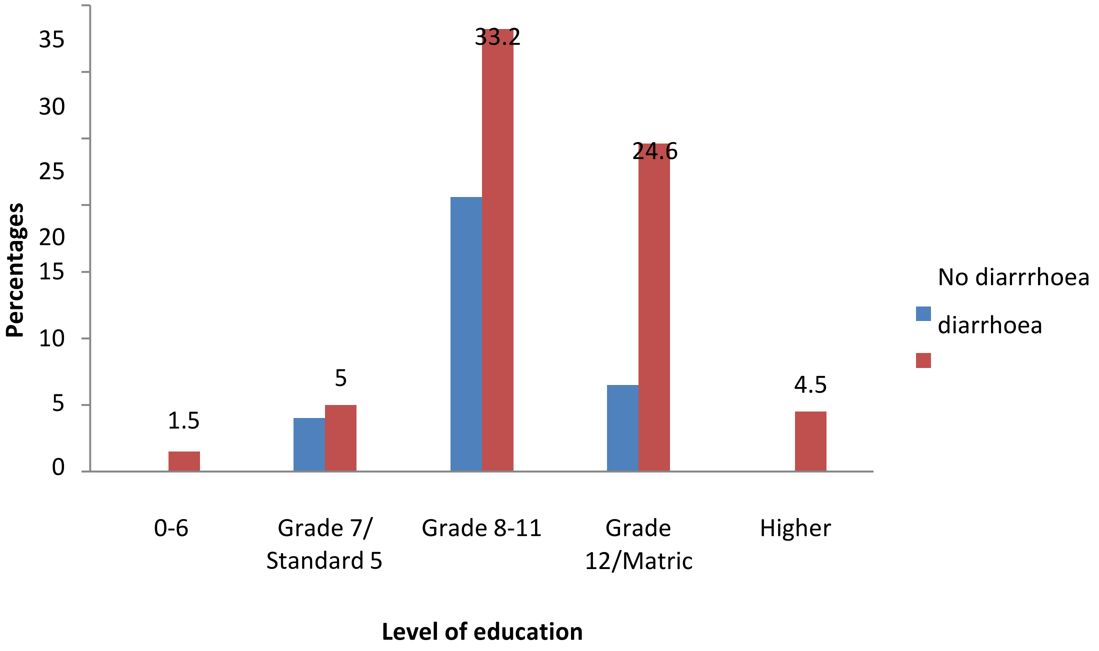

**Figure 4.5: Education and diarrhoea in Cape Town**

In Figure 4.6, with reference to the income of the female caregivers, caregivers with an income status of less than R2000 reported cases of diarrhoea, whilst caregivers earning R2000 and above reported no cases of diarrhoea. The data suggest income status is associated with diarrhoea (P = 0.013). The level of income could be determined by the labour market status and type of employment.

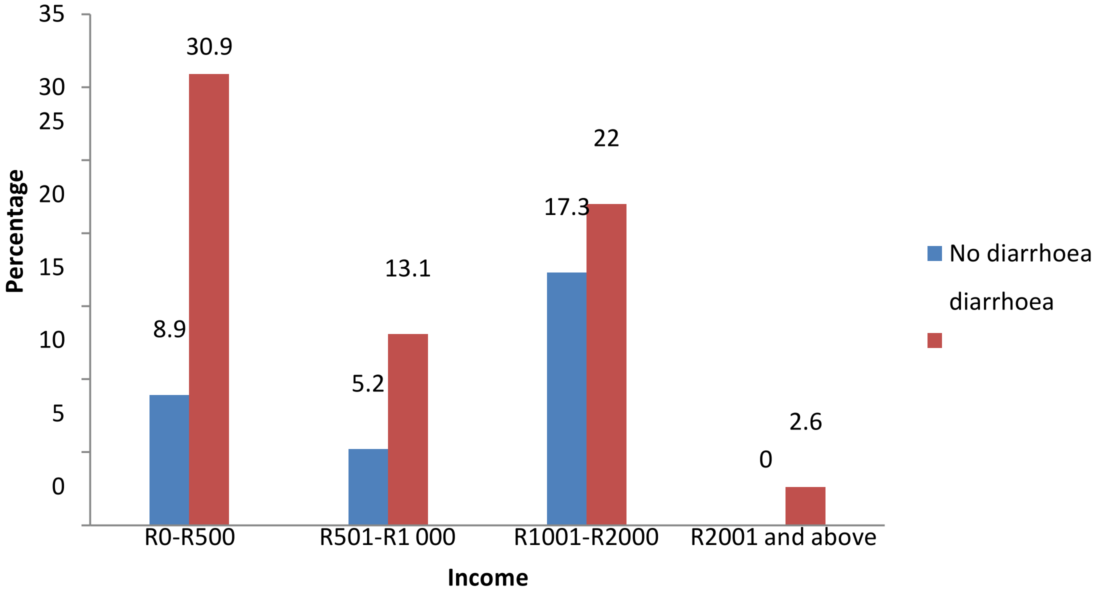

**Figure 4.6: Income and diarrhoea in Cape Town**

In the case of caregiver employment status, the highest percentage of diarrhoea cases was reported among caregivers who were employed temporarily (11.5%). Those who were unemployed also reported a high percentage (10.6%) of care recipient diarrhoea cases during the period under reference. The percentages among housewives (4.5%) and those not economically active (4.5%) were the lowest when compared with the former two employment categories. The income-diarrhoea findings in this study are graphically represented in Figure 4.6.

## 4.4 PHYSICAL HEALTH OF CARE RECIPIENTS

Table 4.5 presents the background characteristics of the female caregivers and the physical health status of the care recipients.

In the study sample, there is a statistically significant relationship ($P < 0.096$) between the demographic characteristics of the female caregivers (age, education, income, population group and employment status, excluding marital status) and the physical health of the care recipients.

**Table 4.5: Socio-demographic characteristics and physical health of care recipients in Cape Town**

| Background Characteristics | Very Good | Good | Bad | Total | $X^2$ | P-Values |
|---|---|---|---|---|---|---|
| | n=64 | n=104 | n=32 | | | |
| **Age Group** | | | | | | |
| Less than 30 | 9.5 | 0.5 | 1.5 | **11.5** | 58.668 | 0.000* |
| 30 – 39 | 5.5 | 2.5 | 3.5 | **11.5** | | |
| 40 – 49 | 4.0 | 13.0 | 4.5 | **21.5** | | |
| 50 and above | 13.0 | 36.0 | 6.5 | **55.5** | | |
| **Total** | **32.0** | **52.0** | **16.0** | **100.0** | | |
| **Population Group** | | | | | | |
| Black/African | 2.5 | 44.0 | 3.5 | **50.0** | 105.534 | 0.000* |
| Coloured | 29.5 | 8.0 | 12.5 | **50.0** | | |
| **Total** | **32.0** | **52.0** | **16.0** | **100.0** | | |
| **Education Level** | | | | | | |
| <Grade 7 | 0.5 | 1.0 | 0.0 | **1.5** | 16.535 | 0.035* |
| Grade 7/ Standard 5 | 3.0 | 3.0 | 3.0 | **9.0** | | |
| Grade 8 – 11 | 15.6 | 32.2 | 6.0 | **53.8** | | |
| Grade 12 and higher | 13.1 | 15.6 | 7.0 | **35.7** | | |
| **Total** | **32.2** | **51.8** | **16.1** | **100.0** | | |
| **Income** | | | | | | |
| R0 – R500 | 23.6 | 6.8 | 9.4 | **39.8** | 78.325 | 0.000* |
| R501 – R1000 | 2.1 | 14.7 | 1.7 | **18.5** | | |
| R1001 and above | 5.2 | 32.4 | 4.1 | **41.9** | | |
| **Total** | **30.9** | **53.9** | **15.2** | **100.0** | | |
| **Marital status** | | | | | | |
| Never married | 9.5 | 16.1 | 2.5 | **28.1** | 10.756 | 0.096 |
| Formerly married | 10.6 | 18.6 | 4.5 | **33.7** | | |
| Currently married | 12.0 | 17.1 | 9.0 | **38.2** | | |
| **Total** | **32.1** | **51.8** | **16. 0** | **100.0** | | |
| **Employment status** | | | | | | |
| Employed | 3.5 | 23.6 | 3.5 | **30.6** | 45.817 | 0.000* |
| Unemployed | 7.5 | 16.1 | 1.5 | **25.1** | | |
| Not economically active | 13.1 | 9.5 | 6.0 | **28.6** | | |
| Housewife | 8.0 | 2.5 | 5.0 | **15.6** | | |
| **Total** | **32.1** | **51. 7** | **16. 0** | **99.9** | | |

$P < 0.05$*

On analysing each of the caregivers' background variables in relation to the physical health of the care recipients in terms of age groups of the caregivers, 10% of the caregivers in the age category below 30 years reported good to very good physical health of care recipients, whilst 1.5% reported bad physical health of care recipients. For those in the age group 30 – 39 years, 8% and 3.5% were the percentages reported for good to very good and bad physical health of care recipients respectively. For the age group 40 – 49 years, a high percentage (17%) was reported for good to very good physical health of care recipients, whilst 4.5% reported bad physical health. A very large percentage of caregivers (49%) in the group 50 years and above reported good to very good physical health of care recipients, whilst 6.5% in this group reported bad physical health of care recipients. This finding seems to suggest that good physical health of the care recipients in the study areas is positively related to age of the caregiver (P = 0.000). As the caregiver's age advances, better physical health outcomes of the care recipients are reported.

When investigating population group dynamics further (Figure 4.7), the black/African population percentages reported were 46.5% and 3.5% for good to very good and bad physical health of care recipients respectively. The coloured percentages reported were
37.5% and 12.5% for good to very good, and bad physical health respectively.

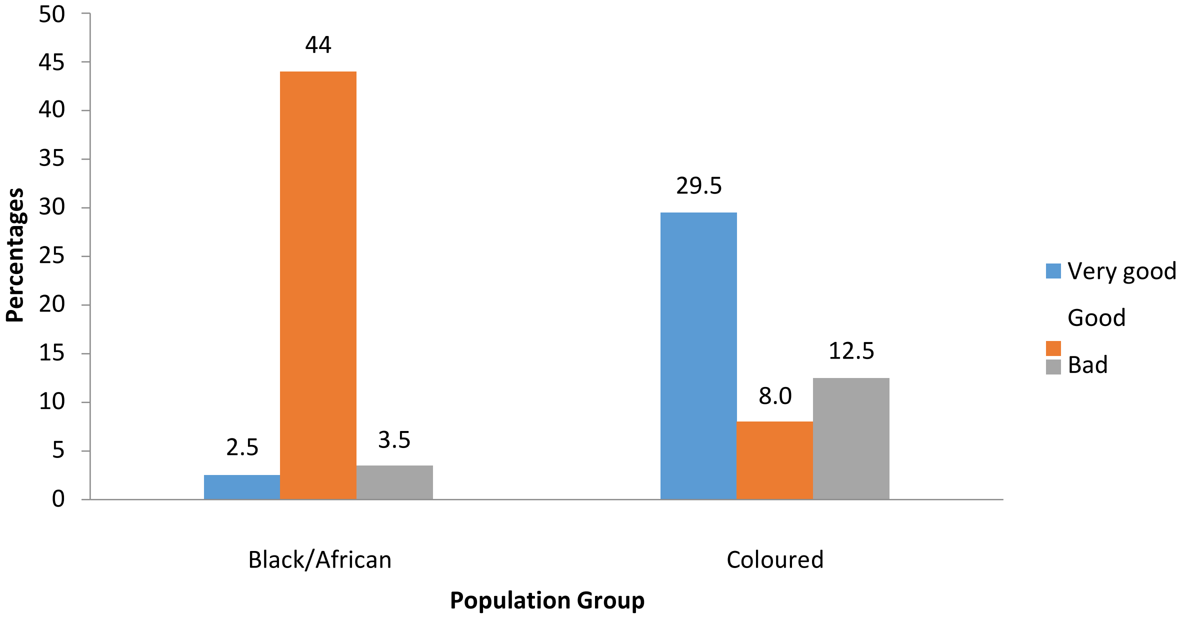

Figure 4.7: Population group by physical health distribution in Cape Town

This study discovered that cultural difference had an impact on the physical health of care recipients (P = 0.000), with a more positive impact reported among the black/African population when compared with the coloured population. This suggests better quality care among the black population, and it is expected that better quality of care results in better health outcomes for the care recipient and thus, less caregiver strain.

With the educational level of the caregivers and the physical health of their care recipients, the largest percentage for the category of good to very good physical health of recipients (47.8%) was reported among caregivers who had completed Grades 8 – 11, whereas 6% with the same level of education reported bad physical health of care recipients. This was followed by those with matric and a higher level of education with 28.7% for the category of good to very good and 7% for the category of bad physical health of care recipients. The lowest percentages, 6% and 3%, were reported among the caregivers with only Grade 7 for both the categories mentioned above. These findings buttress the positive relationship between education and better health outcomes of care recipients (P = 0.035). However, it was expected that (i) the relationship would be linear, and (ii) the largest percentage would have been reported among caregivers with matric and a higher educational level, and yet the largest percentage (53.8%) was found in the group with a Grade 8 – 11 level of education. Anecdotal evidence suggests that more educated female caregivers are better informed, are able to read and understand health materials and practise better health habits than those without formal education. However, the work of public health and community health practitioners and mass education could help ameliorate the effect of lack of formal education. The income level of the household could also minimise the effect.

Regarding income status of the caregiver and physical health of care recipients, a strong statistical significance was shown (P = 0.000). A large percentage (30.4%) of the caregivers who had no income and those who earned up to R500 per month (R0 – R500) reported good to very good physical health of care recipients, whilst 9.4% in the same income bracket reported bad physical health of care recipients. Whilst the lowest proportion (16.8%) of caregivers reporting good to very good physical health of care recipients was reported among caregivers with an income of R501 – R1000 per month, the lowest percentage of caregivers (1.6%) reporting bad physical health of care recipients was found in the same income bracket (R501 – R1000 per month). However, the highest percentage (37.6%) of the caregivers who earned more than R1000 per month reported good to very good physical health of care recipients, whilst 4.1% in this income bracket reported bad physical health of care recipients. This study found that the majority of the female caregivers (41.9%) in the sample earned an income of more than R1000 per month. The largest percentage (39.3%) of the female caregivers in this income bracket earned between R1001 and R2000 per month, whilst 2.6% earned R2001 and above per month. This study selected participants living in areas considered as low-income areas and found that almost all participants (97.4%) were without income or earned less than R2000 per month.

A strong statistical significance (P = 0.000) was shown between the physical health status of care recipients and the employment status of female caregivers. The highest percentage of female caregivers (30.6%) had some form of employment (temporary or permanent), 25.1% were not employed, 28.6% were not economically active and 15.6% were housewives. A high percentage of those who were employed (27.1%) reported good to very good physical health of care recipients, whereas 3.5% reported bad physical health of care recipients. With reference to the other employment categories, 23.6%, 19.6% and 10.5% of the unemployed, not economically active and housewives respectively reported good to very good physical health of care recipients, and 1.5%, 6% and 5% respectively reported bad physical health of care recipients.

There was no statistical significance between the marital status of the female caregivers and the physical health of the care recipients (P = 0.096). Thus, there was no association between marital status and physical health of the care recipients.

## 4.5 ENVIRONMENTAL HEALTH AND HEALTH OUTCOMES OF CARE RECIPIENTS

In this section, the results of the relationship between environmental health and selected health outcomes of care recipients are presented. This section addresses research Question 4 of the study:

Is there a significant relationship between the environmental health status and the health status of the inhabitants of low-income communities?

### 4.5.1 Physical health

Table 4.6(a) shows a statistically significant relationship between the environmental health status (kitchen hygiene and toilet hygiene status) of the home and the physical health of care recipients (P < 0.01).

**Table 4.6a: Environmental health and physical health of care recipients in Cape Town**

| Environmental health | Very Good | Good | Bad | Total | $X^2$ | P-Values |
|---|---|---|---|---|---|---|
| | n=64 | n=104 | n=32 | | | |
| **Kitchen Hygiene** | | | | | | |
| Bad | 2.0 | 18.0 | 2.0 | **22** | 20.580 | 0.000* |
| Good | 30.0 | 34.0 | 14.0 | **78** | | |
| **Total** | **32.0** | **52.0** | **16.0** | **100.0** | | |
| **Toilet Hygiene** | | | | | | |
| Bad | 3.0 | 18.5 | 2.0 | **23.5** | 17.694 | 0.000* |
| Good | 29.0 | 33.5 | 14.0 | **76.5** | | |
| **Total** | **32.0** | **52.0** | **16.0** | **100.0** | | |

P < 0.05*

With kitchen hygiene status, caregivers whose kitchen hygiene was substandard reported the physical health of care recipients as being good to very good (90.9%) and the balance (9.1%) reported the physical health of care recipients as bad. Caregivers with a good kitchen hygiene status reported the physical health of their care recipients as follows: good to very good (82.1%), good (43.6%) and bad (17.9%).

Concerning the toilet hygiene status, 91.5% of caregivers with bad toilet hygiene conditions reported care recipients' physical health as good to very good, and 8.5% reported it as bad. Looking at good toilet hygiene conditions, 81.7% reported the physical health of their care recipients as being good to very good, and 18.3% reported it as bad.

**Table 4.6b: Environmental health and physical health of care recipients in Tamale**

| **Environmental health** | **Very Good** | **Good** | **Bad** | **Total** | $X^2$ | **P-Values** |
|---|---|---|---|---|---|---|
| | n=6 | n=91 | n=3 | | | |
| **Kitchen Hygiene** | | | | | | |
| Bad | 20.0 | 73.3 | 6.7 | **100.0** | 7.161 | 0.028 |
| Good | 3.5 | 94.1 | 2.4 | **100.0** | | |
| **Toilet Hygiene** | | | | | | |
| Bad | 11.8 | 85.3 | 2.9 | **100.0** | 3.038 | 0.219 |
| Good | 3.0 | 94.0 | 3.0 | **100.0** | | |

$P < 0.05$*

Whereas there was a statistically significant relationship between environmental health status (i.e. kitchen hygiene) and the physical health of care recipients (P = 0.028) in the Tamale sample, there was no statistically significant relationship between environmental health status (i.e. toilet hygiene) and the physical health of care recipients (P = 0.219)(Table 4.6(b). However, the Cape Town study found a statistically significant association between toilet hygiene in the home and the physical health of care recipients. This could possibly be because majority of the homes in the Tamale study area use the public toilet system, meaning that the toilet is not within the home. This could be investigated further in future studies.

### 4.5.2 Diarrhoea cases reported

Table 4.7(a) demonstrated that there was no statistically significant relationship between environmental health (kitchen and toilet hygiene status) and diarrhoea cases reported in care recipients (kitchen hygiene, P = 0.894 and toilet hygiene, P = 0.606). One would expect association between the kitchen and toilet hygiene status and diarrhoea cases in the household. This was further investigated in the Tamale study in Table 4.7(b).

**Table 4.7a: Environmental health and diarrhoea cases in care recipients in Cape Town**

| Environmental health | Yes | No | Total | $X^2$ | P-Values |
|---|---|---|---|---|---|
| | n=62 | n=138 | **100** | | |
| **Kitchen Hygiene** | | | | | |
| Bad | 54.0 | 24.0 | **78.0** | 0.018 | 0.894 |
| Good | 15.0 | 7.0 | **22.0** | | |
| **Total** | **69.0** | **31.0** | **100.0** | | |
| **Toilet Hygiene** | | | | | |
| Bad | 53.5 | 23.0 | **76.5** | 0.266 | 0.606 |
| Good | 15.5 | 8.0 | **23.5** | | |
| **Total** | **69.0** | **31.0** | **100.0** | | |

$P < 0.05$*

In the Cape Town study, 54% of caregivers with bad kitchen hygiene reported *yes* for reported cases of care recipient diarrhoea in the four weeks preceding the survey, and 24% reported *no*. For reported cases of care recipient diarrhoea 15% and 7% of caregivers with good kitchen status reported *yes* and *no* respectively. Concerning toilet hygiene, 54% of the caregivers with bad toilet hygiene reported *yes* for reported cases of care recipient diarrhoea in the same period, and 23% reported *no*. Sixteen per cent and eight per cent of the caregivers with good toilet hygiene reported *yes* and *no* respectively for reported cases of care recipient diarrhoea.

Similar to the Cape Town study, the Tamale study demonstrated in Table 4.7(b) that there was no statistically significant relationship between environmental health (kitchen and toilet hygiene status) and reported cases of care recipient diarrhoea (kitchen, P = 0.225 and toilet hygiene, P = 0.939).

**Table 4.7b: Environmental health and diarrhoea cases in care recipients in Tamale**

| Environmental health | Yes | No | Total | $X^2$ | P-Values |
|---|---|---|---|---|---|
| | n=26 | n=74 | **100** | | |
| **Kitchen Hygiene** | | | | | |
| Bad | 13.3 | 86.7 | **100.0** | 1.472 | 0.225 |
| Good | 28.2 | 71.8 | **100.0** | | |
| **Toilet Hygiene** | | | | | |
| Bad | 26.5 | 73.5 | **100.0** | 0.006 | 0.939 |
| Good | 25.8 | 74.2 | **100.0** | | |

$P < 0.05$*

In the Tamale sample, 13.3% of caregivers with poor kitchen hygiene reported *yes* for reported cases of care recipient diarrhoea in the four weeks preceding the survey, and 86.7% reported *no*. For caregivers with a good kitchen status, 28% reported *yes*, and 72% reported *no* respectively on care recipient diarrhoea cases. Large percentages, 27% and 73%, of the caregivers with bad toilet hygiene reported *yes* and *no* respectively to reported cases of care recipient diarrhoea in the same period. In case of female caregivers with a good toilet hygiene status, 26% reported *yes*, and 74% reported *no* for reported cases of care recipient diarrhoea.

# CHAPTER 5

# PREDICTORS AND MODELLING CAREGIVER BURDEN

## 5.1 INTRODUCTION

This chapter presents the results of the assessment of caregiver burden and predictors of female caregiver burden in the study areas. Caregiver burden evaluated with burden inventory questions (Table 3.1) was assessed using a hierarchical linear regression model. The results of the multiple regressions using caregiver burden as the dependent variable with a set of predictors in five blocks are presented in Table 5.1, and the results of the ANOVA in Table 5.2. The results of the Pearson correlation analysis that preceded the multiple regression analysis are presented in Table 5.2.

## 5.2 CORRELATION PREDICTORS AND FEMALE CAREGIVER BURDEN

Prior to the hierarchical regression analysis, Pearson correlation analyses were done, and the results are shown in Table 5.1. The results demonstrate small to moderate positive relationships between female caregiver burden and the group of burden predictors (age, education level, income status, activities of daily living, chronic diseases, social grants, kitchen hygiene and the physical health of care recipients) in the various constructs. However, results show moderately negative relationships between caregiver burden and female caregivers population group, employment status and number of hours they spent in care per week in the main study, Cape Town, South Africa.

## Table 5.1: Pearson's correlations for the impact of the constructs of this study on caregiver burden in Cape Town

| | | Caregiver burden | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Background and Context** | | | | | | | | | | | | | | | | | | |
| 1 | Age | .179* | - | | | | | | | | | | | | | | | | |
| 2 | Level of education | .014 | -.259** | - | | | | | | | | | | | | | | | |
| 3 | Income status | .149* | .314** | -.107 | - | | | | | | | | | | | | | | |
| 4 | Marital status | .013 | .336** | -.060 | .065 | - | | | | | | | | | | | | | |
| 5 | Population group | -.294** | -.497** | .243** | -.724** | .041 | - | | | | | | | | | | | | |
| 6 | Employment status | -.190** | .029 | -.008 | -.559** | .101 | .492** | - | | | | | | | | | | | |
| | **Stressors** | | | | | | | | | | | | | | | | | | |
| 7 | Duration of care | -.097 | .028 | .113 | -.429** | .212** | .521** | .448** | - | | | | | | | | | | |
| 8 | Number of hours of care | -.248** | -.410** | .154* | -.730** | .022 | .912** | .505** | .605** | - | | | | | | | | | |
| 9 | ADLs | .153* | .129 | -.059 | .240** | .097 | -.160* | -.067 | -.016 | -.102 | - | | | | | | | | |
| 10 | IADLs | -.015 | -.063 | -.026 | -.143* | -.045 | .156* | .026 | -.015 | .144* | .006 | - | | | | | | | |
| 11 | Chronic diseases | .172* | .323** | -.150* | -.056 | .239** | .061 | .236** | .233** | .099 | .008 | .053 | - | | | | | | |
| 12 | Diarrhoea | -.111 | -.126 | .158* | -.143* | -.088 | .202** | .120 | .133 | .147* | -.060 | .032 | -.097 | - | | | | | |
| | **Stressor mediators** | | | | | | | | | | | | | | | | | | |
| 13 | Family support | -.094 | -.257** | .178* | -.284** | -.046 | .396** | .148* | .153* | .362** | -.055 | .069 | .047 | -.088 | - | | | | |
| 14 | Social grants | .453** | .441** | -.185** | .296** | .133 | -.438** | -.124 | -.056 | -.342** | .144* | -.064 | .164* | -.105 | -.184** | - | | | |
| 15 | Coping strategies | -.100 | -.059 | -.008 | .071 | .156* | .034 | -.010 | .012 | .030 | -.058 | .077 | -.007 | .035 | -.004 | -.035 | - | | |
| | **Environmental health** | | | | | | | | | | | | | | | | | | |
| 16 | Kitchen hygiene | .206** | .234** | -.120 | .236** | -.007 | -.410** | -.276** | -.195** | -.372** | -.009 | -.191** | -.037 | -.015 | -.105 | .252** | -.048 | - | |
| 17 | Care recipients' physical health status | .459** | .220** | -.011 | .222** | .124 | -.267** | -.095 | -.095 | -.223** | .120 | .004 | .149* | -.075 | -.163* | .491** | .073 | .022 | - |

ADLs = Activities of daily living; IADLs = Instrumental activities of daily living; *P < 0.05, ** P < 0.01

With the background characteristics of the caregiver, the results showed small to moderate positive relationships between caregiver burden and background characteristics of caregivers, such as age, level of education, income status and marital status. The female caregivers population group and employment status showed negative relationships. The caregivers age and income status each reported a significant positive relationship ($r = 0.17$, $r = 0.149$, $P < 0.05$) with caregiver burden. This clearly indicates that the greater the income of the caregiver, the greater the caregiver burden. Female caregivers who were older ($r = 0.17$, $P < 0.05$) and female caregivers in the higher income bracket ($r = 0.149$, $P < 0.05$) experienced significantly higher caregiver burden than those who were younger and those in the lower income bracket. Though employment status of the caregivers indicated a significant negative relationship with caregiving burden, fairly high correlations were established for caregiver income and employment status ($r = 0.559$, $P < 0.001$). Further, the study established that improvement in the employment status of the caregiver resulted in less ($r = - 0.190$, $P < 0.01$) caregiving burden.

The number of hours of care, activities of daily living, instrumental activities of daily living and chronic diseases of the care recipient were all significantly related to caregiving burden. Thus, female caregivers who spent more hours in care tended to experience less care burden ($r = - 0.248$, $P < 0.01$). This finding reinforces other studies that suggest that the caregiving role is rewarding rather than being viewed as negative to the mental health of the caregiver. However, care recipient stressors such as duration of care, instrumental activities of daily living and diarrhoea were not significantly related ($P > 0.05$) to caregiving burden. In the case of the care recipient’s needs for activities of daily living and instrumental activities of daily living, important care-recipient characteristics associated with caregiver mental health such as depression include problem behaviour and higher dependence in activities of daily living (Piercy *et al.*, 2013:922; Pinquart & Sorenson, 2003). It has been reported that as the caregiver engages in instrumental activities in an effort to provide care to the care recipient, such activities can interfere with other aspects of his or her life, including relationships with other family members, personal privacy or work-related aspects, which could potentially result in stress burden (Savundranayagam, Montgomery & Kosloski, 2011:321-322). A positive relationship between time in assisting with activities of daily living and objective burden has also been posited (Savundranayagam, 2011:328). This study established that the more impaired a care recipient was in reference to activities of daily living, the greater the burden of the caregiver’s experience ($r = 0.153$, $P < 0.05$).

## 5.3 FEMALE CAREGIVER STRAIN ASSESSMENT

Caregiver burden was measured by self-report from caregivers with both objective and subjective burden-inventory questions.

From the eight caregiver-strain or burden-inventory questions, female caregiver burden (FCG Burden) was computed using a composite score with a mean after a reliability test (Cronbach alpha = 0.819). The mean female caregiver burden was 27.04 (SD = 5.46), with minimum and maximum scores of 13 and 40 respectively. The percentage of people below the mean caregiving burden was 45.7%, and the percentage of those above the mean score was 54.3%. Caregivers with a score above the mean were presumed to be burdened. The score indicates that the higher the score, the higher the caregiver burden. This finding was reinforced by similar finding in the Ghana study. In using similar approach, the Ghana study found a higher mean burden score of 30.39 (SD = 3.62), with minimum and maximum scores of 23 and 40 respectively. A higher mean burden score is indicative of high level of burden when compared with the Cape Town sample. The low burden level in Cape Town could be the effect of the social grants provided by the government of South Africa. In South Africa social grants is a key factor in the broader safety net established by the state to buffer the negative effect poverty at the household level. As Sanuade and Boatemaa (2015) posit, similar provisions in Ghana would help improve the circumstances of caregivers in Ghana.

Some researchers have presented empirical findings suggesting that the degree of burden experienced by a caregiver depends on several factors that encompass contextual factors, caregiving-related factors and primary stressors, including the socio-demographic status of the caregiver (Kim *et al*., 2012:847). Kim *et al*. (2012:851) found small to moderate positive relationships between the socio-demographic factors of the caregiver, disease-related factors, caregiving-related factors and caregiver burden

## 5.4 MODELLING FEMALE CAREGIVER STRAIN: HIERARCHICAL MULTIPLE REGRESSION

The results of the individual constructs with the set of predictors in five blocks for Cape Town and four blocks for Tamale using female caregiver burden as the dependent variable are presented in this section.

For Cape Town, in **Model 1**, the results showed that 15.8% of the variation in caregiver burden is explained by female caregivers' age, population group/race, education and income, marital and employment status. In this model, population group statistically predicts female caregiver burden (β = 4.805, $P < 0.05$). Specifically, the caregiving burden of black/African caregivers measured 4.805 points higher than that of coloured caregivers. Similarly, studies in the USA found that burden was related to population group, with a higher burden among whites than among black/African Americans (Hatch *et al*., 2014:412). Further, 14.3% of the variation in caregiver burden in Model 2 is explained by the background characteristics of respondents and the stressor variables such as duration in the care role, number of hours care is provided, activities of daily living, instrumental activities of daily living, chronic diseases and diarrhoea.

In **Model 2**, the caregiving burden for those who provided care for recipients living with chronic disease was 2.7 points higher than that of those providing care for recipients with no chronic disease (β = 2.733, $P < 0.05$). Some reports reinforce this point, stating that caregivers who spend more time caring for their sons or daughters with disabilities (hence, functional dependence) experienced more fatigue, arguments and other stressful events in their daily lives compared with mothers of children without disabilities (Lin, 2011:97). A study by Kim *et al*. (2012:852) reports that the more impaired the care recipients are in relation to their activities of daily living or instrumental activities of daily living, the greater the burden reported by their caregivers. This finding is consistent with other reports that found activities of daily living and instrumental activities of daily living to be important predictors of caregiver burden (Conde-Sala, Garre-Olmo, Turro-Garriga *et al.,* 2010:1262-1273; Rinaldi, Spazzafumo, Mastriforti *et al*., 2005). However, Model 2 presented contradictory findings for activities of daily living and instrumental activities of daily living since these did not significantly predict caregiver strain.

In **Model 3**, controls for constructs 1 and 2, stress mediator variables such as family support, social grants, coping strategies and programme use, were introduced. In this case, receipt of social grants was the only significant predictor of caregiver burden. Specifically, the caregiving burden for those who received social grants was higher than those with no social grants (β = 4.487, $P < 0.05$). As a result of age-related disabilities, elderly persons will require support from their family members while remaining in the community. The demographic shift towards an elderly population in most parts of the world suggests that support from the family, especially adult children, will increasingly become an indispensable resource for the disabled elderly (Bachner *et al*., 2009:1016-1039). Bastawrous (2013:431-432) reports that in the community when family caregivers are well supported in their community with informational, emotional and instrumental resources, the effect can offset the caregiver difficulties that informal caregivers experience in their caregiving role. This is confirmed by Zarit and Whitlatch (1992:665-672) who found that when informal caregivers are not supported and well resourced, they experience greater financial, physical and psychosocial strain that can eventually compromise the quality of care they provide for their recipients. In such instances, social support and coping strategies are significant predictors and are modifiable, providing opportunities for the purpose of specific interventions (Piercy *et al.*, 2013:924).

**In Model 4**, the environmental factor such as kitchen hygiene and toilet hygiene were added to the model (in Table 5.4a), and social grants were still the only significant predictor of caregiver burden ($\beta = 4.355$, $P < 0.001$). Globally, the link between social relationships and health in the caregiving environment has been well established (House, Landis & Umberson, 1988 cited in Webster, Antonucci, Ajrouch *et al*, 2015:155-166). It is not an overstatement that as old age advances, the immediate environment becomes more important in terms of sustainability (Yahaya, Siti, Montaz *et al.,* 2010:893-906). In such circumstances, the living arrangements (Yahaya *et al*., 2010) serve as an important component of the overall quality of life among older persons as they experience certain life changes such as retirement, death of a spouse and/or decline in health. In these situations, satisfaction with life among the care recipients is relative since individual perception is an important indicator but is also co-determined by other factors such as availability of finances, basic necessities of life and social support. Other studies (e.g. Kwan, Cheung & Lau, 2003) report that greater satisfaction with life is largely related to important measures of life such as home ownership, finance and health satisfaction, as reflected in the level of cleanliness and protective nature of the living environment.

## Table 5.2: Modelling female caregiver strain: Hierarchical regression analysis of caregivers’ strain in low-income study areas in Cape Town

| Variables | Model 1 | | | Model 2 | | | Model 3 | | | Model 4 | | | Model 5 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | B (SE) | t | P-Values | B (SE) | t | P-Values | B (SE) | t | P-Values | B (SE) | t | P-Values | B (SE) | t | P-Value |
| **Background and Context** | | | | | | | | | | | | | | | |
| ***Age*** | | | | | | | | | | | | | | | |
| Less than 30 (RC) | | | | | | | | | | | | | | | |
| 30 – 49 | 2.508 (1.577) | 1.59 | 0.114 | 1.785 (1.563) | 1.142 | 0.255 | 0.433 (1.590) | 0.272 | 0.786 | 0.600 (1.596) | 0.376 | 0.708 | -0.031 (1.525) | -0.020 | 0.984 |
| 50 and above | 0.193 (1.878) | 0.10 | 0.918 | -0.549 (1.869) | -0.294 | 0.769 | -1.831 (1.863) | -0.983 | 0.327 | -1.817 (1.868) | -0.973 | 0.332 | -1.565 (1.770) | -0.884 | 0.378 |
| ***Level of education*** | | | | | | | | | | | | | | | |
| Less than Grade 8 (RC) | | | | | | | | | | | | | | | |
| Grade 8 – 11 | 0.063 (1.340) | 0.05 | 0.962 | 0.021 (1.297) | 0.016 | 0.987 | 0.650 (1.288) | 0.504 | 0.615 | 0.662 (1.290) | 0.514 | 0.608 | 0.820 (1.224) | 0.670 | 0.504 |
| Grade 12 and higher | 0.550 (1.446) | 0.38 | 0.704 | 0.610 (1.401) | 0.436 | 0.664 | 1.211 (1.387) | 0.873 | 0.384 | 1.246 (1.389) | 0.897 | 0.371 | 1.036 (1.317) | 0.787 | 0.433 |
| ***Income*** | | | | | | | | | | | | | | | |
| R0 – R500 (RC) | | | | | | | | | | | | | | | |
| R501 – R1000 | -1.200 (1.770) | -0.68 | 0.499 | -1.537 (1.798) | -0.855 | 0.394 | -1.267 (1.814) | -0.698 | 0.486 | -1.358 (1.818) | -0.747 | 0.456 | -1.402 (1.712) | -0.819 | 0.414 |
| R1001 and above | -2.077 (1.652) | -1.26 | 0.21 | -2.674 (1.718) | -1.557 | 0.121 | -2.846 (1.739) | -1.637 | 0.104 | -2.793 (1.742) | -1.60 | 0.111 | -2.661 (1.641) | -1.622 | 0.107 |
| ***Marital Status*** | | | | | | | | | | | | | | | |
| Currently married (RC) | | | | | | | | | | | | | | | |
| Never married | -1.353 (1.133) | -1.19 | 0.234 | -0.734 (1.110) | -0.661 | 0.51 | -0.446 (1.102) | -0.404 | 0.687 | -0.321 (1.107) | -0.29 | 0.772 | 0.037 (1.048) | 0.035 | 0.972 |
| Formerly married | 0.340 (0.947) | 0.36 | 0.72 | 0.238 (0.925) | 0.257 | 0.797 | 0.620 (0.942) | 0.658 | 0.511 | 0.715 (0.949) | 0.753 | 0.453 | 1.061 (0.899) | 1.181 | 0.24 |
| Cohabiting | -2.763 (1.712) | -1.61 | 0.108 | -2.459 (1.710) | -1.401 | 0.152 | -1.082 (1.689) | -0.641 | 0.523 | -1.052 (1.691) | -0.622 | 0.535 | -0.310 (1.608) | -0.193 | 0.847 |
| **Population group** | | | | | | | | | | | | | | | |
| Coloured (RC) | | | | | | | | | | | | | | | |
| Black/African | 4.805 (1.808) | 2.66 | 0.009** | 3.936 (2.809) | 1.401 | 0.163 | 1.465 (2.891) | 0.507 | 0.613 | 0.445 (3.003) | 0.148 | 0.882 | -0.370 (2.907) | -0.127 | 0.899 |
| ***Employment Status*** | | | | | | | | | | | | | | | |
| Housewife (RC) | | | | | | | | | | | | | | | |
| Employed | 0.355 (1.478) | 0.24 | 0.81 | -0.204 (1.510) | -0.135 | 0.893 | 0.030 (1.473) | 0.02 | 0.984 | -0.242 (1.496) | -0.162 | 0.872 | -0.102 (1.416) | -0.072 | 0.943 |
| Unemployed | -0.465 (1.336) | -0.35 | 0.728 | -1.080 (1.377) | -0.784 | 0.434 | -0.790 (1.366) | -0.578 | 0.564 | -1.116 (1.389) | -0.803 | 0.423 | -0.800 (1.316) | -0.608 | 0.544 |

|  | Model 1 |  |  | Model 2 |  |  | Model 3 |  |  | Model 4 |  |  | Model 5 |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variables | B (SE) | t | P-Values | B (SE) | t | P-Values | B (SE) | t | P-Values | B (SE) | t | P-Values | B (SE) | t | P-Value |
| **STRESSORS** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ***Duration of care*** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Less than 1 year |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 – 2 years |  |  |  | 0.241 | 0.229 | 0.819 | 0.130 (1.043) | 0.125 | 0.901 | 0.023 (1.047) | 0.022 | 0.983 | -0.116 (0.987) | -0.811 | 0.906 |
| 3 – 5 years |  |  |  | 1.174 | 0.812 | 0.418 | 0.266 (1.463) | 0.182 | 0.856 | 0.217 (1.466) | 0.148 | 0.883 | -0.006 (1.382) | -0.004 | 0.997 |
| 6 years and above |  |  |  | 0.638 | 0.38 | 0.704 | 0.224 (1.704) | 0.131 | 0.896 | 0.145 (1.707) | 0.085 | 0.932 | 0.427 (1.609) | 0.265 | 0.791 |
| **Number of hours for care** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <10 (RC) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 – 19 |  |  |  | -0.251 | --.233 | 0.816 | -0.207 (1.100) | -0.189 | 0.851 | -0.154 (1.107) | -0.139 | 0.890 | -0.251 (1.048) | -0.239 | 0.811 |
| 20 – 29 |  |  |  | -1.189 | -0.719 | 0.473 | -0.438 (1.664) | -0.263 | 0.793 | -0.181 (1.678) | -0.108 | 0.914 | -0.183 (1.582) | -0.116 | 0.908 |
| 30 – 39 |  |  |  | -2.305 | -0.836 | 0.404 | -1.629 (2.699) | -0.604 | 0.547 | -2.192 (2.739) | -0.8 | 0.425 | -1.355 (2.586) | -0.524 | 0.601 |
| 40+ |  |  |  | -2.072 | -0.687 | 0.493 | -2.509 (2.951) | -0.85 | 0.397 | -3.122 (3.005) | -1.039 | 0.301 | -2.750 (2.832) | -0.971 | 0.333 |
| ***Activities of daily living (ADLs)*** |  |  |  | 0.247 | 1.238 | 0.217 | 0.284 (0.204) | 1.391 | 0.166 | 0.306 (0.205) | 1.491 | 0.138 | 0.259 (0.195) | 1.331 | 0.185 |
| ***IADLs*** |  |  |  | 0.12 | 0.523 | 0.602 | 0.027 (0.229) | 0.119 | 0.906 | 0.077 (0.233) | 0.33 | 0.742 | -0.045 (0.223) | -0.204 | 0.839 |
| **Chronic diseases** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| No (RC) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Yes |  |  |  | 2.733 | 3.425 | 0.001* | 1.580 (0.824) | 1.917 | 0.057 | 1.585 (0.830) | 1.91 | 0.058 | 0.110 (0.858) | 0.128 | 0.989 |
| ***Diarrhoea*** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| No (RC) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Yes |  |  |  | 0.345 | 0.405 | 0.686 | 0.749 (0.869) | 0.862 | 0.39 | 0.883 (0.878) | 1.007 | 0.316 | 1.324 (0.845) | 1.567 | 0.119 |
| **STRESS MEDIATORS** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ***Family support*** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| No (RC) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Yes |  |  |  |  |  |  | -0.285 (0.847) | -0.337 | 0.737 | -0.473 (0.860) | -0.55 | 0.583 | -0.258 (0.816) | -0.316 | 0.752 |
| ***Social Grants*** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| No (RC) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Yes |  |  |  |  |  |  | 4.487 (1.069) | 4.196 | 0.000* | 4.355 (1.084) | 4.019 | 0.000* | 3.011 (1.063) | 2.834 | 0.005 |

| Variables | Model 1 | | | Model 2 | | | Model 3 | | | Model 4 | | | Model 5 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | B (SE) | t | P-Values | B (SE) | t | P-Values | B (SE) | t | P-Values | B (SE) | t | P-Values | B (SE) | t | P-Value |
| ***Coping strategies*** | | | | | | | | | | | | | | | |
| Contact family members (RC) | | | | | | | | | | | | | | | |
| Contact neighbours | | | | | | | -0.864 (1.618) | -0.534 | 0.594 | -0.512 (1.648) | -0.316 | 0.752 | -0.621 (1.554) | -0.399 | 0.69 |
| Contact pastor | | | | | | | -0.520 (1.396) | -0.373 | 0.71 | -0.417 (1.400) | -0.298 | 0.766 | -0.133 (1.320) | -0.101 | 0.92 |
| Praying | | | | | | | -1.145 (1.192) | -0.961 | 0.338 | -1.008 (1.198) | -0.842 | 0.401 | -1.442 (1.397) | -0.560 | 0.577 |
| Contact parents | | | | | | | -1.756 (1.478) | -1.188 | 0.237 | -1.687 (1.481) | -1.139 | 0.257 | -1.442 (1.397) | -1.033 | 0.303 |
| Others | | | | | | | -0.356 (1.412) | -0.252 | 0.801 | -0.164 (1.421) | -0.116 | 0.908 | -0.602 (1.351) | -0.445 | 0.657 |
| ***Programme use*** | | | | | | | | | | | | | | | |
| No (RC) | | | | | | | | | | | | | | | |
| Yes | | | | | | | 1.766 (1.752) | 1.008 | 0.315 | 1.799 (1.754) | 1.026 | 0.307 | 1.784 (1.657) | 1.076 | 0.284 |
| **ENVIRONMENTAL** | | | | | | | | | | | | | | | |
| ***Kitchen Hygiene*** | | | | | | | | | | | | | | | |
| Good (RC) | | | | | | | | | | | | | | | |
| Bad | | | | | | | | | | 2.083 (1.913) | 1.089 | 0.278 | 1.800 (1.812) | 0.993 | 0.322 |
| ***Care recipients' physical health status*** | | | | | | | | | | | | | | | |
| Excellent (RC) | | | | | | | | | | | | | | | |
| Good | | | | | | | | | | | | | 3.464 (1.256) | 2.758 | 0.007 |
| Bad | | | | | | | | | | | | | 6.084 (1.333) | 4.564 | 0.000 |
| | ***Model 1 Adj R-square= 0.158*** | | | ***Model 2 Adj R-square= 0.25*** | | | ***Model 3 Adj R-square= 0.345*** | | | ***Model 4 Adj R-square= 0.353*** | | | ***Model 5 Adj R-square= 0.434*** | | |

In Model 5, the physical health status of care recipients was added, controlling all the constructs in Model 5. The results of Model 5 are discussed in section 5.4 below.

In Table 5.3 (ANOVA Table), the statistical significance of each of the models is presented. Each construct with its variables in the blocks (see Figure 3.2) is used to estimate a model. The ANOVA Table shows that each of the models is statistically significant (P < 0.05).

**Table 5.3: ANOVA Table for the hierarchical regression models 1 – 5**

| **Model 1** | | **Sum of Squares** | **df** | **Mean Square** | **F** | **Sig.** |
|---|---|---|---|---|---|---|
| | Regression | 782.908 | 12 | 65.242 | 2.716 | 0.002 |
| | Residual | 4179.723 | 174 | 24.021 | | |
| | Total | 4962.631 | 186 | | | |
| **Model 2** | | **Sum of Squares** | **df** | **Mean Square** | **F** | **Sig.** |
| | Regression | 1221.213 | 23 | 53.096 | 2.334 | 0.001 |
| | Residual | 3662.008 | 161 | 22.745 | | |
| | Total | 4883.222 | 184 | | | |
| **Model 3** | | **Sum of Squares** | **df** | **Mean Square** | **F** | **Sig.** |
| | Regression | 1674.303 | 31 | 54.010 | 2.553 | 0.000 |
| | Residual | 3173.192 | 150 | 21.155 | | |
| | Total | 4847.495 | 181 | | | |
| **Model 4** | | **Sum of Squares** | **df** | **Mean Square** | **F** | **Sig.** |
| | Regression | 1711.410 | 33 | 51.861 | 2.447 | 0.000 |
| | Residual | 3136.085 | 148 | 21.190 | | |
| | Total | 4847.495 | 181 | | | |
| **Model 5** | | **Sum of Squares** | **df** | **Mean Square** | **F** | **Sig.** |
| | Regression | 2103.409 | 35 | 60.097 | 3.198 | 0.000 |
| | Residual | 2744.086 | 146 | 18.795 | | |
| | Total | 4847.495 | 181 | | | |

### 5.4.1 The model of female caregiver strain

In achieving Objective 3 (to identify the predictors of caregiver strain on female caregivers in the study areas) and Objective 4 (to estimate a multidimensional model of caregiver strain in the selected low-income areas in Cape Town, South Africa), this study had five main foci. Focus 5 answered the research Question 4 (What are the predictors of caregiver burden in the study areas?). This aided in achieving Objective 4 of this study (to estimate a multidimensional model of caregiver strain in the selected low-income areas in Cape Town, South Africa), which is an overall model of female caregiver burden (proposed model of caregiver burden: Figure 3.2) in section 5.4. In Figure 3.1, the blocks representing the constructs were presented. The model was also tested in the Ghana aspect of this study and also proved to be effective.

#### ***5.4.1.1 The hierarchical multiple regression model***

In this section, the final model is presented. The results of the hierarchical multiple regression using caregiver burden as the dependent variable and 17 predictors in five blocks are shown in Table 5.4. The overall model with all of the predictors was statistically significant and explained 43.4% of the variance in caregiver burden.

The results indicated that five categories of predictors (i.e. socio-demographical factors, caregiving stress-related factors, care stress-mediator factors, environmental health factors and factors relating to the physical health of care recipients) together uniquely explained caregiver strain. Care recipients' health-related factors reflecting decline in physical health was the most significant predictor, explaining 43.4% of caregiver strain. This was followed by stress mediator-related factors, reflecting social grants as the second most significant predictor and explaining approximately 35% of female caregiver burden. The stressor-related factors accounted for 25%, and caregivers' socio-demographic factors explained about 15.8% of female caregiver burden. The findings are largely consistent with those of Conde-Sala *et al*. (2010), who described care-recipient factors as more significant predictors of caregiver burden than caregiver factors or caregiving-related factor.

**Table 5.4a: Results of hierarchical multiple regression analysis for Cape Town**

| | | | Model 5 | | | 95% C I | |
|---|---|---|---|---|---|---|---|
| Variables | R2 Change | F ratio for R2 change | B (SE) | t | P-Values | Lower | Upper |
| **BACKGROUND AND CONTEXT** | **0.158** | **2.716***** | | | | | |
| ***Age*** | | | | | | | |
| Less than 30 (RC) | | | | | | | |
| 30 – 49 | | | -0.031 (1.525) | -0.020 | 0.984 | -3.044 | 2.982 |
| -50 and above | | | -1.565 (1.770) | -0.884 | 0.378 | -5.063 | 1.982 |
| ***Level of education*** | | | | | | | |
| Less than Grade 8 (RC) | | | | | | | |
| Grade 8 – 11 | | | 0.820 (1.224) | 0.670 | 0.504 | -1.599 | 3.238 |
| Grade 12 and higher | | | 1.036 (1.317) | 0.787 | 0.433 | -1.568 | 3.639 |
| ***Income*** | | | | | | | |
| R0 – R500 (RC) | | | | | | | |
| R501 – R1000 | | | -1.402 (1.712) | -0.819 | 0.414 | -4.785 | 1.981 |
| R1001 and above | | | -2.661 (1.641) | -1.622 | 0.107 | -5.903 | 0.582 |
| ***Marital Status*** | | | | | | | |
| Currently married (RC) | | | | | | | |
| Never married | | | 0.037 (1.048) | 0.035 | 0.972 | -2.034 | 2.107 |
| Formerly married | | | 1.061 (0.899) | 1.181 | 0.240 | -0.715 | 2.837 |
| Cohabiting | | | -0.310 (1.608) | -0.193 | 0.847 | -3.487 | 2.867 |
| **Population group** | | | | | | | |
| Coloured (RC) | | | | | | | |
| Black/African | | | -0.370 (2.907) | -0.127 | 0.899 | -6.116 | 5.376 |
| ***Employment Status*** | | | | | | | |
| Housewife (RC) | | | | | | | |
| Employed | | | -0.102 (1.416) | -0.072 | 0.943 | -2.901 | 2.697 |
| Unemployed | | | -0.800 (1.316) | -0.608 | 0.544 | -3.402 | 1.801 |
| **STRESSORS** | 0.25 | 2.334** | | | | | |
| ***Duration of care*** | | | | | | | |
| Less than 1 year | | | | | | | |
| 1 – 2 years | | | -0.116 (0.987) | -0.811 | 0.906 | -2.067 | 1.834 |
| 3 – 5 years | | | -0.006 (1.382) | -0.004 | 0.997 | -2.736 | 2.735 |
| 6 years and above | | | 0.427 (1.609) | 0.265 | 0.791 | -2.753 | 3.607 |
| **Number of hours for care** | | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| <10 (RC) | | | | | | | |
| 10 –19 | | | -0.251 (1.048) | -0.239 | 0.811 | -2.321 | 1.819 |
| 20 – 29 | | | -0.183 (1.582) | -0.116 | 0.908 | -3.309 | 2.943 |
| 30 – 39 | | | -1.355 (2.586) | -0.524 | 0.601 | -6.467 | 3.757 |
| 40+ | | | -2.750 (2.832) | -0.971 | 0.333 | 8.347 | 2.847 |
| ***Activities of daily living (ADLs)*** | | | 0.259 (0.195) | 1.331 | 0.185 | -0.126 | 0.643 |
| ***IADLs*** | | | -0.045 (0.223) | -0.204 | 0.839 | -0.486 | 0.395 |
| **Chronic diseases** | | | | | | | |
| No (RC) | | | | | | | |
| Yes | | | 0.110 (0.858) | 0.128 | 0.989 | -1.586 | 1.806 |
| ***Diarrhoea*** | | | | | | | |
| No (RC) | | | | | | | |
| Yes | | | 1.324 (0.845) | 1.567 | 0.119 | -0.346 | 2.993 |
| **STRESS MEDIATORS** | 0.345 | 2.553*** | | | | | |
| ***Family support*** | | | | | | | |
| No (RC) | | | | | | | |
| Yes | | | -0.258 (0.816) | -0.316 | 0.752 | -1.871 | 1.355 |
| ***Social Grants*** | | | | | | | |
| No (RC) | | | | | | | |
| Yes | | | 3.011 (1.063) | 2.834 | 0.005* | 0.911 | 5.112 |
| ***Coping strategies*** | | | | | | | |
| Contact family members (RC) | | | | | | | |
| Contact neighbours | | | -0.621 (1.554) | -0.399 | 0.690 | -3.693 | 2.451 |
| Contact pastor | | | -0.133 (1.320) | -0.101 | 0.920 | -2.741 | 2.475 |
| Praying | | | -1.442 (1.397) | -0.560 | 0.577 | -2.868 | 1.602 |
| Contact parents | | | -1.442 (1.397) | -1.033 | 0.303 | -4.203 | 1.318 |
| Others | | | -0.602 (1.351) | -0.445 | 0.657 | -3.272 | 2.069 |
| ***Programme use*** | | | | | | | |
| No (RC) | | | | | | | |
| Yes | | | 1.784 (1.657) | 1.076 | 0.284 | -1. 491 | 5.058 |
| **ENVIRONMENTAL** | 0.353 | 2.447*** | | | | | |
| ***Kitchen Hygiene*** | | | | | | | |
| Good (RC) | | | | | | | |
| Bad | | | 1.800 (1.812) | 0.993 | 0.322 | -1.782 | 5.381 |

|  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|
| ***Toilet hygiene*** |  |  |  |  |  |  |  |
| Good (RC) |  |  |  |  |  |  |  |
| Bad |  |  | -0.854 (1.687) | -0.506 | 0.614 | -4.188 | 2.481 |
| ***Care recipients' physical health status*** | 0.434 | 3.198 |  |  |  |  |  |
| Excellent (RC) |  |  |  |  |  |  |  |
| Good |  |  | 3.464 (1.256) | 2.758 | 0.007* | 0.982 | 5.947 |
| Bad |  |  | 6.084 (1.333) | 4.564 | 0.000* | -3.450 | 8.71 |

|  |  |  |  |  |
|---|---|---|---|---|
| ***Model 1 Adj R-square= 0.158*** | ***Model 2 Adj R-square= 0.25*** | ***Model 3 Adj R-square= 0.345*** | ***Model 4 Adj R-square= 0.353*** | ***Model 5 Adj R-square= 0.434*** |

The results showed that social grants and the physical health status of care recipients were significant predictors of caregiver burden. The results further demonstrated that the caregiving burden for caregivers whose care recipients received social grants was 3.0 points higher than that of those who did not. In addition, the caregiving burden for those providing care for recipients with good and bad health was respectively 3.5 points and 6.0 points higher than those providing care for recipients with excellent health. Buttressing the effect of social support in the informal caregiving system, studies support that positive support mediates the effects in homogeneous (i.e. close families) and heterogeneous families (i.e. geographically distant male youths). For instance, in Lebanon, the increased provision of support by *close families* and the subsequent positive link between this support and no health limitations point to the importance of close, hands-on care to help older adults in maintaining good health (Webster *et al.*, 2015:155).

Model 1, the population group of caregivers, Model 2, availability of social support in the form of grants to the caregiver on behalf of care recipients, Model 3, chronic disease status of care recipient and Model 5, social support and physical health of care recipient significantly predict caregiver burden in the study settings. In Model 5, social support or grant receipt and physical health status of care recipient were the significant predictors of caregiver strain. Overall, the model explains approximately 30% of the variation in caregiver burden. The intriguing finding in this study is that physical health of care recipients and social grants are the critical predictors of caregiver burden or strain among the study population in Cape Town.

## Table 5.4b: Results of hierarchical multiple regression analysis Tamale

| | R2 Change | F ratio for R2 change | Model 4 | | | 95% C I | |
|---|---|---|---|---|---|---|---|
| **Variables** | | | **B (SE)** | **t** | **P-Values** | **Lower** | **Upper** |
| **BACKGROUND AND CONTEXT** | **0.155** | **2.657*** ** | | | | | |
| ***Age*** | | | | | | | |
| Less than 30 (RC) | | | | | | | |
| 30 – 49 | | | 1.042 (1.607) | 0.649 | 0.519 | -2.161 | 4.246 |
| -50 and above | | | 1.320 (1.051) | 1.256 | 0.213 | -0.775 | 3.416 |
| ***Level of education*** | | | | | | | |
| Less than Grade 8 (RC) | | | | | | | |
| Grade 8 – 11 | | | -1.324 (1.124) | -1.178 | 0.243 | -3.564 | 0.917 |
| Grade 12 and higher | | | 0.299 (1.059) | 0.282 | 0.779 | -1.811 | 2.409 |
| ***Income*** | | | | | | | |
| R0 – R500 (RC) | | | | | | | |
| R501 – R1000 | | | -0.347 (1.017) | -0.341 | 0.734 | -2.374 | 1.679 |
| R1001 and above | | | 0.338 (1.247) | 0.271 | 0.787 | -2.146 | 2.823 |
| ***Marital Status*** | | | | | | | |
| Currently married (RC) | | | | | | | |
| Never married | | | 1.561 (1.866) | 0.836 | 0.406 | -2.158 | 5.279 |
| Formerly married | | | -0.632 (1.026) | -0.616 | 0.540 | -2.678 | 1.413 |
| Cohabiting | | | 3.888 (1.416) | 2.745 | 0.008* | 1.065 | 6.711 |
| ***Employment Status*** | | | | | | | |
| Housewife (RC) | | | | | | | |
| Employed | | | -2.953 (1.520) | -1.942 | 0.056 | -5.983 | 0.077 |
| Unemployed | | | -0.710 (1.011) | -0.703 | 0.484 | -2.724 | 1.304 |
| **STRESSORS** | 0.203 | 2.398** | | | | | |
| ***Duration of care*** | | | | | | | |
| Less than 1 year (RC) | | | | | | | |
| 1 – 2 years | | | -0.387 (1.231) | -0.315 | 0.754 | -2.840 | 2.066 |
| 3 years and above | | | 1.694 (0.936) | 1.809 | 0.075 | -0.172 | 3.560 |
| **Number of hours for care** | | | | | | | |
| <10 (RC) | | | | | | | |
| 10 –19 | | | -1.883 (2.029) | -0.928 | 0.357 | -5.927 | 2.162 |
| 20 – 29 | | | -2.059 (1.501) | -1.372 | 0.174 | -5.052 | 0.933 |

|  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|
| 30 and above |  |  | 0.488 (1.484) | 0.328 | 0.743 | -2.471 | 3.446 |
| **Chronic diseases** |  |  |  |  |  |  |  |
| No (RC) |  |  |  |  |  |  |  |
| Yes |  |  | 0.116 (0.841) | 0.138 | 0.890 | -1.559 | 1.792 |
| ***Diarrhoea*** |  |  |  |  |  |  |  |
| No (RC) |  |  |  |  |  |  |  |
| Yes |  |  | 0.992 (0.921) | 1.077 | 0.285 | -0.844 | 2.828 |
| **STRESS MEDIATORS** | 0.191 | 1.973*** |  |  |  |  |  |
| ***Family support*** |  |  |  |  |  |  |  |
| No (RC) |  |  |  |  |  |  |  |
| Yes |  |  | 1.579 (1.459) | 1.082 | 0.283 | -1.328 | 4.486 |
| ***Coping strategies*** |  |  |  |  |  |  |  |
| Contact family members (RC) |  |  |  |  |  |  |  |
| Contact neighbours |  |  | 0.054 (0.809) | 0.066 | 0.947 | -1.558 | 1.666 |
| Contact pastor |  |  | -1.548 (1.482) | -1.044 | 0.300 | -4.503 | 1.406 |
| Praying |  |  | -1.860 (2.041) | -0.902 | 0.365 | -5.927 | 2.206 |
| Contact parents |  |  | -5.260 (3.498) | -1.504 | 0.137 | -12.280 | 1.712 |
| Others |  |  | 0.640 (1.465) | 0.437 | 0.664 | -2.280 | 3.559 |
| **ENVIRONMENTAL** | 0.228 | 2.126*** |  |  |  |  |  |
| ***Kitchen Hygiene*** |  |  |  |  |  |  |  |
| Good (RC) |  |  |  |  |  |  |  |
| Bad |  |  | -1.035 (1.063) | -0.973 | 0.334 | -3.153 | 1.084 |
| ***Toilet hygiene*** |  |  |  |  |  |  |  |
| Good (RC) |  |  |  |  |  |  |  |
| Bad |  |  | 1.868 (0.797) | 2.343 | 0.022* | 0.279 | 3.456 |

***Model 1 Adj R-square= 0.155*** ***Model 2 Adj R-square= 0.203*** ***Model 3 Adj R-square= 0. 0.191*** ***Model 4 Adj R-square= 0. 228***

The results showed that marital status and the toilet hygiene status of care recipients were statistical significant predictors of caregiver burden in Tamale. The results further demonstrated that the caregiving burden for caregivers who were cohabiting was 3.8 points higher than that of those who in the other marriage categories. In addition, the caregiving burden for those providing care in households with poor toilet hygiene was 1.8 points higher than those caregivers in households with good toilet hygiene. It is to be noted that little information is known about this finding on the link between caregiver burden and toilet hygiene in the formal caregiving literature.

In the final model (Model 4), the marital status of caregivers and toilet hygiene in the caregiving environment significantly predict caregiver burden in the study setting in Tamale. Overall, the model explains approximately 22.8% of the variation in caregiver burden. The critical finding in testing the new model in the Tamale study is that whilst physical health of care recipients and social grants are the critical predictors of caregiver burden or strain among the study population in Cape Town, marital status and the environmental health factor, toilet hygiene, are the significant predictors of caregiver burden among the study population Tamale.

## 5.5 ESTIMATED MODEL OF FEMALE CAREGIVER STRAIN IN LOW-INCOME AREAS

The stress process model (Model 5) presented in Figure 5.1 provides the model of caregiver strain in this study. The ANOVA Table (Table 5.3) shows that the proposed model (Model 5) encompassing all the constructs (background variables, environmental health, stressors, physical health of care recipients and stress mediators) is statistically significant (P = 0.000). For purposes of reference, the model in this study is named the *Conceptual framework for the understanding* of *stress process among female caregivers in low-income areas.* The variables in the respective constructs of the model of caregiver strain are presented in Table 5.3. The table shows that the model is significant (P < 0.05) in estimating burden among the caregivers sampled.

**Table 5.5: The stress process model of female caregiver strain in low-income areas**

| CONSTRUCT | VARIABLES INCLUDED | STRAIN STATUS | STATISTICAL SIGNIFICANCE (P < 0.05) |
|---|---|---|---|
| 1. Background and caregiving contexts | Age, level of education, income status, marital status, population group, employment status | Strained | 0.000 |
| 2. Stressors | Duration of care, number of hours per week, ADLs, IADLs, chronic conditions, diarrhoea | | |
| 3. Stress mediators<br>• Resources | Programme use, coping strategies family support, social grants | | |
| 4. Environmental health status<br>• Home hygiene status | Kitchen hygiene | | |
| 5. Health outcomes | Physical health | | |

The constructs in the stress process model of female caregiver strain in low-income areas were presented in the form of a General Linear Model (GLM). Figure 5.1 presents the stress process model from this study.

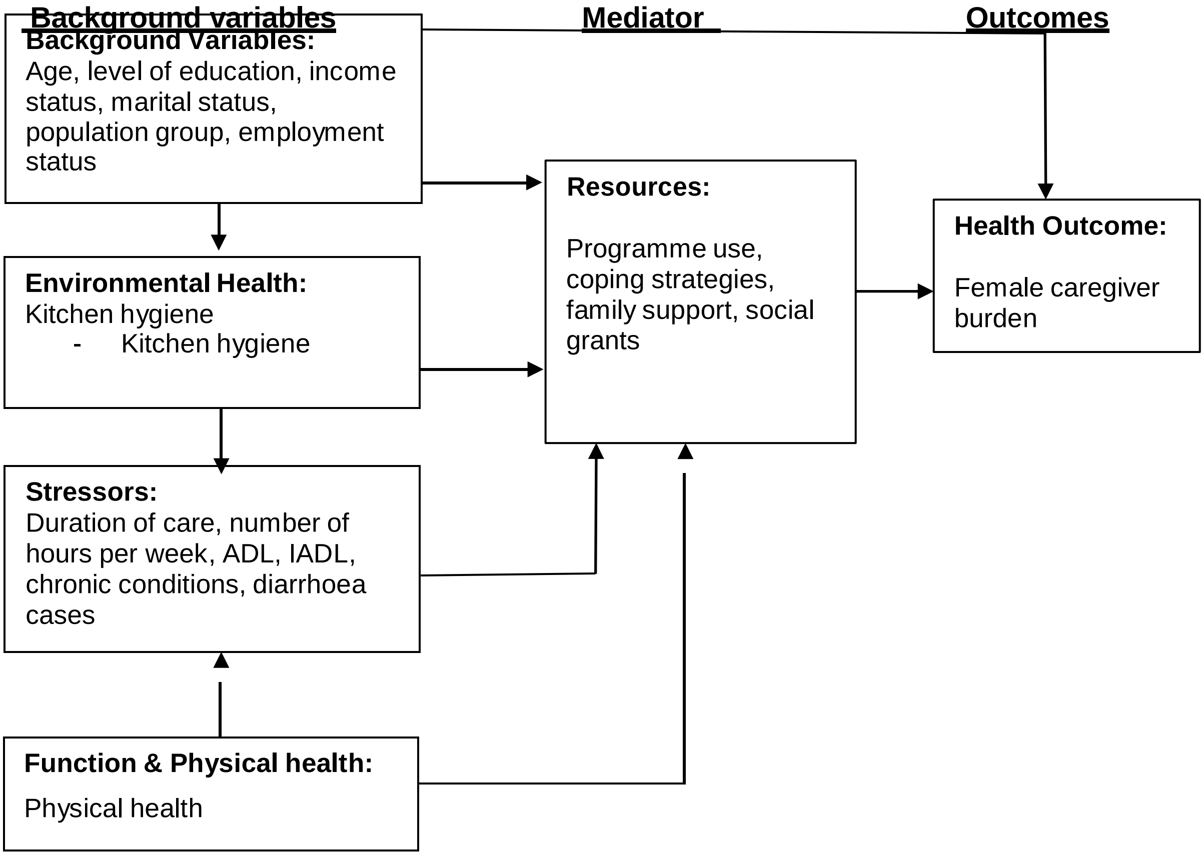

**Figure 5.1: Conceptual framework for the understanding of stress process among female caregivers in low-income areas: Proposed model**

Figure 5.1 presents the final model of the stress process among the sampled female caregivers in the selected low-income areas of an urban centre in Cape Town, South Africa. For elaboration of the relationships in the presented stress process model and its consistency with the Stress Process Model presented by Pearlin *et al*. (1990), see section 2.4.

# CHAPTER 6

# CONCLUSIONS AND RECOMMENDATIONS

## 6.1 INTRODUCTION

This chapter presents the conclusions drawn from the study, a summary of the key findings and recommendations. The conclusions are drawn mainly from the results of the Chi-square tests and the modelling of caregiver burden assessed in the study. The results of the analyses of the relationships between the constructs provided a critical basis for making recommendations for both policy and future research.

## 6.2 SUMMARY OF THE STUDY

In this section, a summary of the univariate analysis, the results of the Chi-square tests, the caregiver burden assessment and the results of the modelling of caregiver burden are presented.

In the sample from the main study site, Cape Town, it was found that female caregivers were older in age compared with the Tamale sample, with maximum ages of 77 years and 67 years for Cape Town and Tamale respectively. All participants were females drawn from low-income areas. In relation to population group, the sample from Cape Town was 50% black and 50% coloured, whilst the Tamale sample was entirely black. A large proportion of the female caregivers were in the age group 40 – 49 years. Regarding the level of income, a key finding of this study was that caregivers were in the low-income group in both Cape Town and Tamale. The majority of caregivers in Cape Town and Tamale earned less than R1001 per month. This finding justified the selection of the study areas (low-income areas). Whilst the caregivers did not find the care tasks financially rewarding, the majority of the caregivers in both the Cape Town and Tamale samples found themselves in care tasks as a full-time job, providing more than 40 hours of care per week. For length of time in caregiving in both Cape Town and Tamale, many of the caregivers were in medium- to long-term caregiving (in the care task for more than three years).

Almost all the caregivers in Cape Town (98.4%) did not use any form of caregiving programme, with barely 2% reporting the use of caregiving programmes to ameliorate the effects of caregiving. For functional dependence, there was a high dependence for activities of daily living in which caregivers provided assistance [3.5 (SD = 1.94)], and the mean number of needs for instrumental activities of daily living was 1.62 (SD = 1.60) in Cape Town.

In terms of relationships between constructs, the study found associations between the socio-demographic variables of the female caregivers, environmental health and the physical health of the care recipients. In addition, the research discovered predictors of caregiver burden in low-income settings. The results show a statistically significant association between number of hours spent in providing care and the physical health ($P = 0.000$) of the care recipients in Cape Town. Also, a positive relationship was established between care duration and physical health of care recipients. Further, the results showed a strong association between the number of years spent in caregiving and the physical health of the care recipient ($P = 0.000$) in the Cape Town sample. These findings are consistent with the work of Kim (2012:846-855) regarding predictors of caregiver burden in caregivers of individuals with dementia, which reported activities of daily living and/or instrumental activities of daily living, number of hours spent in caregiving per week, use of coping strategies, co-residence, spousal status and caregiver gender as significant ($P < 0.05$) factors of caregiver burden. This implies that impaired function of the care recipient and care demands predict caregiver burden in this study.

In terms of chronic conditions of the care recipients in the study sample, the study found no positive or significant relationship between the demographic characteristics of female caregivers (age, education, income and employment status), with the exception of marital status and health (chronic condition status) of care recipients. This suggests that the marital status of female caregivers is an important predictor of caregiver burden in the management of care recipients' chronic conditions.

The results further showed statistically significant relationship between the socio- demographic characteristics (age, education, population group and income status) of female caregivers and the diarrhoea status of care recipients. The female caregivers' age, education level, population group and income status were associated with reported cases of diarrhoea in the low-income study areas in Cape Town. These associations suggest that age, cultural difference and education and income levels are important factors regarding experience of infectious or non-infectious diarrhoea in care recipients in the caregiving environment. These findings are supported by studies of the experiences of caregiver burden among Asian- American caregivers (Li, 2004), as well as research regarding caregiver strain among black and white daughter caregivers (Mui, 1992) and a meta-analysis of ethnic differences in stressors, resources and psychological outcomes of family caregiving (Pinquart & Sorensen, 2005:90-106). In the selected areas for this study, this was not the case for marital status, probably because marital status determines transmission of infection.

The study showed a statistically significant relationship between environmental health (kitchen hygiene and toilet hygiene) of the home and the physical health of care recipients. In Chapter 4, it is shown that majority of the caregivers have a basic education and, therefore, read and understand basic health information. This means that these female caregivers are a hygiene-sensitive population. Thus, one would expect that in these homes, if the kitchen were clean, the toilet too would be hygienically clean. The study also found no statistically significant association between the environmental health (kitchen and toilet hygiene) status and reported diarrhoea cases among the care recipients. However, it is expected that with a bad home hygiene status, especially if the toilet is not kept clean and regularly disinfected, the care recipients would be exposed to bacterial infections.

For the assessment of caregiver burden, eight caregiver strain or burden inventory questions evaluated female caregiver burden. The caregiver burden was computed using a composite score with a mean after a reliability test (Cronbach alpha = 0.819). With a mean caregiver burden score of 27.04 (SD = 5.46) and minimum and maximum scores of 13 and 40 respectively, it was established that caregiver burden occurred in the study sample in Cape Town (See Chapter 5). The larger mean burden score of 30.39 (see Table 4.1b) in Tamale suggests a higher burden among caregivers in Tamale, than in Cape Town. The lack of any form of social grants to caregivers in Tamale may have resulted in the higher burden level when compared with Cape Town, where caregivers reportedly received some form of social grants on behalf of their care recipients.

Five models were run to find a robust model of caregiver burden in the study areas (Figure 5.1). The final or overall model (Model 5) is the proposed model of female caregiver burden (Figure 5.1) with the set of predictors that were statistically significant and explained approximately 43.4% of the variance in caregiver burden (Adjusted R-squared = 43.4%, $P < 0.05$). Considering the four models that preceded Model 5, the results showed that in the models, the variation in caregiver burden (see Chapter 5) was explained by significant variables of the constructs. These variations were as follows: 15.8% for Model 1, 25% for Model 2, 34.5% for Model 3 and 35.3% for Model 4. In each of the models, there were additional predictors of female caregiver burden with the exception of Model 4 in which the hypothesised construct (environmental health – kitchen hygiene and toilet hygiene) did not show any effect but slightly increased the variation in caregiver burden from 34.5% to 35.3%. The effect of environmental health factors could be nested in key socio-economic factors such as education and income status. Model 1, the population group of caregivers, Model 2, availability of social support in the form of grants, Model 3, chronic disease status of care recipients and Model 5, social support and physical health of care recipients all significantly predict caregiver burden in the study settings in Cape Town.

In Model 5, only two variables: (i) social grant receipt as a form of safety net; and (ii) physical health status of care recipient predicted female caregiver strain and explained the largest variation (approximately 43.4%) in caregiver strain. Categorically, only these two variables made a difference in caregiver strain in the study areas in Cape Town. Contrary to this finding, in Tamale only marital status and environmental factor (toilet hygiene) made a difference in caregiving burden. By implication, the model predict that intervention geared towards improving caregiver health, should target improving the physical health of care recipients and the social support access among informal caregivers in the communities in Cape Town. Whereas in Tamale, interventions should be tailored towards improving environmental living conditions of caregiving such as toilet hygiene, as well as encouraging marriage among the adult population.

## 6.3 CONCLUSIONS

This study was based on the variables included in the Stress Process Model (Pearlin *et al*., 1990). The key components of the theory are (i) the background variables and the context of stress, (ii) the stressors, (iii) the stress mediators, and (iv) the outcomes.

The findings of this study addressed all the components of the above-mentioned theory. The Stress Process Model of Pearlin *et al*. (1990) studied stress resulting from caring for dementia patients, but this study broadened the condition of interest to investigate the general physical health of the care recipients and the environmental health of the caregiving situation. The method employed for this study also brought about varied explanations for certain components of the theory. The main conclusions of this study are based on the objectives of the study. These key conclusions are described below.

A preliminary analysis using the Chi-square test (bivariate analysis) for environmental factors such as kitchen hygiene and toilet hygiene status found statistically significant relationship between these factors and the physical health of care recipients. This finding suffices for a conclusion that there is an association between environmental health status and the physical health of care recipients. This was supported by the results of the Pearson correlation analysis. However, further analysis at multivariate level (hierarchical regression) found that these factors were not significant. This implies that there is a weak or no association between these environmental factors and the physical health of care recipients. These contrary findings could be due to confounding factors for which there was no control in the hierarchical regression analysis. Associations between these environmental factors and the physical health of the care recipients were expected since educated and income earners live in hygienically cleaner and more protected environments.

Secondly, with reference to toilet hygiene status, 91.5% of caregivers with poor toilet hygiene conditions reported physically healthy care recipients, whilst about 8.5% of them reported care recipients with bad physical health. For the female caregivers with good toilet hygiene conditions, about 82% reported care recipients with good physical health and about 18% with bad physical health. This is an expected finding since it is expected that there would be positive relationships among these variables.

In the case of diarrhoea status of care recipients, there is no statistically significant association between environmental health and diarrhoeal status of the care recipient at both bivariate level (Chi-square test) and hierarchical regression analysis (multivariate level). For caregivers with bad kitchen hygiene, a large proportion (68.2%) did not report any care recipient with experience of diarrhoea in the four weeks preceding the survey. Similarly, a large proportion (66%) of the caregivers with poor toilet hygiene reported that no care recipient experienced diarrhoea in the same period. However, large proportions of caregivers reported care recipients with diarrhoea (>30%) for both toilet and kitchen hygiene. It was expected that there would be positive associations between environmental health and diarrhoea status. This is because poor hygiene conditions could provide a breeding ground for both bacterial and viral causes of diarrhoea.

For reported diarrhoea cases, the socio-demographic factors of female caregivers including age, population group, educational level and income status determined the care recipients experience of diarrhoea. Also, for physical health of the care recipients, the caregivers' variables that are significant are age, population group, educational level, income and employment status. These findings buttress the important relationship between the socio-demographic variables (attributes) of female caregivers and the health of care recipients. Moreover, this study found that the female caregivers in the study areas were burdened. However, information on who else cares for the care recipient is acknowledged as a limitation in this study. The services of a second major caregiver could help ameliorate the negative effect of caregiving on the main caregiver. The study further reports that the physical health of care recipients and social grant that female caregivers received on behalf of their care recipients are critical factors in the development of caregiver burden. It was also reported that more Black/African female caregivers when compared with the Coloured population sampled.

Overall, this study concludes that the major predictors of female caregiver burden in the main sample in Cape Town, South Africa were physical health of care recipients and social grants. This is shown in the final model (Model 5) in Chapter 5 in which all other variables were controlled. Physical health of care recipients and social grant receipt were the only significant predictors of female caregiver burden or strain among the study population, whilst marital status and toilet hygiene significantly predicted burden among caregivers in Tamale, Ghana. In future models, inclusion of hygiene practices (such as the use of toilet soap and cleaning detergents)

## 6.4 RECOMMENDATIONS

In South Africa, community caregiver programmes played a significant role in supplementing and redressing the effects of the protracted apartheid regime and in supporting the reform of the health system in the periods preceding the demise of the apartheid system. Although the post-apartheid government has made tremendous strides to provide enabling environments and funding, many non-profit organisations operating in the community are responsible for basic care delivery and the tasks of enrolling, training and managing community caregivers. The non-profit organisations assist in integrating the services that the caregivers render within existing health and social structures (Van Pletzen & MacGregor, 2013:5-6). In these health and economic structures, it is imperative to identify the predictors of caregiver strain, particularly among caregivers in the low-income, urban areas in Cape Town, South Africa. Recognition of these predictors could aid in improving the National Department of Health policy guidelines, launched in 2010 to address problems and concerns of caregivers, by placing the female caregivers at the heart of national health and social policy planning in South Africa, Ghana and similar communities across the globe. It is against this backdrop that the following recommendations are made:

- In a country where community caregivers form a force and play significant roles in supplementing and redressing the effects of racial segregation, as well as supporting the reform of the health system, the plight of the caregivers must take centre stage in national health and development policies.
- Although the post-apartheid government made efforts to provide enabling environments and funding, many non-profit organisations operating in the community still take on basic care delivery and management responsibility of community caregivers. This calls on the central government to increase collaboration between government and non-profit organisations.
- The government should recognise the increasing importance of the physical health of care recipients and increase the amount of the social grants to the caregivers since this

could improve the circumstances of both the caregiver and the care recipients. It could aid in improving the standard of living of caregivers in these households.

- With female caregivers being placed at the heart of national health and social policy planning, female caregivers could live healthier lives and provide quality care to their care recipients in South Africa, Ghana and in similar communities in other parts of Africa.

## 6.5 CONTRIBUTIONS OF THIS STUDY

The major contributions of this study to the existing literature in the study of the caregiver burden are discussed below.

First and foremost, this study found that the main predictors of female caregiver burden in the selected study areas in Cape Town, South Africa are *physical health* of care recipients and *social grant receipt*.

Also, this study discovered that availability of social grants in the caregiving process makes a difference in burden appraisal of caregivers. Social grants relieve the financial strain on female caregivers and, therefore, this has a buffering effect in the stress appraisal. Thus, this study postulates that Pearlin’s Stress Process Model would have been a more robust model if it had included physical health and social grants as important factors in the study of caregiver burden and stress process. Social grants as government interventions should be made accessible to all caregivers in such low-income settings. In addition, the government should provide caregiving training to all caregivers in order for them to provide quality care at home and to reduce care burden.

Most of the studies of caregiver burden and stress process models only reported care burden on caregivers of patients with one particular chronic condition such as Alzheimer’s disease, dementia or problem behaviour. Unlike the Pearlin’s Stress Process Model tested in this study that only investigated dementia patients, this study included the general physical health status of the care recipients . Inclusion of general physical health in the Pearlin’s model could have rendered it more encompassing.

Furthermore, this study also found that environmental health factors are not statistically significant factors at multivariate level. However, at the bivariate level, this study found them to be important variables in the study of stress process in low-income settings.Thus, inclusion of these factors in the Stress Process Model by Pearlin *et al*. (1990) could have improved the model. The work of Lazarus and Folkman (1984) has given this postulation an impetus by buttressing the importance of caregivers' appraisal of the caregiving environment.

Section 6.5 presents what is already known in relation to the topic, the main contributions of this study and policy implications for clinicians and clients.

## 6.5 CONTRIBUTIONS OF THIS STUDY AND POLICY IMPLICATIONS

### Existing literature

- In general, caregivers of patients with chronic diseases such as dementia and cancer usually suffer from caregiver burden and are thus vulnerable to various health problems.
- Caregiver burden has been widely accepted in the medical fraternity by clinicians as a critical indicator of the negative impact of caregiving on the physical and mental health of the caregiver, including psychological and emotional health.
- In the health literature, the major causative factors of caregiver burden include the socio-demographical attributes of both the caregiver and care-recipient, the nature of the disease of the patient and the perceived stress emanating from the caregiving role.
- A female in the household often assumes the major caregiver role.

### Contributions of this study

- This study found that the major predictors of female caregiver burden in the selected study areas in Cape Town are care recipients' *physical health* and care recipients *social grant receipt* by the caregiver.
- Caregivers in this study suffered from a moderate level of caregiver burden, and they spent more time on caregiving compared with previous study findings.
- This study included the physical health status of the care recipients, unlike previous models such as those of Pearlin *et al*., (1990) and Lazarus and Folkman (1984) that only investigated condition-specific caregiver stress. In addition, this study reported strain/burden among female caregivers.
- This work found the five main factors (socio-demographical factors, stress-related factors, stress mediator-related factors, environmental health-related factors and care recipient health-related factors as important factors in the stress process among caregivers in the selected low-income areas.
- The results showed small to moderate positive relationship between female caregiver burden and certain predictors, that is, age, education level, income, ADLs, chronic diseases, social grants, kitchen hygiene and physical health of care recipients in the various constructs. However, results showed moderately negative relationship between caregiver strain and other predictors, that is, population group, employment

status and number of hours in care.

- The number of hours of care, ADLs and IADLs and chronic diseases of care recipient were all significantly related to caregiving burden.
- Specific predictors included care recipient-related factors (impairment of ADLSs, chronic diseases and physical health status) and caregiving contextual-related factors (number of hours of caregiving, receipt of social grants).

**Implications for policy**

- This study proposed basic information on the appropriate priority of caregiver plight and policy recommendation to include pragmatic caregiver intervention in national health policy as an impetus to create more effective interventions by both policy-makers and clinicians for clients.
- The findings suggest that clinicians comprehensively assess the health problems of the caregiver by using a multidimensional approach to enable them to provide better interventions to help relieve caregiver burden.
- This study provided a basis for researchers to identify prediction of caregiver burden based on primary data.

## 6.6 FUTURE RESEARCH

Future research in similar settings should disaggregate and compare burden on female caregivers of physically strong with physically ill care recipients. Future models of stress process should include physical health of care recipients and social grant receipt as important predictors of caregiver burden. The inclusion of these variables would aid in improving the robustness of caregiving burden models.

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# APPENDICES

## APPENDIX A: INFORMED CONSENT FORM

Cape Peninsula
University of Technology

*(To be read out by researcher/fieldworker before the beginning of the interview. One copy of the form to be left with the respondent and one copy to be signed by the respondent and kept by the researcher/fieldworker.)*

My name is .........................................................(fieldworker). I am doing research on a project entitled '*The relationship between environmental health status, the attributes of female caregivers and the health status of care recipients in low-income areas in Cape Town, South Africa*' under the Tanganyika Consulting & Research company on behalf of the research team.

Main Researcher: **Mr Yakubu A. Yakubu** (Student number: 212300563)
Contact details: Cell: 074 625 5555/0732593949
Email: ysquare2001@gmail.com

Study supervisor: **Prof De Wet Schutte,** Cape Peninsula University of Technology
Contact details: Tel: 021 460 3194
Cell: 082 784 8368
Email: schutted@cput.ac.za

**Purpose of the research:** To assess the coping strategies and the burden of the caregiving role on females in selected townships in Cape Town. The results could be used by policy-makers for future policies to improve the standard of living of female caregivers in South Africa.

**Risks in taking part:** The research team does *not* anticipate any risk in participation. Confidentiality of the respondents is assured.

**Compensation:** There is no financial compensation for the respondents. Participation is completely voluntary.

Thank you for agreeing to take part in the project. I would like to emphasise:

- **Your participation is entirely voluntary.**
- **You are free to refuse to answer any question.**
- **You are free to withdraw at any time.**

The interview will be kept strictly confidential and will be available only to members of the research team. Excerpts from the interview may be made part of the final research report. To give your consent for the following information to be used in the report, please tick one of the options below.

| | |
|---|---|
| Your name, position and organisation | |
| Your position and organisation | |
| Your organisation or type of organisation *(please specify)* | |
| None of the above | |

Please sign this form to confirm that I have read the contents to you and you have agreed to participate.

(1) ---------------------------------------- (Signed) ------------------------ (Date) ------------------------

---------------------------------------- (Participant/Respondent)

(2) ---------------------------------------- (Researcher/Fieldworker)

---------------------------------------- (Signed) ------------------------ (Date). ------------------------

Thank you.

## APPENDIX B: THE STUDY INSTRUMENT: QUESTIONNAIRE

Personal Identification Number (PIN)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | | | | | | | 1 |

1. What is your age in years?

.......................................... 2

2. With which population group do you associate yourself with most?

| | | |
|---|---|---|
| Black/African | 1 | |
| Coloured | 2 | |
| Indian | 3 | |
| White | 4 | |
| Other: Please specify ………………............................ | 5 | 3 |

3. What is your highest level of education?

| | | |
|---|---|---|
| No schooling | 1 | |
| Grade 1 – 6 | 2 | |
| Grade 7/Std. 5 | 3 | |
| Grade 8 – 11 | 4 | |
| Grade 12/Matric | 5 | |
| Matric with diploma/degree | 6 | |
| Higher | 7 | |
| Other: ................................ | 8 | 4 |

4. What is your marital status?

| | | |
|---|---|---|
| Single/Never married | 1 | |
| Separated | 2 | |
| Divorced | 3 | |
| Widowed | 4 | |
| Living together/Cohabitation | 5 | |
| Married (Traditional) | 6 | |
| Married (Official) | 7 | |
| Other: Please specify .................................... | 8 | 5 |

5. What is your current job/employment status?

| | | |
|---|---|---|
| Employed/full time | 1 | |
| Employed/temporary | 2 | |
| Unemployed | 3 | |
| Not economically active/looking for job | 4 | |
| Not economically active/not looking for job | 5 | |
| Housewife | 6 | 6 |

6. Which of the income categories best describes your gross income in Rands per week?

| Rand per week | | Rand per month | | Rand per year | | |
|---|---|---|---|---|---|---|
| 115 | = | 500 | = | 6000 | 1 | |
| 116 – 232 | = | 501 – 1000 | = | 6001 – 12000 | 2 | |
| 233 – 465 | = | 1001 – 2000 | = | 12001 – 24000 | 3 | |
| 466 – 697 | = | 2001 – 3000 | = | 24001 – 36000 | 4 | |
| 698 – 930 | = | 3001 – 4000 | = | 36001 – 48000 | 5 | |
| 931 – 1162 | = | 4001 – 5000 | = | 48001 – 60000 | 6 | |
| 1163+ | = | 5001+ | = | 60001+ | 7 | 7 |

7. Indicate the number of children under 5 years old and the number of elderly persons 60 years and older in your care.

| Years | Number | |
|---|---|---|
| <1 | ............ | 8 |
| 1 – 4 | ............ | 9 |
| Total children <5 | ............ | 10 |
| 60 – 69 | ............ | 11 |
| >70 | ............ | 12 |
| Total elderly | ............ | 13 |
| Total CR | ............ | 14 |

8. How long have you been caregiving?

| | | |
|---|---|---|
| Less than 6 months | 1 | |
| 6 – 11 months | 2 | |
| 1 – 2 years | 3 | |
| 3 – 5 years | 4 | |
| 6 – 10 years | 5 | |
| More than 10 years | 6 | 15 |

9. Do you use any community/municipal/government sponsored programme (e.g. lunch provided for the needy) in your caregiver role?

| | | |
|---|---|---|
| Yes | 1 | |
| No | 2 | 16 |

10. How many hours per week do you spend in this caring role?

| | | |
|---|---|---|
| Less than 10 hrs. | 1 | |
| 10 – 19 hrs. | 2 | |
| 20 – 29 hrs. | 3 | |
| 30 – 39 hrs. | 4 | |
| 40+ hrs. | 5 | 17 |

11. How often do you feel that because of the time you spend on the care of your care recipient (CR), you do not have enough time for yourself?

| | | |
|---|---|---|
| Very often | 1 | |
| Often | 2 | |
| Seldom | 3 | |
| Never | 4 | 18 |

12.1 Do any of your CRs need support in their daily activities?

| | | |
|---|---|---|
| Yes | 1 | |
| No | 2 | 19 |

12.2 Do any of your CRs need support in their daily activities?

| Activity | Yes | No | |
|---|---|---|---|
| 12.2.1 Washing their clothes | 1 | 2 | 20 |
| 12.2.2 Cooking | 1 | 2 | 21 |
| 12.2.3 Feeding | 1 | 2 | 22 |
| 12.2.4 Dressing after bathing | 1 | 2 | 23 |
| 12.2.5 Bathing | 1 | 2 | 24 |

13.1 Do any of your CRs need equipment for their daily activities e.g. wheelchair, spectacles?

| | | |
|---|---|---|
| Yes | 1 | |
| No | 2 | 25 |

13.2 Do any of your CRs need support with the following?

| Activity | Yes | No | |
|---|---|---|---|
| 13.2.1 Wheel chair | 1 | 2 | 26 |
| 13.2.2 Spectacles | 1 | 2 | 27 |
| 13.2.3 Walking stick | 1 | 2 | 28 |
| 13.2.4 Transport | 1 | 2 | 29 |

14.1 Being a caregiver, is there anything you find difficult to do?

| | | |
|---|---|---|
| Yes | 1 | |
| No | 2 | 30 |

14.2 Do you find any of the following difficult?

| Activity | Yes | No | |
|---|---|---|---|
| 14.2.1 Bathing and dressing CR | 1 | 2 | 31 |
| 14.2.2 Washing CR clothes | 1 | 2 | 32 |
| 14.2.3 Feeding CR. | 1 | 2 | 33 |
| 14.2.4 General supervision | 1 | 2 | 34 |

15. Indicate whether you **strongly agree**, **agree**, **disagree** or **strongly disagree** with the following statements. If you cannot make a decision, you may record **neutral**.

| **Statement** | **Strongly agree** | **Agree** | **Neutral** | **Disagree** | **Strongly disagree** | |
|---|---|---|---|---|---|---|
| I do not have as much privacy as I would like because of my caregiving role**.** | 1 | 2 | 3 | 4 | 5 | 35 |
| My care recipients (CRs) disturb my sleep. | 1 | 2 | 3 | 4 | 5 | 36 |
| Caregiving is a physical strain. | 1 | 2 | 3 | 4 | 5 | 37 |
| I had to change my life as a result of my caregiving. | 1 | 2 | 3 | 4 | 5 | 38 |
| My caregiving is a financial strain. | 1 | 2 | 3 | 4 | 5 | 39 |
| I do not have enough money to take care of my CR/s. | 1 | 2 | 3 | 4 | 5 | 40 |
| My social life has suffered because of my caregiving role. | 1 | 2 | 3 | 4 | 5 | 41 |
| I am in control of my life. | 1 | 2 | 3 | 4 | 5 | 42 |

16. How would you rate your knowledge of caregiving?

| | |
|---|---|
| Excellent | 1 |
| Good | 2 |
| Fair | 3 |
| Bad | 4 |

43

17. Where did you learn caregiving? (Please refer to response codes)

..........................................................................................................................

44

18.1 Do you experience stress?

| | |
|---|---|
| Yes | 1 |
| No | 2 |

45

18.2 If yes, how do you mostly overcome it? (Please refer to response codes)

..........................................................................................................................

46

19. If something goes wrong when caring for the CR/s, what do you usually do? (Please refer to response codes)

19.1 . ............................................................................................................. 47
19.2 ............................................................................................................... 48
19.3 ............................................................................................................... 49

20.1 Do you receive support from family for your CR/s?

| | |
|---|---|
| Yes | 1 |
| No | 2 |

50

20.2 If yes, is the support adequate?

| | | |
|---|---|---|
| Yes | 1 | |
| No | 2 | 51 |

21.1 Do you receive any financial support for your work as a caregiver?

| | | |
|---|---|---|
| Yes | 1 | |
| No | 2 | 52 |

21.2 If yes, how much in rands?

| Rand per week | | Rand per month | | Rand per year | | |
|---|---|---|---|---|---|---|
| 115 | = | 500 | = | 6000 | 1 | |
| 116 – 232 | = | 501 – 1000 | = | 6001 – 12000 | 2 | |
| 233 – 465 | = | 1001 – 2000 | = | 12001 – 24000 | 3 | |
| 466 – 697 | = | 2001 – 3000 | = | 24001 – 36000 | 4 | |
| 698 – 930 | = | 3001 – 4000 | = | 36001 – 48000 | 5 | |
| 931 – 1162 | = | 4001 – 5000 | = | 48001 – 60000 | 6 | |
| 1163+ | = | 5001+ | = | 60001+ | 7 | 53 |

22.1 Do you receive social grants for any/all of your CRs?

| | | |
|---|---|---|
| Yes | 1 | |
| No | 2 | 54 |

22.2 If yes, for how many children and elderly persons?

| | | |
|---|---|---|
| Children | ……. | |
| Elderly | ……. | 55 |

23. How would you describe your overall physical health?

| | | |
|---|---|---|
| Excellent | 1 | |
| Good | 2 | |
| Fair | 3 | |
| Bad | 4 | 56 |

24.1 Do you have a chronic condition?

| | | |
|---|---|---|
| Yes | 1 | |
| No | 2 | 57 |

24.2 If yes to Question 24.1 above, are you taking medication?

| | | |
|---|---|---|
| Yes | 1 | |
| No | 2 | 58 |

25.1 Can you rely on your family to help you when needed?

| | | |
|---|---|---|
| Yes | 1 | |
| No | 2 | 53 |

25.2 Have you made use of their help in the past?

| | | |
|---|---|---|
| Yes | 1 | |
| No | 2 | 59 |

26.1 Can you rely on members in your community?

| | | |
|---|---|---|
| Yes | 1 | |
| No | 2 | 60 |

26.2 Have you made use of their help in the past?

| | | |
|---|---|---|
| Yes | 1 | |
| No | 2 | 61 |

26.3 Did they help?

| | | |
|---|---|---|
| Yes | 1 | |
| No | 2 | 62 |

27. Please state the gender, age and relationship to you of each CR/HH?
(Please refer to response codes)

| Age | M | F | Relationship | | | |
|---|---|---|---|---|---|---|
| 27.1 ......... | 1 | 2 | ........................................... | 63 | 64 | 65 |
| 27.2 ......... | 1 | 2 | ........................................... | 66 | 67 | 68 |
| 27.3 ......... | 1 | 2 | ........................................... | 69 | 70 | 71 |
| 27.4 ......... | 1 | 2 | ........................................... | 72 | 73 | 74 |
| 27.5 ......... | 1 | 2 | ........................................... | 75 | 76 | 77 |
| 27.6 ......... | 1 | 2 | ........................................... | 78 | 79 | 80 |
| 27.7 ......... | 1 | 2 | ........................................... | 81 | 82 | 83 |
| 27.8 ......... | 1 | 2 | ........................................... | 84 | 85 | 86 |
| 27.9 ......... | 1 | 2 | ........................................... | 87 | 88 | 89 |
| 27.10 ....... | 1 | 2 | ........................................... | 90 | 91 | 92 |
| 27.11 …… | Total household | | | 93 | | |

28.1 Have your CRs reported any illness in the past month?

| | | |
|---|---|---|
| Yes | 1 | |
| No | 2 | 94 |

28.2 Have your CRs reported diarrhoea in the past month?

| | | |
|---|---|---|
| Yes | 1 | |
| No | 2 | |
| Do not know | 3 | 95 |

29.1 Do any of your CRs have a chronic condition?

| | | |
|---|---|---|
| Yes | 1 | |
| No | 2 | 96 |

29.2 If yes to Question 29.1 above, is the CR taking medication?

| | | |
|---|---|---|
| Yes | 1 | |
| No | 2 | |
| Do not know | 3 | 97 |

30. Which meals do you usually cook for the CRs?

| Meal | Yes | No | |
|---|---|---|---|
| 30.1 Breakfast | 1 | 2 | 98 |
| 30.2 Lunch | 1 | 2 | 99 |
| 30.3 Supper | 1 | 2 | 100 |

31. How would you describe the physical health of your CRs?

| | | |
|---|---|---|
| Very good | 1 | |
| Good | 2 | |
| Bad | 3 | |
| Very bad | 4 | 101 |

32. Do you have the Road-To-Health card for children?

| | | |
|---|---|---|
| Yes | 1 | |
| No | 2 | 102 |

33.1 How many people usually sleep in the house during the night?

………………………….. 103

33.2 How many bedrooms are there in the house?

| | | |
|---|---|---|
| 1 Bedroom | 1 | |
| 2 Bedrooms | 2 | |
| 3 Bedrooms | 3 | |
| 4+ Bedrooms | 4 | 104 |

34. How would you describe the hygiene status of the following?

| Status of: | Very bad | Bad | Good | Very Good | |
|---|---|---|---|---|---|
| 34.1 Yard | 1 | 2 | 3 | 4 | 105 |
| 34.2 Living area/lounge | 1 | 2 | 3 | 4 | 106 |
| 34.3 Kitchen | 1 | 2 | 3 | 4 | 107 |
| 34.4 Toilet | 1 | 2 | 3 | 4 | 108 |

**Interviewer to observe and complete**

35. What is the main type of toilet facility used by the household?

| Type of toilet facility | | |
|---|---|---|
| Flush toilet | 1 | |
| Chemical toilet | 2 | |
| VIP/Pit toilet with ventilation | 3 | |
| Bucket toilet | 4 | |
| Other Please specify ……………................... | 5 | 109 |

**Interviewer to observe and complete**

36.1 Do you have an uninterrupted water supply in the house?

| | | |
|---|---|---|
| Yes | 1 | |
| No | 2 | 110 |

36.2 If yes, what is the ***main*** water supply?

| | | |
|---|---|---|
| Municipal/Government | 1 | |
| Borehole | 2 | |
| Water vendor | 3 | |
| Water tanker | 4 | |
| Other: Please specify……………………… | 5 | 111 |

37.1 Is your household's refuse removed weekly?

| | | |
|---|---|---|
| Yes | 1 | |
| No | 2 | 112 |

37.2 If yes, which is the *main* means of refuse removal?

| | | |
|---|---|---|
| Local authority/company weekly | 1 | |
| Local authority/company less frequently | 2 | |
| Communal refuse dump/own dump | 3 | |
| Other<br>Please specify …………………………… | 4 | 113 |

38. What type of energy do you ***mainly*** use for cooking, heating and lighting?

| **Energy** | **Electricity** | **Gas** | **Paraffin** | **Wood** | **Other: Please specify** | |
|---|---|---|---|---|---|---|
| 38.1 Cooking | 1 | 2 | 3 | 4 | ……………………………… | 114 |
| 38.2 Heating | 1 | 2 | 3 | 4 | ……………………………… | 115 |
| 38.3 Lighting | 1 | 2 | 3 | 4 | ……………………………… | 116 |

39. How safe do you feel in the house?

| | | |
|---|---|---|
| Very safe | 1 | |
| Safe | 2 | |
| Unsafe | 3 | |
| Very unsafe | 4 | 117 |

**Question 19: Response codes**
1= Take a walk, 2 = Contact family, 3 = Contact neighbours, 4 = Contact pastor,
5 = Pray over it, 6 = Contact CRs parent, 7 = other

**Question 27: Response codes**
1= Niece, 2 = Cousin, 3 = Brother, 4 = Sister, 5 = Grandson, 6 = Granddaughter, 7 = other

**Thank you for your cooperation.**

## APPENDIX C: ETHICAL CLEARANCE

Cape Peninsula
University of Technology

**Enquiries:**
Dr M Opperman
Faculty of Applied Sciences
Chair: Ethics Committee
Tel: (021) 953-8677
Email: oppermanm@cput.ac.za

17 September 2013

Mr A Yakubu
Environmental and Occupational Studies
Cape Peninsula University of Technology

Dear Mr Yakubu

**The relation between environmental health status, female caregivers' attributes and the health status of care recipients in low income areas in Cape Town, South Africa** (Ref. 07/2013)

The Ethics Committee has considered your application for Ethics approval for the above project and would like to advise that approval for the project is hereby granted.

We wish you every success with your research.

Kind regards

Dr Maretha Opperman (RD (SA))