

REGIONAL INSTITUTE FOR POPULATION STUDIES (RIPS)

UNIVERSITY OF GHANA

**SOCIAL SUPPORT AND PERCEIVED VULNERABILITY TO FLOODING AMONG
URBAN POOR DWELLERS IN ACCRA**

BY

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ACCEPTANCE

Accepted by the Faculty of Social Sciences, University of Ghana, Legon in partial fulfilment of the requirement for the degree of MPhil POPULATION STUDIES.

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DECLARATION

I hereby declare that this work is the result of my own research undertaken under supervision except for references made to other people's work and which have been duly acknowledged. Also, this work has neither in part nor whole been presented for another degree elsewhere.



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DEDICATION

I dedicate this work to my lovely husband Elliot and son Ellis for their love, care and support throughout this period.



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ABSTRACT

The study aimed to examine the association between social support and perceived vulnerability to flooding in two flood prone communities in the Accra Metropolitan Assembly. Jamestown which is made up largely of Ga indigenes and Agbogbloshie an ethnically heterogeneous community were selected.

Purposive and random sampling techniques were employed during the study. Purposive sampling was used in selecting respondents who have had some flooding experience. Random sampling on the other hand was employed in selecting non flood victims. Four focus groups in each of the two communities comprising of a minimum of six people were selected making a sample size of fifty three. Discussions with respondents were audio taped in their local language and later transcribed into English language with assistance of an expert. The transcribed scripts were further coded and themes that emerged were later analysed using the thematic network approach.

The identified flooding types in both communities were drainage problem floods and flash floods. Drainage problem flood were however the predominant type of flooding in Agbogbloshie. Children, women, elderly and the poor populations were groups identified to be most vulnerable to flooding. From the research it was revealed that, respondents in Jamestown do not receive any social support in the aftermath of flooding. However, the two forms of social support existed in Agbogbloshie, although very negligible. The only formal support available was stones from the Assemblyman. Informal support from friends and religious bodies was also available for flood victims in Agbogbloshie. To reduce the incidence of drainage problem floods in the study area, authorities should help construct proper drainage facilities in Agbogbloshie, since they suffer most as a result of poor drainage systems. Tangible formal support in monetary terms should be provided to flood victims to help them recover from this sudden distressing event.

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CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Climate change is any change in climate over time, whether due to natural variability or as a result of human activities (Intergovernmental Panel on Climate Change, IPCC, 2007). A disaster is defined as a basic disruption of the social context within which individuals and groups function (Fritz, 1961 p.651, cited in Kaniasty and Norris, 2004). According to Olorunfemi (2011), flooding is one of the most hazardous, frequent and widespread of all natural disasters throughout the world.

Floods are sometimes considered as unavoidable (Wong and Zhao, 2000) because they are perceived as an act of nature; hence the activities of humans are highly neglected as reasons for their occurrences (Kanaisty and Norris, 2004). However, Adanu (2004) and the Government of Canada (2010) posited that although there are natural forces, such as volcanic shifting and solar activities that have contributed to climate change, the recent warming has been largely attributed to human activities such as burning of fossil fuels that has greatly led to the increased levels of atmospheric carbon dioxide which is largely the prevailing force of climate change and for that matter flooding.

Kundzewics *et al.* (2007) also predicted flood risk to be on the rise since the frequency and intensity of precipitation events are very likely to increase. Flooding is a community level event rather than an individual affair because its impact is not limited to an individual in a community.

However, the severity of flood disaster varies from person to person depending on the magnitude of the flood and their social vulnerability to flooding (Wong and Zhao, 2000).

Vulnerability has been defined by Bakker (2009) as the characteristics of a person or group in terms of their capacity to anticipate, cope with, resist, and recover from the impact of a natural disaster for example flooding. However, vulnerability is not restricted to only the physical environment but also social, economic and political circumstances (Bakker, 2009).

O'Brien *et al.* (2003) have developed the concept further. According to these authors, vulnerability has three distinct features. Firstly, vulnerability is inherently a differential concept. That is, it varies across physical space, among and within social groups. Secondly, vulnerability is scale-dependent which varies depending on the unit of analysis. That is, it may vary among and within countries, regions, community or individuals and lastly, vulnerability is dynamic, and may change over time depending on structures and conditions available.

Research has found that urban poor dwellers are most vulnerable to flooding as compared to other urban dwellers (Shardul, 2005; Okyere *et al.*, 2012). However, the aftermath of these floods usually results in both direct tangible impacts such as physical damage to houses, infrastructure, sweeping away properties, bridges etc., and indirect tangible impacts for instance, traffic disruption and loss of industrial production (Messner *et al.*, 2007). There are also other social impacts such as loss of life, financial loss, epidemics, loss of community cohesion, etc., which are difficult to quantify in the actual cost of damage and recovery (Adedeji *et al.*, 2012). Aside the aforementioned impacts, Lui *et al.* (2006) and Feng *et al.* (2007) found that these floods do not only cause economic and property losses but also impacts their victims both physical and psychological injuries. As a result, people with flooding experience have been found to show more fear and are more worried about their lives and properties as compared with those with no experience of flooding (Shaw *et al.*, n.d.).

Research has further shown that flood victims in developed countries have a higher amount of wealth and depend on their insurers; however victims in developing countries depend on social support from families, religious bodies and the government to alleviate their losses (Aboagye, 2012). Crichton (2007) confirms that about ninety three per cent of home owners in Britain have private insurance cover.

Kanaisty and Norris (2004) have defined social support as a network of family, friends, colleagues, and other acquaintances a person can turn to, whether in times of crisis or simply for fun and entertainment. Social support has been considered to be an important factor influencing an individual's reaction to stress. These networks provide an important linkage between the individual and their social structures, functioning as resources for information, material compensation and physical help (Armah *et al.*, 2010). However, some form of distinction exists.

Formal social support refers to those support received from professional social systems, for instance from the government, the National Disaster Management Organization (NADMO), non- profit organisations, medical systems while informal social support is received from either friends, colleagues, family and relatives during the aftermath of the floods.

1.2 Statement of the problem

Climate change increases the vulnerability of the urban poor throughout Africa (Action Aid International, 2006) especially changes in rainfall due to its exposure to severe weather events and its over reliance on natural resources (O'Brien, 2003). The devastating effect of floods has been felt worldwide for a very long period of time. It causes about one-third of all deaths, one-third of all injuries and one-third of all damage from natural disasters (Askew, 1999, cited in Adedeji *et al.*, 2012).

According to Jonkman (2005), every year floods cause enormous damage all over the world, and in the last decade of the twentieth century, about hundred thousand people were killed as a result of floods and about 1.4 billion people were severely affected. Over ninety percent of all deaths from natural disasters are estimated to be water related (Allianz *et al.*, 2006) and ninety nine percent of these deaths during 1975-2001 amounted to over two hundred and fifty thousand people who are from low income countries (Crichton, 2008).

Sub-Saharan Africa is deemed to be most vulnerable to climate variability including flooding in the world (Armah *et al.*, 2010). According to the British Broadcasting Corporation (BBC, 2007), the then United States spokeswoman, Byrs stated that in 2007 about five hundred thousand (500,000) people were affected by floods in twelve countries in Africa. Some of the poorest countries in sub saharan Africa for example Mali, Niger and Burkina Faso were severely affected.

A report from NADMO (2010) suggests that although Ghana is vulnerable to certain disasters, flooding has become the major disaster the country has suffered in recent years especially in its urban areas and more seriously affected is Accra, the country's capital. Flooding is second to

epidemics that have claimed a lot of human lives in the country. Between 1968 and 2011, floods have killed about three hundred people and affected about 3.81 million people (Okyere *et al.*, 2012).

Rain *et al.* (2011), however, predicts that this may even become a greater problem with a rise in sea levels. According to Haines *et al.* (2006), populations in low lying coastal regions are at higher risk of being affected by rise in sea levels, especially in countries where economic conditions do not allow construction of sea defences. Most coastal parts of Ghana are experiencing sea level rise. Meanwhile Chan and Parker (1996) stated that development is said to be progressively threatened and weakened with severe disasters such as flooding. Okyere *et al.* (2012) also asserts that recurrent flooding can thwart the aim of a country to achieve its Millennium Development Goals (MDGs).

The aftermath of these floods often result in loss of human lives, physical and psychological injuries, displacing population, causing financial loss to both the victim and the larger economy. It also causes epidemics through the spread of waste flood water and the accumulation of water creating conducive breeding grounds for mosquitoes and the blockage of drainage channels (Feng *et al.*, 2007; Messner *et al.*, 2007; Adedeji, 2012). This is already a critical health and environmental issue particularly in poor areas (Rain *et al.*, 2011).

Available literature has found urban poor dwellers who live in poor infrastructure and housing conditions to be more vulnerable to flooding as compared to other urban dwellers (Shardul, 2005; Okyere, 2012). Adanu (2004) affirms that in Ghana this problem can be attributed to the lack of accessible roads to homes and shops in poor urban areas. This researcher stated that these roads are usually occupied with buildings and kiosks. Olorunfemi and Raheem (2007)

found that these urban poor dwellers are faced with serious challenges in moving to less dangerous sites, due to their low income and lack of financial reserves. This constrains the urban poor dwellers to choose well-located, safer sites coupled with their want to be located closer to income-earning opportunities.

Although some studies have been conducted on the perennial flooding in Ghana (Aboagye, 2012; Arthur and Arthur, 2011), there is still paucity of knowledge on the relationship between social support and victims perceived vulnerability to flooding. It is therefore necessary to undertake this study, because the findings will go a long way to inform policy makers on what policies to formulate to assist vulnerable urban dwellers.

1.3 Research questions

- what do people in urban poor communities perceive as causes of flooding?
- how do people in urban poor communities perceive their vulnerability to flooding?
- how do persons affected by flooding vary depending on their demographic and socio-economic characteristics?
- what is the relationship between the type of support received and perceived vulnerability to flooding?

1.4 Rationale

The subject of climate change may seem neglected, compared with such pressing challenges as poverty, disease, malnutrition and economic stagnation. Meanwhile, as pointed out by the

Institute of Local Government Studies and International Water Management Institute (ILGS and IWMI, 2012), climate change evokes a lot of negative impacts including water scarcity, food shortages, malnutrition, increased disease vectors, increased storm surges and frequent flooding. Furthermore, the efficiency of resource investments and the achievement of many development goals can be affected by climate change (Shardul, 2005).

It has been established that climate change is closely linked to flooding (Okyere *et al.*, 2012), and flooding has been found to be one of the most hazardous, frequent and widespread of all natural disasters throughout the world (Olorunfemi, 2011). However, there has been very scanty information on flooding in the Sahel which Ghana forms a part as compared to drought as suggested by Tschahert *et al.* (2009). Okyere *et al.* (2012) also stated that, although natural disasters such as tsunamis, cyclones and earthquakes do not usually strike in Ghana, persistent floods alone have had severe impacts on the living standard of people particularly the urban poor. This makes flooding an important subject of study, particularly in Third World countries such as Ghana where consistent and appropriate research on it has been lacking.

What is more disturbing is that while there is great public consensus of the warming of the entire continent by the end of the 21st century, projections on precipitation extremes remain a great challenge. Notwithstanding, the latest available prediction for Africa depicts wetter trends along the coasts especially along the Gulf of Guinea (Tshakert *et al.*, 2009). The researchers' further state that not having a glimpse of what the future has for us makes any attempt to come out with possible mitigation strategies extremely difficult. This is again where the aim of undertaking this research becomes very important. However, research has found that, urban poor dwellers who live in poor infrastructure and housing conditions are more vulnerable to flooding as compared to other urban dwellers (Shardul, 2005; Okyere, 2012).

Meanwhile, the resilience of urban poor dwellers to disasters such as flooding is very low (NADMO, 2010). This makes one expect that urban poor dwellers with long flooding experience would move out from flood-prone areas. However, Olorunfemi (2011) states that these people lack any financial capital to enable them relocate to any safer site. There is, therefore, a great need to investigate how these flood victims cope and will cope in a future full of uncertainties which makes it incumbent to undertake this study whose main objective is to understand how flood victims perceive their vulnerability to flooding and social support available to help them bounce back to live.

Again, the study of the vulnerability of humans to climate change and variability, and their ability to adapt to changes in the climate, is quite a new field of research (ILGS and IWMI, 2012). As Olorunfemi (2011) citing Zevenbergen (2008) points out, up to date, the challenge of addressing urban floods and reducing urban flood vulnerability has received little attention. However, Rain *et al.* (2011) assert that increased flooding is associated with an increase in disease and sanitation, a problem in urban poor communities. Haines and Patz (2004) state that damages caused by flooding to the home environment as well as its consequent economic loss have led to an increase in psychiatric disorder such as anxiety and depression. However, Feng *et al.* (2007) posits that social support plays a vital role in reducing the effect of the sudden distressing experience for flood victims. The current research communities have been identified as most affected by floods (Adanu, 2004; Sam Jr., 2009). There is, therefore, the motivation to find out whether these flood victims receive any form of support to help them cope with the stress evoked on them as a result of flooding. Understanding the relationship between vulnerability to flooding and available social support can be a very effective tool in developing measures to address this problem. Hence, the relevance of this study cannot be over-emphasised.

1.5 Objectives of the study

The main objective of this study is to understand the relationship between social support and perceived vulnerability to flooding among urban poor dwellers.

The study specifically seeks to:

- i. identify people's perceived causes of flooding in the study area
- ii. identify demographic and socio-economic factors that influence perceived vulnerability to flooding
- iii. identify how persons affected by flooding vary depending on their demographic and socio-economic factors
- iv. understand the relationship between the type of support received and perceived vulnerability to flooding; and
- v. make recommendations based on the findings.

1.6 Organization of the study

This research presents the findings from two flood-prone communities in the Accra Metropolis. The first chapter discusses the introduction which consists of the background of the study, statement of the problem, research questions to be answered, the rationale as well as the objectives of the study. The second chapter focuses on review of literature. The reviewed literature pertains to issues that relate to the research work by defining some key terms, overview of flooding, climate change impacts on flooding, history of floods in Accra, incidence of flood risk in Accra, coping strategies, vulnerability to flooding and social support in the context of flooding. The third chapter presents the methodology used in the study which is mainly a qualitative study. It consists of the profile of the study area, which are James Town

and Agboglobshie, source of data, sampling techniques employed in the study, sample size, how the coding frame was developed, and data analysis.

Chapter four examines the background characteristics of respondents, in terms of age and sex, educational attainment and occupation of respondents. Chapter five presents analysis on perceptions of vulnerability to flooding including types, causes and effects of flooding. This chapter also includes persons most affected by flooding, communities' adaptation and coping mechanisms to flooding as well as the prevailing social support. These were used to develop a thematic network on perceived vulnerability to flooding. Chapter six focuses on the interpretation of perceived vulnerability to flooding as well as social support. And finally chapter seven which is the last chapter offers the summary, conclusion on the major findings and recommendations for policy intervention.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

A considerable number of studies have been conducted on the perennial flooding in Ghana (Karley, 2009; Aboagye, 2012). None from the reviewed literature has focused on the influence of social support on perceptions of vulnerability to flooding. This section reviews the body of literature on social support and flooding.

2.2 Definition of key terms

According to the Intergovernmental Panel on Climate Change (IPCC, 2007) climate change is any change in climate over time, whether due to natural variability or as a result of human activities.

Vulnerability according to Bakker (2009) is defined as the characteristics of a person, group or society in terms of their capacity to anticipate, cope with, resist, and recover from the impact of a natural disaster for example flooding.

Chow (1956) describes flooding as a relatively high flow, which overflows the natural channel, provided for runoff (Cited in Afeku, 2005).

Social support is a network of family, friends, colleagues, and other acquaintances a person can turn to, whether in times of crisis or simply for fun and entertainment (Kaniasty and Norris, 2004).

2.3 Overview of flooding

Flooding as already defined can be likened to a situation where water temporarily covers land outside its normal boundaries. Floods are among the world's most frequent and damaging types of disaster and annually affect the lives of millions all over the globe (Bakker, 2009). According to Brooks (2003), among all the other climatic hazards, floods are particularly problematic, as their magnitude is mediated by anthropogenic factors such as land use.

Flooding is a unique phenomenon, and several types of them can be distinguished. Jonkman (2005) has classified floods into three types which are river floods, drainage-problem floods and flash floods. River floods are also called collapsed embankment floods caused by flooding of the river outside its regular boundaries, often as a result of high precipitation levels. Drainage-problem floods are also called soaked floods, which occurs as a result of usual drainage systems not able to handle high precipitation levels. Flash floods usually occur as a result of short and extreme precipitation with high intensity which surrounds small areas of land.

Heavy rain is the prime initiator of flooding worldwide (Few, 2003; Bakker, 2009). However, the magnitude, speed of onset and period of the flood are influenced by factors such as landscape, vegetation and soil, river diversion and urbanization (Chan and Parker, 1996; Aboagye, 2012). Yet not all floods are necessarily caused by an excess of rainfall. For instance, Dabara (2012) found that lack of drainage facilities was the major cause of floods in Gombe in Nigeria. Rivers can overflow due to snowmelt or because of the periodic release of water stored behind or within glaciers, or a rise in sea levels can lead to flooding of the surrounding land (Bakker, 2009; Rain *et al.*, 2011).

Floods can be generated by humans, such as encroaching on lands across water courses and other human activities such as damming (Karley 2009; Okyere *et al.*, 2012). Opening of dam gates as well as damming water bodies aggravates the prevalence of flooding. For irrigation purposes local people sometimes block drains or dam water bodies to form ponds causing flooding in certain areas (Sam Jr., 2009). Inadequate infrastructure such as drainage system unable to cope with the immense soil erosion to the extent that gutters are choked up causes flooding (Sam Jr., 2009). Creation of artificial lakes such as the lake created along the Volta River to develop the Akosombo Hydro Electricity Power Plant during the 1960s can be a cause of flooding. However, in Ghana the main causes of flooding are intense rainfall run-off, dam-burst and tidal waves (Karley, 2009).

The recognised health effects in the aftermath of flooding include physical injuries, diarrhoea diseases, and increased incidence of respiratory infection (Haines and Patz, 2004; Kouadio *et al.*, 2012). However, these health effects are mediated by factors such as malnutrition, crowding of populations and overgrowth of molds in the aftermath of the floods. There is also an increase in psychiatric disorder such as anxiety and depression due to damages to the home environment as well as great economic losses (Haines and Patz, 2004). However, the health impact may differ depending upon the severity of the floods, the time of day the floods occurred and location in the floodplain among other factors (Brooks, 2003). The findings of Wong and Zhao (2000) confirm this because it was revealed in their study that the low number of casualties experienced by flood victims was due to the fact that water flooded the villages gradually, permitting villagers to escape to safer places. Urban floods spread disease and destroy houses, assets and income (Oluronfemi, 2011). It can also result in direct economic and property losses and deaths across the world (Liu *et al.*, 2006).

The impact of flooding is not solely of negative consequence. Shaw (2006) found that some people make economic gains from the otherwise damaging floods therefore bringing new opportunities of livelihoods. For instance in the aftermath of flooding, manual workers are contracted to remove waste and raise walls which have been destroyed by the floods. Floods irrigate and bring new fertile soil for agriculture, wash out salts and toxins from soils and bring fishes to fishermen. Streams and rivers carry floodwaters which help maintain water quality and quantity hence providing habitat for plants, aquatic organisms, and wildlife (Few, 2003; Meyer *et al.*, 2003; Shaw, 2006).

According to Few (2003), although there are several negative impacts of flooding, some positive sides can also be outlined. This explains why most times residents of developing countries take an indecisive attitude towards flood events and blame it on government policies rather than taking action to prevent them. However, Adanu (2004) found that some people living in urban poor communities ignore the threat flood poses on their lives once they have a place to lay their heads.

2.4 Climate change impact on flooding

Climate change has emerged as one of the most challenging problems facing the world in the 21st century that involves alterations in weather variables such as precipitation, temperature and wind (IPCC, 2007; O'Brien and Leichenko, 2000). There has been indicative and gathering evidence of climatic instability with a global rise in the frequency and intensity of extreme weather events such as floods. Jonkman (2005) asserted that global warming as a result of climate change is associated with effects such as sea level rise, more intensive precipitation and higher river discharges which may increase the frequency and extent of flooding on a global scale.

Most studies have found a direct correlation between climate change and flooding hence with continuing climate change, the frequency and severity of flooding will be widespread in the near future (Crichton, 2008; Okyere *et al.*, 2012). Olorunfemi (2011) said that the weather is now less predictable and the rains are more uncertain as a result of climate change. A typical example is the fluctuations in the levels of Lake Victoria in Africa since the 1980s.

According to the Environmental Protection Agency (EPA, 2013) the earth's average temperature has risen by 1.4 °F over the past century, and is projected to rise another 2 - 11.5 °F over the next hundred years. This rise in global temperatures has been accompanied by changes in weather and climate. However many places are already seeing changes in rainfall, resulting in more floods and this trend will continue into the future unless dramatic mitigation measures are adopted. Yet, even with greatest efforts in climate change mitigation, some climatic impacts are inevitable (Olorunfemi, 2011). Humans are largely responsible for these changes in climate (EPA, 2013) and yet are the very same recipients of the consequences climate change evokes.

Crichton (2008) stated that more than ten million people within Europe are at risk of extreme floods due to climate change. However, it is predicted that in the next century, flood hazards in Britain will increase significantly with the number of people at risk increasing from 1.6 million to between 2.3 million and 3.6 million by 2080 as reported from the 'Foresight' programme of the Office of Science and Technology (Crichton, 2008). According to Coninx and Bachus (2006), a study on trends in precipitation and weather extremes in Belgium showed considerable evidence of increasing winter precipitation intensity since the 1980s by up to 20% as a result of climate change.

Haines and Patz (2004) asserted that although globally people are experiencing impacts of climate change, populations in developing countries are more vulnerable particularly to

flooding due to factors such as weak public health infrastructure, higher economic damage, habitation of flood-prone areas and coastal zones. Africa has been identified as one of the most vulnerable places in the world due to climate change and climate variability (IPCC, 2007) perhaps due to, among other factors, its overdependence on economic activities based on natural resources that are sensitive to climate and climate variability (O' Brien *et al.*, 2003). However, Adiku and Stone (1995) have explained that the observed increasing annual and extreme rainfall events in many locations in Ghana can be attributed to global climate change.

2.5 A brief history of floods in Ghana

According to Okyere *et al.* (2012), flooding is a nationwide cancer that affects most people from the north to the southern parts of the country. In 1999, rainfall-induced storm caused coastal floods that led to many deaths across the coastal parts of Ghana, with Accra very much affected. This was the highest recorded flood since 1936 which took seventeen lives and disrupted commercial and industrial activities (Sam Jr., 2009).

In June 2001, according to Karley (2009), torrential rain caused widespread flooding in the entire country and particularly affected were residents of Accra. The floods left eleven people dead and over hundred thousand people were displaced. In 2005, Ghana was one of the countries in West Africa that experienced severe flooding. According to Karley (2009), about three hundred and fifty thousand people were reported to be severely affected during this flooding incidence and several hundred hectares of farmlands were completely destroyed. In 2007, between the months of August and September, the three northern regions experienced massive floods ever to occur in the history of the country due to a heavy downpour which led to the loss of fifty-six lives, displaced about three hundred and thirty three thousand vulnerable persons and destroyed sixty nine bridges and other key infrastructure (Armah *et al.*, 2010; Arthur and Arthur, 2012; Okyere *et al.*, 2012). According to Aboagye *et al.* (2013) fifty five

communities in the Central Gonja District located in the Northern Region of Ghana were affected by floods in 2010, displacing about seven hundred thousand people, and destroying a lot of acres of farmlands. The Northern Region experienced another flooding in the year 2012 where two people were reported dead and about twenty-five thousand people were displaced (Arthur and Arthur, 2011).

Although these floods last only a short period of time it brings long term suffering to its victims and the entire economy (Okyere *et al.*, 2012). This is due to the fact that aside from property damage, flood waters are capable of spreading pollution from solid waste, industrial waste, and sewage; all of which are important health and environmental issues (Rain *et al.*, 2011).

2.6 Incidence of flood risk in Accra

Flooding is a serious environmental issue affecting Accra the capital of Ghana (Rain *et al.*, 2011). Vulnerability to flooding in Accra dates back to the late 1930s (Aboagye, 2012). The relocation of the national capital to Accra, coupled with its spatial expansion and the growth in human population has increased flood risks in Accra (Aboagye, 2012).

O'Brien *et al.* (2003), states that political factors play a role in a population's vulnerability. As a result of poor planning policies with regard to land use, areas that used to restrain the impact of rain and runoff water and designated as flood-prone have been removed and replaced with the erection of concrete structures (Nyarko, 2000; Arthur and Arthur, 2011).

According to Aboagye (2012), even after political independence, factors such as unstable political system, little institutional commitment to vulnerability reduction coupled with continued disregard for land use planning among others have made some populations more vulnerable to flooding. Perennial flooding in Accra has become a phenomenon of every rainy

season which is usually between the months of May, June and July (Karley, 2009; NADMO, 2010; Arthur and Arthur, 2011).

Karley (2009) explains that the main causes of flooding in Ghana are intense rainfall run-off, dam-burst and tidal waves. Heavy torrential rains, however, have been the major cause of flooding in Ghana just as it is globally (Aboagye, 2012; Okyere *et al.*, 2012). However, Adanu (2004) mentions that the Odaw River which has its channels choked by refuse is another cause of floods in Accra. James Town which is one of the research communities is severely affected by this river in addition to some communities such as Alajo, Avenor and parts of Abossey Okai. Flooding in Accra is further exacerbated by poor planning of the residential areas, inadequate or no information on early flood warning signs, poor drainage systems and dam burst (Okyere *et al.*, 2012).

The flood incidence of July, 1995 caused thirteen deaths, destroyed major roads and rendered thousands of people homeless in Accra (Aboagye, 2012). However, Agbogbloshie was one of the communities that was severely affected by this flood (Sam Jr., 2009). In June 2001, a heavy rainfall caused widespread flooding in Accra where eleven people were reported dead and displaced over one hundred thousand (Karley, 2009). Significant flood events have been recorded in 1973, 1986, 1995, 1999, 2001, and 2002 (Rain *et al.*, 2011).

It has been reported that during 1995-2007, more than ten incidents of flooding have been recorded in Accra that caused a lot of havoc to its inhabitants, with each successive flood having a greater impact than the previous (Aboagye, 2012). On 26th October 2011, a heavy downpour caused severe flooding in Accra which caused massive destruction. The impact of this flood was huge because the preparedness for the flood was very low. This was because the victims deemed that period as an off period for floods. It was reported that about forty three

thousand people were estimated to be affected, seventeen thousand displaced, fourteen dead and the destruction major infrastructure (United Nations Environment Programme (UNEP)/Office for the Coordination of Humanitarian Affairs (OCHA), 2011. Although much effort has been put in place in mitigating floods, human vulnerability to flooding continues to be on the rise each year in Accra.

2.7 Coping strategies

Every community has varying perceptions on disaster and therefore develop different mitigation efforts to overcome the floods. The ability to survive the impact of the disaster is, however, different depending on the characteristics of the individual (Adedeji *et al.*, 2012). According to Arthur and Arthur (2011), most flood victims usually relocate to stay with friends and family members but return when the floods subside. A study by Aboagye (2012) reveals that many households in Accra mitigate their risk to floods by decreasing the flood impacts while increasing their social and economic resources. According to Aboagye (2012) most households in the Alajo community have adopted some structural mitigation activities such as protecting their fence and reinforcing windows and doors. Adoption of these mitigation efforts is consistent with work done by Adedeji *et al.* (2012) in Nigeria which found that local people have many ways of dealing with the negative impacts of floods. They construct their houses with materials that can minimize the impacts of floods and get involved in economic diversification such as engaging in more than a single job. In addition to this, the research by Shaw *et al.* (n.d.) indicated that some households adopt certain mitigation measures including having an elevated construction and/or shielding the house with water barriers and moving transportation vehicles to safe area.

Regarding the issue of insurance as a coping strategy, Aboagye (2012) found that the majority of households in Alajo in Ghana have little or no knowledge of the existing insurance policy.

Although few others admitted they knew of flood insurance programmes, they could not afford them which confirm the survey conducted by Shaw *et al.* (n.d.) which suggested that over 99 % of the households did not purchase flood insurance for their houses and cars. The findings of Chan and Parker (1996) in Malaysia suggest that poor households especially Muslim households resort more to prayer as a coping mechanism.

2.8 Vulnerability to flooding

According to IPCC (2001), the growing body of literature on vulnerability contains a bewildering array of terms such as exposure, sensitivity, resilience, adaptation, adaptive capacity, risk, hazard, coping strategies and so on. However, different researchers define vulnerability differently though some of these common themes are mentioned. This current study draws on the definition of vulnerability according to Bakker (2009) as the characteristics of a person or group in terms of their capacity to anticipate, cope with, resist, and recover from the impact of a natural disaster for example flooding. However, vulnerability has been found not to be limited only to the physical environment but also social, economic, ecological and political circumstances (Bakker, 2009; Aboagye, 2012).

There are two forms of vulnerability according to Brooks (2003). These are biophysical and social vulnerability. Biophysical vulnerability suggests both a physical component connected with hazard and a biological component connected with the properties of the affected system that act to intensify or lessen the damage resulting from the hazard. It is crucial to state that biophysical vulnerability is the external state of the system such as the frequency of flood, the location in a floodplain, etc. Social vulnerability according to O'Brien *et al.* (2003) is viewed as an inherent property of a system as a result of some internal characteristics such as economic, social, demographic and political.

Bakker (2009) further states that the vulnerability of any physical, structural or socio-economic system to a natural hazard such as flooding is its probability of being damaged destroyed or lost. Moreover, the degree of vulnerability to the hazard does not completely depend on the proximity of the source of the hazard but also social factor plays a crucial role in determining a person's vulnerability (Cutter *et al.*, 2000). Their study revealed that "the most biophysically vulnerable places do not always spatially intersect with the most vulnerable populations" (p1).

Being vulnerable is not static but a dynamic process that may change over time depending upon social, economic and institutional contexts which can alter with time. For example, increasing social resilience capacity would theoretically minimize a system's vulnerability (Few, 2003; Bakker, 2009). On the other hand, social inequality manifests the individual's ability to resist and recover from disasters such as flooding (Yang *et al.*, n.d.).

The basic causes of human vulnerability include a lack of access to resources, information and knowledge, limited access to political power, cultural beliefs and customs (Blaikie *et al.*, 1994). According to Chambers (2006), two sides of vulnerability can be discussed: one is the external side which includes shocks, stress and risk which individuals or households are subject to, and the other is the internal side of vulnerability which is defenceless, meaning a lack of response tools to mitigate losses.

2.9 The concept of social capital

The concept of social capital has been variously defined by a number of theorists (Portes 1998; Schuller *et al.*, 2000). However, it is Putnam's (1993) definition which has captured the most attention. Putnam defined social capital in terms of both networks (high levels of participation in local community groupings) and supports (high levels of trust and reciprocity amongst community members). Two forms of social capital are distinguished in Putnam's later analysis:

'bonding' and 'bridging' social capital (Gittel and Vidal, 1998; Putnam 2000). Bonding social capital refers to intra-community ties among people with similar goals and interests, and bridging social capital refers to ties across social groups, such as ties between communities and public services.

The social environment includes the groups to which we belong, the neighbourhoods in which we live, the organization of our workplaces, and the policies we create to order our lives. The physical and social environments do not exist independently of each other; any environment is the result of the continuing interaction between natural and man-made components, social processes, and the relationships between individuals and groups (Yen and Syme, 1999).

2.10 Social support in the context of flooding

Although at times there are warning signs about flooding, most flooding strikes quite suddenly which severely affect its victims. Floods cause injury, result in great physical destruction in the natural and built environments and sometimes death (Kaniasty and Norris, 2004). Flooding evokes a number of other stressors that challenge victims for a very long time and inflicts a long lasting trauma on them. Social support has been considered to reduce the effect of the sudden distressing experience for flood victims. On the other hand, when there is no adequate social support system either before, during or after a flooding incident, there is the likelihood that the vulnerability of the system (human) will increase greatly which will consequently impact negatively on their wellbeing (ILGS, IWMI 2012).

A study by Feng *et al.* (2007) shows that flood victims who had a higher degree of social support experienced a significantly lower post-traumatic stress disorder compared to their

opposite counterparts. More to this point, Yang *et al.* (n.d.) asserts that more social support and high disposable income speeds up the recovery rate of households.

Research has found that in the aftermath of natural disasters, the nature of help received can be likened to a pyramid with its broad base being helped from informal support systems like family members, followed by support from friends and religious bodies and its narrow apex being the aid provided by formal agencies and professional services. Households that receive informal social support from families, friends, and colleagues, etc., recover faster than those that receive formal support from government (Yang *et al.*, n.d.). Adedeji (2012) attributes this to the immediate response from family as compared to the relatively slower time required acquiring benefits or compensation from the formal sectors such as the government or some non-profit organisations.

A study by Okyere *et al.* (2010) confirms that the actions taken by government and other non-profit organizations in responding to the aftermath of floods is often ineffective. Some communities that were affected by the 2007-2012 floods stated that relief items from NADMO, the main organisation responsible for natural disasters in Ghana were inadequate.

The broad definition of social support can be categorised into three distinct operational facets: received support, perceived support and social embeddedness (Kaniasty and Norris, 2004). Received support is the immediate mobilization of help following traumatic events such as flooding either from formal support systems or informal support systems. Formal support systems are those support obtained from the government (NADMO) and non-profit organizations while informal support systems are those received from families, colleagues, religious bodies, neighbours, etc. Perceived support is explained as the notion that one has good relationship with family and friends and can, therefore, rely on them when faced with any

difficulty. Lastly, is the fact that one lives in a community and partakes in societal activities giving him/her a sense of belonging and, therefore, his/her social embeddedness.

Although in the aftermath of flooding, most people come together to rescue and help, this stage eventually ceases (Kaniasty and Norris, 2004) and the reality of loss, pain and destruction sets in. Wong and Zhao (2000) found that Chinese victims will normally resume their production immediately after the flood has receded, or someone in the family may have to emigrate to the city to seek employment to supplement the family's income. This was confirmed by work done by Armah *et al.* (2010) in the Northern Region of Ghana which revealed that households have to persuade some members of the family to emigrate in order to attract remittance to help support the family left behind.

Armah *et al.* (2010) suggests that there is some form of neglect in the distribution of support in the aftermath of natural disasters and for that matter flooding which exacerbate people's vulnerability. Oliver-Smith (1996) argues that the act of giving and receiving support in the aftermath of floods usually takes place in an already existing socio-political and cultural community. Therefore, interactions among members are usually complex. These supports come in the form of relief items such as food, drugs, blankets, medical equipment, emergency lights and clothing usually distributed by NADMO and World Health Organization (WHO, 2008; Karley, 2009).

Kaniasty and Norris (1995) state that the first and most familiar rule governing the emergent supportive communities is the rule of relative needs where precedence is given to such victims who experience the greatest exposure to the negative impact of the disaster. However, notwithstanding ones' needs, certain people are either placed in the advantageous or disadvantageous side in receiving post-disaster support (Kaniasty and Norris, 1995). Armah *et*

al. (2010) further assert that in getting access to these items in the aftermath of the floods, precedence is given to individuals who belong to the ruling political party, neglecting those who are non members.

A study by Feng *et al.* (2007) reveals that there is a higher level of social support for males than females. This, they attributed to the fact that males often have higher educational levels than females and may therefore have better coping and social intercourse skills. The elderly have a higher level of support compared to the young because the elderly have wider social interactions than the young by virtue of their age. However, Armah *et al.* (2010) finds that women especially childless widows and the elderly are more vulnerable to floods yet there are no specific policies directed towards helping these vulnerable groups.

2.11 Theoretical framework

The degree of suffering that individuals and communities express as a result of climate induced changes such as flooding is connected to the place of dwelling. This may result in the decreased levels of social capital in terms of networks and support systems (McLeman and Smit, 2004). A study by Tschakert and Tutu (2010), explores the environmental impacts of flooding that are linked to the transformation of social networks and customs among the poor. They found that, climate change impacts, in the context of Ghana's rapidly increasing slum population, lead to mental, emotional and physical health aspects that are influenced by decreasing social support for victims.

Very little is known about climate-related adaptation in the social context. However, the few studies available have alluded to the subtle impacts that go beyond economic performance and food security, to include the sense of belonging, respect and socio-cultural heritage, all of which

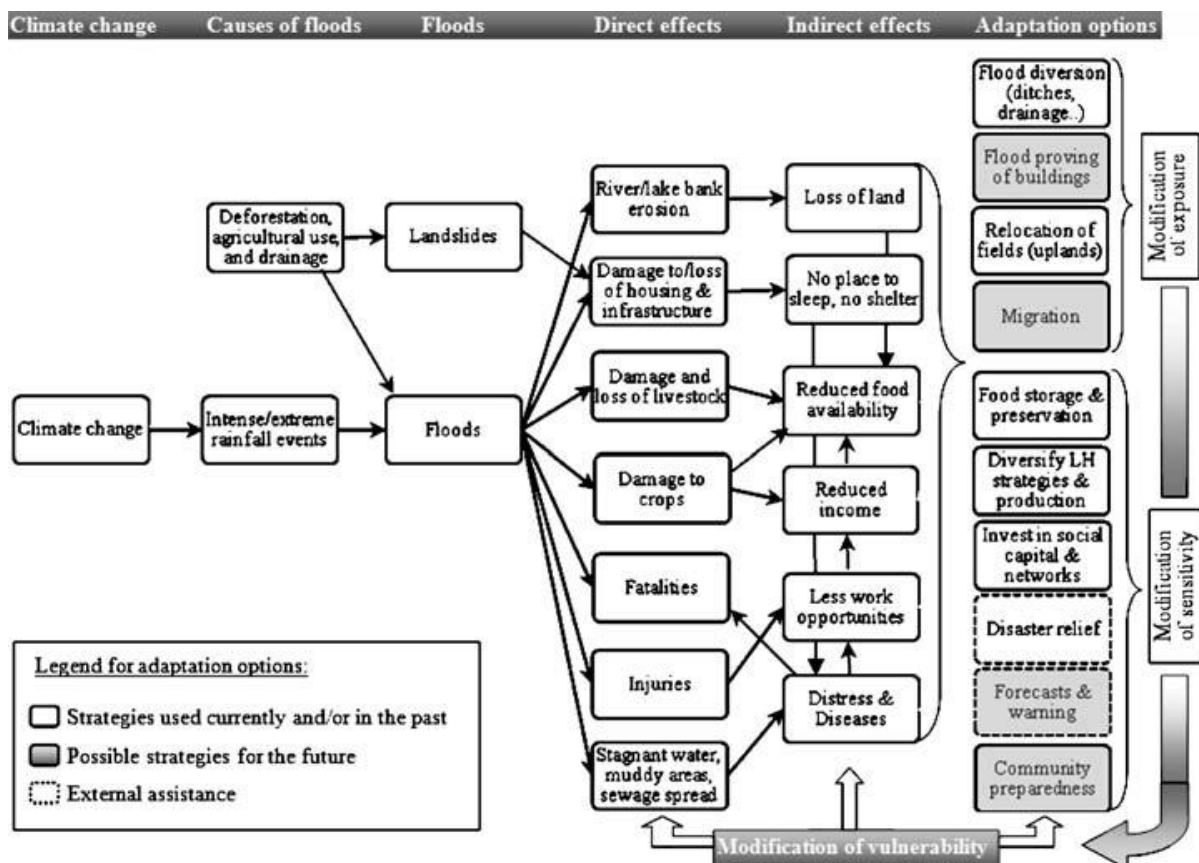
are attributes of social capital (Tschakert and Tutu, 2010). According to Tschakert (2007), research among poor, small scale farmers in Senegal has shown that poor health and disheartening sense of worthlessness, particularly among the male youth undermine local adaptive capacity. She suggests that, this may very well be the lack of belonging associated with environmental change that pushes young Africans to even risk their lives, crossing the Sahara or the Atlantic Ocean in search of a better life in Europe (Tschakert, 2007).

Drawing from the Theory of the Biopsychosocial cost of ecosystem disturbance, environmental climate impacts such as flooding have an influence on the biological, psychological and the social aspects of well-being (Tschakert, 2007). This present study on social support and perceived vulnerability to flooding is founded in this model. Respondents were asked to describe how they perceive their vulnerability to flooding and how they are impacted negatively by such experiences.

The biopsychosocial cost of ecosystem disturbance has been used in a similar study by Tschakert and Tutu (2010), who conducted semi-structured interviews with migrants living in two urban slums in Accra. Respondents were asked to describe their neighbourhood with the aim of understanding how they perceived and felt about their place of abode and also indicate the major challenges they face living there. The dominant theme that emerged was that, their neighbourhood becomes muddy when it rains; it was full of wooden structures and, therefore, a place with no town planning ethics. Thus, they perceived themselves as vulnerable to the elements of flooding.

This study draws on the conceptual framework of Tschakert *et al.* (2009). The original framework was, however, developed by Perch Nelson *et al.* (2008). Figure 2.1 ties together the relationships between climate change, vulnerability to flooding and adaptation measures such as dependence on social capital and networks. Vulnerability to flooding was measured by one's exposure and sensitivity to flooding. Exposure and sensitivity was however described as the likelihood of a system to experience flooding and the system's livelihood characteristics such as location and housing structures that influence its sensitivity to the exposure. According to the model, when the climate changes and subsequently leads to flooding, different adaptation measures are employed. Drawing from the understanding in the conceptualization in Figure 2.1, the relationship between an individual's social support and how that can influence the person's perception of vulnerability to flooding can be understood. This implies that, the higher a person's social support, the more likely that person will perceive his/her vulnerability to flooding to be low and vice-versa.

Figure 2.1: Conceptual Framework from Tschakert *et al.* (2009)



Source: Tschakert *et al.* (2009)

According to Clark *et al.* (1998), the perceptions of hazardous events are usually not distributed equally among different groups of individuals. Age has been found to be an important consideration in defining a persons’ vulnerability to flooding. Children and the elderly demand an extra care, since they are considered to be unable to resist or respond on their own and economically active community members have to allocate resources to them. However, perceptions of vulnerability of the elderly is said to be minimal by their wealth of experience (Shaw *et al.*, (n.d.).

Age according to Regyl *et al.* (2006) is an important factor to be considered especially during the evacuation process. Older populations tend to be more reluctant to evacuate and are also subject to numerous health challenges. This, however, makes them perceive their vulnerability

higher than the others (Cutter *et al.*, 2009). It should be noted that not all elderly people lack the necessary physical and economic power to respond effectively to a disaster.

Older people are expected to own more resources than younger people, and often they perceive their losses as larger than others in the neighbourhood, leading to recovery difficulties (Shaw *et al.*, n.d.). Their inability or unwillingness to leave the residence during and after the flood may lead to poor living environment and an impoverished neighbourhood, and those who decide to leave may experience some health problems (Coninx and Bachus, 2006).

Gender is another widely adopted variable for evaluating a person's vulnerability (Armah *et al.*, 2010) due to lack of access to resources and differential exposures. Men are less vulnerable to flooding as compared to women because they perceive flood risk as less significant (Shaw *et al.*, n.d.). This can further be explained as in general speaking, females are disadvantaged in their quest to access economic resources to mitigate hazards (Aboagye, *et al.*, 2013). The researchers found that while men own valuable livestock such as cattle, sheep and goats, women normally rear fowls. The literature suggests that, females are more vulnerable due to their responsibility towards taking care of the children and elderly both requiring help and supervision (Regyl *et al.*, 2006; Cutter *et al.*, 2009). They are even impacted more when the household has members that are disabled or have impaired mobility. Conversely, a study by Yang *et al.* (n.d.) suggests that gender is not an important factor that affects a person's vulnerability.

Level of education is another important factor that influences a person's perceived vulnerability to flooding. According to Feng *et al.* (2007) people with lower educational level often have poorer coping skills and therefore are most affected negatively by floods. According to Aboagye (2012) people with lower educational level are automatically cut-off from any early

warning signs against floods. People with lower or no education are therefore expected to be more vulnerable to flooding as compared to those with some education or higher education.

According to Shaw (2006), poverty and lack of resources at different levels make people vulnerable. Poor people's inability to afford less flood-prone areas and live in poorly built structures due to their lack of resources can be on the major disadvantageous side when disasters as flooding occur (Regyl *et al.*, 2006). Cutter *et al.* (2009) asserts that, although wealthy households may suffer greater monetary losses during a flooding event, the same wealth helps them to absorb those losses through insurance, social safety nets and entitlements and, therefore, making them less vulnerable. On the contrary, the poor according to Chan and Parker (1996) find it difficult to reconstruct their lives following floods.

Clark *et al.* (1998) assert that income helps people in purchasing some preventive items such as heating systems to retrofit their houses or relocate to higher floors for immediate reconstruction to proceed during and after flooding. Financially deprived people are often caught in a defenceless state when affected by floods. They often have no money to protect themselves by means of insurances or purchasing flood protection materials (Conninx and Bachus, 2006). And after the floods they are the most hit with recovery often taking a longer period because of their financial constraint.

Aboagye (2012) asserted that, people who are employed in the informal sectors with no constant income and lack financial reserves to help them secure safer places less prone to flooding perceive their vulnerability higher than those employed in the formal sectors. The spatial allocation of the built environment is very important in describing people's vulnerability to flooding. According to Coninx and Bachus (2006), mobile home dwellers are very vulnerable to flood impacts because their houses scarcely resist floods. They do not also have

extra space to save some of their properties during flooding. It is, therefore, apparently clear that the quality of construction can predispose people to flooding.

In conclusion, floods are among the world's most frequent and damaging types of disaster and heavy rain has been found to be the prime initiator of flooding worldwide. The impact of flooding is not solely of negative consequence since some people make economic gains from the otherwise damaging floods thereby bringing new opportunities of livelihoods. This explains why most times residents of developing countries take an indecisive attitude towards flood events and blame it on government policies rather than taking actions to prevent them. Social support has been considered to reduce the effect of the sudden distressing experience flood victims go through. The nature of support victims receive in the aftermath of the flooding event is likened to a pyramid, with the broad base being support from family members, followed by support from friends, and the narrow apex being support from the government.

CHAPTER THREE

METHODOLOGY

3.1 Profile of the study area

The study was undertaken in two urban poor communities in the Accra Metropolitan Assembly. They are Agbogbloshie and James Town. James Town is an old Ga town and one of the earliest towns in Accra. Agbogbloshie and James Town are urban poor communities located in Central Accra in the Ashiedu Keteke District under the Accra Metropolitan Assembly (A.M.A). Central Accra is comprised of areas such as James Town, Ussher Town, Bukom and Agbogbloshie. Although Agbogbloshie and James Town are varied in their ethnic makeup, there is great similarity in their socioeconomic structure.

Agbogbloshie covers a land area of about four acres and has a human population of about nine thousand. It is a multi ethnic community made up of economic migrants from the various parts of Ghana. The community is embedded in a major market area where most of the foodstuffs from the surrounding rural areas are transported and redistributed to other satellite markets in Accra. Majority of its inhabitants are engaged in trading activities ranging from food to non-food items with others working as artisans. Due to increased housing demand, land and construction cost, most of the houses in the community are mobile (wooden-walled structures/ kiosk) with closed unplanned structures which have little or no drainage systems. This pose a lot of sanitation problems coupled with the fact that there is no health facility in the community.

Commercial activities in the community have resulted in the creation of both liquid and solid waste which consequently blocks the few available drainage systems, thereby resulting in flooding anytime there is a downpour. An example is the Accra Brewery Limited, Graphic Corporation and Sikkens Paint Company which in an interview with some of the inhabitants

revealed that some of these industries produce a lot of waste (both liquid and solid) which are deposited in the community leading to flooding as well as pollution.

James Town on the other hand is purely an indigenous Ga community with its inhabitants mainly Ga-Dangmes, although there are traces of some minor ethnic groups such as Akan and Hausa. Ga language is therefore the major mode of communication in this community. James Town has a population of over seventeen thousand people with compounds usually consisting of six to twenty people. James Town unlike Agbogbloshie has a community clinic and a few pharmacies. It is a coastal community where fishing and fish processing are the predominant economic activities of the people. While the men mainly engage in fishing, some of the women process the fish and others serve as fishmongers. Unlike Agbogbloshie, residential structures in this area are mostly cement-walled with few places designated for recreational activities. However, within the centre of the community is a place for butchering livestock which creates unpleasant smell for the inhabitants.

3.2 Reconnaissance visit

Although the study sites were not completely new to the researcher, a familiarization visit was made to the sites to help the researcher establish good relationship with the community members as well as to gain access to community facilitators useful during the research period. Some opinion leaders, for instance the leaders for the youth groups were also interacted with to help in the organization process.

3.3 Sources of data

3.3.1 Observation

The researcher's personal observation in each of the communities was recorded during the research period. This helped in understanding some practices undertaken in these communities in dealing with flooding. It also involves issues on sanitation, economic activities and community cohesion. This observation gave an in-depth understanding and helped to either confirm or probe some responses given by some respondents during the focus group discussions.

3.3.2 Focus group discussion

This study is purely a qualitative study that makes use of focus group discussions with community members. The purpose of this study is to understand the relationship between social support and perceptions of vulnerability to flooding among urban poor dwellers. Focus group discussions were used in soliciting for information due to the method's unique nature in addressing the main objective of this study. This method is based on principles of community involvement in addressing circumstances and challenges that are important to members of the community, thus, reflecting how social beings in a community think about flooding. According to Wong and Zhao (2000) although the impact of flooding varies from person to person depending on some factors such as social vulnerability to flooding, it is seen as a community level event rather than an individual affair since its impact is not limited to an individual in the community. Another advantage of employing focus groups is that it is both a rigid and flexible methodology of collecting of data. It gives the researcher the opportunity to design questions that are semi-structured in nature while at the same time making room for the respondents to narrate or elaborate on them.

3.3.3 Segmentation approach

Each community was sub-divided into two; flood prone area and non-flood prone area. This was done to help capture the vulnerable to flooding and non-vulnerable to flooding groups in each of the communities. This categorisation was informed by the author's observation during the reconnaissance visit and informal communication among some local gate-keepers in the communities who mentioned that some particular areas flood anytime there is a downpour. The two communities (James Town and Agbogbloshie) were chosen because of their distinct socio-cultural set up. James Town (as mentioned earlier) is largely a homogenous community compared to Agbogbloshie which is largely a heterogeneous or migrant community. This suggests that inhabitants of James Town would have a closely knit community system and as such have a stronger social support network than inhabitants of Agbogbloshie. As such comparing these two communities which are both flood-prone would help us understand the kind and levels of social support systems existing in the two communities. In Agbogbloshie, all residents around the area called by residents as 31st December, as well as residents around the Presbyterian Church were classified as one group that is vulnerable to flooding. All the other parts of the community were classified as non-vulnerable group. In James Town, available literature suggests that some residents are vulnerable to flooding as a result of the Korle Lagoon (Sam Jr., 2009). As a result all residents in James Town towards the Korle Lagoon were classified as vulnerable to flooding and others far from the lagoon classified as non-vulnerable to flooding.

In each community, a purposive sampling technique was used in selecting participants from the flood-prone areas to form the focus groups. It is worth mentioning that this group was not necessarily a representative sample of the entire community. The aim of this sampling approach was to enable the researcher to get the required people who will give meaningful contribution with regard to the topic. Members in the non-flood prone areas were randomly selected since

they form the majority of the population. In each area, two focus group discussions were organised, namely, male group and female group comprising about six to nine members. This segregation was due to the fact that, a homogeneous group brings less intimidation and therefore enables individual participants in a group to fully engage in the discussion. However, the focus group discussions factored in age, occupation and educational attainment to explore how they perceive the vulnerability of these groups.

Armah *et al.* (2010) suggest that, gender is a very important variable in evaluating a person's vulnerability due to lack of access to resources and differential exposures. Males have a higher social support than females. Therefore, in each of the communities, members in both designated flood-prone areas and non-flood prone were further grouped into males and females. Age has also been another widely adopted variable in describing a person's vulnerability to flooding. Conninx and Bachus (2006) suggest that children as well as the aged populations are either unable and/or unwilling to leave their homes during and after the floods subjecting them to various health challenges. In addition to age, level of education according to Aboagye (2012) influences an individual's vulnerability to flooding. People with no education are often cut-off from any early warning signs against floods which is disseminated in English language. In this study, the level of education was categorized as 'None', 'Primary', 'Senior High School' and 'Higher'.

Occupation is said to influence an individual's vulnerability to flood while at the same time defining whether he/she will have access to social support in the aftermath of the flood event. Aboagye (2012) posits that, people who are employed in the informal sectors with no constant income lack financial reserves and therefore perceive their vulnerability higher than those employed in the formal sectors. Respondents were asked the kind of work they do and the study

classified occupation as ‘Unemployed, Student, Trader, Artisan, Business /Private Other’. Unemployed meant that respondent, at least at the time of the interview, was not actively working.

3.4 Sample size

A total of eight focus groups were conducted in the two communities; four groupings in each community. Each focus group comprised a total number ranging from six to nine individuals, making the total sample size of fifty three people. Each of the eight focus group discussions that was audio-taped in the respondents’ local languages (Ga and Akan) was later transcribed into English language by an expert.

3.5 Data analysis

3.5.1 Developing a coding frame

The transcripts were first examined and categorised into various codes. A coding frequency was then obtained by bringing together all basic themes and the number of times each of them appeared in the discussion. The coding frame was then conceived theoretically and guided by basic themes identified in the transcripts. Attride-Stirling’s (2001) thematic network approach was used as a guide in developing both deductive and inductive codes that explore the understanding of the issues. This thematic network approach is a qualitative research analytical tool that provides a clear series of steps for carrying out thematic analysis of a qualitative material. Attride-Stirling’s (2001) thematic network represent a web-like illustration that gives a pictorial view of how the basic themes come together to represent an organizing theme and by uniting several organizing themes bring into being the core of the thematic network called the global theme. Two different thematic networks were developed for both perceived vulnerability to flooding and social support in the aftermath of flooding.

3.5.2 Thematic analysis

A thematic analysis was used to analyse the data. In analysing perceptions of vulnerability to flooding using thematic networking, four main themes were identified. A second thematic network was developed to analysis social support which is also an important variable in the study. Pseudonym names showing participant's identity have been used in the analyses. Details of participants' identity can be found in appendix A.

CHAPTER FOUR

BACKGROUND CHARACTERISTICS OF RESPONDENTS

4.1 Introduction

This chapter describes the background characteristics of respondents. The socio-demographic characteristics of a study population (respondents) to a large extent determine their social support and perceived vulnerability to flooding. Fifty three people were involved in a focus group discussion from the population in Agbogbloshie and James Town. The characteristics considered in the study were age, sex, level of education and occupational status. The characteristics aforementioned were considered because of their contribution to influencing a person's perception of his/her vulnerability to flooding as well as gaining access to support.

4.2 Socio-demographic characteristics of respondents

Table 4.1 shows the background characteristics of respondents during the study period. Age is an important factor to be considered in defining a person's vulnerability to flooding (Regyl, 2006). Feng (2007) asserts that, a person's age comes into play in determining access to social support in the aftermath of flooding. The elderly are found to have a higher level of social support compared to the young, because the elderly have wider social interactions.

From Table 4.1 it can be seen that, majority of the selected respondents were predominantly young adults. Out of fifty three respondents who were selected for the focus group discussions, four respondents were recorded under the age group < 20. One person was from the vulnerable group (Agbogbloshie vulnerable male) and the other three from the non-vulnerable group. Thirty nine respondents belonged to the age group 21-40; twenty of these respondents were from Agbogbloshie while nineteen were from James Town. In viewing this age category (21-40) across vulnerable and non-vulnerable groups, twenty one of them were from the vulnerable

group (both James Town and Agboghloshie) while eighteen belonged to the non-vulnerable. Under the age group 41-60, seven respondents were recorded; four of the respondents were from James Town while three were from Agboghloshie. Across vulnerable and non-vulnerable groups, all the three vulnerable respondents were from James Town and the remaining four from the non-vulnerable group (three from Agboghloshie and one from James Town). The last age category was 61-80. Three respondents belonged to this age category. All the three respondents were from vulnerable female groups, two respondents from James Town and one respondent from Agboghloshie.

Table 4.1: Background characteristics of respondents

	JTVM*	AGVM*	JTVF*	AGVF*	JTNVM*	AGNVM*	JTNVF*	AGNVF*	Total
Age									
<20	0	1	0	0	0	0	2	1	4
21-40	8	7	1	5	6	4	4	4	39
41-60	0	0	3	0	0	2	1	1	7
61-80	0	0	2	1	0	0	0	0	3
Gender									
Male	8	8	0	0	6	6	0	0	28
Female	0	0	6	6	0	0	7	6	25
Education									
None	0	0	2	0	0	0	0	1	3
Primary	0	0	4	1	1	3	3	0	12
Secondary	8	7	0	5	4	3	4	5	36
Higher	0	1	0	0	1	0	0	0	2
Occupation									
Unemployed	2	0	2	0	4	0	3	0	11
Student	0	1	0	0	1	0	1	0	3
Trader	3	3	3	4	0	2	3	3	21
Artisan	1	2	1	2	1	4	0	3	14
Business /Private	0	1	0	0	0	0	0	0	1
Other	2	1	0	0	0	0	0	0	3

* **JTVM:** James Town Vulnerable Male

AGVM: Agboghloshie Vulnerable Male

JTVF: James Town Vulnerable Female

AGVF: Agboghloshie Vulnerable Female

JTNVM: James Town Non Vulnerable Male

AGNVM: Agboghloshie Non Vulnerable Male

JTNVF: James Town Non Vulnerable Female

AGNVF: Agboghloshie Non Vulnerable Female

Several studies have also shown that the sex of the individual influences his/her perceived vulnerability to flooding as well as getting access to support. Aboagye *et al.* (2013) asserts that, females are disadvantaged in accessing economic resources to mitigate hazards. This therefore makes them more vulnerable as compared to their male counterparts. It can be seen from Table 4.1 that majority of the males (twenty five) involved in the study were recorded under the age group 21-40. It must be mentioned that, out of the ten respondents recorded under age groups 41-60 and 61-80, eight of them were females and two males. Six of these female respondents were from James Town and the remaining two were from Agbogbloshie.

It has been established that education plays a very important role in determining a person's vulnerability to flooding. This variable can also influence the type of occupation a person engages in. According to Feng *et al.* (2007), people with lower educational level often have poorer coping skills and therefore are most affected negatively by floods. From Table 4.1 it is observed that, majority of respondents (thirty six respondents) had completed secondary education. However, in considering education in relation to vulnerability, twenty respondents out of the thirty six respondents were from the vulnerable group. Under the category 'no education', three respondents were recorded. All three respondents were females. Two of them were from the James Town vulnerable group and one from non-vulnerable female group in Agbogbloshie. Two out of the fifty three respondents had completed higher education both from the male group. These two respondents were from non vulnerable male group in Agbogbloshie and vulnerable male group in James Town.

A person's occupation can indicate his/her access to income and therefore influence the person's vulnerability to flooding. Aboagye (2012) assert that people who are employed in the informal sectors with no regular income often lack financial reserves to help them secure safer

places less prone to flooding. They are therefore more vulnerable as compared to those employed in the formal sectors. From Table 4.1, it can be seen that, out of fifty three respondents who were selected for the focus group discussions, eleven respondents were unemployed at the time of the interview. All of these unemployed respondents were from James Town. Three respondents at the time of the interview were students, two males and a female. With regards to vulnerable and non-vulnerable groups, thirteen out of the twenty one traders were vulnerable. Twelve of the respondents engaged in trading were from the Agbogbloshie community and nine from James Town. In addition, fourteen of the respondents were artisans. Out of the fourteen artisans, only three of them were from James Town and the remaining eleven from Agbogbloshie. Six of the artisans were vulnerable to flooding and the remaining eight were not vulnerable.

CHAPTER FIVE

PERCEIVED VULNERABILITY TO FLOODING AND PREVAILING SOCIAL SUPPORT

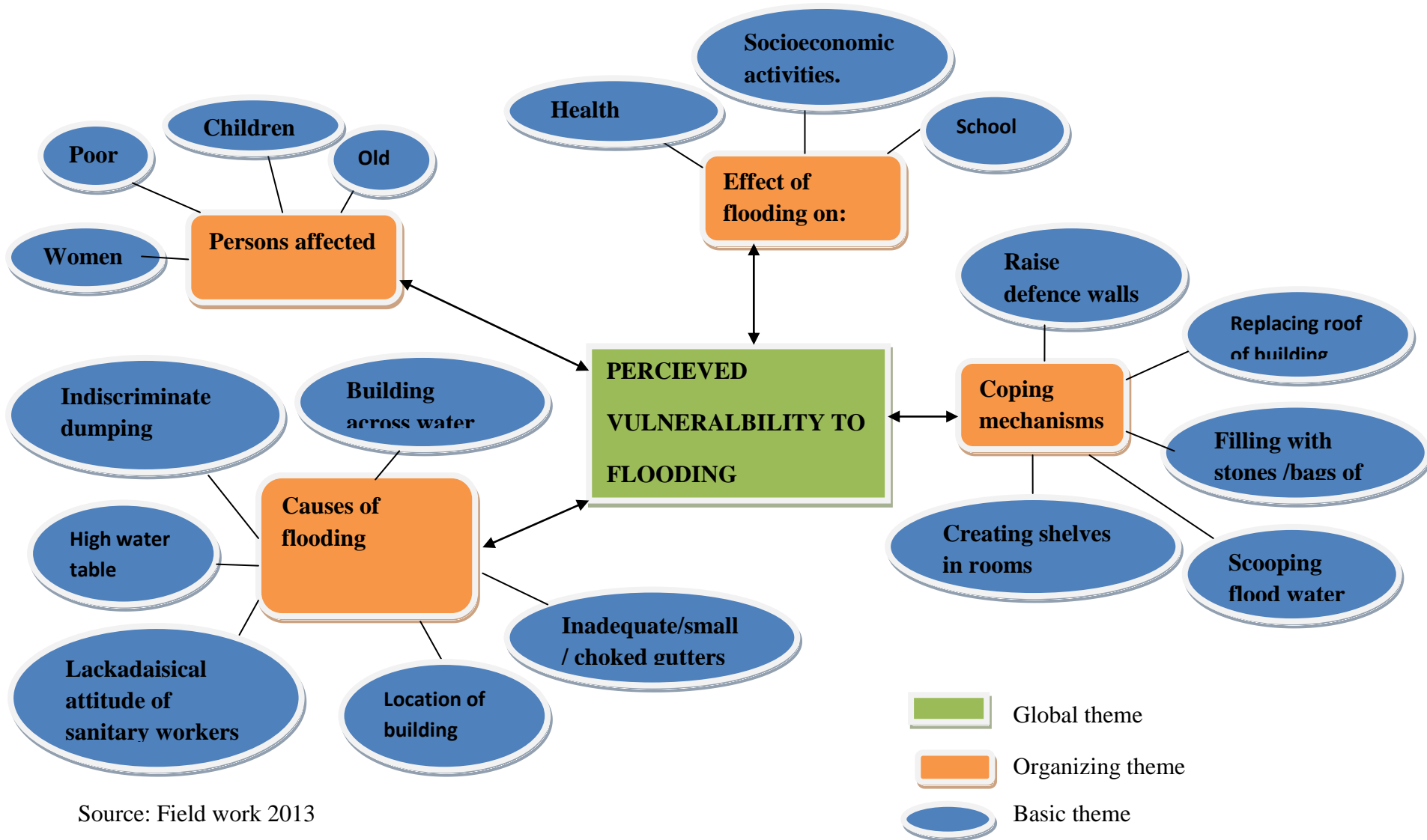
5.1 Introduction

This chapter presents the results on social support and perceived vulnerability to flooding. Under the global theme perceived vulnerability to flooding, four organizing themes emerged. These are perceived causes of flooding, persons most affected by flooding, effects of flooding and adaptation mechanisms. Another thematic network was developed which presents the types of support that prevailed in the research communities, sources of the support and the kinds of support.

5.2 Causes of flooding in the research communities

As already presented, Figure 5.1 is a section of the perceived vulnerability of flooding showing what the respondents considered to be the causes of flooding in their communities. The study revealed that there were seven main causes of flooding as perceived by community members. These responses were further grouped into three: individual, natural and structural causes of flooding.

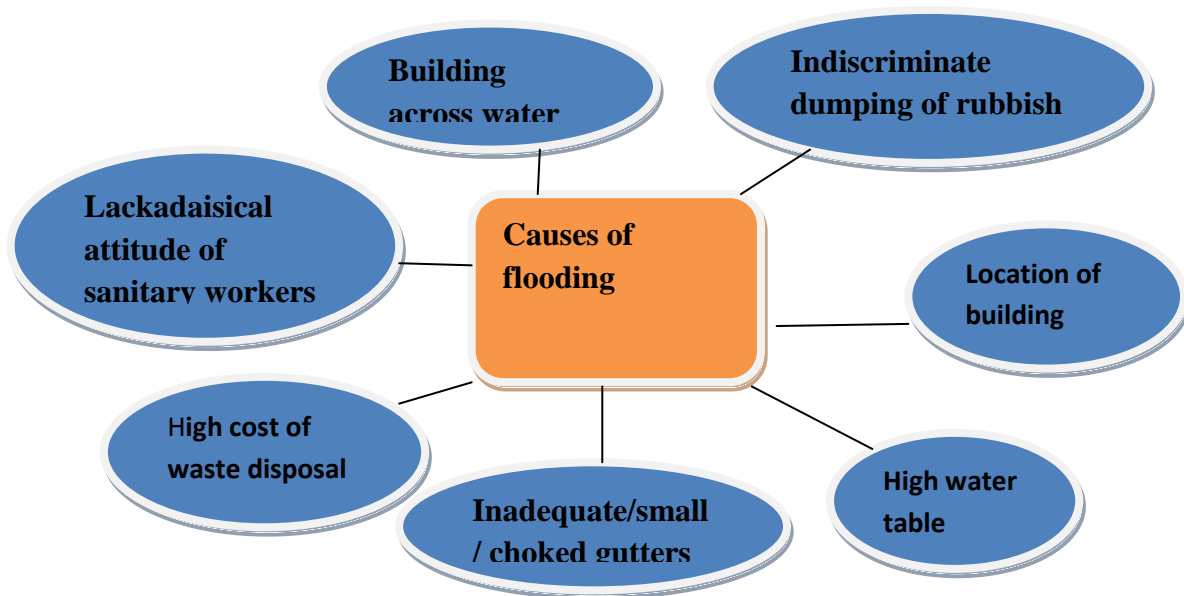
Figure 5.1: Perceived vulnerability to flooding: A thematic network.



Source: Field work 2013

Figure 5.2 shows the thematic network on causes of flooding. It is one of the organizing themes in the global theme on the perceived vulnerability to flooding. This theme include; building across water course, lackadaisical attitude of sanitary workers, high cost of waste disposal, inadequate/small/choked gutters, high water table, location of building and indiscriminate dumping of refuse.

Figure 5.2: Thematic network on causes of flooding



Source: Field work 2013

5.2.1 Individual causes of flooding

An individual cause of flooding was described by respondents in three ways. These are, building across water course, indiscriminate dumping of refuse and the location of buildings as presented in figure in 5.2. According to the respondents, the behaviour of some people putting up structures across water ways blocks the path of flood water. This problem was reported by both male and female respondents and it transcended community boundaries. It appeared in five out of the eight focus group discussions organized, three

groups in Agboglobshie and two in James Town. Three out of the five reported groups were female groups.

Maame Yaa, a female respondent in Agboglobshie expressed it in this way:

The way people have built their houses here. Because certain places are for water courses but people rather build there so the water doesn't get anywhere to run off'

(Maame Yaa, AGVF)

The second individual cause of flooding according to the respondents was the indiscriminate dumping of refuse. They explained that when rubbish is not appropriately disposed, it definitely finds its way into the few available gutters and gets chocked. This practice when it rains according to them prevents the free flow of water and therefore results in the water diverting its course or overflowing to the neighbouring environment. It was the highest reported cause of flooding which was raised in all the eight focus group discussions held. This means that indiscriminate dumping of refuse was the most significant cause of flooding in the research communities. Respondents stated that during the rainy season, this pile of rubbish in the gutters is carried away by flood water and eventually leaves rubbish in undesired places such as people's homes, open compounds, and market places.

In Agboglobshie, Kwesi, a male respondent described it in this way:

'My brother it's a pity but only God is with us, they are pouring okro different foods which are rotten and we will be sitting here and it will be rising to us'

(Kwesi, AGVM).

This was similar to what respondents in James Town mentioned.

Eno, a female respondent who experiences flooding in James Town had this to say:

'There is someone who will take refuse from her house and come and place it at our place, go and look they have come and park some there' (Eno, JTVF).

Location of buildings was the last individual cause of flooding mentioned. The respondents stated that some people in the communities are located on uplands while others are found on the low lying part and therefore depending on where a person is located within the community, he/she can be affected severely by flooding. Location of buildings as an individual cause of flooding appeared in half of the focus group discussions conducted. However, it was more of a problem to the people of Agbogbloshie than James Town. In James Town it was a problem to only the female respondents who were vulnerable to flooding. In Agbogbloshie, however, it was raised in the vulnerable to flooding female group and both male and female groups not vulnerable to flooding groups. This shows that both respondents who had some flooding experience and those who do not experience flooding in Agbogbloshie showed similar concerns regarding this issue.

Monica, a female respondent in Agbogbloshie commented:

'When it rains since we are at a lower part of Agbogbloshie, the water comes to our house...' (Monice, AGVF)

As mentioned earlier, although in James Town the location of buildings was a problem to only the female groups who experience flooding, they showed great concern towards it. They all lamented that when it rains, the runoff water drains to their part of the community causing their homes to get flooded.

'The water is from Sempe, our houses are at the end, where the water is supposed to pass all has been blocked, so all the water from Sempe comes to our house before some will pass here and some will pass here' (general consensus, JTVF).

5.2.2 Natural cause of flooding

One theme emerged under the natural causes of flooding. As shown in Figure 5.2, it was described by the respondents as high water table. According to these respondents, this theme was a major contributing factor to flooding in their areas. It came up in two of the focus group discussions conducted. These two groups were the vulnerable males in James Town and vulnerable females in Agbogbloshie. Respondents put much emphasis on the holes in the ground as a cause of flooding. The theme of holes in the ground was however new to the literature but can be considered under the broader theory of landscape. Respondents explained that when there are holes in the ground, it allows flood water to stay at a particular place for long.

Here is a sample quote from Abbey, a male respondent in James Town:

'...the ground here has holes in it so it makes the water stay here for a long time when it rains' (Abbey, JTVM).

5.2.3 Structural cause of flooding

Three basic themes appeared under the structural causes of flooding. These were the inadequate and small gutters, the lackadaisical attitude of some sanitary workers as well as high cost for waste disposal in the community as presented in Figure 5.2. Inadequate and small gutters appeared in six of the focus group discussions held. It appeared in all the four groups in Agbogbloshie, thus both vulnerable to flooding and non vulnerable groups in Agbogbloshie. It must be said that inadequate drainage system was the theme respondents in Agbogbloshie deemed most important among the structural causes of flooding, and respondents seemed to attach greater concern to this problem. In James Town, however,

this problem was expressed by both male and female respondents who do not experience flooding in the community.

Amoako, a respondent in Agboghloshie puts it like this:

'At least there should be a gutter so when it rains, it does not enter people's rooms and the open gutters also make this place flood' (Amoako, AGVM).

Lackadaisical attitude of some sanitary workers was reported in four focus groups, and was equally distributed in both communities. While it was a problem for males in Agboghloshie, among both vulnerable and non vulnerable males, in James Town, however, it was rather the vulnerable and non vulnerable female groups who reported it. Female respondents explained that, these sanitary workers do not render onto them any quality service, yet they receive their salaries by the close of the month. According to them, while there are inspecting officers who were supposed to inspect the work done by these sanitary workers, they do not see any inspecting officers in their communities. This practice they believe might have caused the sanitary workers not to render quality services to them.

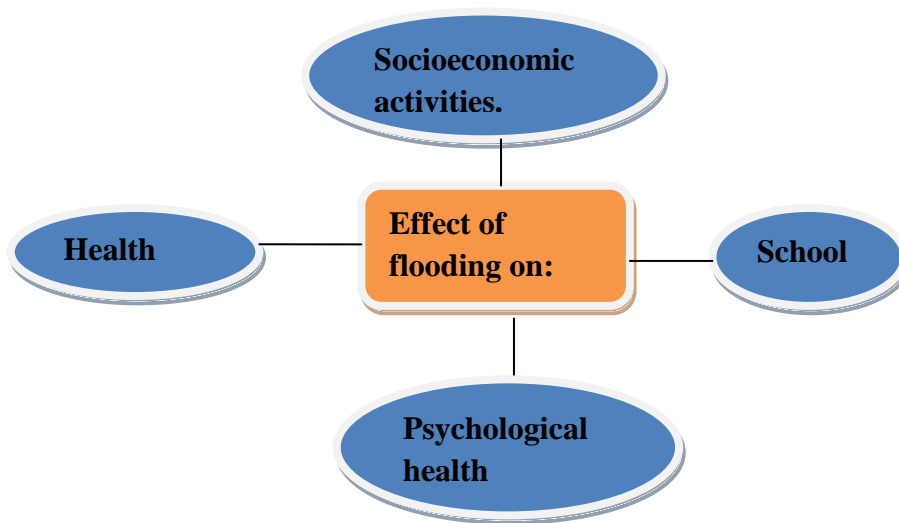
Ashorkor, a female respondent from the vulnerable group in James Town shares her views *'.....the government has employed people who clean the gutters, so if the person come and clean the gutters, they have inspectors, supervisors who should come and check whether the person is cleaning the gutters but we don't see them. So the person who clean our gutter will not come, if it's getting to the end of the month he will go and collect his money.....'*(Ashorkor, JTVF)

High cost of waste disposal was the last structural cause of flooding. Six out of the eight focus group discussions mentioned it as a cause of flooding in the community. In both communities high cost of waste disposal was pertinent for both males and females who do not experience flooding. Male respondents in Agbogbloshie as well as female respondents in James Town raised similar concerns. According to the respondents, some people inappropriately dispose rubbish as a result of the financial cost that comes with proper waste disposal. It was seen that both males and females shared similar views on this subject matter. It came up during the discussions that most households in the communities do not have private toilet facilities, and therefore pay money to have access to the communities' toilet facilities, but as a result of recent increase in the fee, most people especially parents allow their children to defecate in the backyard or gutters to save the little money they have. Owusua, a female respondent in Agbogbloshie shares her experience:

'.....what I will say a little is where we defecate, our place; it worries me a lot because now they have locked all of them, so even if a child wants to go there she has to pay Two Thousand (now GHp 20) if she is 1 to 5 years old but 10 years it will be three thousand (GHp 30) and I think it is too expensive, so if you are a mother you cannot pay so you let the child to defecate in the house.....' (Owusua, AGNVF).

5.3 Effects of flooding in the communities

Four effects of flooding were identified. These encompassed: effects on health, effects on socioeconomic activities, effects on school and effects on psychological health. This is presented diagrammatically in Figure 5.3.

Figure 5.3: Thematic network on effects of flooding

5.3.1 Effects of flooding on health

The health implications of flooding are closely linked to the sanitation of the community. According to the respondents, this negative health effect was a result of the filth including faecal matter carried to their homes by the flood water. The effect of flooding on health was described in both communities across the eight focus groups. Although some can be described as immediate causes of flooding, others were gradual which occur over some time after the flooding event. Respondents explained that any person but usually children who come into contact with the flood water experience some sickness such as fever, skin rashes, cholera, physical injuries and diarrhoea.

Torfic, a male respondent in Agboglobshie who experiences flooding expressed his grief: *'.....What I'm afraid of in Agboglobshie is cholera outbreak and diarrhoea because it has started raining and people are putting toilet in the gutters which mixes with the rain water on the field and children go out to play they may fall sick.....'* (Torfic, AGVM).

The other long term effect of flooding as discussed by respondents was the breed of mosquitoes which subsequently leads to the spread of malaria as a result of stagnant water. Respondents from all the groups attested to the fact that they suffer greatly from malaria during this season.

Tina, a female respondent in James Town stated that:

'...because when it rains it breeds mosquitoes and mosquitoes spread to everywhere, it doesn't discriminate that you have money so I've left, you are a child so I've left you, it will bite everyone' (JTVF).

Electric shock was a major effect of flooding among the male group that experience flooding in James Town. They showed a deep concern about this problem which run almost throughout their discussion. Although this problem did not emerge in any of the other group discussions, it was captured due to the seriousness respondents attached to it. Respondents pointed out that, anytime there is a downpour/flooding, they experience some form of electric shocks from the ground. This they said was as a result of an underground wiring.

This is how Frank, a male respondent in James Town put it:

'.....The water floods here such that if you are walking you cannot move your leg in the water; there is electric in the ground, it can shock you. The hill there is an electric' (Frank, JTVM).

It must however be said that the electric shock theme was new to the literature, which should indeed be included under the broad health effect of flooding.

5.3.2 Effects of flooding on socio-economic activities

This problem was associated with both vulnerable and non vulnerable female groups in Agbogbloshie. The male group in the community who does not experience flooding also raised similar concerns. However, it did not come up in any group in James Town. Agbogbloshie as indicated earlier in the profile of the study community is embedded in a major market area. The inhabitants of this community are mostly traders, and their livelihoods are centred on buying and selling. Aside the loss of properties, business activities of respondents are almost brought to a halt during these periods because according to them they sometimes do not go to work when their rooms are filled with flood water.

‘.....The flood water at times reach our waist level because we don’t have anywhere for the water to pass. So the only thing we do is to scoop the water which even prevents us from going to work because you have to clean the house.....’
(Akosua Tuntum, AGVF).

The dilapidated state of the roads coupled with stagnant flood water, brings to a halt all economic activities since there will be no means of transportation, thereby negatively affecting economic activities.

5.3.3 Effect of flooding on school

As shown in Figure 5.3, flooding had a serious repercussion on schooling activities especially for the people in Agbogbloshie. It came up in all the focus group discussions in Agbogbloshie with the exception of males who were vulnerable to flooding in the community. Contrary to Agbogbloshie, respondents in James Town could not see any link between flooding and schooling activities. Respondents in Agbogbloshie mentioned that

during heavy rains, school children were not able to go to school for fear of being drowned or carried away by the flood water. Agbogbloshie as mentioned by respondents do not have a single school in the community. This, however, poses a big problem for both school children and parents during the rainy seasons.

Konadu, a female respondent complained that:

'.....if you look at Agbogbloshie the people here are plenty but there is no school and if all the children here are going to school they take a long distance; they go to the upper part of Galloway and some even go to somewhere in Adabraka and you will see that they are little children, they are too young, they cannot go, so unless everyday you cross the road with them and some of the parents too don't have time for the children so unless someone took them and whether child will go and reach there or not nobody knows, that also worries us.....' (Konadu, AGNVF).

Parents particularly women who take responsibility of these little ones prevent their children from going out for their own safety. They claimed they become afraid for the lives of their children since sometimes the water reaches as high as an adult waist level not to talk of the children.

'.....because the children cannot walk through the flood so we often force them to stay in closed doors. Even you the adult when you walk through it, the level of the water is somewhere around your waist, so how much a child.....' (Monica, AGVF).

They added that some of the children sometimes have to cross some wooden bridges on their way to school, which become death traps during flooding periods. This period of absenteeism can last for days until the flood water drains. This can possibly affect the learning process of these children.

5.3.4 Effect of flooding on psychological health

Flooding had a negative impact on their psychological well-being. From the study, it was observed that some individuals were often traumatized in the aftermath of the flooding event. They explained that, this was a result of the great destruction caused them due to the flood. Emotional distress as a result of flooding was reported among male and female groups who experience flooding in Agbogbloshie. However, this theme did not emerge in any of the other groups either in Agbogbloshie or James Town. From the discussion it was realized that, some respondents had their properties destroyed or carried away by previous flooding. This according to respondents makes them uncomfortable whenever it begins to rain.

Grace, a female respondent commented:

'.....so whenever the weather becomes cloudy then we are crying and praying that it should not rain because the water will not get anywhere to pass but enter our rooms.....' (Grace, AGVF).

While the female group complained of the loss of personal properties, their male counterparts on the other hand showed concern about their source of entertainment being destroyed by flood water. Loss of property due to the flooding, leads some respondents to go on the street to beg for alms.

Angela a female respondent in Agbogbloshie shares her experience:

'.....we have experienced a lot, when we were young the rain water carried most of our things away and we went about begging for money.....' (Angela, AGVF).

However, those respondents who were lucky to have their property left behind by the flood water had to bring them outside for drying. One of the female respondents described her experience:

'.....So I have to bring all my things outside and scoop the water out of my room and wait till my things and the room get dried.....' (Monica, AGVF).

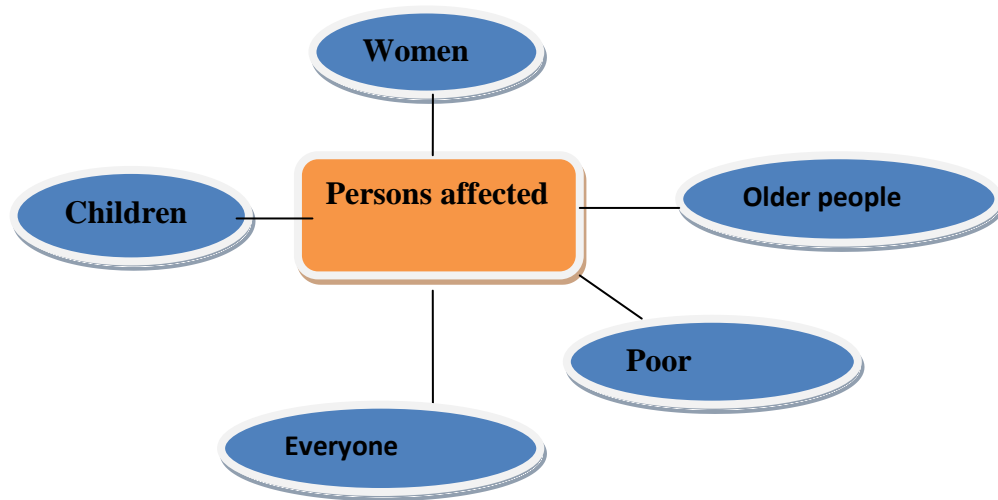
According to the male respondents, the flood usually destroys the only recreational facility they have in the community. They explained that the only football park they have in the community is always destroyed by the flooding.

'.....What worries us is that this park has become erosion path, you see, any time it rains it will pass here, we sometimes fill the place and it goes up but the water will pass here again when it rains so when it happens like that we the boys organize ourselves and just scoop the water then we seal with sand and when it dries we play our ball' (general consensus, AGVM).

5.4 Persons most affected by floods

The perceptions of impact of hazardous events are usually not distributed equally among different groups of individuals in a community (Clark *et al.*, 1998). The study revealed that in the aftermath of flooding some people were greatly impacted than others even in the same community. Five groups of persons were identified. These were: children, women, older people, poor and everyone (Figure 5.4).

Figure 5.4: thematic network on persons affected by flooding



5.4.1 Children

From the responses obtained, it came up that children, represented one group which respondents claimed were highly vulnerable to flooding. They gave some reasons that these children cannot make good judgement between good and bad. This theme emerged in five out of the eight focus group discussions held. With regard to Agbogbloshie, aside the males who experience flooding, all the other groups both vulnerable and non vulnerable mentioned that children were more vulnerable to flooding. In James Town however, it was the male groups who stated that children were more vulnerable. It did not come up in any of the female groups in James Town. Children according to respondents were severely affected during the flooding period. Female respondents in Agbogbloshie explained that during the flooding event, their rooms become full of flood water and will have to wake up and scoop the water away especially during the night. They are then compelled to wake these children up in the middle of the night to scoop the flood water from inside the room.

Monica, a female respondent vulnerable to flooding in Agbogbloshie explained:

'.....May be the child will be feeling cold and will like to sleep but you have to scoop and mob the water before he gets somewhere to sleep, and if the child doesn't get anywhere to sleep he will fall sick.....' (Monica, AGVF).

Male respondents in James Town described this suffering in terms of their health. They stated that these children suffer a lot of adverse health effects such as rashes and cholera during this period. Children as indicated earlier on are also kept indoors for fear of being drown. They are therefore cut off from all social activities they enjoy doing.

5.4.2 Women

As shown in figure 5.4, another group of people respondents deemed to be more affected by floods were women. They attributed this to the fact that women are the people who normally spend more time in the house and are mostly found with the children. The theme appeared in four of the focus group discussions. It was more pertinent in all the four female groups except that of the female group who do not experience flooding in James Town. On the other hand, it was not relevant in the male groups with the exception of the male groups in Agbogbloshie who do not experience flooding. They explained that it is women who normally spend more time in the house and are mostly found with the children. From the discussion, it was revealed that this group of people were responsible for taking care of the children in addition to their own selves. Akosua Tuntum, a female respondent explained:

'.....I will say it worries we the women most because may be you are having a child whom you have to carry in order to avoid the flood when it is raining. At times the

children will be say three or four and your husband is not around how can you carry all of them.....' (Akosua Tuntum, AGVF).

5.4.3 Older people

From the respondents' own account, older people were among the most severely affected group of people as a result of flooding. This theme appeared in almost all the groups. Respondents indicated that this group of people were weak and therefore demand extra care and attention. It was only vulnerable males in Agboglobshie and vulnerable females in James Town who did not mention older people as being mostly affected by flooding. However, all the four non vulnerable groups in both communities indicated that older people were severely affected. Females who were vulnerable to flooding in Agboglobshie and males vulnerable in James Town also indicated the same. They attributed this to the decline in their physical strength. The respondents described the old as weaker persons who need help and supervision during flooding periods. This group of people were the most mentioned group to be severely affected by flooding.

Okai, a male respondent from James Town observed:

'.....The old ladies too, some of them, their bodies are weak because when you reach certain age you become weak and need somebody to help them. So the old people suffer a lot' (Okai, JTVM).

5.4.4 Poor

Another group of people respondents asserted are severely affected during flooding were the poor. This theme was raised only in James Town among the female groups. Both females who experience flooding and their counterparts who do not experience flooding raised similar concerns. However, no group in Agboglobshie mentioned it. It is interesting

to state that these respondents deemed themselves as the poor people who are faced with this challenge of living in the flood prone areas with no hope of moving out. They explained that no wealthy person will in the first place be willing to live in such an environment.

These were the views of respondents suggesting that there is no rich man in their community.

*‘.....No rich person will live here; it’s we the poor people who will live here...’
(JTNVF).*

Another respondent stated:

‘.....By now a rich man is sitting in his hall with his leg on something. What is he coming to do at the bank of a gutter?(JTVF)

5.4.5 Everyone

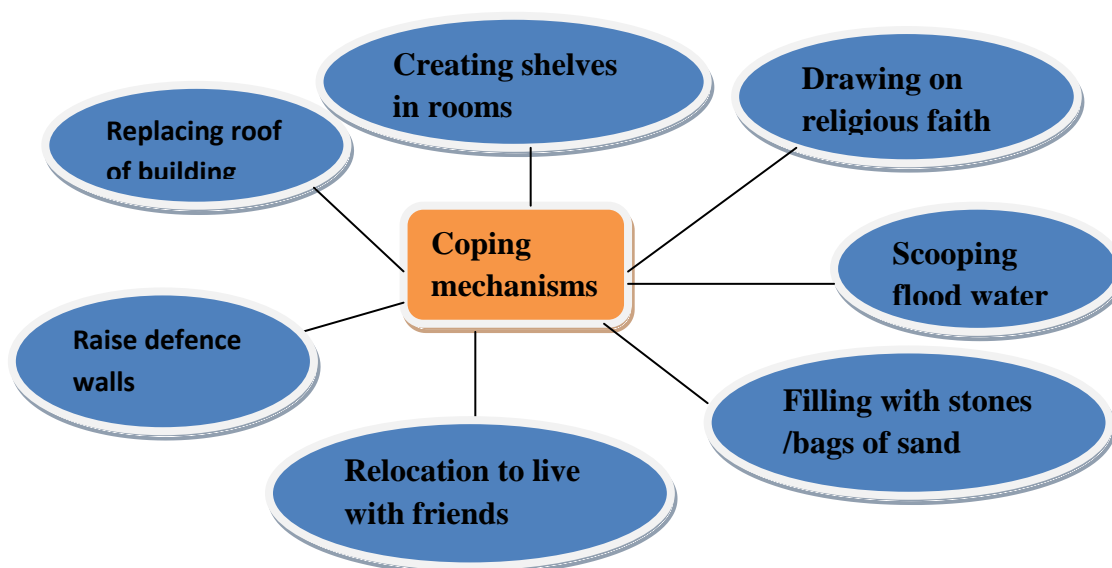
In two of the focus group discussions, respondents suggested that everyone in flood prone areas was in one way or the other affected by flooding. They were the males and females who experience flooding in Agbogbloshie and James Town respectively. It was however absent in all the remaining groups. These respondents explained that, everyone experiences flooding in the community. They explained this in terms of disease outbreak and the spread of malaria parasites. This was how a male respondent from Agbogbloshie put it:

‘Yes we all suffer, because when it rains it breeds mosquitoes and mosquitoes spread to everywhere, it doesn’t discriminate that you have money so I’ve left, you are a child so I’ve left you; it will bite everyone’ (consensus AGVM).

5.5 Community adaptation and coping mechanism to flooding

Adaptation and coping mechanisms are various ways which people employ to help them reduce and sometimes withstand the negative impact of flooding. Several basic themes emerged under this organizing theme. These were: creating shelves in rooms, replacing the roof of their building, raising defence walls in front of their rooms, filling their compounds with stones and bags of sand, scooping the flood water, relocating to live with friends and drawing on their religious faith. Figure 5.5 shows an array of mechanisms respondents employed to help them cope with the flooding. They include; creating shelves in rooms, replacing roof of building, raising defence walls, relocating to live with friends, filling compound with stones, scooping flood water and drawing on religious faith. From the range of mechanisms respondents employed, two main groupings were derived, namely; proactive measures and reactive measures.

Figure 5.5: thematic network on coping mechanisms



5.5.1 Proactive measures

According to the respondents, one way of reducing their vulnerability to flooding was by adopting certain proactive measures that will ensure that, in an event of flooding their properties and lives will not be affected. From the responses given, three proactive measures were employed by the respondents. They are: creating shelves in rooms, replacing roof of building and raising defence walls.

Creation of shelves in rooms was one of the proactive measures employed by flood victims. The idea of creating some form of shelves in rooms was to keep their things from getting destroyed by flood water. This theme however emerged in only the female group in Agbogbloshie that experiences flooding.

This was what one of the respondents said concerning this practice:

'..... as an individual you can do shelves in your room in order to put your things on it to prevent them from the rain water.....' (Angela, AGVF).

Replacing the roof of building with a new roofing material was another method employed by respondents under the proactive measure. According to them, they do this when they realize there are holes in the roofing sheet which can cause leakage during rainfall. This theme also came up in only the female group in Agbogbloshie that experiences flooding. This practice just like the creation of shelves was employed by individuals in the community.

Maame Yaa, a female respondent in Agbogbloshie mentioned:

‘.....Individually if you see something is wrong with your building, for example, the roof then you have to go and buy a new roofing sheet to replace the old one.....’

(Maame Yaa, AGVF).

The last proactive measure adopted by the respondents was raising defence walls in front of their rooms. According to these respondents they do this to prevent flood water from entering their rooms. Unlike the other two proactive measures employed by only female respondents in Agbogbloshie, raising defence walls was done in both Agbogbloshie and James Town among female respondents who experience flooding.

Joana, a female respondent from James Town stated that:

‘Our door steps you can see that we have done a little wall there, first the water, if you don’t use anything to block it, it will enter into the room’ (Joana, JTVF)

5.5.2 Reactive measures

The second coping mechanism is the reactive measures. Four basic themes emerged under this broader theme. These were scooping of flood water, filling their compounds with stones and bags of sand, going to live with a friend and drawing on their religious faith. According to the respondents, this practice was to help them recover from the adverse effects of flooding incidents. Scooping of flood water was the major and most common reactive measure accepted and adopted by respondents from both communities. It emerged in seven out of the eight focus group discussions conducted. The only group of people who did not mention it was the female group in James Town that does not experience flooding. They explained that the flood water was not able to flow as a result of indiscriminate dumping of refuse which consequently choked the few available gutters. For this reason

they had to collect the water from their rooms after the rain has subsided. According to some respondents in James Town, this activity most of the time leads to quarrel among neighbours since there is always a disagreement as to where to throw the collected water.

Dorcas shares her experience:

'.....When it rains and you scoop the water then people will be insulting you; the water you have scooped what will I do with it, so when they scoop it, then we also scoop it back, so our house everyday there is quarrel there.....' (Dorcas, JTVF).

This task according to the respondents is often tedious and time consuming to undertake. They explained that after collecting the water they will have to bring all their belongings outside and mop the room while they wait for the room to get dry and pack the things back. This sometimes prevents them from embarking on their economic activities.

Fosuah, a respondent in Agbogbloshie commented:

'.....The flood water at times reaches our waist level because the water has nowhere to pass. So the only thing we do is to scoop the water which even prevents us from going to work because you have to clean the house...' (Fosuah, AGFV).

Placement of stones and bags of sand was another reactive measure adopted by members of both communities. Five out of the eight focus groups mentioned this theme as an adaptation measure. These groups were all the vulnerable groups in both communities as well as males in Agbogbloshie who were not vulnerable to flooding. They explained that while the stones enabled them to have access through the flooded areas, the bags of sand also block the flood water from entering their rooms. It was also another practice common

in both communities. It appeared in all the four groups from both communities that experience flooding. Another group who mentioned this aside these four groups was the male group in Agbogbloshie that does not experience flooding.

A male respondent from James Town put it like this:

'.....Because of the water and mud we arrange stones and walk on them so that when you are dressed, the mud will not get onto your body.....' (Adjetei, JTVM).

Relocating to live with friends was another reactive measure employed. However, this theme only emerged in the vulnerable female group in Agbogbloshie. Respondents pointed out that they sometimes leave their residence or send their children to live with a friend who was not affected by the floods. Although respondents said this was an adaptation measure, they mentioned that, it was not so effective because they cannot stay for long before they overstay their welcome.

Fosuah shares her experience:

'.....So there is a brother here called 'Four Play' who came to carry all the children to his place.....' (Fosuah, AGVF).

Drawing on religious faith was the last adaptation measure employed according to the respondents. This theme again emerged from only the focus group discussion held with vulnerable females in Agbogbloshie. Some respondents in the group mentioned that, they drew on their religious faith and religious texts as a way of coping with the floods.

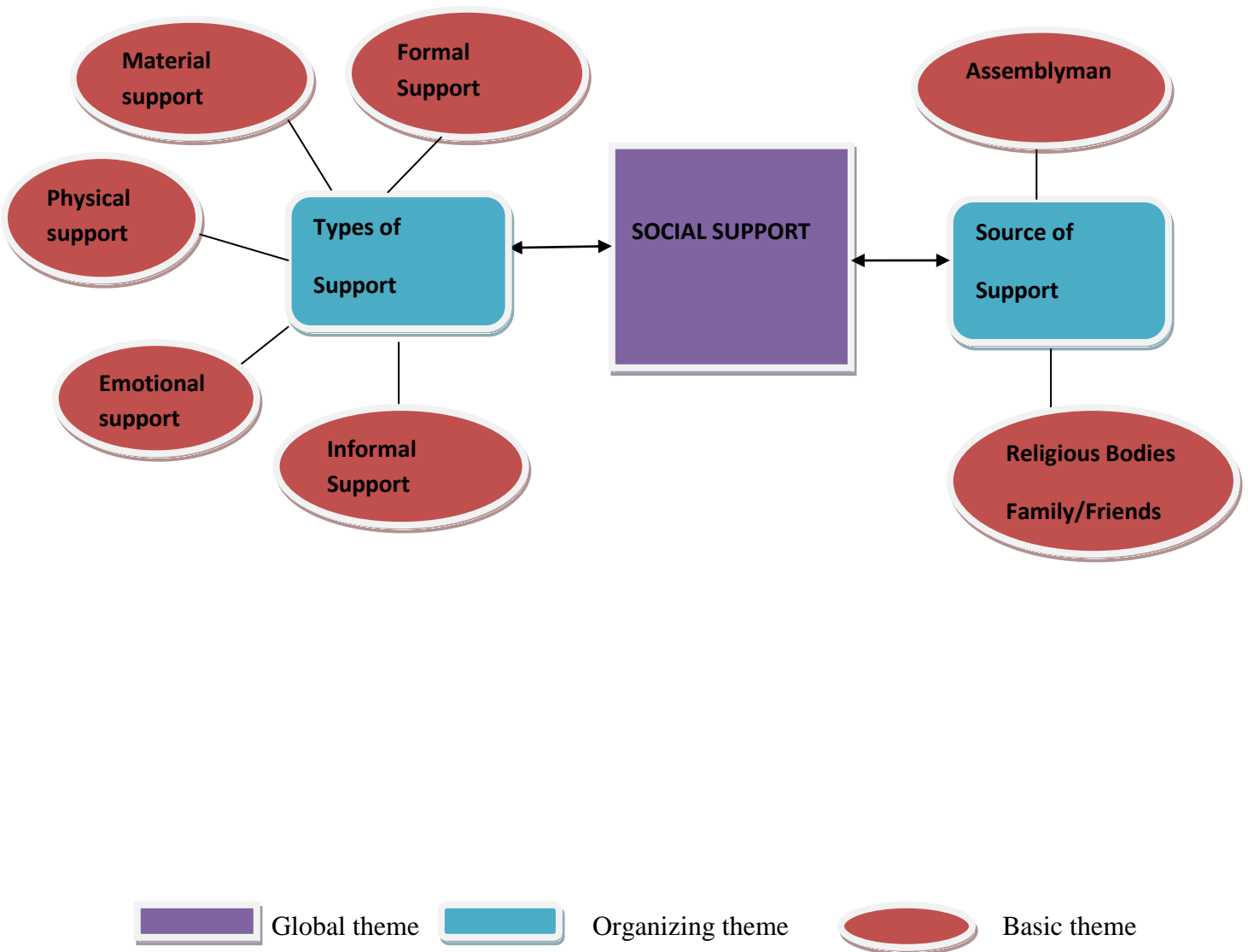
Maame Yaa, a respondent from Agbogbloshie stated that:

‘.....As you know, the Bible even says “if you have life you have all things.....’

(Maame Yaa, AGVF).

5.6 Prevailing social support in the community

Social support is a very crucial element in the lives of many affected flood victims. It facilitates the emotional recovery of these affected persons. Two types of support prevailed in the study area. These are both formal and informal support from the Assemblyman, religious bodies, families and friends (Figure 5.6).

Figure 5.6: Thematic network on social support

5.6.1 Formal and informal supports

Formal support is the type of support received from the government and other formal institutions, such as non governmental bodies and associations. From the responses obtained from the eight focus group discussions, receipt of formal support came up in only two groups. These groups were the female group who experience flooding and male group who do not experience flooding both in Agbogbloshie who confirmed the receipt of formal

support given to flood victims in Agbogbloshie. No group in James Town, however, admitted receiving support either formal or informal.

According to respondents from the two groups in Agbogbloshie who receive support, they only received formal support was from the assemblyman. This was material support in the form of stones which is given only when election is approaching. According to them the stones are to be laid on the flooded areas for easy passage.

This was how Grace, a female respondent from Agbogbloshie put it:

'.....when they hear that election is coming; as for that one the Assemblyman will come here. Then they will bring stones here for everyone to collect some to his/ her house and if you don't hurry up, you will not get some' (Grace, AGVF).

Male respondents in Agbogbloshie who although do not experience flooding confirmed the receipt of some formal help from the Assembly. They attested to the fact that aside the provision of stones, sometimes the Assemblyman provides them with the equipment needed to undertake some clean-up exercises although it is not necessarily in the aftermath of flooding.

Selasie, a male respondent who does not experience flooding commented:

'.....Like all of us have said we don't get any help formally may be from A.M.A. say the elders from A. M. A. have come that you are doing clean – up so take, we don't get anything but when we go to the Assembly man and tell him that we want to do clean – up exercise; he provides us with wheelbarrows and things but that doesn't come directly from A. M. A. because at the end the Assembly man himself organizes some refreshment for us' (Selasie, AGNVM).

Although this form of support exists for flood victims in Agbogbloshie, they however expressed that it does not in any way help them in their recovery process. This is what Maame Yaa, another female respondent stated it:

‘.....I don’t think these stones bring us any benefit.....’ (Maame Yaa, AGVF)

However, considering the views of respondents, it must be stated that respondents only deemed social support directly from the government (NADMO) and non profit organizations as formal source of support.

It is worthy to mention that among the respondents who received support in Agbogbloshie, there was some form of disparity even in the distribution of the stones. Priority was often given to those individuals who are close or related to the source of the support at the disadvantage of the others.

This is what one female respondent from Agbogbloshie said:

‘.....Since I was born we have not received any help if maybe you are a family member to the assemblyman fine, but if you are not a family member, no help’ (Angela, AGVF).

All sources of support from families, friends, colleagues and religious bodies were classified as informal sources of support. From the study it was found that both male and female respondents from Agbogbloshie who experience flooding receive some form of informal support from some religious bodies as well as friends.

Akosua Tuntum, a female flood victim in Agbogbloshie shared her views:

'.....I think at times we get help from the church when they hear about it, but no A.M.A. or NADMO come to our aid.....' (Akosua Tuntum, AGVF).

However, contrary to the responses obtained from flood victims in Agbogbloshie, no respondent in James Town reported receiving any form of support. This was how Eno, a female respondent from James Town who experiences flooding put it:

'.....we don't receive any support, even the Town Council came and looked; when they go they never come back.....' (Eno, JTVF).

5.6.2 Material, emotional and physical supports

Material, emotional and physical supports emerged as already shown in Figure 5.6. The material support was in the form of stones and clothing received from the Assemblyman and religious bodies respectively. The receipt of clothing was reported by the female vulnerable group in Agbogbloshie.

Fosuah, a female flood victim commented:

'.....the church when sometimes they hear about it brings some cloths to us.....' (Fosuah, AGVF).

The emotional support on the other hand was sympathy calls respondents received from friends during the flooding period. This theme however emerged from the male group who experience flooding in Agbogbloshie. Asamoah, one of the male respondents shares his experience:

'.....As for sympathy call we receive a lot. I even have a friend who calls me whenever there are showers.....' (Asamoah, AGVM).

Physical support was only received by female flood victims in Agbogbloshie, with none of the other groups from the same community admitting receiving support. From the female group it also came up that they sometimes send their little ones to live with some friends until the flood waters subside.

A female respondent from Agbogbloshie pointed out:

'.....So there is a brother here called 'Four Play' who comes to carry all the children to his place till the water goes down.....'(AGVF).

It can however be said from the discussion that, although James Town is an homogenous community, there was more communal living in Agbogbloshie, a heterogeneous community as compared to James Town.

5.7 Source of support

Three sources of support were reported. These were support from the Assemblyman, friends and religious bodies. While female respondents who experienced flooding admitted receiving formal support from the Assemblyman, male respondents who do not experience flooding from the same community also received formal support from the Assemblyman. However, none of the other groups mentioned received support from the Assemblyman. Both male and female respondents in Agbogbloshie who experience flooding received support from friends. With regard to receiving support from religious bodies, it was only the female group in Agbogbloshie who attested to the fact that they receive some form of support from some religious bodies when they are affected by flooding.

In conclusion, an individual cause of flooding was described by respondents in three ways: building across water course, indiscriminate dumping of refuse and the location of

buildings. Location of buildings was however, more of a problem to the people of Agbogbloshie than James Town. In James Town, it was a problem to only the female respondents who were vulnerable to flooding. According to the respondents, high water table was the major natural cause of flooding in the area. This was however, new to existing literature but could be considered under the broader theory of landscape.

With respect to structural cause of flooding, the respondents identified three basic themes: inadequate and small gutters, lackadaisical attitude of some sanitary workers and high cost of waste disposal in the communities. Four effects of flooding were also identified during the study period: effects on health, effects on socio-economic activities, effects on school and effects on psychological health. The electric shock theme revealed in this study was however, new to literature and should be included under the broad health effect of flooding.

The community adaptation and coping strategies to flooding during the study were: creating shelves in rooms, replacing the roofs of their buildings, raising defence walls in front of their rooms, filling their compounds with stones and bags of sand, scooping the flood water, relocating to live with friends and drawing on their religious faith. Apart from these coping strategies by the people, there was also a prevailing social support for these flood victims. These were formal and informal support from the Assembly man, religious bodies, families and friends. These supports however, only prevailed in the Agbogbloshie community during the study period.

CHAPTER SIX

INTERPRETATION OF RESULTS

6.1 Introduction

This chapter discusses the study findings in relation to two broad headings. These are the perceived vulnerability to flooding and the prevailing social support. Under the perceived vulnerability to flooding, subjects such as perceived causes of flooding, effects of flooding, persons affected as well as the adaptation measures employed are explored. The chapter also discusses about the types of support that were available to people in the research communities.

6.2 Perceptions of vulnerability to flooding

Flooding is a major environmental challenge according to the respondents' own account. The type of flooding that occurred in the research communities can be likened to two of the three types of flooding as classified by Jonkman (2005). These are the drainage-problem floods and flash floods. There were seven main causes of flooding as perceived by respondents. This, as already mentioned, was further grouped into three causes; namely, individual cause of flooding, natural cause of flooding and structural causes of flooding.

Under the individual causes of flooding, building across water courses was a major problem for the female groups as compared to the male groups. It was seen that, out of the five groups that this theme emerged, three were female groups as shown in Appendix B. The female respondents complained that people, particularly men build in unauthorised places and they suffer the consequences, by always scooping dirty flood water. Putting up structures in unauthorised places was also common in Agbogbloshie than James Town. This could be attributed to the fact that Agbogbloshie as seen to be a major market area in

Accra, and perhaps due to the proximity of the community to the market, most people will want to live close to the market and thereby put up structures without any official permit. Also, from the discussion it came up that, the cost of rent was considerably cheaper in Agbogbloshie as compared to some areas in Accra. This reason could also compel most of the people especially those who are into buying and selling to live there, thereby increasing the tendency of some people to build inappropriately. Olorunfemi and Raheem (2007) assert that poor urban dwellers have low income which constrains them from locating in safer sites. Karley (2009) states that encroaching on water courses was one of the most significant causes of flooding in Ghana.

Indiscriminate dumping of refuse was the highest recorded cause of flooding in the research communities. The theme transcends community boundaries as well as gender differentials. Respondents attached greater importance to it and attested to the fact, this attitude of indiscriminately dumping refuse often results in the few available gutters being choked up which subsequently leads to flooding. They further stated that their communities are often left untidy whenever it rains as these piles of rubbish are carried away by flood water. This goes to buttress the biological aspect of the Biopsychosocial cost of ecosystem disturbance on which this study is founded. Whereby in a similar study conducted by Tschakert and Tutu (2010) respondents described their neighbourhood as muddy whenever it rains, thereby perceiving themselves as vulnerable to the elements of flooding. A plausible reason for indiscriminately dumping refuse can be linked to high cost of disposing waste in the study area, which is one of the structural causes of flooding. High cost of waste disposal was a major burden especially to the respondents who do not experience flooding. It came up from the discussions that, most respondents did not have private toilet facilities in their homes and were therefore required to access the general

community for a fee. However, with a recent increase in the fees coupled with their low income status, respondents mentioned that they were left with no option than to defecate in their backyards. According to the respondents, they had to pay large sums of money before they are allowed to dispose their rubbish. They therefore had to dump it somewhere within the community in times when they do not have the money.

Agbogbloshie is found in a major market area, and it is likely that most waste generated by market people is sometimes left within the community. James Town on the other hand is a fishing community and some people perceive the sea to be a drain of waste. They therefore throw refuse anyhow with the hope that when it rains, it will be carried away by the rain water into the sea. This finding was in conformity with the report by ILGS and IWMI (2012) which found some residents in some urban poor communities in Accra disposing refuse haphazardly with the aim of being carried away by flood water.

Location of buildings was a major problem to both female groups who were vulnerable to flooding. However, vulnerable female respondents in James Town suffered the most. They stated that, due to the location in which they find themselves within the community, they are on the disadvantageous side of experiencing flooding. In Tschakert *et al.*, (2009), the conceptual framework on which this study is drawn, vulnerability to flooding was described as the likelihood of a system to experience flooding and that system's livelihood characteristics such as its location and housing structures. It therefore suggests that this has something to do with the topography of the area. This is what Chan and Parker (1996) report that the topography of an area predisposes people to be vulnerable to flooding. Similarly, Brooks (2003) and Aboagye (2012) have stated that the external state of a

system such as the location in the floodplain can make that person biophysically vulnerable to flooding.

High water table emerged as a cause of flooding among two groups who were vulnerable to flooding. These were the male group in James Town as well as the female group in Agbogbloshie. Respondents placed emphasis on this theme that, as a result of holes in the ground, flood water stays longer in their compounds even after scooping. They believed that additional water comes from the ground through these natural holes. This finding according to Chan and Parker (1996) are factors that exacerbate the occurrence of flooding.

An inadequate and or small gutter was a major problem to the people of Agbogbloshie than those in James Town. All the groups in Agbogbloshie both vulnerable to flooding and not vulnerable to flooding expressed similar concerns. The slum-like nature of Agbogbloshie with its attending poor community planning makes this community lack the necessary gutters needed for run-off. In addition to the lack of gutters, the few small gutters as termed by the respondents' as 'manmade' were often choked. This therefore corroborates the findings of Dabara (2012) which found the inadequate drainage system in Gombe in Nigeria to be the major cause of flooding. In James Town, however, although they suffer indiscriminate dumping, they have properly constructed drainage facilities that enhance run-off. They therefore did not attach much concern to this issue.

Lackadaisical attitude of sanitary workers was pertinent to female groups in both communities. Respondents expressed the view that sanitary workers were not able to render unto them better services and therefore leave their communities dirty. They further

stated that it takes these sanitary workers a long time to clear rubbish from the communities. This theme was found among the women groups. This is perhaps the role they played as housekeepers.

6.3 Effect of flooding on communities

In connection with the biological component of the biopsychosocial model adopted, some themes that emerged in the focus group discussions in relation to health suggested the various negative health effects as a result of flooding. Respondents mentioned a range of ailments they suffer during the flooding periods. There were both immediate and long term effects. Negative health effects such as skin rashes, cholera and physical injuries were some of the immediate effects of flooding. The long term effect had more to do with the breeding of mosquitoes through the collection of stagnant water. The health effect of flooding was mentioned in all the groups.

The general negative health implications expressed by respondents are in consonance with the literature reviewed which suggest that in the aftermath of flooding often emerge epidemics such as cholera and diarrhoea through the spread of waste flood water and the blockage of drainage channels. This leads to the accumulation of water which creates conducive breeding grounds for mosquitoes (Patz and Haines 2004; Messner, *et al.*, 2007; Adedeji, 2012).

Among the male group who experience flooding in James Town, electric shock emerged as another health effect of flooding. They expressed great worry regarding this matter. They mentioned that the whole vicinity is electrified whenever there is a downpour. This can restrict their movement in the community.

The effect of flooding on socioeconomic activities was mostly felt by female respondents in Agbogbloshie. The Theory of the Biopsychosocial cost of ecosystem disturbance stated that flooding have an influence on the social aspect of the well-being (Tschakert, 2007). From this study, it was observed that, flooding deprives these people from embarking on their livelihood ventures. According to the respondents, when it floods, they spend all their time scooping flood water at the expense of their businesses. Also, due to the nature of their road network, coupled with the flood water, they are cut off from any transactions since no vehicle will be willing to enter the community. This finding therefore agrees with Olorufemi (2011) who finds that urban floods affects livelihood opportunities by destroying houses, assets and income.

This was a big challenge to the people of Agbogbloshie. However, no group in James Town showed any concern towards it. Even in Agbogbloshie, it was more pertinent to the female groups than the males. This suggests that, as asserted by Regyl *et al.*, (2006), females bear the responsibility of taking care of the children and in this context their education. Respondents in Agbogbloshie expressed extreme concern about this problem. According to them, their children's education was at stake. Respondents mentioned that education is now the key to financial breakthrough. Meanwhile, they do not have a single school in Agbogbloshie, and had to take their children to other neighbouring communities. This is worsened during the flooding periods, as they are unable to send these children for fear of being drowned. Some respondents also stated that sometimes the children will have to cross bridges some of which are wooden which becomes death traps during these period. Olorunfemi (2011) asserts that flooding has a major impact on schooling activities.

Turning to the psychological aspect of the Biopsychosocial model, flooding leads to emotional distress. Respondents whose property was either destroyed or carried away by the flood encounter stress as a result of soliciting for funds in order to help them cope. This often leads to feelings of discomfort, depression and anxiety whenever they perceive to expecting the rains. The impacts of flooding negatively affect their livelihoods as they are unable to undertake income generating ventures. The male group who were vulnerable to flooding mentioned that they were denied their only source of entertainment. This was a football park within the community which is often destroyed by flood water. This psychological health impact of flooding is in agreement with Kanaisty and Norris (2004), who asserted that flood victims are often traumatized as a result of the life threatening exposure they go through.

6.4 Persons affected

From the study it was revealed that flooding had a greater negative impact on some people compared to others. Children were deemed to be most affected according to respondents from both communities. According to them, children had little knowledge in differentiating between good and bad. They were even impacted more when the incident of the flooding occurred at night. Because according to the respondents, they are left with no option than to wake these children up to save their lives, since the flood water at times reaches an adult's waist level. Another way by which flooding affects children is that they are often confined indoors and are then cut off from any other social activities for the fear of being drowned. The health repercussions of flooding are also mostly severe among children than any other group.

This is therefore in conformity with what available literature suggests that children are severely affected because they are unable to resist or respond on their own and adults have to allocate resources to them (Coninx and Bachus, 2006; Cutter *et al.*, 2009)

Women were the other group of people deemed most vulnerable to flooding. This theme emerged in all the female groups both vulnerable and non vulnerable. This is probably due to their socio-cultural setting, where females bear the greater responsibility of taking care of the children. They are therefore mostly found in the house while the men embark on income generating activities outside the home. This finding however contradicts the findings of Yang *et al.* (n.d) which suggest that, gender is not an important factor that influences a person's vulnerability to flooding. However is in line with Regyl *et al.*, (2006), who asserts that females are more vulnerable due to their responsibility of taking care of the children and elders who require help and supervision. Another plausible reason could be that, because women are sometimes regarded as the weaker vessels, they normally project their suffering than men.

Another group that was severely impacted by flooding according to the respondents were the older people. Respondents described the old as weak as a result of decline in their physical health. With the exception of males in Agbogbloshie and females in James Town experiencing flooding, all the groups attested to the fact that older people are severely impacted by flooding. This finding is in accordance with Shaw *et al.* (n.d) who states that the elderly demand special care and attention because they are unable to respond on their own to the impacts of flooding.

The poor were mentioned by respondents as being greatly affected by flooding. Female respondents in James Town declared that they were the poor people who are faced with the challenge of living in flood prone areas. They further stated that no rich man will be willing to live in the kind of environment they find themselves. It therefore corroborates what Shaw (2006) postulated that poverty and lack of resources at different levels make people vulnerable. It also agrees with Regyl *et al.* (2006) who concluded that poor people are unable to afford less flood prone areas, and they live in poorly built structures due to their lack of resources which places them on the disadvantageous side when disasters such as flooding occur.

Everybody was the last theme that emerged under the persons most affected by flooding. Males and female respondents who experience flooding in Agbogbloshie and James Town respectively stated that, in the event of flooding, everyone both young and old suffer. They however related this to the spread of mosquitoes and outbreak of diseases. The vulnerable male group in Agbogbloshie stated everyone because this group raised concerns about the destruction of their only source of entertainment as a result of flooding. But perhaps in their social and cultural beliefs men were expected to be strong and therefore were not able to project their suffering as women did.

6.5 Community adaptation and coping mechanisms

From the study it was revealed that flood victims in the research communities have certain mechanisms they put in place in order to avoid or minimize the impact of flooding incidence on their lives and properties. These mechanisms were employed both at the individual, household and community levels.

Proactive measures were measures respondents put in place in anticipation of future floods. According to the respondents, this gives them some form of assurance that in the event of flooding, their lives and properties were safe. The creation of shelves in rooms was mostly an individual adaptation measure that ensures that valuable items and personal belongings were kept on higher elevations to avoid damage. It was employed by female flood victims in Agbogbloshie. This practice was also found among residents in Mataheko and Old Fadama where mostly female flood victims put their belongings on shelves in anticipation of future floods (ILGS and IWMI, 2012).

Replacement of the roof of a building was another proactive measure adopted by flood victims in Agbogbloshie. This adaptation measure was again done at the individual level among vulnerable female respondents in Agbogbloshie. Although it seems to be more physically demanding, it emerged in a female group. This could probably be due to the fact that most household heads within this community who are vulnerable to flooding are females and therefore have to take the initiative of replacing the roof. The practice was also consistent with Adedeji *et al.* (2012) in Nigeria who found that majority of the local people, dealing with the negative impacts of flooding, construct their houses with materials that can minimize the impacts of floods.

The last proactive measure according to the respondents was by raising defence walls in front of the rooms to prevent the flood water from entering their rooms. This practice unlike the other two proactive measures was adopted by both respondents in the two communities. Shaw *et al.* (n.d) indicate that some households adopt the construction of elevations and or shield their houses with water barriers to block the water from entering their rooms.

Reactive measures according to the respondents assist in the recovery process. Scooping of flood water was the most common reactive measure adopted in the two communities. It was employed by all the groups except non vulnerable females in James Town. This could possibly be attributed to the less financial cost involved and the lesser skill attached to it. According to the respondents as a result of the inadequate drainage facilities in conjunction with indiscriminate dumping of refuse, the flood water is not able to flow, which consequently floods their rooms. According to them, it was both time consuming and tedious because they will have to bring all their things out from their rooms, scoop the water, mop the rooms, wait while the room dries and then pack their things back to the room. Female respondents who experience flooding in James Town however mentioned that this activity normally results in quarrelling among neighbours as to where to throw the collected water.

Placement of stones and bags of sand was another reactive measure adopted by respondents. This practice was employed both at the household and community levels. These stones provide access through the flooded areas and the bags of sand also prevents the flood water from entering their rooms. This practice was also reported among residents in Mataheko and Old Fadama, suburbs of Accra as coping mechanisms (ILGS and IWMI, 2012).

Relocating to live with friends was another reactive measure adopted by female flood victims in Agbogbloshie. Respondents however mentioned that it was not an effective measure, because they were not able to live for long before they overstay their welcome. Arthur and Arthur (2011) also found that flood victims in Ghana usually relocate to stay with family members but return when the floods subside. Respondents emphasised that

they only go to live with friends since majority of their family were not living in Accra and the few who live with them are equally affected.

Drawing on one's religious faith and religious text was another coping mechanism. It was found among the Agbogbloshie vulnerable female group. The finding confirms that of Chan and Parker (1996) in Malaysia, which suggests that poor households especially Muslim households resort more to prayer as a coping mechanism.

6.6 Social support

Some types of social support existed in the study area. These are formal, informal, material emotional and physical supports. Unlike in more affluent regions of the world where formal aid offered by the government and relief agencies is a common feature (Barton, 1969, cited in Kanaisty and Norris, 2004), flood victims from both communities stated explicitly that they do not receive any form of support either formal support or informal support. However, when this issue was probed further, it was revealed that both formal and informal types of social support existed in Agbogbloshie. Female respondents in Agbogbloshie reported that they sometimes receive support from the assemblyman when election is approaching. This was a material support in the form of stones. These stones according to the respondents were to be laid on the flooded areas with the purpose of allowing easy passage through the community. Although this form of support existed for flood victims in Agbogbloshie, they however expressed that it does not in any way help them in their recovery process.

From the discussion it was found that male respondents who although do not experience flooding confirmed the receipt of some formal support from the Assemblyman. They

mentioned that, aside the stones, the Assemblyman sometimes provides them with the equipment needed to embark on clean-up exercises. They further stated that although this support is from the Assemblyman, they do not receive any formal support from the government. It can be deduced from the discussion that respondents only deemed social support directly from the government (NADMO) and non-profit organizations as formal sources of support.

Contrary to Agboglobshie, respondents in James Town stated repeatedly mentioned that they do not receive any form of support. This could perhaps be attributed to the fact that respondents from James Town were not severely affected by the flooding incidence as compared to those in Agboglobshie and, as Kaniasty and Norris (1995) suggested, the first and most familiar rule governing the emergent supportive communities is the rule of relative needs where precedence is given to such victims who experience the greatest exposure to the negative impact of the disaster.

It must be mentioned here that disparity existed in the distribution of the support even among respondents who confirmed receiving support. Priority was given to those individuals who were close or related to the source of support at the disadvantage of the others. This finding is in consonance to the findings of Armah, *et al.* (2010) in the Northern region of Ghana, who asserted that in getting access to support items in the aftermath of the floods, precedence is given to individuals who belong to the ruling political party neglecting those who are non members.

All sources of support from families, friends, colleagues and religious bodies were classified as informal sources of support. This type of support helps flood victims to

recover faster due to its nature of immediate response as compared to formal support from the government (Okyere *et al.*, 2010; Adedeji, 2012). Respondents in Agbogbloshie who experience flooding mentioned that they receive some informal support from friends and religious bodies. Research has found flood victims who receive informal support to experience lower post traumatic stress disorder as compared to those who receive formal support (Yang *et al.*, n.d.). Adedeji (2012) attributes this to the immediate response from family as compared to the relatively slower time required acquiring benefits or compensation from the formal sector, for example, the government or some non-profit organisation.

This was confirmed by Okyere *et al.* (2010) whose findings revealed that the actions taken by government and other non profit organizations in responding to the aftermath of floods is often ineffective. Some communities that were affected by the 2007-2012 floods mentioned that relief items from NADMO were inadequate and even came too late.

However, as already mentioned, respondents claimed that they do not receive support because their families were equally affected by the flood.

From the study, it was revealed that flood victims in Agbogbloshie received some support. These were material support, emotional support and physical support. The material support was in the form of stones and clothing received from the Assemblyman and religious bodies respectively. The emotional support on the other hand was sympathy calls respondents received from friends during the flooding period. From the female group it also came up that they sometimes send their little ones to live with some friends until the flood waters subside. This was asserted by Arthur and Arthur (2011) who found that most flood victims in Ghana relocate to live with families until the flood subsides.

The results of this study revealed that, there is no relationship between the type of support received and perceived vulnerability to flooding. This means that there is no difference in the perceptions of people who said they receive some support and those who do not receive any support. Because, as mentioned earlier, the respondents in Agbogbloshie who receive some form of support stated that this support does not in any way help them in their recovery process.

With regards to receiving support, female flood victims in Agbogbloshie received all the forms of support available in the community. That is, support from the Assemblyman, religious bodies as well as friends. However the vulnerable male group in Agbogbloshie acknowledges receiving support from friends only. This could probably be due to the fact that they did not want to mention all the support they receive for fear of being denied extra support from other sources. On the other hand, it can be due to the fact that the males are placed on the disadvantageous side in the distribution of support. As according to Kaniasty and Norris (1995), certain people are either placed on the advantageous or disadvantageous side in receiving support following a disaster. This finding however contradicts the finding of Feng *et al.* (2007) which revealed that there is a higher level of social support in males than in females, which they attributed to the fact that males often have higher educational levels than females and may therefore have better social intercourse skills.

CHAPTER SEVEN

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

7.1 Summary

The research focused on social support and perceived vulnerability to flooding among two flood prone communities in the Accra Metropolis. These communities were Agbogbloshie and James Town which are urban poor communities in Accra. The study was a purely qualitative study that used data from focus group discussions held with people who experience flooding as well as those who do not experience flooding in the above mentioned communities. A total of eight focus groups made up of about six to nine respondents in each group, making the total respondents of fifty three persons were conducted. The study explored four specific objectives and the results helped to answer four research questions.

Two types of flooding identified in the study area. However, the people of Agbogbloshie experience more drainage problem floods than those in James Town. This was a result of inadequate and choked gutters that were found in Agbogbloshie. Flooding had a negative effect on the communities' socio-economic activities, health, schooling activities as well as their psychological health.

Flood victims employed several techniques in coping and adapting to flooding. Some of these techniques were, raising defence walls in front of their rooms, filling their compounds with stones and bags of sand, replacing the roof of their buildings and scooping flood water. However, scooping of flood water was the most adopted mechanism employed in both communities. It was again revealed that, during the period of flooding,

children, women, poor and older people were severely affected. There was no form of social support for flood victims in James Town. However, the only kind of formal support received by flood victims in Agbogbloshie was from the Assemblyman in the form of stones. It was therefore concluded that this kind of support was not able to help them cope better with the floods.

7.2 Conclusions

The findings of this research reveal that two types of flooding occur in Agbogbloshie and James Town communities. Male flood victims had higher educational levels compared to their female counterparts. Due to inadequate drainage facilities in Agbogbloshie, flood victims in Agbogbloshie were more vulnerable to flooding as compared to those in James Town. Flooding had a severe impact on the lives of these victims ranging from their social and economic lives to their psychological health.

Scooping of flood water was the major adaptation mechanism employed by flood victims in both communities. There were two types of support received by the respondents who experience flooding in Agbogbloshie. The formal type of support was from the Assemblyman, while the informal support was from friends and religious bodies. However, they reported that the available support was negligible. It was revealed also that respondents from James Town did not receive any form of social support after flooding events.

7.3 Recommendations

From the aforementioned, the following recommendations are made.

- i. More drainage systems should be constructed by Accra Metropolitan Assembly in Agbogbloshie community before rains set in, because, they suffered most as a result of drainage problem floods.
- ii. There should be some form of substantial formal social support given to flood victims in the research communities since formal support available for flood victims in the area was negligible.

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APPENDICES

Appendix A; Sample of transcript of focus group discussion of females in Agboghloshie who experience flooding.

DEMOGRAPHIC INFORMATION

Respondents	Age	Occupation	Educational Level
Fosuah	28	Seamstress	S. H. S.
Angela	23	Sales personnel	S. H. S.
Akosua Tuntum	30	Hairdresser	J. H. S.
Monica	38	Trader	J. H. S.
Maame Yaa	67	Trader	Form 4
Grace	29	Food seller	JHS

INTERVIEWER

Interviewer: Please I will like to know that; what are environmental, like things that worry you most in this community. Our community things that worry us in terms of sanitation and other things like when it rains things that worry you most.

Respondent 2: As for us a lot of things are worrying us here especially when it rains this place mostly gets flooded and it enters our rooms but when rains a little only this small place flood, it does not enter our rooms; but when it rains heavily our things can become unpleasant. Right now the rain has stopped but still there is water on the ground, when it rain we suffer a lot here.

Respondent 1: The same as my sister said when it rains, it affects us most and also the way the gutter is also the rubbish that they throw; rubbish together with the flood worries us here a lot.

[**Probe:** R 3, but you live at the back there so you can also say what worry you people there]

Respondent 3: What worries me is our place also when it rains the same thing they throw rubbish into the gutter so it makes it flood, then it entering the rooms.

Respondent 5: Flood is also a big problem to me because whenever it rains and the house gets flooded, the water enters my room and I feel uncomfortable. So I have to bring all my things outside and scoop the water out of my room and wait till my things and the room gets dried.

Respondent 4: The flood water at times reach our waist level because we don't have anywhere for the pass. So the only thing we do is to scoop the water. It even prevents us from going to work because you have to clean the house.

Respondent 6: All my sisters have said is true, floods worries us because we don't have gutters here so water enters my room whenever it rains.

Respondent 5: Additionally, I think water comes from the ground because even water rainfall we take a long time to scoop the water out of the house.

Interviewer: So please what brings these floods in this our community.

Respondent 1: It can happen that where we are not supposed build houses is where we have built so it's like it has chokes the gutter through which the water is supposed to pass. For example, if you go behind this building you will see that people have built at places which are not appropriate for building. So when it rains the water doesn't get any where to pass in order to where it supposed to go. Also refuse have choked the gutters.

Respondent 2: Like my sister said people have built their at certain places which is not appropriate and because the land owners have sold the land to them, they doesn't listen to what any one will say but rather go ahead to build. So that also contribute to flooding in this place and when it rains this place becomes unpleasant. Mostly we have to remove refuse from the gutters and whenever we forget to do so the whole place will get flooded when it rains.

Respondent 5: I will say the absence of a gutter is a factor and the way people have built their houses here because certain places are for water course but people rather build there so the water doesn't get anywhere to run off.

Respondent 6: Also refuse have choked the gutters especially when you go to the Agboghloshie Market area you will see that refuse have choked the gutter.

Respondent 4: Like they said the refuse that chokes the gutters causes floods in my area.

Interviewer: So please which people does the floods worries, may be it can worry male than female or children or old people or those who have a little money or those who are a little poor. Do we have some people the floods worry than the others?

Respondent 1: It depends on where you stay, me for instance I stay with my parents and my siblings, and someone is also with her husband or children. I will say it worries we the women most because may be you are having a child whom you to carry in order to avoid the flood when it is raining. At times the children will be say three or four and you husband is not around how you can carry all of them.

Respondent 2: Like my sister said, it is true because when it happens (flood) like that the men doesn't care whether the woman cater for the children or not. And as a woman when there are floods you have to do everything possible to cater for the children, so we suffer a lot here.

Respondent 3: What they said, the same thing.

Respondent 5: Truly, children are those who suffer mostly, because they cannot walk through the flood so we often force them to stay in closed door since some will like to come out and play. Even you the adult when you walk through it, the level of the water is somewhere around your waist, so how much a child.

Respondent 4: Children because at times they have to go to school but due to the rain they will not be able to go since the whole place is flooded.

Respondent 6: I will say children since they cannot go to school.

Interviewer: Please you said children, so children; is it those of 5 years and below or 10 to 18 years or 19 to 54 years or old people?

Respondent 2: Children above 10 years for example the one sitting there will be able to help their mother but children below 5 years will not be able to do anything so it affects them most. May be the child be feeling cold and will like to sleep but you have to mob the water before he get somewhere to sleep. And if the child doesn't get anywhere to sleep he fall sick.

Respondent 1: The old ladies too some of them body is weak because when you reach certain age you becomes weak. So the old people also at times they suffer a lot.

Respondent 5: Truly, those of 10 years coming down suffer most. Because when it happens like that, the way it has rained and the whole place is flooded, even you the mother who is suppose to look after the child to go school will not get time because the way it has rained you be trying to anything to enable the water to go, may be you will scoop or be caring your things to avoid the rain water and the children too don't get anywhere to bath, so when it happen like we don't allow them to go school.

Interviewer: Please, so your house, have you experience some of the flood.

Respondent 1: Yes, we have experience a lot. Because when we were young the rain water carried most of our things away and we went about begging for money. So there is a brother here called 'Four Play' who came to carry all the children to his place. So as for us experience; we have experience a lot, it's long time ago.

Respondent 5: Even when there are showers, so whenever the weather becomes cloudy then we are crying and praying that it should not rain because the water will get anywhere to pass.

Respondent 4: I always wish that it never rain.

Interviewer: It seems you have answered it already, because like I want to ask what have you being doing to enable you to live here; like how do you cope, because the water you experience it; it comes mostly and how do you continue with life, because it takes your things away.

Respondent 1: As you know, the Bible even says "if you life you have all things". So although the rain water carries most of our belongings away, we manage the little left and after the rain we scoop the water out of the house.

[**Probe:** Do you go and live with relatives/ friends or do not move at all]

Respondent 2: Who are you going to stay with? Because we were born here, so we do whatever we can till the sun shine and the water move completely. We also dry our things on the sun and after it has dried life still continues.

Respondent 1: I don't move to anywhere because I'm living in a family house and the strangers are not plenty. As for friends too it's not all the time that you will go and stay with a friend.

Respondent 5: I am willing to relocate but it's all a matter of money because I cannot afford house rent elsewhere. So the only thing I do is to scoop the water for me to be able to survive.

Respondent 4: The same as my sister said.

Respondent 6: I don't have anywhere to go because this is where I have being living for many years, so we only scoop the water.

Interviewer: So please the water, does it is spend hours or days or weeks when this place floods, does it keep long before it will go?

Respondent 1: Now our gutters are choked and so if it were to rain right now it will flood this place. So it takes days, that is, when the gutter is choked but with our rooms it doesn't take long, may be hours, so gutter is our problem.

Respondent 2: The land is what I will say may be its not good because it rained about three days ago but if you go my veranda there is water there. So when you wake up every morning, you have to scoop the water. Also the way people builds here prevent water course.

Respondent 4: It takes hours (at times from 9am – 12pm) before we will finish scooping the water because we have to carry the water to a gutter a bit far away from here.

Respondent 5: At times we forfeit our work and businesses to scoop the water because if you don't do that the water will be there.

Respondent 6: We the old people at times join by using used paint rubbers to scoop the water because the gutter somewhere around market is mostly choked.

Respondent 5: And if we decided not to scoop the water then it will be there for may months.

Interviewer: So please when this place flood do you get help from anywhere like do government come in, any NGO or any health center.

Respondent 1: That one it's a lie, we don't receive any form of help. Even the Assembly man here we don't know him, we they hear that election is coming; as for that one they will come here. Then they will bring stones here for everyone to collect some to his/ her house and if you don't hurry up, you will not get some. I don't think these stones bring us any benefit.

Respondent 2: During the election, we were promised that our road will be constructed and up to now we have not seen anything. And I think if we have a better road here it will reduce the flood, because when it rains, people scoop the water onto the road and since we are at a lower part of Agbogbloshie, the water comes to our house. Since I was born we have not received any help and may your family member but if you are not a family member, no.

[Probe: May be with the help it's not always money, may be they will say soap, clothes because the water has taken your clothes away, a relative or friend will come and help scoop the water or may be sorry for what has happened to you]

Respondent 2: No one comes to our aid, we help ourselves. Because when it rains every individual scoops the water out of his/ her house.

Respondent 1: I think at time we get help from the church when they hear about it, but no Assembly man, A.M.A. or NADMO come to our aid.

Respondent 5: It will be a lie if I say we get help from somewhere because people do come here the way you have come and see worst flooding and will promise that something will be done about it but when they leave, they don't return.

Respondent 4: We don't get help from anywhere.

Interviewer: So please what are you and your household do to protect you, like make you will do a fence wall or you construct gutters for the water to pass through or the materials used to build your house you check whether it prevent water from coming into your room.

Respondent 2: I don't think we can do anything here unless we agree and contribute some money for a particular project which nobody is ready to do so may be if you as an individual you can do shelves in your room in order to put your things on it to prevent them from the rain water.

Respondent 1: So like my sister said, individually if you see something wrong with your building, for example, the roof then you have to go and buy a new roofing sheet to replace the old one.

Respondent 2: No one is willing to do something, even when the gutter chokes, we don't get anyone to remove the refuse for the water to go.

Respondent 6: We are planning to raise a fence wall but absence of gutter too is a problem for us, so if you even raise a fence wall which gutter will the water move through.

Interviewer: So what do you suggest that the government should come and do; maybe he should relocate you or the gutters should be cleaned or new ones should be constructed or when the water comes he should bring you money?

Respondent 1: I think relocating us will take a long time, so I want the government to develop this place for us so that when it rains, it will not worry us.

Respondent 4: I want gutters to be constructed to enable the water to move and reduce flooding but there is no space for the gutters to be constructed so we only scoop the water.

Respondent 2: As for me the gutter is important to me, I wish it could be expanded a little. Also, those who build on water course, I wish they will be talked to and compensate them in order to demolish their buildings, because it prevent the rain water from moving away.

Respondent 6: I want a gutter to be constructed and also we want additional transformer here because the load is too much and everyday our light goes off. Also, if something could be done about our house so that when it rains, it doesn't flood our house.

Respondent 4: I will plead with the government to construct a gutter for us because that is all that we want here for the rain water to move.

Respondent 5: I will be glad if the government could help us because of the extent of the flood here. And I have always been suggesting that if our house was to be built in a certain form like it will be helpful but we don't have money to do that so if the government will help, I will be glad. We now have a lot of plans in mind to avoid flood but it's all a matter of money, so we just talk and stop; but we will be pleased if the government could do something for us.

THEMATIC PRESENTATION OF PERCEIVED VULNERABILITY TO FLOODING SOCIAL SUPPORT

JTMV – James Town Male (Non)-Vulnerable

JTFV - James Town Female (Non)-Vulnerable

AGMV – Agboghloshie Male (Non) -Vulnerable

AGFV - Agboghloshie Female (Non)-Vulnerable

Organizing Theme	Basic Theme [No. of FGDs]	JTMV	AGMV	JTFV	AGFV	JTNVM	AGNVM	JTNVF	AGNVF	Total	Sample Quote(s)
Causes of flooding	Holes in the ground [2]	✓			✓					2	<i>'The ground here has holes in it which make water to stay here for a long time when it rains' (JTMV)</i>
	Inadequate/ small gutters [6]		✓		✓	✓	✓	✓	✓	6	<i>'The way the gutter is small also the rubbish that they throw inside it, rubbish together with the flood worries us here a lot' (AGFV)</i>
	Lackadaisical attitude of sanitary workers [4]		✓	✓			✓	✓		4	<i>'What I also have to say is that when our dust bins get full it keeps long, they don't come and take it and when it is too full and you also have a rubbish then you have to throw it on the ground'</i>

											(AGVM)
Building across water course [5]		✓	✓	✓	✓			✓	5	<i>'The way people have built their houses here. Because certain places are for water course but people rather build there so the water doesn't get anywhere to run off' (AGVF)</i>	
Indiscriminate dumping of rubbish [8]	✓	✓	✓	✓	✓	✓	✓	✓	8	<i>'There is someone who will take refuse from her house and come placed it at our place; go and look they have come and park some there' (JTVF)</i>	
High cost of waste disposal [6]		✓	✓		✓	✓	✓	✓	6	<i>'... they take money before they will allow you to put your rubbish in it. So I feel that if they can reduce the price of throwing rubbish, no one will get a bad intention to dump it anywhere (JTNVM).</i>	
Location of building			✓	✓		✓		✓	4	<i>'When it rains since</i>	

	[4]										<i>we are at a lower part of Agboglobshie, the water comes to our house' (AGVF)</i>
Effects of flooding	School [3]				✓		✓		✓	3	<i>'there is no school here and when all the children here are going to school they take a long distance, so if a child has closed from school and she is coming and the place is flooded and she go and walk in it, the water can take her away, so you the mother will not allow her to go to school' (AGNVF)</i>
	Health [8]	✓	✓	✓	✓	✓	✓	✓	✓	8	<i>The water floods here such that if you are walking you cannot move your leg in the water; there is electric in the ground, it can shock you. The hill there is an electric' (JTVM)</i>
	Socio-economic [3]				✓		✓		✓	3	

	Emotional distress [2]		✓		✓					2	
Person's affected	Children [5]	✓			✓	✓	✓		✓	5	<i>'May be the child will be feeling cold and will like to sleep but you have to mob the water before he get somewhere to sleep, and if the child doesn't get anywhere to sleep he fall sick' (AGVF)</i>
	Women [4]			✓	✓		✓		✓	4	<i>Female, because the males are always not in the house and they don't even know what happens in the house always, it is we the women who suffers since we are always in the house' (JTVF)</i>
	Older people [6]	✓			✓	✓	✓	✓	✓	6	<i>'The old ladies too most of them their body are weak because when you reach certain age you become weak. So the old people also at times they suffer a lot' (AGVF)</i>

	Poor [2]			✓				✓		2	<i>‘.it is we the poor who suffer, by now a rich man is sitting in a hall with his leg on something. What is he coming to do at the bank of a gutter?’ (JTNVF)</i>
	Everyone [2]	✓		✓						2	<i>Yes we all suffer, because when it rains it breeds mosquitoes and mosquitoes spread to everywhere, it doesn't discriminate that you have money so I've left, you are a child so I've left you; it will bite everyone' (AGVM)</i>
Adaptation measures	Creating shelves in rooms [1]				✓					1	<i>'As an individual you can do shelves in your room in order to put your things on it to prevent them from the rain water'(AGVF)</i>
	Replacing roof of building [1]				✓					1	<i>'Individually if you see something is wrong with your</i>

											<i>building, for example, the roof then you have to go and buy a new roofing sheet to replace the old one' (AGVF)</i>
Raising defense wall [2]			✓	✓						2	<i>'Our door steps you can see that we have done a little wall there, first the water, if you don't use anything to block it, it will enter into the room' (JTVF)</i>
Scooping flood water [7]	✓	✓	✓	✓	✓	✓			✓	7	
Filling ground with stones/bags of sand [5]	✓	✓	✓	✓		✓				5	<i>Because of the water and mud we arrange stone and walk on it so that when you are dressed, the mud will not get onto your body' (JTVM)</i>
Relocating to live with friends [1]				✓						1	<i>'.....So there is a brother here called 'Four Play' who came to carry all the children to his place....' (AGVF)</i>

	Drawing on religious faith [1]				✓					1	<i>'.....As you know, the Bible even says "if you have life you have all things.'" (AGVF)</i>
Type of Social support	Formal support [2]				✓		✓			2	<i>The Assemblyman provides us with wheelbarrow and things and organizes some refreshment for us' (AGNVM)</i>
	Informal support [2]		✓		✓					2	<i>'.....I think at times we get help from the church when they hear about it' (AGVF)</i>
Kinds of support	Material [2]				✓		✓			2	<i>the church when they sometimes hear about it bring some cloths for us (AGVF)</i>
	Emotional [1]		✓							1	<i>'As for sympathy call we receive a lot. I even have a friend who calls me whenever there are showers.'(AGVM)</i>
	Physical help [1]				✓					1	<i>So there is a brother here called 'Four</i>

											<i>Play' who come to carry all the children to his place till the water goes down (AGVF)</i>
Source of support	Assemblyman [2]				✓		✓			2	'the Assemblyman provides us with shovels, wheelbarrow to do clean up exercise' (AGNVM)
	Friends [2]		✓		✓					2	'Some friends even come and ask us whether we were affected' (AGVM)
	Religious bodies [1]				✓					1	'.....I think at times we get help from the church when they hear about it' (AGVF)