
Appraising the Relationship of Water and Sanitation with the Socio- economic Status of Women in North- western Nigeria.

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Abbreviation

Free Trade Agreement (FTA)

Nigeria Demographic Health Survey (NDHS)

Non-Governmental Organisation (NGO)

United Nations (UN)

Socio-Economic Status (SES)

Sustainable Development Goals (SDG)

Abstract

To promote the need for effective initiatives to reduce the effect the lack of water and sanitation have on women's social and economic status in North-western Nigeria. This study appraises the relationship of water and sanitation with the three levels of Socio-economic Status (SES) of women in North-western Nigeria. The study demonstrates that access to water and sanitation can have a correlation with a woman's social and economic life through noticeable pathways such as poverty, a lack of simple technology, cultural beliefs and customs and so forth, thereby having an effect on her status in the society. The NGIR6ASV (Individual Recode) dataset from the Nigeria Demographic Health Survey (NDHS, 2013) was analysed using a descriptive analysis with the IBM SPSS ver.25 software. The findings indicate that 69% of the women who travelled distances to retrieve water were in the lowest socio-economic level in terms of education, health status, autonomy in decision making and affluence. The findings further indicate 91% of the women who endured unsanitary conditions had no education at all while 46% of those with better sanitary conditions had a secondary level of education. Generally, women in all three levels of socio-economic status relied on their husbands or partners to make decisions regarding their personal health care with only 14% of women in the highest SES making independent decisions regarding their personal health care. 99.1% of the women in the lowest SES had no autonomy in decisions made over them either within their immediate household or in the wider society. This study recommends among others, a holistic approach in terms of synergy with the private sector in the form of Public Private Partnership (PPP) to enhance water and sanitation accessibility for women which, in turn could transcend to a higher SES for the women impacted.

DECLARATION

I certify that this thesis does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any University; and that to the best of my knowledge and belief it does not contain any material previously published or written by another person except where due reference is made in the text.

A handwritten signature in black ink, appearing to read "Derali .", is written on the page.

15/10/18

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Dedication

I dedicate this thesis to God Almighty, without whom none of my success would have been possible.

My humble effort I dedicate to my loving parents, whose unflinching support, encouragement and prayers over these years laid the foundation for my discipline, determination and resilience.

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Chapter 1

Introduction

1.1 Introduction

Nigeria, a country located in the western part of Africa has an approximate population of about 174 Million, which is comprised of 51% males and 49% females, as reported by Nigeria's National Bureau of Statistics in 2014 (Gerland et al. 2014). Using indicators such as income, the economy, social structure, physical quality of life and freedom (both economic and political), Nigeria is categorically classified as a developing country (Abdullahi & Aziz 2010 cited in Oyebanji et al. 2011) Despite Nigeria being a developing country, it is abundantly blessed with water resources, in fact, 'Nigeria is estimated to have 267.3×10^7 cubic metres of surface water and 51.9×10^9 cubic metres of groundwater' (Nnabugwu 2015 cited in Adeyinka & Olugbamila 2015). This is very important as water is paramount for socio-economic development (Muta'aHellandendu 2012, p.112).

In Nigeria, the provision of water is perceived purely as a government responsibility to its people. The inability of the government to harness its water resources or ensure a sustainable and equitable access to sanitised water for its people has become a major challenge spanning many decades. The government agencies saddled with the responsibility of delivering water service to the Nigerian population have failed in their proper implementation (Muta'aHellandendu 2010, p.113). This has resulted in women not being able to shed the burden of sourcing water for daily consumption needs (Adeyinka & Olugbamila 2015).

From time immemorial, domestic activities such as water collection and purification for domestic purposes have rested solely on the women (Nwoye 2007; Sanday 1974). These activities deprive women from obtaining a stable income or satisfactory socio-economic standard of life and this hinders the ability of womenfolk to protect their

interests (Craft 1997). It has been widely noted that women, especially those in their younger years, are heavily involved in this activity to the point that the high volume of time and energy expended on it is not reciprocal to other profit-making ventures such as personal economic development and societal achievement such as education (Sangodoyin 1993, p.255). Across the Sub-Saharan African countries including Nigeria, women and children play a major role in load carrying, specifically in terms of water fetching and wood collection for domestic purposes (Sorenson, Morssink & Campos 2011). This has proven to have serious implications for school attendance and sometimes the school performance of young girls. It also has implications for the health and wellbeing of the carriers, as it affects women's time and general societal connections (Porter et al. 2013). Nigerian women, both in the rural and semi-rural communities, are more involved in accessing water and often bear the rigours of such activity under unfavourable conditions such as their life stage, climatic changes and insecurity (Sagondoyin 1993, p.260). It is worrisome to note that domestic load carrying tasks such as water collection are envisaged in most African communities as a 'female activity' and most arguments have corroborated it (Avotri & Walters 1999; Barwell 1999; Malmberg Calvo 1994 & Porter 2008 cited in Porter et al. 2013). The most common load in Africa is the 20 litre water bucket, with a significant percentage of women carrying a 20 litre bucket every day in search of water (Porter et al. 2013).

Nigeria recognises the need to improve the socio-economic status of women to a level that they have the freedom to undertake a higher level of education, earn an income and become self-reliant should they desire it. This is important as no country striving for improved economic development and reform can achieve such without the equal participation and input of both gender (Sanday 1974, p.191). The Socio-economic status of women in Northern Nigeria has not experienced a significant or noticeable positive change compared with its counterparts around the world (Matland 1998). Nigeria, like other developing countries, has adopted programmes such as the Better

Life for Rural Women Program (BLRW) and the National Economic Empowerment and Development Strategy (NEEDS). However, Oyeranti and Olugboyega (2005) outlines that the implementation of these programmes did not yield the desired results of achieving the optimal socio-economic benefits for women specifically in the rural populace.

This study seeks to appraise the correlation water and sanitation has with a woman's education, health, income and decision-making input in North-western Nigeria. It is interesting to note that a deficiency in one socio-economic status can trigger or lead to another; in other words, they are interconnected (Kaplan et al. 1987; Smith 1998). A sizeable number of the Nigerian population access water through personal efforts to meet their daily consumption (Eneh 2007, p.2). Akpabio (2012) reports that 80% of the rural population depend mostly on natural sources of water supply such as ponds, streams and hand dug wells. It is worrisome to know that despite the high percentage of women in the population, a sizeable proportion cannot attain a decent socio-economic status because of this statistic. Even though the United Nations has recognised the importance of water and sanitation and has it listed as a basic human right, the tools used in measuring accessibility to water and sanitation in developing countries such as Nigeria, are challenging (Yang et al. 2013).

In this crucial era of development, globalisation and technology the Nigerian government, policy-makers and Non-Governmental Organisations (NGOs) should channel their concern into identifying the hiccups in improving the Socio-economic status of Women (SES) by coming up with appropriate strategies, collaborations and workable frameworks by leveraging on the recently introduced Sustainable development goals (Organization 2015).

This study was embarked on with the hope that it will stir an awakening in policymakers and stakeholders to use it in two important ways: firstly, to incorporate initiatives that will make water and sanitation accessible to households in North-western Nigeria, so as

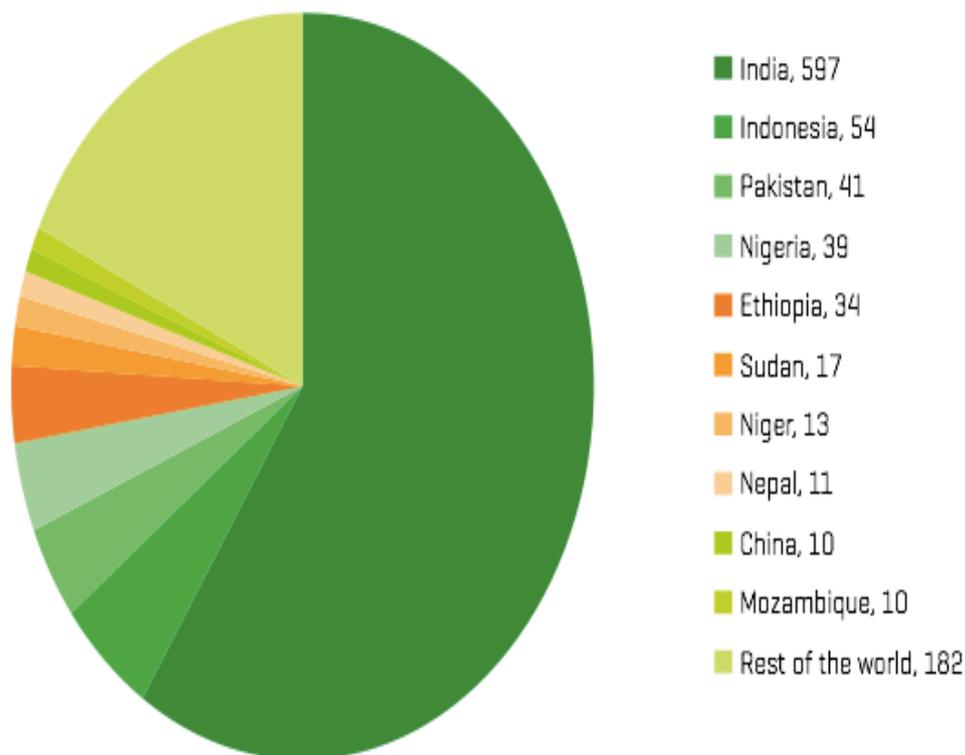
to enhance and improve the Socio-economic Status (SES) of those women and, secondly, to spur the Nigerian Government's desire to draw on global experiences. The women are the ones encountering these complexities and know exactly how unconvincing it is. Therefore, it is unfair for Nigeria's policy-makers to continue making decisions regarding matters which impact their society without having adequate input from the people that it affects the most. The input of women in Nigeria's reform in the aspect of water and sanitation is imperative.

1.2 Background

The intricacies that come with accessing water for household consumption in communities are enormous. They could be social, political, psychological and economic in nature. In whatever form these intricacies emerge, they tend to affect the women the most as they are naturally seen as water suppliers for the family and this is seen in most Nigerian communities. Access to sanitation is as important as access to water, especially so in the case of women. While the importance of sanitation cannot be quantified, we do know that access to sanitation has the ability to speed up development and enhance quality of life in terms of access to education, health and income-generating activities (Okelola et al. 2014, p.11). Unfortunately, Nigeria's world ranking for sanitation is not encouraging, and it is the women and girls who bear the greatest burden of that challenge (WHO 2014). Okelola et al. (2014, p.11) reiterate that women suffer most from a lack of access to adequate sanitation and often suffer from the indignity of open defecation in bushes and hidden areas, thereby also facing the risk of assault and rape.

Figure 1. 1 Nigeria's poor ranking in the world in terms of basic sanitation

Eighty-two per cent of the one billion people practising open defecation in the world live in 10 countries



Source: WHO, 2014

There have been ongoing studies on the issues surrounding women's predicaments in accessing water and sanitation, which are peculiar to most developing countries. One such study by Sagondoyin (1993, pp.257-9) was located in Ogbomosho North and South local government areas of Oyo state, Nigeria. The respondents were all women, of which 67% were women between the ages of 25 to 45 and were agile and able to cope with the strenuous nature of accessing water for household consumption. The approach used for data collection was interview and participant observation. The Interview method was adopted against the use of questionnaires as the participants had low or no literacy levels as most did not have any formal education, even though most of them agreed that education provides the foundation for development. Secondly, although this age bracket represents the economically active group, unfortunately, most of them had no form of income generating occupation. The survey concluded that 82% of the

respondents stated that they spend between 30 minutes and 2 hours fetching water daily, which indicates a colossal waste of time and energy. 62% of the respondents said they choose their water source based on its proximity and being the only choice for a water source available to them within their vicinity, irrespective of the water's purity. Furthermore, 65% of the women fetch water together with their children. Finally, 63% of the respondents had at least one disease or another medical issue which could be linked back in one way or another to poor water accessibility.

Another recent study by (Sorenson, Morssink & Campos 2011) notes the importance of water for essential survival but reiterated that a significant number of people in developing nations lack access to it. The study further attributed the lack of proper sanitation and water to either changes in climatic conditions, social instability or both. It is worth noting that Nigeria is faced with all the mentioned attributes; that is, including a lack of access to water as well. The study noted that pressure was exerted specifically on the women and children as the primary suppliers of water to households. Often, women and children need to travel long distances and over rough terrain, bearing different containers of various weights on their heads, to access water. This is the trend in most communities in developing nations, including Nigeria. The data used in this study was the Multiple Indicator Cluster Survey (MICS) which was based on a UNICEF report offering data estimates regarding people, grouped by gender. The data was collected to monitor water- fetching by women in 44 different developing countries globally. Information such as the source of drinking water for household consumption was sought specifically. Questions such as how long it takes to arrive at the water source, and then return were asked of survey participants who did not have water readily available at their place of residence, as well as the gender and the age bracket of those responsible for carrying the water. The MICS data for Nigeria is shown in (Table 1.1)

Table 1. 1 Nigeria's Multiple Indicator Cluster Survey (MICS) for water- fetching by women

Variable	%
Women who have access to an improved water source	49.1
Women who have water on the premises of their household.	17.1
Women who travel to a water source in less than 15 minutes	28.7
Women who travel to a water source in 15-30 minutes	19.8
Women who travel to a water source in 30-60 minutes	21.1
Women who travel to a water source which is over 60 minutes away.	11.2

This study further established that 80.8% of women in Nigeria travel a distance ranging from 15 minutes to over one hour to access water.

Another study by Thompson et al. (2011) identified how inadequate water and sanitation restricted a girl's education in Sub-Saharan Africa. The study recognised that even when water and sanitation are available, they are usually unsafe and insufficient to cater for the sanitary needs of women, especially young girls. The study suggested that the construction of more female-friendly toilets in schools will boost their confidence and improve their attendance in school as well. In addition, domestic tasks, such as water collection means girls go to school late or often this duty prevent them from attending altogether (Assad et al. 2007; UNICEF 2003 cited in Thomson et al. 2011). The data for this study was collected through a unique approach. Data was collected via participation in a 'water 4 life' school's competition. The competition's aim

was to engage a sample group of young people who fetch water for household consumption. It provided a channel for communication between the sample of young water carriers and government decision-makers for a more informed and better water policy. The study sought the views of the young water carriers through their experiences in accessing water. The results from this study provided some thought-provoking feedback that needs further research. It involved a total number of 30 students, comprising of 17 females and 13 males between the ages of 13 and 27 years. A competition jury was formed and this consisted of stakeholders from various water corporations. The following observations were deduced; Water scarcity negatively impacts personal hygiene and health as a result of the inability of people to bathe or launder clothes properly; More specifically, health challenges such as typhoid fever, diarrhoea and skin infections were cited; People use the bushes as an alternative for proper toilets because of improper sanitary conditions and this contaminates the local environment. This unsanitary routine causes microbial elements to be washed into streams and lakes where water is sourced for daily consumption. Walking long distances with heavy water containers exerts enormous stress and fatigue on the carrier while returning home late negatively impacts the quality of education and performance of the children who fetch the water, which in this context are girls.

The time lost is another crucial observation made during the Thompson et al. (2011) study. Unreliable water access prompts the fetchers to search for other sources which, in turn, makes the children return home late. After returning home late, the children tend to the household chores later as a consequence and this results in the children getting to school late too or absent. The children miss school time and are often too fatigued to attempt their assignments with sufficient effort and so all of these negatively impacts the academic performance of the young girls.

Another observation that was made was from an economic context, women prefer to purchase additional water containers to store more water for a longer period of time and this negatively impacts the women's market activities if they existed at all since their monetary resources have been channelled into purchasing additional water containers rather than investing into generating further income.

The lack of physical safety was also observed. The highlight of the deliberation amongst the stakeholders and the Mayor concerning this study was the safety of girls in relation to sexual abuse and harassment, as a result of girls being out late at night in search of water. The research concluded that girls face different challenges, issues and consequences in the context of water accessibility and more research is needed to focus on this observation.

1.3 Research Questions

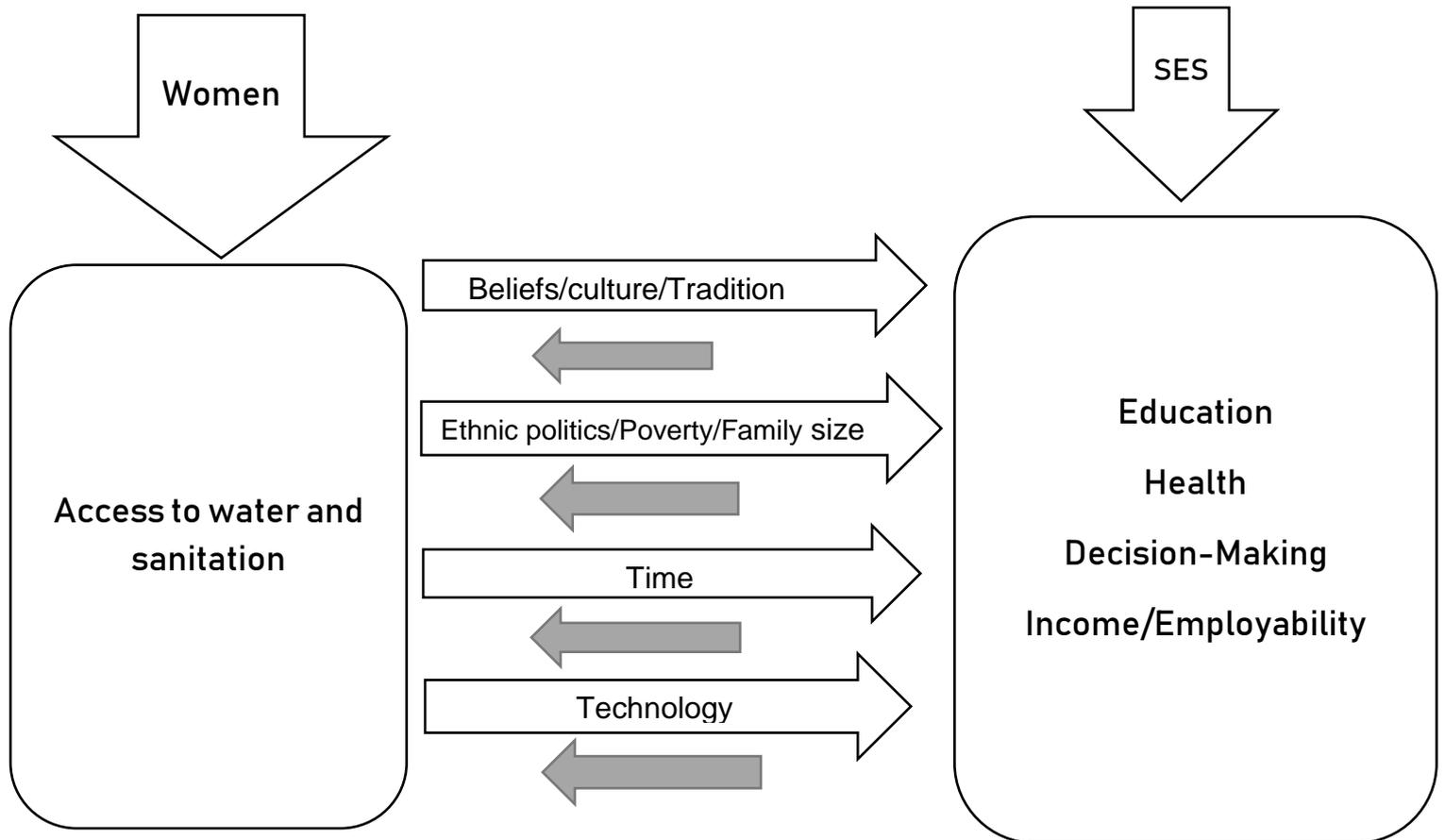
The focus of this study is the linkage of water availability and sanitation with the socio-economic status of women in North-western Nigeria. It is imperative that this research provides more insight into this issue so that future research can offer more recommendations. The research questions for this thesis are:

1. Does improved access to water and sanitation at the household level have a strong correlation with the Socio-economic Status (SES) of women in North-western Nigeria?
2. What are the prospects of drawing globally from comparative experiences and their implications?

1.4 Hypothesis

Women's socio-economic status (SES) in Northern-western Nigeria can improve significantly if policies and simple technologies are implemented to alleviate the pressures that comes with water and sanitary inaccessibility.

1.5 Conceptual framework of the relationship of water and sanitation with Socio-economic Status of women in North-western Nigeria



The conceptual framework of this study lies in the relationship water and sanitation has with the socio-economic status of women in North-western Nigeria. This relationship, as shown in the framework, has different connection points or pathways. These are namely; time spent retrieving water as a daily activity, a lack of simple technology, ethnic politics, poverty and size of the family in question and finally societal beliefs and culture. The interplay of these connection points invariably impacts the dependent socio-economic variables of women of in Northern-western Nigeria.

The lack of personal development as a result of cumulative years of indulging in repetitive tasks of water collections affects women chances to be socially and economically stable thereby plunging them into more poverty (Black 2008).

Poverty is an important issue that has a correlational relationship with a woman's SES and it is very important for the government of Nigeria to recognise its effect on the women in the area under study (Izugbara & Ezeh 2010). Closely associated with poverty, is ethnic politics which has a deep negative effect on human, society and national development (Adeniji & Emeka 1999).

Women are often not consulted about their needs and what affects them the most. Most decisions on matters associated with women, if considered at all, are usually treated shallowly or incorporated into broader or more general matters. The need to adopt developmental initiatives to address women's issues ranging from the home environment to the broader society is crucial. It is high time to help women channel their strengths and skills for lasting benefits rather than the Nigerian Government adopting to perceive women's issues as a burden for which they reluctantly ought to take full responsibility.

Often, even when water is accessed, women face the problems of waiting long hours due to overcrowding or long queues, for example, in the case of accessing water via a single borehole within a large community. Other issues women encounter with water access are continuous arguments as to who gets access to the taps and time-wasting when the water pressure is low. This lost and valuable time could be better used to facilitate life-change outcomes via education and/or income-generating ventures (Thompson, Folifac & Gaskin 2011,p.113).

The role women assume as a result of traditional customs or beliefs, such as accessing water and firewood for household consumption (Bryceson & Howe 1993,p.1717) has and continue to grossly affect the socio-economic potential of a woman. It is one of the

most dominant pathways in which her socio-economic status is being undermined. The patriarchy system that makes the man the head of a household with the woman being subjected to menial domestic pressures, especially with regards to accessing water and irrespective of the family's size is deeply rooted in the area under study (Okafor & Akokuwebe 2015; Okpalaobi 2011).

The lack of technology to help channel water closer to the doorsteps of women has aggravated their plight. Even when technology is present, it is often employed in the areas where the elites live rather than the areas that accommodate the masses (Kofoworola 2010, p.50).The lack of functional hand pumps and boreholes, the lack of a budgetary allocation to these issues and the lack of policies that will holistically address water accessibility and sanitation are all contributory pathways to affecting women's socio-economic stability (Gleick 1996).

Chapter 2

Literature Review and Methodology

2.1 Introduction

In 2008 the World Health Organisation (WHO) 2008, defined 'reasonable access' in the context of water consumption as 'the availability of at least 20 litres per person, per day from a source within one kilometre of the user's dwelling' (Thompson, Folifac & Gaskin 2011,p.112). The natural sources of water that are available for rural consumption are often contaminated by pollutants as a result of anthropogenic activities (Duruibe, Ogwuegbu & Egwurugwu 2007,p.113; Kallis & Butler 2001; Labonne 2002). As a result, women often travel longer distances in search of water for daily consumption. A UNICEF water and sanitation current status report from March 2018 reiterates that close to a billion people world-wide still lack basic water services and sanitation, and from this figure approximately 159 million people still fetch drinking water directly from rivers, lakes and other open surface water source. The report further highlighted that the burden of collecting such water heavily lies on women and children (UNICEF, March, 2018).

Water collection is often a strenuous activity, especially when a great deal of distance is covered to access it. When it is not easily accessible, other locations must be explored for alternative water sources. This search can take hours or the whole day just to complete a single trip to collect water for the household (Han 2009; Sangodoyin 1993). Water issues are not usually isolated as they, in turn, negatively impact social, economic, environmental, legal and political factors at local, national and sometimes regional levels (Biswas 2004 cited in Demie et al. 2016, p.126) explores the complexity of water access problems in connection to these other factors in the society. Accessing water has become a limiting factor for the socio-economic productivity of women and

girls. The lack of access to sanitation not only affects the dignity of a woman, it also acts as a barrier to overcoming the socio-economic hurdles to her personal development as well as those of the broader society as a whole. The World Health Organisation (WHO) estimated that curbing the menace of a lack of sanitary access to women in the Millennium Development Goals (MDG) era would have helped recover of 272 million lost school days in developing countries but, Nigeria could not achieve these goals (Igbuzor 2006,p.4). It also noted that a lack of sanitary access in schools affects the attendance of girls during their puberty years (Okelola, 2014 p.13). This has negatively affected the attainment of equal education for girls. Take, for example, the literacy rate of young girls between the ages of 15 and 24. The rate of girls in this age group that can read and write in any language with a proper understanding has traditionally been unstable, fluctuating between 64% and 80% for the period 2003 to 2008, as reported by the Nigeria Demographic Health Survey (NDHS 2008, 2013). Nevertheless, this concern should be an action point for the Nigerian government as the percentage of girls enrolled in school is still not adequate, even though there is a slight improvement. S.Ajiye (2014), however, cites that the improvement in the enrolment of girls in Nigerian schools is not sustainable as the figures dwindled over the years. The importance of education in the life of an individual cannot be overemphasised, irrespective of the social constraints at play. The inability of a gendered group to be educated at the expense of accessing water for other members of the household is not worth the sacrifice of one's life opportunities. The government of Nigeria ought to minimise the impacts a lack of water and sanitation has on the social and economic status of women and girls in their communities, in fact, this is imperative. (Berry et al. 2004) note that 'healthier and better-educated individuals are more likely to be able to build their livelihood opportunities, contribute to long-term economic growth, and protect themselves from economic shocks'. Time spent walking from home to various water sources or search for some form of privacy (in terms of sanitation) is a colossal

waste of time. Upon their return home, more time might have to be allocated to household chores such as cleaning, cooking, or perhaps walking out again but this time to collect firewood.

In a crowded community, even when there is an avenue to access an improved water source, the time spent queuing for water can take an hour or more (Sorenson, Morssink & Campos 2011)). It is not wrong, then, to support Okelola's (2014, p.13) argument that improved access to water and sanitation creates time for other meaningful and life changing activities such as education and income-generation, meaning a lack of access to water and sanitation robs women of opportunities leading to such meaningful activities.

The act of retrieving water exposes women to all sorts of strenuous activities such as continual bending, lifting, carrying, and walking over difficult terrain. All these activities gradually cause increased stress on their bodies. Caruso et al. (2015) note that the physical stress of accessing water causes fatigue which not only affect a woman's wellbeing but also diminishes her chances of a productive life.

Other tangible concerns relating to a woman's water and sanitary needs have to do with her life stages such as pregnancy, incapacitation due to ill-health or being elderly. Weather conditions and the time of day are additional issues that are often neglected when dealing with water and sanitary issues of women. A woman might feel the urge to 'relieve herself' but climatic weather conditions such as storms, severe cold or heavy rain might prevent her from using the bushes or the backyard. Dangerous and unforeseen dangers, depending on the time of day especially during the night, might make it unsafe for her to access sanitary solitude (Caruso, Bethany A et al. 2017). Sexual harassment and rape, as discussed in the study conducted by Thompson et al. (2011), are serious concerns raised by young water fetchers and this concern also apply to women seeking sanitary privacy in bushes due to a lack of proper or female-only

toilets in the late hours of the night. Okelola (2014, p.11) reiterate that women suffer most from a lack of access to adequate sanitation and often suffer the indignity of open defecation in hidden places thereby causing increased risk of assault and rape. Long distances expose women and young girls to sexual harassment by men who have come to understand the routine of these vulnerable girls. Public bathing and 'relieving oneself' behind bushes due to inadequate sanitary conditions are contributory means of exposing these women and young girls to unwarranted harassment. (Caruso, Bethany A. et al. 2015) corroborate this view by noting that often adolescent girls are the most vulnerable and cite a rural Indian example from May 2014 in which two girls on a water-fetching mission were raped and hung by their necks to death.

All In all, a woman trapped in this situation of needing to fetch water and all the related issues remain trapped therein because her incapacitation at educational level, lack participation in what affects her, impoverishment and the loyalty to the beliefs around her.

2.2 Poverty & Ethnic politics

The fastest means for water to become readily available and to reduce this burden on women would be the drilling of more boreholes or the digging of more wells (Eduvie 2008, p.2). However, but most of these communities are ravaged by poverty and most cannot afford the cost implications of making bore water available. In a country where poverty affects approximately 70% of the total population, with close to 91 Million people living below the poverty line of living on less than one USD per day (Jogwu 2010), it is very hard for Nigeria to overcome the challenges of water accessibility. One example of this, is a case study by (Beshiru et al. 2018) of a community in Etsako LGA in Edo state of Nigeria where the river is an important source of water but the cost of employing simple technology to channel that water to the community is a huge financial challenge; as is the case for most communities in Nigeria. The cost of drilling boreholes

is unaffordable for the sake of saving women and children from needing to walk multiple miles to the river every day to fetch water for family consumption.

In a study conducted by Obiora et al. (2018) of the mining community at Enyigba in the Nigerian state of Ebonyi, it was observed that the large community had just a few boreholes so most of the community dwellers relied on the local stream for their water supply. An analysis conducted on the stream water indicated it contained high percentages of the metals being mined, including lead and zinc, which were beyond the threshold levels recommended for human consumption. By contrast, the water from the few boreholes had levels of lead and zinc which were within the recommended thresholds for human consumption. Unfortunately, only about 20% of the community dwellers had access to the few boreholes as the community was not financially secure enough to drill more boreholes and dig more wells.

In some cases, when water is available at a location far away from the women's homes, the women who can afford to pay for the cost of transportation to that water source do so in order to ease the burden of walking such long distances. Similarly, women who can afford to buy more storage containers do so in order to ease the burden of fetching water every day. Such expenditure draws on the few savings they might have made from their limited income activities (Olufemi & Ojo 2013). The search for water prevents women from engaging in productive ventures, thereby entrenching their families into ongoing poverty (Okelola et.al, 2014, p.2).

A salient but very important factor that might determine the accessibility of water and sanitation and its relationship to SES of women might be the influence of ethnic politics. Ethnic politics and ethnicity according to a study by Adeniji and Emeka (1999), determines the trend of development. The study noted that politicians in positions of authority expedite actions as it relates to development based on ethnic influences which clearly affects the heterogeneity of the Nigerian society. Findings from the study

indicated a significant number of the respondents (92%) agreed that ethnicity and the politics around it affects education, employment and election and, 74% of the respondents affirmed that they were affected by ethnicity. This simply means that ethnicity and the intricacies of ethnic politics influences poverty.

There is no doubt that lack of water and sanitation is associated with poverty and negatively influences the Socio-economic Status (SES) of women. It is observed that most communities make their own efforts to access water as the government is not meeting its community's expectations of providing sufficient water for all of its citizens. This is especially true in the rural areas where, in most cases, it is the women who bear the burden of making water and sanitation available to their families.

2.3 Family Size

Nigerian society is largely patriarchal in nature (Makama 2013) and this is most visible in North-western Nigeria, which is the area under study. The Patriarchal nature of Nigeria entrenches family and it is this power which determines the decisions made in the community (Carroll n.d ; Ibrahim 2016) and in the family, such as determining family size, for example (Stash 1996). Patriarchal rule in most of Northern Nigeria supports large family sizes (Duze & Mohammed 2006) and a large family size means more resources for family consumption, including water and sanitation. Makama (2013) argues that a low social status can also stem from patriarchal attitudes toward gender roles. In most Nigerian communities, patriarchal preferences tend to favour the male children over female children, with the males enjoying opportunities to engage in economic activities and having access to more or better education than their females' siblings. The females, on the other hand, are assigned domestic duties such as searching for water with their mothers, fetching firewood and tending to household chores (Nwagha 1992). A study by Duze and Mohammed (2006, p.54-60) corroborated

the idea that the patriarchy system in Nigerian communities influence family size and accounts for the soaring rate of fertility. The study highlighted that 94% of the male respondents wanted more children, with about 60% wanting five or more children. The Nigerian Demographic Health Survey (NDHS, 2008) revealed that the Total Fertility Rate (TFR) of the average Nigerian woman is 5.7, just a little lower than the six-children-per woman figure recorded in 1990. Bear in mind that the World Health Organisation (WHO, 2008) defined reasonable access to water as 'the availability of at least 20 litres per person per day from a source within 1km of the user's dwelling (Thompson et al. 2011). More children and larger family sizes means more water consumption per household and an increased number of round trips in search of water. This leads to a more physically stressed body and less time for those responsible for fetching the water. This ultimately affects opportunities for the women in Northern-western Nigeria to be socially empowered because of the increased number of round trips they have to make to satisfy the increased water needs of a larger household.

Notably, the woman's low social status is characterised by a number of distressing indicators including a lack of power in decision-making, a low or no attainment of education, a poor standard of health, a low rate of participation in politics and a low or no source of income at all (Izugbara & Ezeh 2010). Frequent births is associated with level of education (Elem & Nyeche 2017) and can result from women not participating in decisions that affect them directly, including the family size. North-western Nigerian women especially in the rural communities, typically remain silent on decisions concerning them both on the home front and in the society in general, and this silence negatively impacts their quality of life (Frye Helzner, 1996). Decision-making is an important indicator of a woman's socio-economic status as its absence hampers a woman's empowerment. According to the Nigeria Demographic Health Survey (NDHS, 2008), 46% of women in Nigeria did not have any say regarding any of the decisions made concerning them. An educated woman is an informed woman with a confident

voice regarding what decisions or norms affect her. Dhar (2015) suggests that the acquisition of education by a woman is a means to a more empowered life. Unfortunately, however, the opposite is prevalent in Nigerian communities with most women in Nigerian communities being uneducated, unable to voice what impact the scourge of a lack of water and sanitation has on their status and also allowing their husband's desire for a large family size to worsen their burden.

2.4 Lack of Simple Technology

The importance of technology in solving infrastructure problems cannot be overemphasised. Miles (1995) cited in Li-Hua (2007) defined technology as 'the means by which we apply our understanding of the natural world to the solution of practical problems'. This means that challenges associated with basic water accessibility and the provision of simple sanitary facilities should be one of the challenges that technology ought to solve, but this is yet to occur or is happening at a very slow speed in Nigerian communities. (Avlonitis et al. 2007) notes that in using technology to harness water resources, a number of factors needs to be considered, one of which is that most of the sources of water have low accessibility and the distance between the sources of water and the consumers is far. In this case, to get water closer to the people requires expending already limited resources, which the Nigerian government might resist. Nigeria is endowed with natural resources such as oil and gas, which generates much revenue for the nation, contributing approximately 90% of the country's foreign exchange earnings (Sonibare & Akeredolu 2006). Yet still, the government lacks the will power to use part of the generated revenue to end the suffering of women by alleviating the challenges associated with accessing water and sanitation.

However, (Wierzbicki 2015) argues that as important as technology is, delays to solving the access-to-water crisis are inevitable as a result of the complexity and many stages

of technological development, meaning implementing a solution could take years before a noticeable impact is felt in the socio-economic arena. The above argument should not be an excuse, however, for the negligence of the Nigerian government to address the issue of water and its corresponding impact on women. Akujieze (2003 p.261) observes that in 1976, only 23% of the Nigerian population had access to water for consumption at a rate of 58.2L/per capita, per day, almost a decade later in 1985, just 43% of the people had access to water for domestic consumption at a rate of 49 litres per capita per day. This analysis shows that Nigeria has fallen grossly below the recommended rate of the World Health Organisation (WHO) of 120 litres of water per capita per day for 100% of the population. Nigeria has been under the administration of many different governments but none of the governments have taken a holistic approach to tackle the effects of lack of water and sanitation on women. (Akujieze, Coker & Oteze 2003), notes that the inefficient and disorganised manner in which hydrogeological and management practices are undertaken at all tiers of government is what leads to the inaccessibility of water for most of the populace. Kofoworola (2010, p.50) suggested that the government of Nigeria should take total responsibility for the matter of water access for both rural and urban areas. The author further suggested that the government should liaise with its development agencies to repair broken pipes and fix dilapidated boreholes all around the country. This can be done concurrently with extensive feasibility studies to reach other communities with the aim of providing water schemes through hand-pumps and motorised operated boreholes.

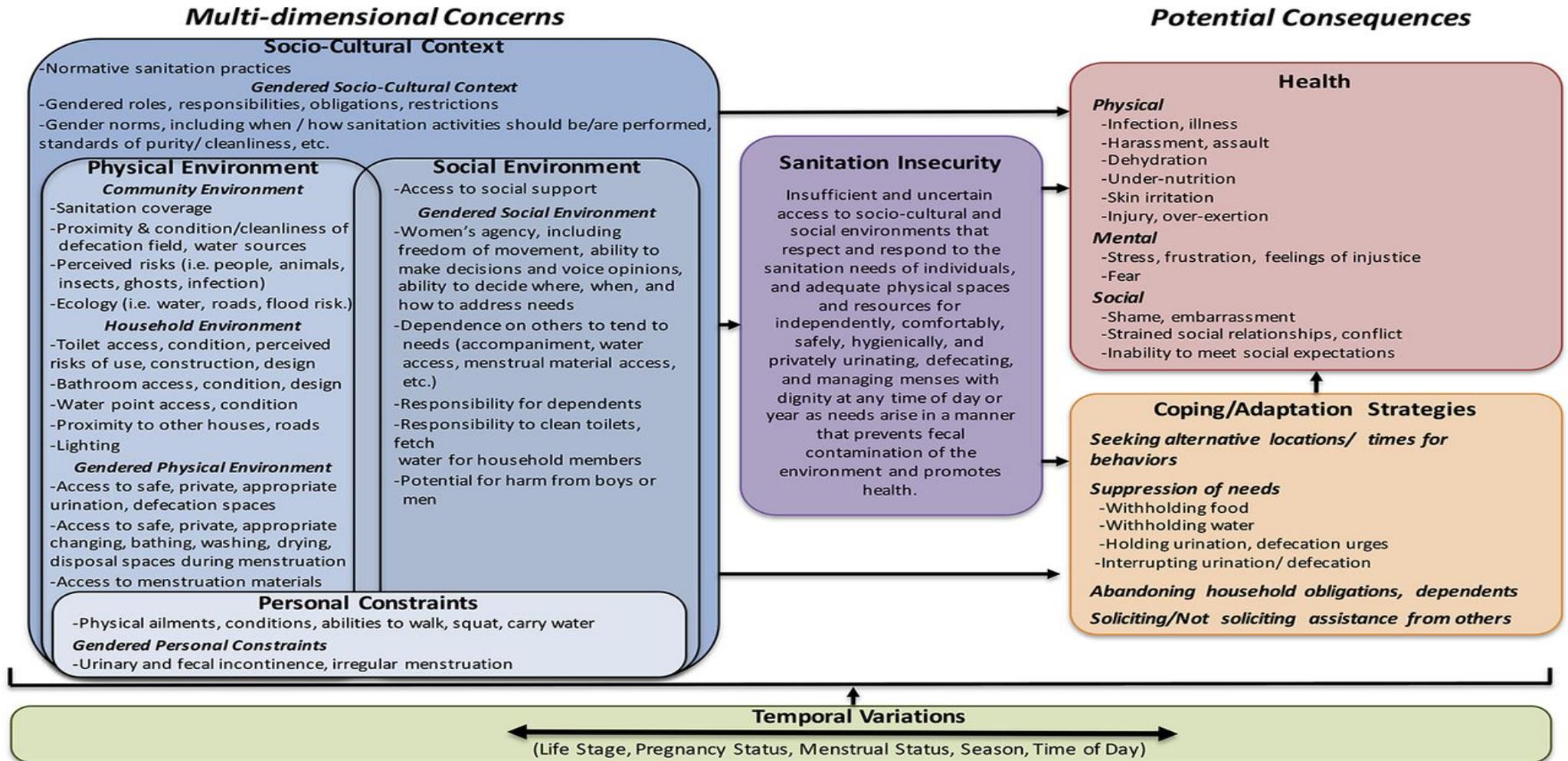
The Rio + 20 summit held in 2012 (Griggs et al. 2013), on sustainable development outlined the importance of water and sanitation for maximum benefit to the most impoverished population. However, years after the summit, a significant number of communities, especially in the developing countries, are still overcome by challenges associated with the lack of access to water and adequate sanitary facilities (Starkl, Brunner & Stenström 2013).

2.5 Society's Beliefs, Customs and Behaviour

In many undeveloped societies, women are less educated or not educated at all and are, therefore subject to practices, customs and prejudices that limit their abilities and often prove harmful to their wellbeing (Craft 1997). The roles that women assume because of customary and traditional beliefs have grossly undermined their capabilities and has subsequently affect their livelihoods (Makama 2013,p.116). The role of women as water providers in most Nigerian communities is a sign of a gross underdevelopment on the part of Nigeria as a nation.(Jogwu 2010) notes that underdevelopment is closely associated with a traditional pattern of thought in Africa, which in most cases limits women's abilities and promotes low or no social, political and economic progress. Most customs in Nigeria incorporate the belief that it is the responsibility of women and female children to care for their family. This is not necessarily wrong, up to a point, but in patriarchy, Nigerian women shoulder responsibilities for their families which their government should shoulder, such as the provision of social infrastructure including the common access and provision of water. In turn, the burden of caring for one's family is usually cumbersome for Nigerian females. This duty, which has been practiced for many generations and limits the women's prospects to generating their own income or receive education and training, has impacted on women's health and mostly importantly eroded any chance for education-related aspirations among women in North-western Nigeria. Craft (1997) notes that 70% of the 1.3 billion people living in poverty globally are women. She noted further that issues affecting women in most developing nations are common and are socio-economic in nature. The glaring issues amongst them are, lack of education, lack of autonomy, traditional practices and a lack of health care etc. Nigerian communities have been absorbed by these beliefs for so long. Even though Christian Missionaries introduced education to Nigeria as far back as 1842 when the first school was built in Badagry in the state of Lagos (Jogwu,2010), these beliefs still remain so strong and continue to affect the status of women today. World Bank report

cited in Craft (1997), strongly argues that when a government does its role by providing the public with basic amenities such as water, sanitation, elementary education, health care and alike, this leads to an improved social outcome for the society as a whole. The government of Nigeria needs to invest in policies that support the socio-economic growth of women in all aspects, including prioritising strategies designed specifically to curb the menace of a lack of water and proper sanitation in its nation's communities.

Figure 2. 1 Conceptual framework for sanitary concerns



Source: Caruso et al. (2017)

The conceptual model above (Fig2.1) was designed based on sanitary concerns. Sanitation concerns are multidimensional according to a study by Caruso et al. (2017). In this study, nearly all the women respondents' raised concerns about sanitation in terms of urination (91%), defecation (94%) and menstruation (97%).

2.6 Indices of Socio-economic Status (SES)

Figure 2.2 Scenario of water searching by young girls



Source: www.naijalifemagazine.com

2.6.1 Health

The challenges of accessing water have further aggravated the deplorable health status of many women (Sorenson, Morssink & Campos 2011). It is worrisome that this problem has been left to linger for such an unnecessarily long period (Nnamuchi 2007). USAID has noted with dismay that accessing water and sanitation in Nigeria has become an overwhelming concern, which is fast becoming a daily challenge for most Nigerians in the rural and semi-rural areas. This is notable in the North-western region of Nigeria under the study where about 70% of the population lacks adequate access to water and sanitation, thereby impacting their socio-economic lives, especially among females (Okelola 2014, p.7).

A significant percentage of the Nigerian population (70.8% in fact) live on \$1 per day or less and cannot afford any medical expenses, with women and children being the

most vulnerable in this aspect. 'The productivity of the rural population is also hindered by ill health, in particular HIV/AIDS, tuberculosis and Malaria. Investments in health, education and water supply have primarily been focused on the cities' (Aidelunuoghene 2014), neglecting the rural and semi-rural areas. (Adekunle et al. 2004) note that typical examples of the common health issues associated with unhealthy sources of water in Nigeria are typhoid fever and cholera, with both remaining a great socio-economic problem. Muta'a Hellandendu (2012, p.115), corroborates that the health repercussions of accessing unhealthy water sources include contraction of water viruses and bacteria such as salmonellosis, gastrointestinal viruses and dysentery. Inadequate or non-existent sanitary facilities accelerate a high risk to pathogenic exposure that has an adverse effect on health such as soil transmitted helminth infection, trachoma and schistosomiasis (Caruso, Bethany A et al. 2017). Women are at a high risk of being infected as a result of fetching water by faecal transmitted infections such as ascariasis, diarrhoea and trachoma. Typhoid fever remains a critical health problem in the developing nations (Mogasale et al. 2014).

Secondly, for those women who do work, they tend to work informally in unregulated sectors of employment in addition to the home chores they do (Yenilmez 2015). The work they are engaged in often exposes them to unhealthy working conditions that are detrimental to their health, some of which include exposure to carcinogenic substances, excessive heat and physical strain etc. (Craft 1997). These conditions when combined with excessive stress resulting from water searching and fetching as well as a lack of proper sanitation, jeopardise the health of the women entirely. Accessing water comes with enormous social challenges. One issue raised by a community of southern Cameroon, in a study by Thompson et al. (2011, p.119) was the fear of sexual promiscuity by young girls as a result of the long hours they spend outside looking for and fetching water. This sometimes leads to unwanted pregnancies and the contraction of sexually transmissible diseases. The nature of a community's access to water and

the quality of sanitation is a determinant of the quality of life of its people (Muta'aHellandendu 2012,p.112).

Negotiating rough, uneven terrain with heavy loads of water on one's head can lead to injury. Women who are pregnant or lactating mothers with babies strapped to their backs all face an array of health challenges resulting from the continual water fetching (Caruso, Bethany A. et al. 2015). 'Many women in developing countries suffer from malnutrition and iron deficiency, and the energy consumed in fetching water particularly during periods of scarcity is consequential in that it worsens their condition' (Buor,2014 cited in Sorenson et al.2015, p.1525). A study by Porter et al. (2011, 2012) indicated that about one third of women interviewed spend 21+ hours a week fetching water and felt that their health had worsened as a result. The study using MEDLINE (a healthcare company) deduced that, major potential health impacts as a result of head loading such as water-fetching cause energy lost, muscular-skeletal injury and degenerative changes, risk of acute injury, impacts on maternal and foetal health and psychosocial impacts. Water carrying together with other high energy activities are typical for Nigerian women. While the actual level of energy expended is not well documented, it is believed that whatever energy lost negatively impacts on women's status of health as most of the women are undernourished in impoverished communities they come from. The health impacts could be short- lived but they often have a related long-term impact. The activity of load carrying on the head such as that of water and wood, has shown a high incidence of backache among the Maasai Mara women of Kenya which also affect their lower spine and hips, a condition known as tumoral calcinosis or locally known as 'Kikuyu bursa' (Porter et al.2014). Water Aid (1996) states that carrying an enormous weight of water on the head has an implication on the health of young girls because of their immature body structure, which thereby causes damage to the head, neck and spine. It further noted that extreme cases of spinal damage can cause pregnancy and child-birth related problems in the future in a girl's reproductive life

(Porter et al. 2013). Health problems among young girls such as Bilharzia which is associated with water contact among the young girls is also another serious challenge that impedes their status. Bilharzia is a disease caused by parasites in waters and mostly synonymous to the tropical and sub-tropical countries. It can be seen from these examples that the absence of proper sanitation and access to portable water sources creates a variety of health challenges in the lives of communities particularly in rural settings thereby impacting on the social and economic progress of the female population and the country in turn. (UNICEF/WHO 2008, p.4).

The former UN Secretary General, Ban Ki Moon, in 2011 acknowledged that inaccessibility to water and sanitation causes social hardship and impedes development (Muta'aHellandendu 2012, p.113). Women and girls can enjoy an improved status of health if they encounter less marginalisation in the quest for basic education, poverty reduction and equality in the society (The Lancet 2012). It is not wrong, therefore, to add that a lack of access to safe water and sanitation has a significant impact which affects the health status of women directly. Akpor et al. (2013) note that some possible constraints, according to an assessment by WHO and UNICEF in 2000 which discussed the development of water supply and sanitation, include a generation of other negative effects leading to, amongst others, financial difficulties on the part of the affected communities, a lack of budgetary allocation to tackle this menace, a lack of political commitments, a lack of community involvement, a lack of hygiene education and insufficient information and communication.

In addition to the health challenges women encounter in Nigeria, inequality in terms of one's socio-economic condition is perceived to be a chief contributor to undermining the health status of women. An improvement in the availability of key social amenities can dramatically improve women's health status (Kinney et al. 2010; WHO Report 2008 cited in Kinney et al., 2010).

2.6.2 Education

The progress of any country is partly based on its economic and social developments and this largely depends on the economic and social contributions made by its citizens, gender not-withstanding (Sanday 1974). Nigeria, for instance has rated education as the chief priority in achieving socio-economic success (Ojimba 2013, p.13). However, the quality of the educational input required stems from existing skills or lack thereof of the population of the country's people. This needs to be acknowledged if a level of education is to be achieved which is reasonable enough to contribute to the social and economic progress in practice. 'Women's literacy has the potential to be a particularly powerful tool for social and political change if approached in the right way' (Ajiye, 2014) but often in Nigerian communities, the skills that should be harnessed from this gender group lack a satisfactory standard for any meaningful contribution to be made to the women's personal development or the nation in general. Acquisition of basic education and training is found to boost women's capacity to negotiate and cope with challenges, giving them an edge to function in a modern society (Sagondoyin 1993, p.260). The World Health Organisation (WHO, 2004a, and 2004b) estimates the time spent by women in accessing water to be 40 billion hours per year. This amount of time, if channelled into education, could give women the knowledge and skills required for better water development and management which in turn, would contribute to better reducing the stressors associated with searching for and retrieving water. (Demie, Bekele & Seyoum 2016), highlights that the cumulative time spent on water fetching has a huge diminishing impact on a female's education and health, limiting her opportunities to partake in developmental activities. In addition, most Nigerian cultures recognise the importance of the children's absolute obedience to their parents (Endurance, Majeed & Gift 2014). Obedience is mostly recognised in a child's ability to

help his or her parents with domestic chores ranging from running errands to searching for and carrying water (Abdallah 2013), to helping the family on the farm. The chores of helping mothers with water searching especially for young African girls, keeps children out of school and this, hence affects their overall wellbeing in terms of being deprived of the basic education needed for them to develop into healthy adults (Okelola 2014, p.2). An example of this impact diminishing a female's life and status in the society was most vivid in a study carried out in Wuchale and Jidda woreda districts of Ethiopia. In the study It was discovered that young females in their communities were absent from school for between 37 and 51 days per year, so their quality of participation, performance and homework was not encouraging. It was also discovered that girls did not attend school when they were menstruating because the sanitary facilities at school were lacking thereby promoting an unequal learning opportunity between both genders (Demie et al. 2016, p.10).

2.6.3. Decision-making

The input of women into decision-making cannot be over-emphasised. The ability of a woman to make decisions within the household, in the community and on national issues helps elevate the status of women and bring issues to the forefront which affect them in all spheres of life. There is a direct link between the decision-making power of women and their Socio-economic Status (SES). The low SES in Northern Nigeria cannot be isolated from the fact that women are generally under-represented in all levels of decision-making. S. Ajiye (2014) notes that at the highest level of decision-making in politics, the National Assembly in Nigeria, the representation of women dropped from 7% in 2007 to 6% in the 2011 election. There were only 25 women out of 360 Representatives and 7 out of 109 Senators present in the lower and upper chambers of the Nigerian House of Representatives and Senate respectively. The importance of women's participation in planning and decision-making in societal issues cannot be

overlooked. Women's lack of or inadequate participation in the politics of most developing countries is one of the greatest barriers to bringing the plight of women, especially in terms of water and sanitation accessibility to the forefront of the agenda of many governments (Sorenson, Morssink & Campos 2011). The views and opinions of women and girls should be in the main focus in water development initiatives (Caruso, Bethany A. et al. 2015). Inadequate community participation in matters regarding water and sanitation creates societal gaps and sends the wrong signal to the broader society, making the government look like the sole stakeholder in matters of water and sanitation (Muta'aHellandendu 2012, p.114). Women in most Nigerian communities cannot be heard in many areas of decision-making, even when those communities are deliberating concerns pertaining to the social and economic well-being of women. An example of this weakness is seen in a study by Sagondoyin (1993) which concerns water accessibility in two of the local governments in the state of Oyo in Nigeria. Women were not forthcoming in discussing their experiences in terms of water inaccessibility, they were sceptical about expressing their opinions and felt all questions should be directed to the perceived head of the household, i.e. their husbands (Sagondoyin 1993, p.258).

The input of women in decision-making concerning water development could go a long way in facilitating workable tools to alleviate the stresses for Nigerian women associated with water collection and sanitation. Invariably the input of women in whatever reform needs to be implemented. It will be unfair for policy-makers to continue making decisions regarding matters pertaining to society without having adequate input from the people in that society which it affects the most (Ngara & Ayabam 2013; Nwoye 2007).

2.7 Case Studies of Morocco and Rwanda as Global Comparative Examples

Morocco and Rwanda are examples of two African countries that have gone through the scourge of lack of adequate access to water and sanitation to a present success story. In this section, I will explore how these countries implemented reforms and are gradually overcoming these challenges which has reflected in the improvement of the socio-economic status of the women, with a possibility of 100% continuity. This is occurring even though both countries are experiencing a significant population growth, with Morocco recording a growth rate of 2% annually between 1995 to 2001 (ater Supply & Sector 2004, p.10) and Rwanda 3% annually (Westoff 2013), and is expected to increase to more than double by 2050 (Kigali n.d). It is interesting to note that amidst their population increases, efforts towards making water and sanitation accessible have not been deterred. (Water Supply & Sector 2004, pp.5-16) highlight that in 2008, 82% of Moroccans enjoyed reasonably improved access to water supply, which is higher than most countries globally, with both the urban and rural areas also enjoying access to improved sanitation at the rates of 95% and 42% respectively. In 2011, McDougall rated the improvement in the water supply of Morocco to be between 50% and 90%. The governments of both countries did what they had to do to provide basic societal needs, which has been a victory for the empowerment of women. A 2011 study of six provinces in morocco indicated that there had been a 20% increase in school attendance by girls within the previous four years (McDougall 2011,p.13) and this was attributed to the fact that girls were spending less time to access water. Prior to that, in a project funded by the United States Agency for International Development (USAID), in some rural districts of Morocco near Agadir, researchers noticed the limited attendance of girls to school and it was attributed to the unavailability of toilet facilities especially

when girls were menstruating. USAID deduced that there was a strong link between the lack of toilet facilities in schools and the illiteracy of girls, as a similar scenario was observed in other areas. The ongoing reform in Morocco's water sector has been remarkable even though there are still institutional gaps that needs to be addressed. Morocco has, in general initiated viable strategies to address water issues with a hope they remain sustainable (Doukkali 2005).

Jamati (2003) highlights a strategic step Morocco adopted. The government of Morocco collaborated with a private company in the form of a Public Private Partnership (PPP) agreement, with a major objective of the PPP being to contribute to poverty alleviation by connecting rural areas to water, sanitation and electricity networks. The government of Morocco signed an agreement with Lyonnais des Eaux de Casablanca (LYDEC) for a period of thirty years with the company adopting the responsibility to manage Morocco's water, sanitation and electricity sectors. The contract was signed in August 1997 for an initial sum of 220 million euros and with almost half of that sum invested in sanitation projects. The contract has a five-yearly review and the deliverables has thus far been remarkable. Rural areas called Bidonvilles were given special attention because they represent 10% of the Moroccan population. The targets for service coverage are 100% for both water and sanitation. It is worth mentioning that between 1997 and 2001 there was an increase in water accessibility and connections of about 27.5%.

Secondly, the parliament of Morocco instituted national plans targeted specifically on water, sanitation and electricity such as the National Sanitation Plan (NSP). (McDougall 2011) pp.12-13) notes that the government took another remarkable step by designating strategic project-related positions to women to assess the situation of water and sanitation in Morocco. An example is the appointment of Dr.Asma El Kasmi to the 'UNESCO Chair for Water, Women and Decision Power' in 2008. Dr. Asma in her preliminary findings and in collaboration with women in high levels of water management in the UN, argued that women ought to be given opportunities as water

managers since this will set them on the path of equity, empowerment and alleviation from poverty, especially in Moroccan society. An International Water and Sanitation Centre (IRC) study of community water and sanitation noted that water projects which incorporate women into the central decision-making processes are more likely to succeed and be sustainable (Wijk-Sijbesma 1998 cited in McDougall 2011, p.10), and will invariably increase the level of developments in their communities (Water 2006, cited in McDougall, 2011).

Morocco with the view of knowing how important water and sanitation is in the development of its citizens, negotiated a vast array of World Bank- funded projects on local and national levels which involved representatives from the government, academia, women as a socially excluded group and Moroccan communities to achieve its goals (McDougall 2011).

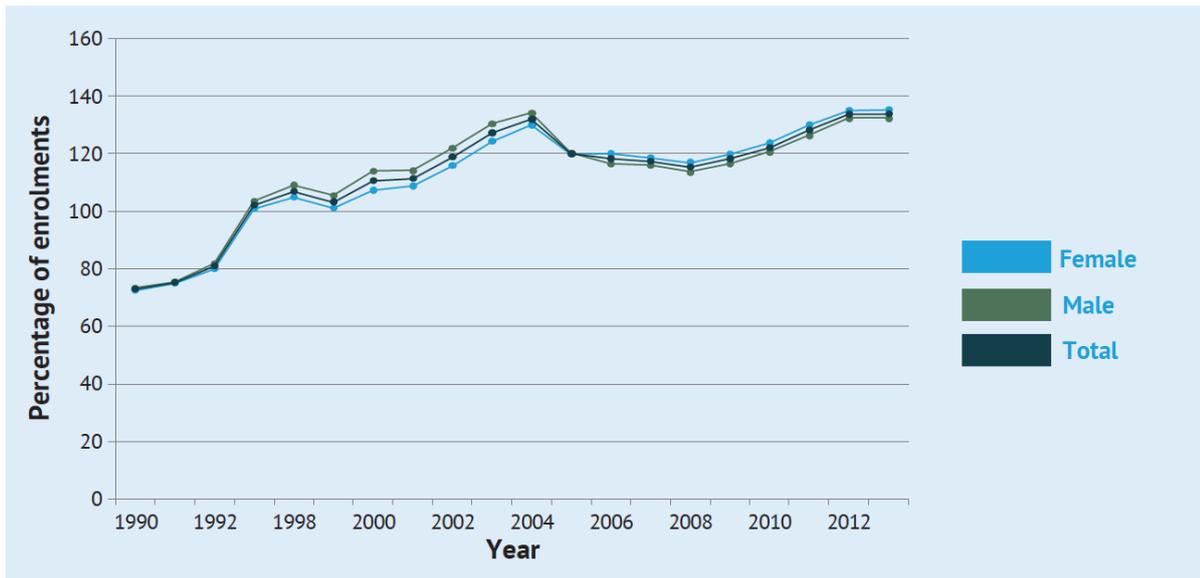
The water and sanitation sector of Morocco has benefited greatly more from donor financing especially with regard to the large amounts of affordable financing it has received from the EU (WHO 2014). The Moroccan government formed a sizeable number of free trade agreement with countries such as France, Italy ,Spain and the United States, just to mention a few, with the aim of transferring of expertise and equipment aimed at specifically addressing the state of water and sanitation in Morocco (ater Supply & Sector 2004, p.12).

Rwanda, on the other hand, had a higher urban population growth of 7.8% than Nigeria's 5.3% during the period of 1980-2000 yet, despite this higher growth rate, Rwanda has still been able to implement strategic legislative tools to address the issues of water and sanitation and improve the status of its citizens (Fotso et al. 2007). Rwanda is one of the counties in the world that has legislation that recognises water and sanitation as a human right (WHO, 2014 p.4), this could be one of the reasons it is gradually achieving its goals of making water and sanitation accessible to all.

Notably, Rwanda has made a strong commitment to promote the status of women and improve the social well-being of women, having made substantial progress towards female representation at the highest levels of decision-making. Rwanda is the first country in the World to attain a composition of 50% women in its parliament (Abbott & Malunda 2016) and a similarly high representation in other sectors of its economy and governance (Huggins & Randell 2007). This is a welcomed development as the representation of women in key hierarchical structures is a milestone achievement in addressing issues that concern women, especially with regard to their socio-economic status in relation to water and sanitary access. (Sorenson, Morssink & Campos 2011) note that 'women's lack of political representation in many countries in the developing world may be a major obstacle to bringing water infrastructure to the fore-front of public expenditure'.

In terms of female enrolment in schools, the enrolment of girls in the primary and higher educational levels are higher in Rwanda (Fig.2.3). This is commendable because the more educated the women are, the more their voices are heard with regard to social infrastructure needs, and the more empowered they are as time lost to access water and sanitation is reduced, and the more their socio-economic status improves.

Figure 2. 3 School enrolment in Rwanda for both gender, 1990 - 2012



Source: UNESCO Institute for statistics, 2014

Chapter 3

Methodology

3.1 Introduction

This chapter will highlight the research methodology that was utilized for this thesis and how the relevant data was accessed and analysed.

3.2 Choice of Method

This study utilizes a research method that can be described as predominantly a quantitative approach and the hypothesis was confirmed through a deductive statistical analysis using IBM SPSS Software. Often, quantitative studies use statistical tools to give meaning to the data obtained in the context of a conceptual framework (Onwuegbuzie & Leech 2005,p.379).The importance of using a quantitative approach in this study is that a significant portion of the data used in this thesis is numeric requiring statistical method to interpret the data in order to provide a satisfactory explanation to the results. To give a better understanding of the research problems, the study further integrated selected qualitative material by drawing on insights from past and recent reviews related to the aims of the research. (Bryman 2006) and (Creswell 2011,p. 271) noted that integrating both approaches to an extent has become a common phenomenon in research and gives a better understanding of the research study. It is important to note also that the synergy of these approaches put a great deal of emphasis on the development, arguments and proffering of significant breakthroughs in current issues of the social strata (Chih-Pei & Chang 2017).

Quantitative research methods according to Creswell, involves variables, plus the relationship and unit of analysis between them. These variables could be independent, dependent or have intervening variables. Creswell also highlighted that quantitative methods are based on surveys and experimentation (Chih-Pei & Chang 2017).

This study, however, is based on secondary data from a survey conducted through the Nigeria Demographic Health Survey of 2013. These surveys are mostly collated through characteristics of a population and analysed using statistical tools.

3.3 Research Design

This study uses a non-experimental method and adopts a correlational approach between variables. The data was assessed with the sole aim of interpreting it to analyse if certain events or activities occur and how they relate to one another. This method has the advantage of being easier to adopt owing to the fact that a large volume of numeric data is less cumbersome to interpret using statistical techniques.

3.4 Study Location

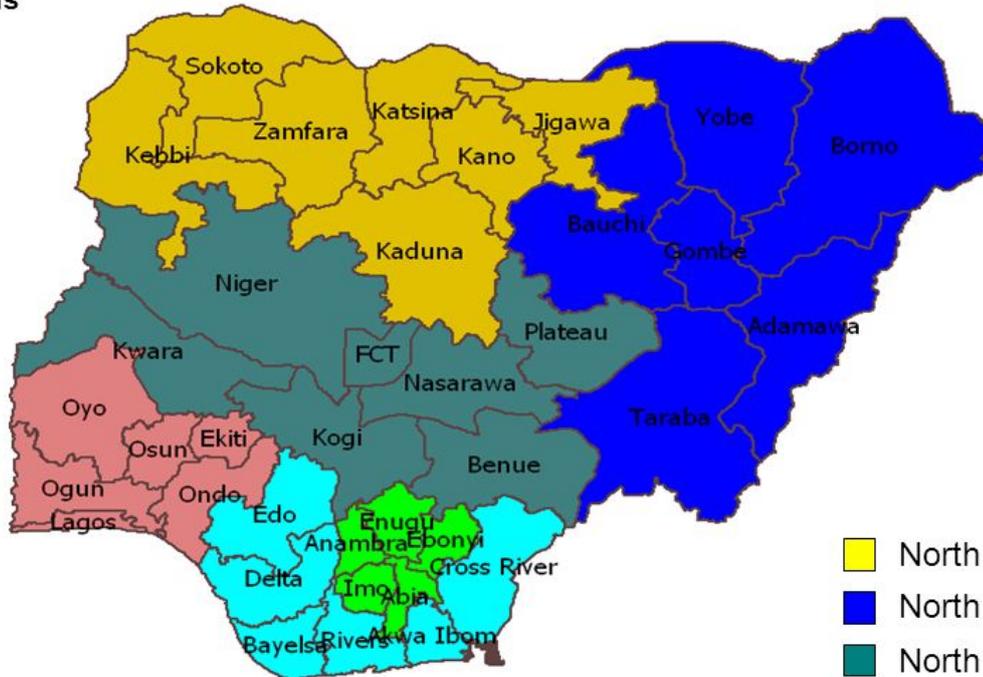
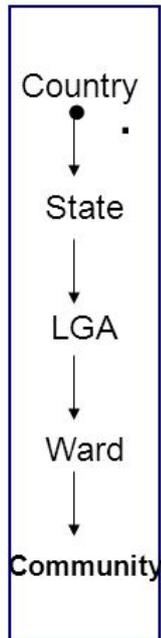
The study area constitutes the North-western region of Nigeria, depicted as the Yellow-shaded portion of the map (Fig.3.1). This zone comprises seven of the 36 states of Nigeria which altogether are referred to as the North-western zone. The zone under study is very important regarding the researched problems stated in chapter one, more especially as the percentage of women surveyed is indicated to be higher in that zone (25% of the adult female population) compared with the other zones. A World Bank socio-economic assessment report for Nigeria notes that in terms of social and welfare development, women in this zone were more disadvantaged than in other zones. Measures used to reach this assessment include indices such as wage employment, youth literacy, primary school enrolment and access to water and sanitation (documents.worldbank.org, 2011).

Map of Nigeria Showing the Zones, with the Zone of Interest Shaded in Yellow

Figure 3.1 Map of Nigeria showing study area

Nigeria Political Map

Admin Levels



- North West
- North East
- North Central
- South East
- South West
- South South



Source: Nigerianinfopedia.com

3.5 Empirical Basis, Sample and Data

The Nigeria Demographic Health Survey (NDHS, 2013) is the fifth in a series of Demographic Health Surveys conducted in Nigeria. Previous surveys were undertaken in 1990, 1999, 2003 and 2008. The surveys were implemented by the National Population Commission of Nigeria with supporting resources from international agencies such as USAID and others. It is worth mentioning that the Nigeria Demographic Health Survey of 2018 (NDHS, 2018) which would have been the latest survey in its series for Nigeria, is still ongoing and it is yet to be published.

The primary objective of the survey was to provide updated information, mainly on the social, health and economic situation of women and children predominantly. This was done with the aim of assisting policy makers to chart a course of action to tackle the challenges associated with the mentioned indicators.

In 2013, the NDHS, was conducted using a sampling frame called the Enumeration Areas (EAs), which were designed for the 2006 population census in Nigeria. The Primary Sampling Unit (PSU), referred to as a 'cluster' in that NDHS, was based on the EAs of the 2006 census. The cluster was selected using a stratified 3-stage cluster design consisting of a further 904 sub-clusters, of which 372 were in urban areas and 532 were in rural areas.

All women aged 15-49 in the survey were permanent residents of a household or were visitors present in the household on the night before the survey. Information collected through questionnaires included; information on decision-making, domestic violence, education, religion, fertility awareness and other social topics (NDHS 2013, pp.6-10).

The research questions presented in chapter one form the main basis of this study. The study sample in this research consists of women in the reproductive age group of 15-49 years, and from the north-west zone of Nigeria specifically. They have similar

characteristics, such as gender (female), age bracket (15-49 years of age), geographical location (north-west zone of Nigeria) and cultural upbringing, being a group of people who presumably spend an enormous amount of time and energy, who presumably are victim to the corresponding correlation that this has on their socio-economic status. After establishing the relevant sample for this study, responses were extracted according to different dependent and independent variables in the NDHS, 2013 dataset.

3.5.1 Sample Size and Key Statistics of Geographical Distribution

Table 3.1 Geographical Zones of Nigeria.

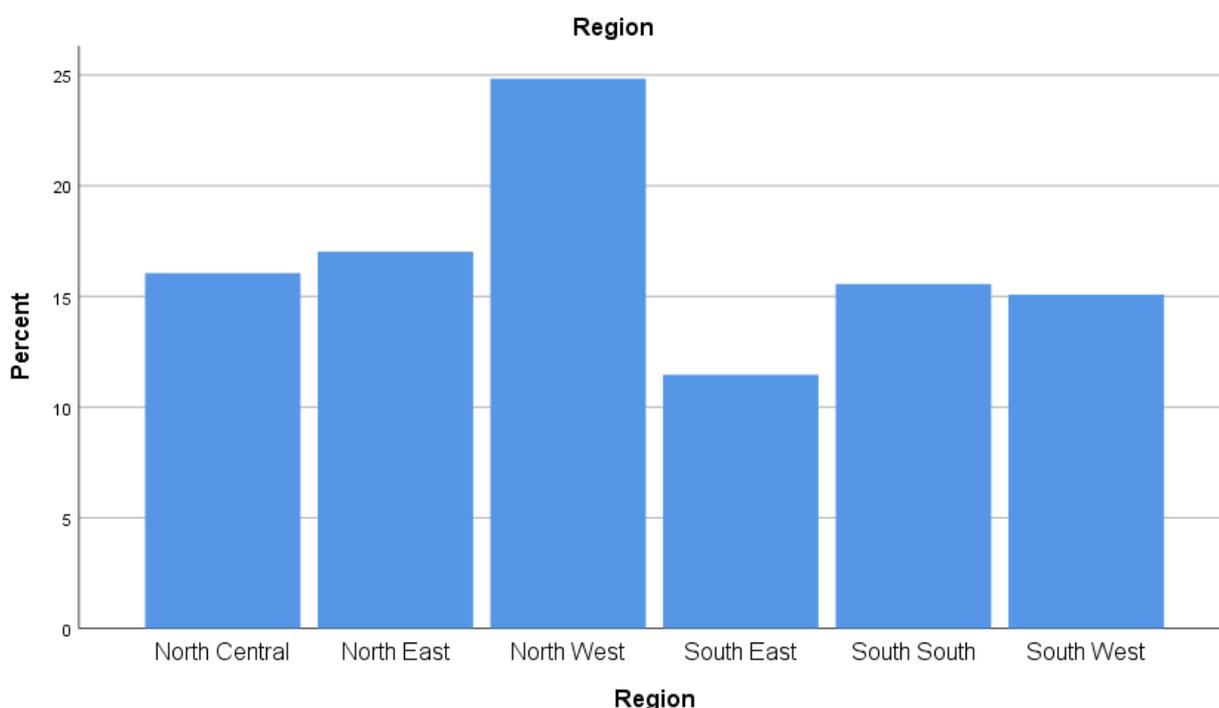
	Frequency	Percent	Valid Percent	Cumulative Percent
North Central	6251	16.0	16.0	16.0
North East	6630	17.0	17.0	33.1
North West	9673	24.8	24.8	57.9
South East	4462	11.5	11.5	69.4
South-South	6058	15.6	15.6	84.9
South West	5874	15.1	15.1	100.0
Total	38948	100.0	100.0	

Source: NDHS, 2013

Nigeria is made up 36 states grouped into six geographical zones. The Nigeria Demography Health Survey of 2013 surveyed a total of 38,948 women (Table 3.1) from the six geographical zones under the NGIR6ASV (Individual Recode) dataset. The population of interest for this was mainly the women from the North-west zone as it had the highest number of women (25%) of the total women from the NGIR6ASV dataset and the researcher presumed that it would present more responses from a broader perspective.

Figure 3. 2 Segment of the study population.

Graphical Representation of the Geographical Distribution of the Segment of the population.
The North-west zone is the area of interest.



The secondary data used in the analysis for this research was accessed by obtaining permission from the United States Agency for International Development (USAID), which is the organisation responsible for conducting Demographic Health Surveys including the Nigerian Demographic Health Survey of 2013. The secondary data was accessed electronically from the survey dataset as SPSS files, namely the NGHR6ASV (Individual Recode) dataset. This dataset was further categorized into 47 individual characteristics variables such as educational attainment, participation in decision-making, employability, source of drinking water, type of toilet facility etc. The final

analysis to determine how these variables correlated within the sample population (women) were determined by using the IBM-SPSS¹ Software version 25.

Table 3.2 Categories of Dependent and Independent Socio-economic Variables under Study.

Category of Variables	List of Variables
Education	<ul style="list-style-type: none"> • Highest educational level • Educational attainment • Husband's/Partner's highest year of education • Husband/Partner's educational level
Decision-Making	<ul style="list-style-type: none"> • Frequency of listening to radio • Frequency of reading newspapers/magazines • Frequency of watching TV • Person who decides on large household purchases • Person who decides on what to do with husband's/Partner's earning • Person who decides on when the respondent can visit friends/family • Beating justified if respondent goes out without telling husband • Beating justified if respondent neglects children
Income	<ul style="list-style-type: none"> • Number of household members • Sex of the household head • Position on wealth index • Having Daughters at home • Respondent currently works • Away for more than one month in a year • Type of earning from respondent's work • Type of land where respondent works • Respondent employed all year/seasonal • Respondent worked in last 12 months • Husband/Partner's occupation • Type of place of residence • Respondent's mobile number. • Owns land alone or jointly • Owns own house or jointly
Health	<ul style="list-style-type: none"> • Person who usually decides on respondent's health care
Water & Sanitation	<ul style="list-style-type: none"> • Source of drinking water • Time to get to water source • Type of toilet facility

	<ul style="list-style-type: none"> • Toilet facilities shared with other households
Other variables	<ul style="list-style-type: none"> • Region • Number of persons in Household • Country code • Case identification • Current marital status • Age (grouped into 5-year brackets)

Source: NDHS, 2013

¹SPSS is known as the statistical package for social sciences (DiMaggio 2013). SPSS was developed by three students at the University of Stanford namely: Norma H. Nie, C. Hadlai Hull and Dale H. Bent. It was founded in 1975 (<http://www.unige.ch/ses/sococ/cl/bib/soft/spss.history.html>). The software has a vast array of functions ranging from analytical reporting to graphics and statistical modelling.

Chapter 4

Data Analysis, Results and Discussion

4.1 Introduction

This study was undertaken to determine if improved access to water and sanitation at the household level has a correlation with the Socio-economic status (SES) of women in North-western Nigeria. It is imperative to note that the development of every nation lies on the collective contribution of both men and women (Duflo 2012). Often these contributions rely heavily on the Socio-economic status (SES) of individuals in terms of education, health, input in decision-making and employability and so on. These factors cumulate and, if satisfactory, create a conducive environment for the skills and population resources required to advance development (Arimah 2004). According to data from the Nigeria Demographic Health Survey (NDHS 2013), 71% of women from the area of study spend a significant amount of time fetching water. The time allocated to fetching water, ranges from 1 to 420 minutes (7 hours) per woman as only 29% of women have water piped to their premises. (Sullivan 2002) reiterates that in developing countries, 25% of women's time is spent on water collection. This significant amount of time if harnessed productively instead, could convert to a reasonable improvement in the SES of women in North-western Nigeria.

In view of the above, this chapter presents its findings which portrays trends in the relationship between the different socio-economic variables of individual respondents and access to water and sanitation. To ensure that each socio-economic variable was analysed to its greatest extent, the writer analysed one variable at a time (univariate) and, where a relationship between variables was examined, the writer ensured that there was at least a cross tabulation relationship between one independent variable (access to water or sanitation) and a dependent variable.

4.2 Preliminary Analysis of Individual respondent

This section describes the demography of individual respondents (women) from the North-western zone of Nigeria in terms of age, marital status and their type of dwelling.

4.2.1 Age of Respondents

A frequency total of 9,673 survey participants were selected as a sample representation of all the women in the region, with the respondents' ages ranging from 15 – 49 years. 55% of the population studied was aged 15-29 (see Table 4. 1). According to an Organisation for Economic Co-operation and Development (OECD) 2018 Report, the 15 to 29 year bracket is the early working age group of people that have recently completed their education and are ripe for the labour market.

Table 4. 1 *Age in 5-year groups*

		Age in 5-year groups			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	15-19	1928	19.9	19.9	19.9
	20-24	1652	17.1	17.1	37.0
	25-29	1769	18.3	18.3	55.3
	30-34	1333	13.8	13.8	69.1
	35-39	1159	12.0	12.0	81.1
	40-44	878	9.1	9.1	90.1
	45-49	954	9.9	9.9	100.0
	Total	9673	100.0	100.0	

4.2.2 Marital status

In the study, 86% of the women were married (Table 4.2). A corresponding relationship between married women within each 5-year age bracket was analysed and the finding confirmed that 50.4% of the married women were within the age range of 15 to 29 years (Table 4.3). (Singh, S & Samara 1996) reiterates that women who marry early tend to focus more on marital responsibilities such as caring for the family and motherhood. In as much as this is important in the life of a woman, there must be a balance between caring for the family and her individual welfare, such as attaining an education and engaging in productive activities. Caring for the family includes the responsibility of the woman for accessing water (Asiyanbola 2005,p.3). The monotonous tasks of water fetching and firewood collection that women engage in for many years after marriage has been documented as preventing them from engaging in any personal enriching activities (Paulme 2013,p .7)

Secondly, Nigerian communities, by being patriarchy in nature tend to have a high proportion of married women falling under the absolute rule of their husbands in terms of decision –making and that affects their development in the society (Makama 2013)

Table 4. 2 Current marital status

	Frequency	Percent	Valid Percent	Cumulative Percent
Never in union	1058	10.9	10.9	10.9
Married	8300	85.8	85.8	96.7
Not Married	19	.2	.2	96.9
Widowed	105	1.1	1.1	98.0
Divorced	161	1.7	1.7	99.7
No longer living together/Separated	30	.3	.3	100.0
Total	9673	100.0	100.0	

Table 4. 3 Current marital status within 5-year age bracket

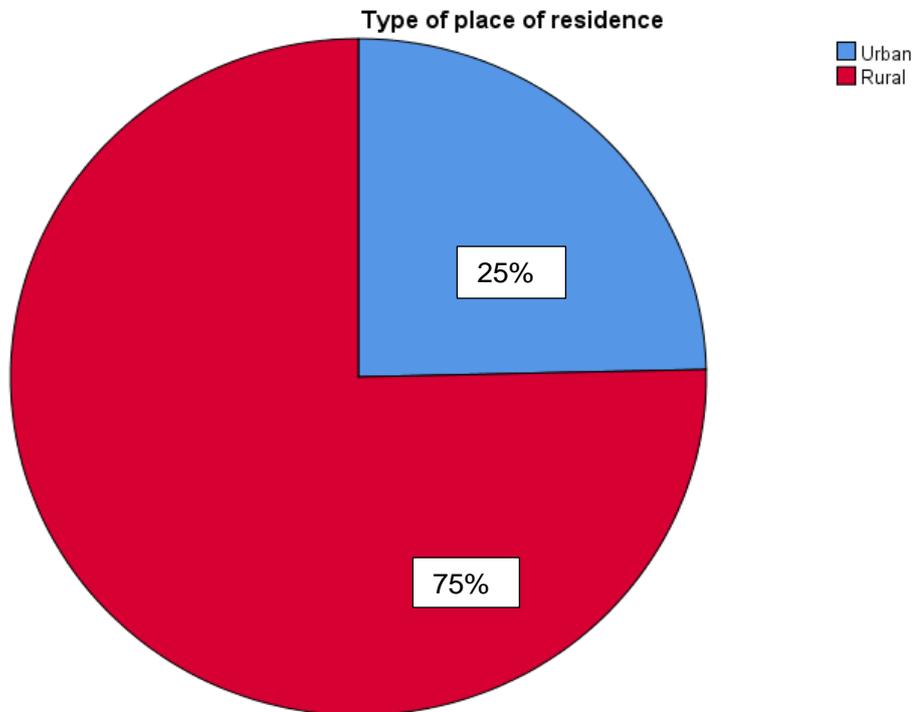
Current marital status	Age in 5-year bracket						
	15-19	20-24	25-29	30-34	35-39	40-44	45-49
Never in union	79.9%	14.2%	3.7%	1.8%	0.4%	0.1%	
Married	12.7%	17.4%	20.3%	15.3%	13.5%	10.0%	10.9%
Not Married	15.8%	42.1%	15.8%	21.1%	5.3%		
Widowed	1.9%	4.8%	5.7%	8.6%	9.5%	31.4%	38.1%
Divorced	14.9%	23.6%	20.5%	15.5%	9.9%	9.3%	6.2%
No longer living together/Separated	10.0%	20.0%	20.0%	20.0%	16.7%	3.3%	10.0%

4.2.3 Type of dwelling of respondents

A significant percentage of the population studied dwell in rural areas (Fig. 4.1) with only 25% of the respondents living in urban areas. This disparity in the type of dwelling could be a factor related to the socio-economic status of women in the area under study. Previous studies have shown that the world's poor live in rural areas and that 70% of them are women, with a rough estimate of about 900 million poor women to 400 million poor men (Quisumbing, Haddad & Peña 2001; IFAD 2001, p.428 cited in Wiggins & Proctor 2001). This poverty among the large population of women in the area studied could have a relationship with their socio-economic status. A woman in a working-compatible age bracket but who lacks opportunity to engage in productive activities because of oppressive duties such as water retrieval could be lacking those opportunities and fetching water in part due to her socio-economic status. Black (2008,

p.9) notes that 'families without a working member are more likely to suffer persistent low income and poverty'.

Figure 4.1 Type of place of residence of respondent



4.3 The socio-economic index of the women under study

The socio-economic index of the women was constructed by streamlining five variables, identified as the most useful in characterising a people group's socio-economic status. The five variables were the respondent's highest level of education, whether the respondent was currently working at that time, the level of autonomy in the respondent's decision-making, decision-making autonomy regarding the respondent's health care and the respondent's level of wealth. (Winkleby et al. 1992, p.816) support the view that socio-economic status can be defined by a broad spectrum of variables but the most important is the combination of financial, occupational and educational influences. These women respondents were ranked according to each of the variables with those perceived as having more suitable attributes scoring higher and those as having less

attributes scoring lower. For example, with regard to education level, women with a higher level of education (considered a more suitable attribute) were scored higher while women with no or little education (considered a less suitable attribute) were scored lower. All the higher scores for the streamlined SES related variables were collated under the heading of 'highest level of socio-economic status', the medium under 'medium level of socio-economic status' and the lowest scores under 'lowest level of socio-economic status'.

It is observed in Table 4.4 below that women on the lowest level of SES (comprising 47.1% of the respondents) and the medium level of SES (comprising 48.3% of the respondents), dominated the population studied, with only about 4.5% of that studied population having the highest level of socio-economic status. This means women in the highest level had the highest level of education, the most autonomy over decision-making, were currently working at that time, were relatively affluent and made decisions regarding their own health.

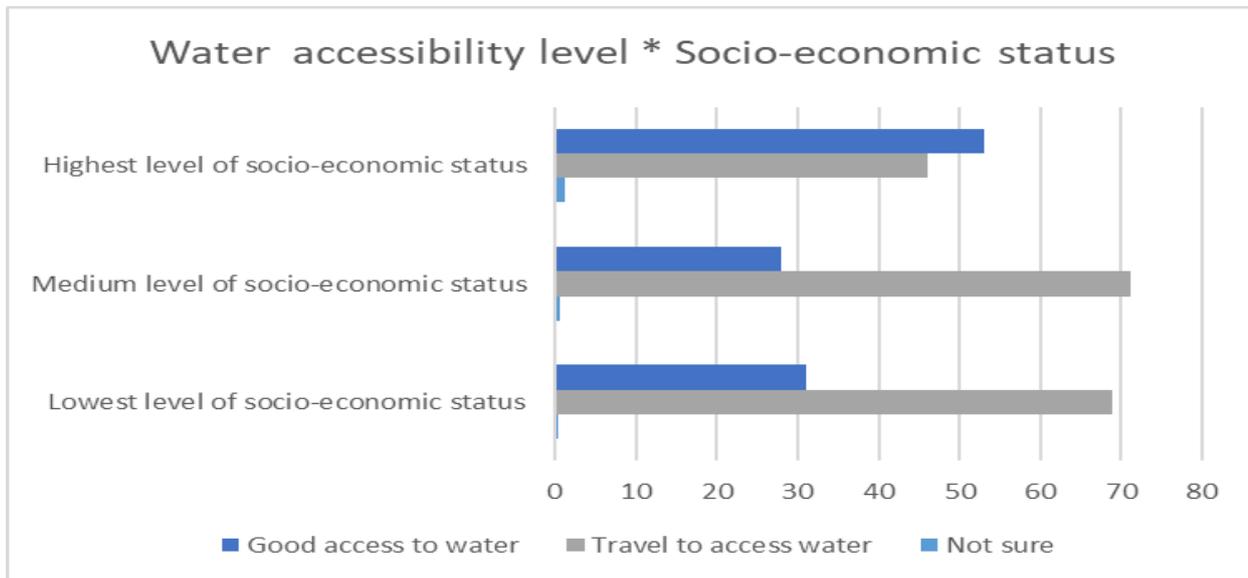
Table 4. 4 *Socio-economic level of Women*

	Valid Percent	Cumulative Percent
Lowest level of socio-economic status	47.1	47.1
Medium level of socio-economic status	48.3	95.5
Highest level of socio-economic status	4.5	100.0

4.3.1 Level of water accessibility in correlation to the socio-economic status of Women from the North-western zone.

The level of water accessibility was constructed as a variable by grouping the respondents into three distinct groups. The first group comprised of those that have water on the premises of their homes, irrespective of the type of water source (were deemed as having 'good access to water'). The second group included women who travelled distances to accessed water were grouped as ('travel to access water'). The third group still somehow access water without giving any specific detail and they fell under the group ('Not sure'). This variable was analysed vis-à-vis the socio-economic level of the subjects using the crosstabulation tool for descriptive analysis. The results indicated that about 69% (Fig. 4.2) of the women with the lowest level of socio-economic status travel distances to access water, with only 31% having access to some source of water on the premises. The women with a medium level of socio-economic status comprised 71% of the women travelling distances to access water. This indicates the direct relationship the level of water accessibility has with the status of the women. The women with a highest socio-economic status are more likely to have better access to water than their counterparts of a lower socio-economic status. This might be because women of a higher socio-economic status are more financially stable and can afford to invest in ensuring that water is accessible to them, as it saves them time rather than them needing to walk distances to access it. Even when water vendors are available (Abraham et al. 2007 cited in Abraham et al. 2009), and water gets more difficult to access it is often difficult for the women on the lowest SES to pay as a result of their low income or no-income financial status. (Abubakar & Bn Ahmad 2014, p.69) notes that individuals with a higher socio-economic status in terms of education and income are in a better position to strategise for a balanced development in their livelihoods. This development includes finding a way, either through knowledge, skill or finances to channel water to and provide sanitation in their dwelling.

Figure 4.2 Water accessibility in relation to SES



4.3.2 Level of wealth in correlation to the Socio-economic status of women

Results obtained from this correlation depict a direct relationship between the levels of wealth and the levels of socio-economic status of the women in the area studied. 95.3% of the women with the highest socio-economic status enjoyed the highest level of wealth while 99.3% of the women with the lowest socio-economic status endured the lowest level of wealth (Fig.4.3). Judging from this result, there is no doubt that a low socio-economic status is often associated with poverty, especially among women. (Abubakar & Bn Ahmad 2014) highlight that women from the northern part of Nigeria have the worst human development outcomes and this is characterised by poverty levels which doubles the poverty levels observed in other parts of the country.

Figure 4.3 Wealth level in relation to SES



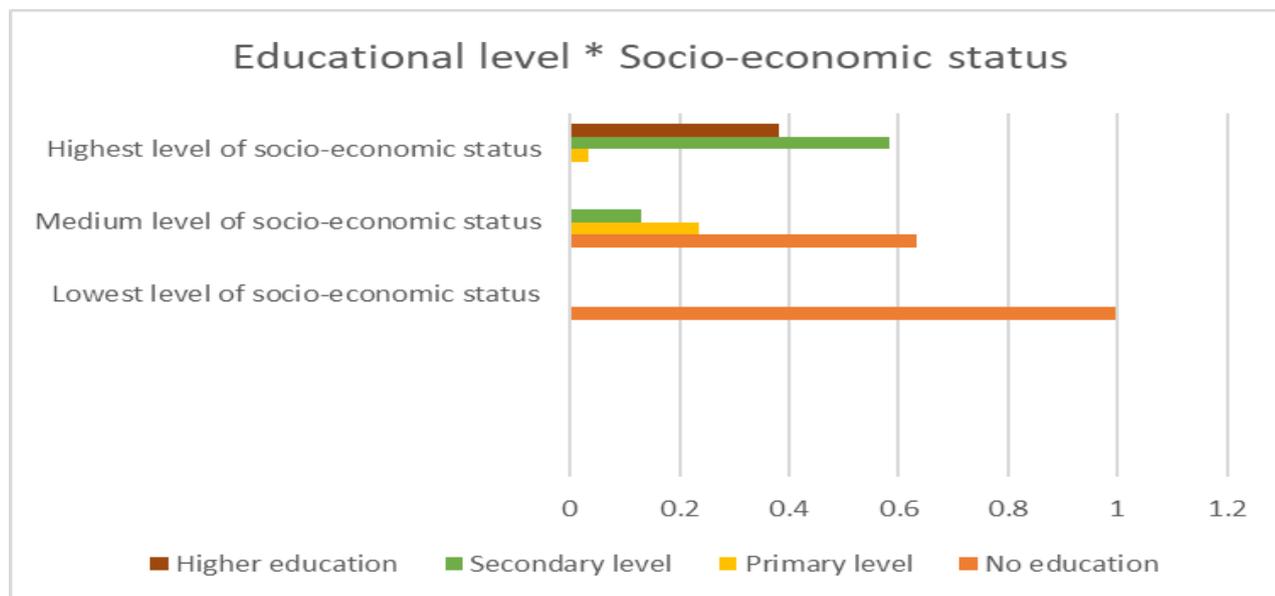
4.3.3 Education level in correlation to the Socio-economic status of women

The importance of education cannot be overemphasised, (Adler & Newman 2002,p.61) note that education is the most important SES variable as it acquisition paves the way for future income-generating opportunities and earnings. The result from the descriptive crosstabulation of women in respect to their education and SES clearly showed that 99.7% of the women with the lowest SES are not educated while 0.3% have attained a primary level of education. Women with the highest SES had attained about 58.3% and 38.3% of secondary and higher education levels respectively (Fig.4.4). Cultural and patriarchal influences might have contributed to this worrisome result as in Nigerian culture women are largely seen as the housekeepers, often being marginalised economically and socially away from activities that would lead to their transformation and progress (Makama 2013,pp.119-120). (Ogbogu 2011,p.1), makes an important and salient observation,he notes that, compared to men,women are generally not privy to information that will help them succeed in life and so they have a low representation even in academia. This view is also corroborated by (Nwoye 2007) that women in Nigeria are not just deprived educationally but also from market information and

technology which when accessed, would make a positive impact on their human development.

Lastly, policies and legislations in Nigeria have not been effective in gender mainstreaming. Gender mainstreaming could be a good avenue for the Nigerian government to intervene in making efforts to narrow the large variable gaps experienced by women in the lowest socio-economic group. (Klasen et al. n.d, pp.6-7) highlight the importance of government policies in development, especially as it affects the poor, the vulnerable and the marginalised, noting also that domestic and institutional legislation play important roles as they tend to address conditions of the poor.

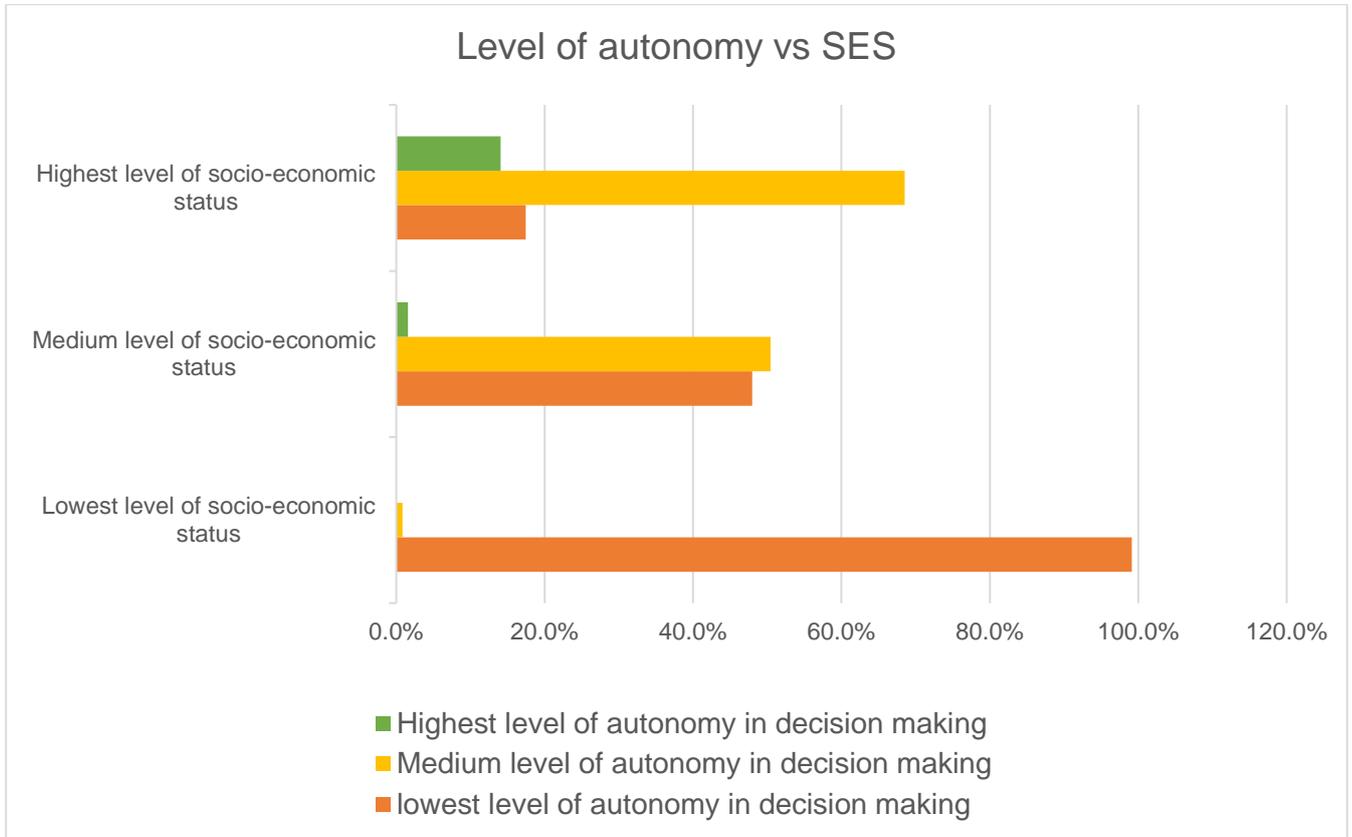
Figure 4.4 Educational level in relation to SES



4.3.4 Level of autonomy in decision-making in correlation to the socio-economic status of women

The levels of autonomy in decision-making includes almost all decisions made over a woman within the household and the society. Judging from the result obtained from the relationship between the level of autonomy of women and their SES, it is observable that 99.1% (Fig.4.5) women with the lowest SES have no autonomy in decisions made over them, whether be it within their immediate household or their society. This can be attributed firstly to the high level of patriarchy in that society. 'Nigeria is a patriarchal society, as such men and any other extended male members of the family take final decisions on most issues in the household' (Abdulsalam-Saghir et al. 2011,p.6). Secondly, the representation of women is lacking in influential or strategic positions in the political arena of the country where women's voices can be heard (Olufade 2013,p.162. It is indeed a concern that trivial decisions that have to do with whom the respondents visit or cannot visit are often determined by the husband (NDHS, 2013). (Agbalajobi 2010, pp.76-77) strongly argues that since women in Nigeria make up almost half of the population, they deserve a fair share in the decision-making process in the governance of the country. The argument that women's participation in vote casts has increased from 10% to 40% is not enough in terms of their representation as they are under-represented in public offices, politics ,governance and academia (Agbalajobi 2010,Ogbogu 2011). Duflo (2012, p.1071) highlights that women leaders might just be the best representatives to voice the needs of their fellow women.

Figure 4.5 Level of autonomy in relation to SES

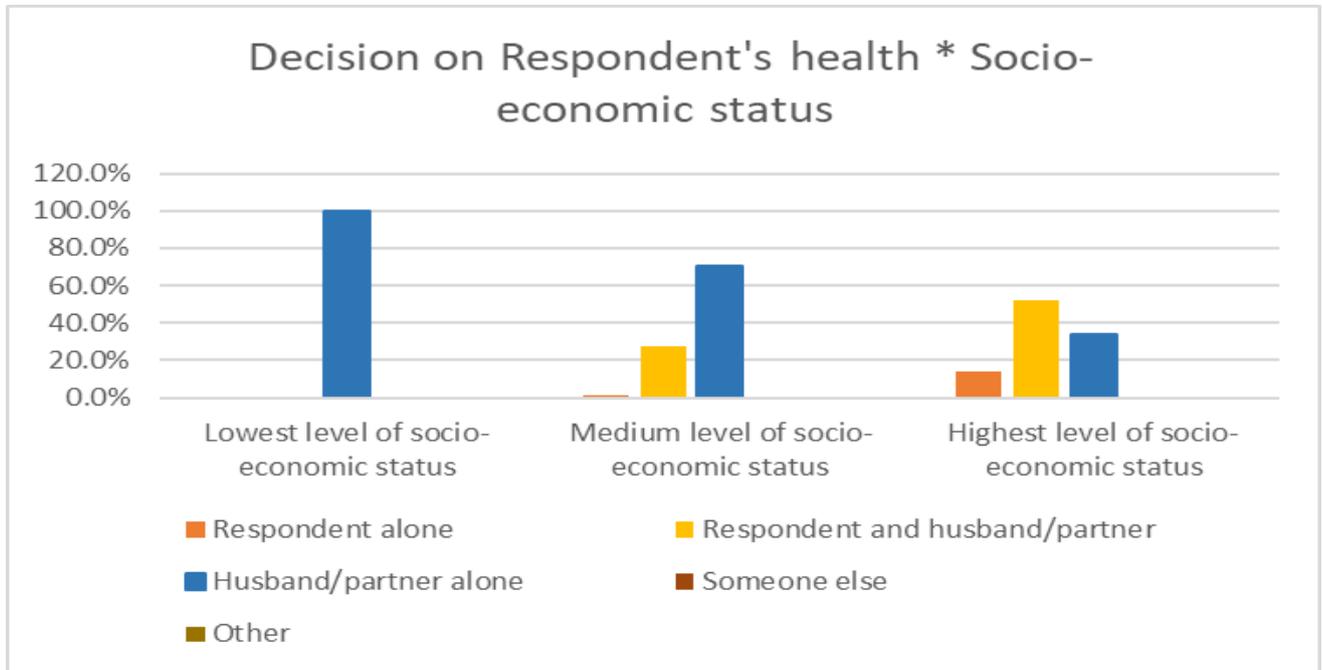


4.3.5 Respondent's health care in correlation to their Socio-economic status

The variable for the correlation between the person who makes a decision about a respondent's health care and their SES shows that all the women at all three levels of SES rely on their husband or partner to make decision regarding their health care, but for women in the highest SES, only 14% of them are empowered to make decisions regarding their personal health care independently of their husband or partner, 52% engage in joint decision-making with their husband or partner regarding their personal health care and 34% rely wholly on their husband/partner to make unilateral decisions on their health care (Fig. 4.6). 99.5% of women with the lowest SES rely on their husband /partner to make decision on their health care and none of them (0.0%) make decision alone on their health care (Fig 4.6). This is a disturbing trend so much as it affects the health of the women in the study area. (Sen, George & Östlin 2002, pp. 2-3) notes that women's low social autonomy exacerbates their biological susceptibility to diseases. Notably, women are naturally prone to health related challenges due to their vulnerable nature, especially with regard to morbidity from a pregnancy-related complication (Krejci & Bissada 2002). These women, in addition to their vulnerable nature in the society, are confronted with the strenuous activities of accessing water and sanitation and all of this greatly impacts on their health. It is apparent from this result that they have to rely on their husbands to make decision regarding their health care, which actually makes their health status worst. (Grown, Gupta & Pande 2005) highlights that a resident that walks kilometres fetching water expends 30% of daily calorie intake on that activity. The location of water and sanitation in or near a woman's home could reduce quite a number of the health stressors such as neck and joint aches, thereby contributing to an overall improvement in her health status (Grown, Gupta & Pande 2005). Duflo (2012) notes that traditionally women have little power in decision-making and often they desire to submit to the wishes of their husbands. In as much as the area studied is predominantly a patriarchal society, it behoves on the women to

imbibe an attitude of making decisions regarding their personal health issues as this could be a way to gain confidence in making their own overall decisions regarding issues such as water and sanitation that affect them in the wider society.

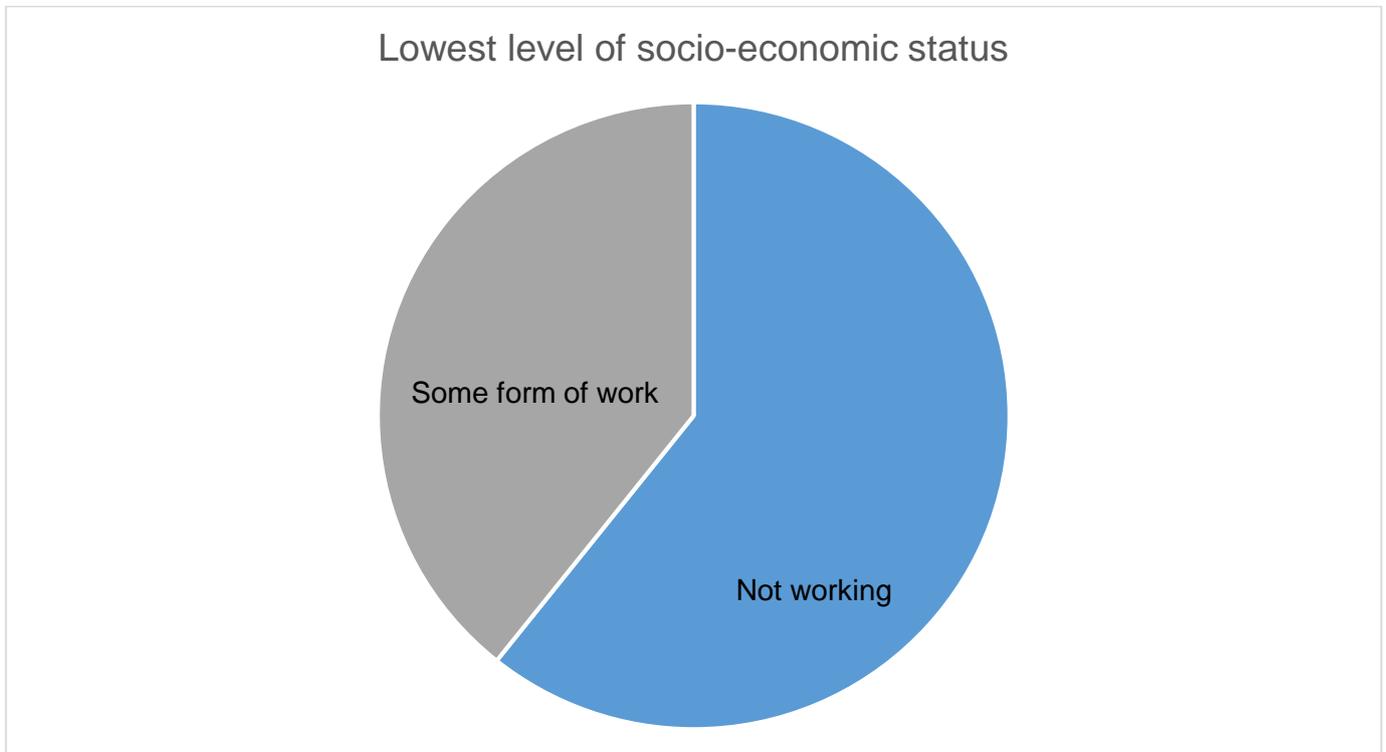
Figure 4.6 Decision-making on health care in relation to SES



4.3.6 Employability in correlation to the and Socio-economic status of women

The outcome from the cross-tabulation of the relationship between the respondents who are currently working and their SES indicates that 72% (Fig. 4.7) of the women with the lowest socio economic status were not working at the time when these responses were retrieved and 28% (Fig.4.7) were engaged in some sort of work possibly farming or raising livestock. In most communities in Nigeria, women who are not educated and are in a rural or semi-rural settlement, engage in either small farming around the family's home (Aluko 2011,p.40) raise livestock in most cases goats and those that are more privileged, engage in poultry activities to support the family in some way. (Ogunlade & Adebayo 2009,p.56) observed that majority of women (63%) engaged in poultry production in some areas of Kwara state have no formal education. (Jaji, Adegbuyi & Yusuf-Oshoala 2014) noted that 50.72% of the women involved in fish related activities such as fish processing were in the low socio-economic group.

Figure 4.7 Employability in relation to SES

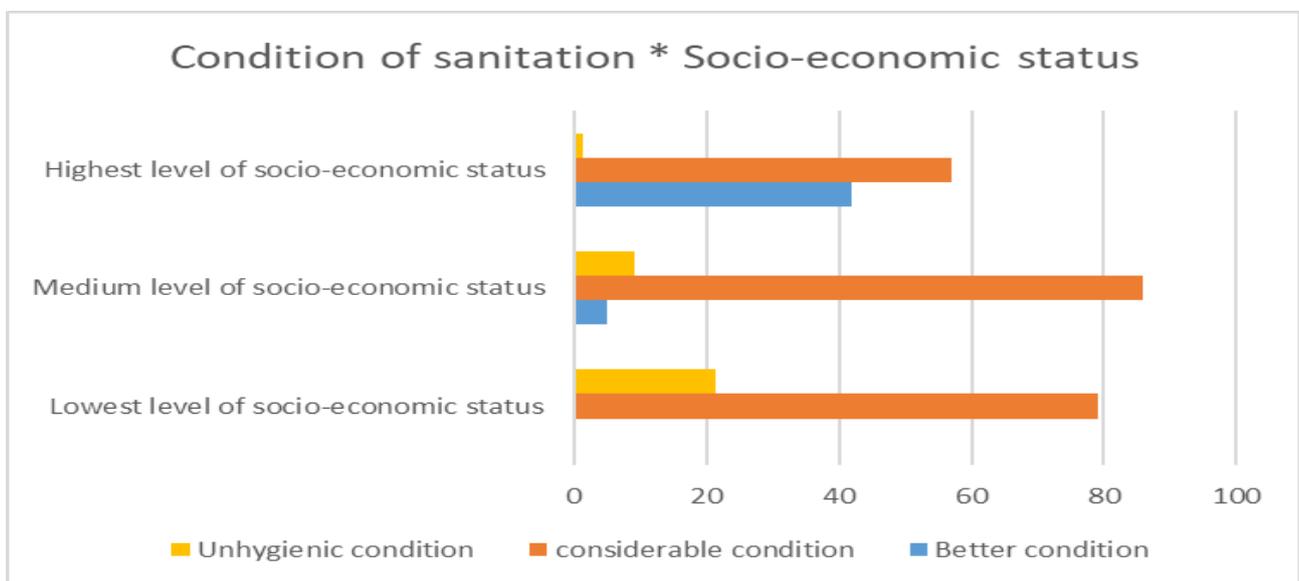


4.4 Level of sanitary conditions in correlation to the Socio-economic status of women

The results obtained from the crosstabulation of the relationship between the condition of sanitation of the women under study and their socio-economic level yield alarming statistics among the three levels of socio-economic status, only 42% (Fig 4.8) of the women with the highest level of socio-economic status enjoy better sanitary condition, meaning they have some type of flush toilet at home and do not have to share toilets with neighbours. 79% of the lowest and 86% of the medium levels of SES from population studied have only considerable sanitary conditions, meaning they have sanitary facilities such as latrines and sometimes do not need to share these facilities

with neighbours. Worse still, 21.2% of women with the lowest SES endure unhygienic sanitary conditions, meaning they use bushes or buckets as substitute for toilets. Van wijk-Sijbesma (1998) cited in O'Reilly (2010 p.46) notes that the provision of sanitary facilities such as latrines within the household is important for the convenience, safety and status of women, as they prevent women from walking away from home to seek sanitary privacy elsewhere, such as into the bushes. (Supply & Programme 2014, pp.6-8) notes that Nigeria is not on track in terms of water accessibility and sanitation coverage to its citizens as less than half of its population has access to improved sanitation facilities, unlike its counterpart in North Africa, and Morocco to be specific (Jamati 2003) where there has been noticeable progress. In fact, Nigeria is observed to have declined in terms of sanitary condition. This, no doubt, increases the negative impact on the women of Nigeria for reasons already observed from the findings in this study.

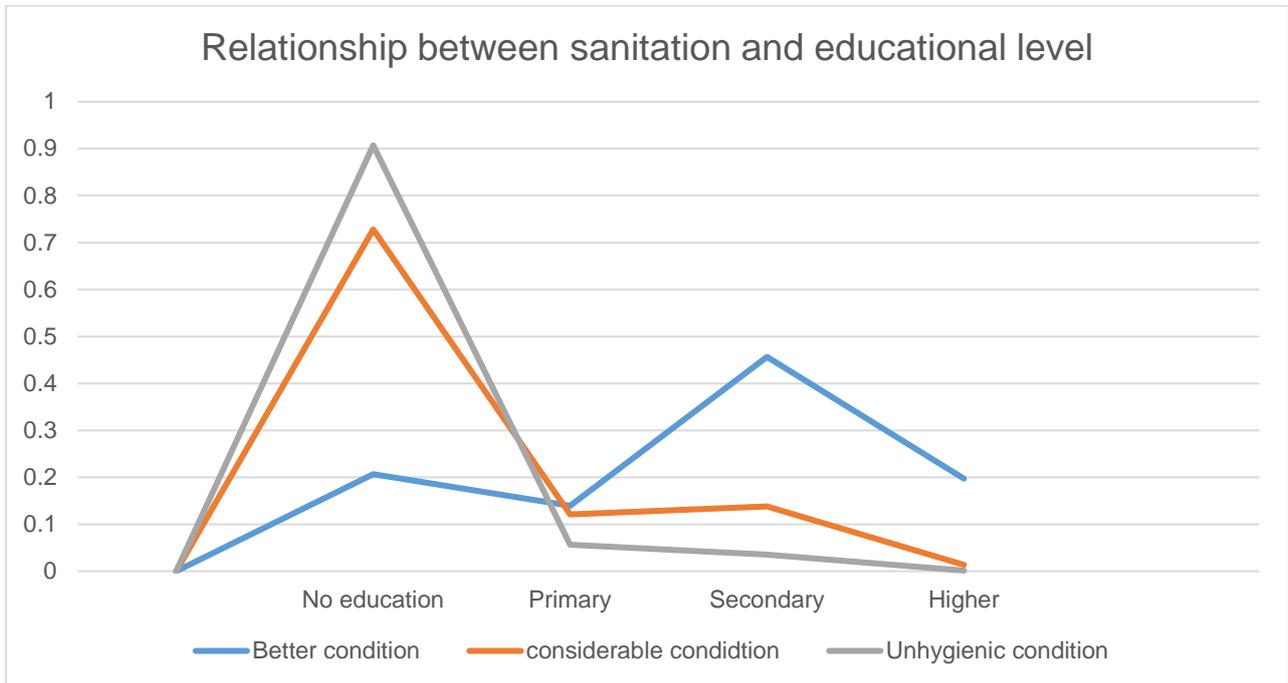
Figure 4.8 Sanitary condition in relation to SES



4.4.1 Correlation between sanitary conditions and the education level of women

The findings for the relationship between sanitary conditions more specifically, better conditions (different types of flush toilets), considerable conditions (different types of pit latrines) and unhygienic conditions (bucket/open field/Bush) and the level of education (Fig.4.9) of these women clearly indicate a direct correlation between these two variables. The higher the level of education, the better the sanitary conditions of women in the population studied, with 46% of those who enjoy better sanitary conditions being those who have a secondary level of education. The lower the educational level, the more unhygienic the sanitary condition, with 91% of those enduring unsanitary conditions being those who have no education at all. Bosch et al. (2002 p.376) claims that a lack of serviceable toilets in schools deter girls who are going through puberty from continuing their education. Women in sub-Saharan Africa including Nigeria consider access to water and sanitation a top priority because it eases their burdens overall and, more specifically, in meeting their sanitary needs (Desai 1994). The empowerment of women in terms of education is important and this is better achieved through a process of improving the women's self-confidence and dignity, both of which are only achieved when the woman's needs for seclusion and privacy when accessing sanitation are implemented and/or improved (O'Reilly 2010). The need for a woman to be educationally empowered is reciprocal to adequate sanitation and vice versa (O'Reilly 2010).

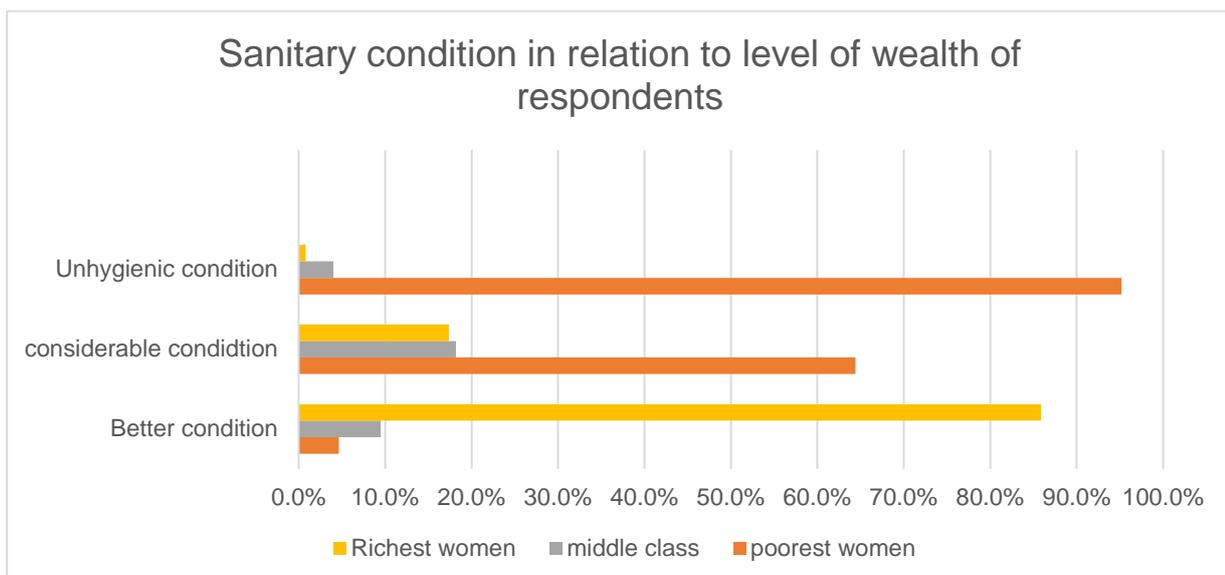
Figure 4.9 Sanitary condition in relation to educational level



4.4.2 Correlation between the level of sanitation for women and the wealth index

The level of wealth a respondent has in relation to her sanitary conditions presents a wide gap between those women who enjoy better sanitary conditions and those who endure unhygienic conditions. 86% of the women enjoying the best sanitary conditions are the richest women (Fig.4.10) whereas, 95% of those enduring the most unhygienic sanitary conditions are the poorest women (Fig.4.10). This means that there is a direct relationship between sanitation and the measure of the wealth of a woman. Bosch et al., (2002) note that the relationship between these two variables is well established. Some contributory pathways leading to low SES in women in relation to sanitation, and as seen in the conceptual framework of this study, are captured in Bosch's (2002 et al. p.373) argument, noting that the poor cannot afford the cost of simple technology such as latrines, they lack the political voice to make their plights heard, and they are confronted with income shortages and the cultural norms that have prevailed in those environments.

Figure 4.10 Sanitary condition in relation to wealth



In view of all the above findings and judging from the correlational relationships between water and sanitation for all these variables, it is evidently clear and consistent that the more accessible the availability of water and sanitation is to the women in the North-western region of Nigeria, the better their Socio-economic status (SES) in society. This can be observed clearly in the relationship between the education level and the sanitary conditions of the women in that region (Fig.4.9). The women enduring unhygienic sanitary conditions had no formal education. The findings of this study are so important and timely as it can serve as a leverage on the frameworks to engage in long-term agreements with the private sector in the form of Public Private Partnership (PPP) and to advocate for more international funding for improving the empowerment of women and for the availability of water and sanitation.

Chapter 5

Recommendations and Conclusion

5.1 Introduction

Improved access to water and sanitation is a thematic area within the Sustainable Development Goals (Griggs et al. 2013) and, as such, the complexities surrounding water and sanitation access such as the time required, the role of women in accessing water and the means by which water is accessed, as observed from this study, all need to be documented. These complexities correlate with the SES of Women. Addressing water problems should be a collective effort which requires an intersectional and multi-disciplinary approach to maximize social and economic progress in an equitable manner (Muta'aHellandendu, 2012 p.112). This effort cannot be completed without at least an equal representation by the group that is most affected. The involvement of women in any developmental initiative cannot be overemphasised. A UNICEF report clearly details that a development programme that fails to incorporate women will not realise its full potential (UNICEF 1977 cited in Sangodoyin, 1993). This is paramount when it comes to water and sanitation issues as women in this regard are the most affected; hence, they are in a better position to suggest ideas to alleviate their plights.

Secondly, community participation in sectoral projects can play a significant role in alleviating the issues of water and sanitation accessibility, as this gives the community a sense of ownership and responsibility when dealing with these issues (Zakus & Lysack 1998, p.2). This study has appraised the relationship of water and sanitation with the socio-economic status of Women in the North-western zone of Nigeria. Considering the results obtained from this relationship, this study proposes the following recommendations and hopes that further research can be undertaken on them.

5.2 Recommendations

5.2.1. Social infrastructure

Women in the area studied live in societal conditions that are inconvenient to the point of being oppressive. This affects their ability to seize opportunities which would otherwise improve their living conditions. Social infrastructure in the form of access to water and sanitation is obviously lacking. While recommendations are being made to the government to revamp this sector, other social infrastructure such as bringing education to the doorsteps of these women should not be neglected, as they will serve as a collective effort to improve their SES. The introduction of new, simple and affordable technologies to improve water and sanitation access is needed and the introduction of learning opportunities to improve the educational status of these women should also be considered. Albeit (Wanga, Ngumbuke & Oroma 2012) argue that often the implementation of new learning opportunities such as simple educational technologies comes with their own challenges especially in rural areas where social infrastructure such as transportation and electricity are also lacking.

5.2.2 Public Private Partnership (PPP)

The importance of Public Private Partnership (PPP) was extensively discussed in chapter two where its positive impacts are noticed in the water and sanitation sector of Morocco. Public Private Partnership (PPP) brings new expertise, synergies, resources and a new concept to otherwise public projects (Marin 2009). In as much as PPP comes with faster solutions to most social infrastructural issues, it is not devoid of challenges and somewhat political conflicts. Morocco had its own share of PPP challenges which was evident in various agitations in the processes leading up to the privatisation of the then inefficient government service providers to a private company and, afterwards the barrage of agitations as a result of complaints of exorbitant water tariffs and bills by residents. The potentials of PPPs in collaborating with governments be they in the

developed or developing world, to provide social services is important. The role of the private sector as an actor in social reform can be beneficial both for the government and the populace. This is because the costs that the government would normally incur are reduced and the services that the populace would need are delivered without the typically long administrative bottleneck involved in government budgetary allocation (Jütting 1999). Most developed countries, notably the UK, Australia, Canada, Spain and the USA have adopted the PPP approach as a means of synergising with the private sector in the provision of goods and services in what was originally envisaged as the public sector's responsibility and function (Volkov 2016,p.66). It is imperative to mention that for almost two decades, PPP is fast becoming a policy tool in most western countries and the developing countries as well. Nigeria is taking a leaf from this trend (Oyebanji, Akintola & Liyanage 2011) but Nigeria needs to prioritize the issue of water and sanitation as a target goal in its synergies with private operators. Marin (2009) opines that since the inception of PPPs in sub-Sahara Africa, close to 260 contracts have been awarded to private operators, although some of the contracts awarded failed or were otherwise terminated, quite a sizeable number have remained successful. The case of the Cote Ivoire is a successful one as close to three million people had access to piped water through household connections and this was entirely devoid of any government funding, rather the money used for the project was through cash-flow generation from tariff revenues (Marin, 2009).

5.2.3. Collaboration with International Donors

Collaboration with international agencies who have organisational objectives aimed at tackling impediments to an improved access to water and sanitation is highly recommended. Morocco is a typical example of a country that has explored different avenues of international funding, financial aid and financial donors, all aimed at

improving water and sanitation (Organization 2014) . Often the funding might not cover the whole country but communities that are the most ravaged in terms of a lack of water and sanitation can be serve as the target area of the funding. (Tecco 2008) notes that ‘even if official Development Aid represents only a small amount of the total need, it can play an important role in leveraging other funds’. The commitment and synergy of all the involved parties, starting with the local populace, cannot be overlooked as this collaboration creates a sustainable social reform in terms of the provision of water and sanitation (Tecco 2008)

5.2.4. Sustainable development goals

The sustainable development goals that were adopted in 2015 (Organization 2015,p.7) seeks to focus on the unmet needs of less privileged nations out of which water was recognised as an integral part of human development and ecosystem needs (Bhaduri et al. 2016),it comes with expectations for specially the impoverished population of many nations. The SDGs are thematically structured to address societal issues faced by disadvantaged populace. Each goal addresses a social or economic need of people. It is noted that Goals 3-6 summarises what this study entails. Goal three (3) is targeting ensuring healthy lives and promoting well-being for all at all ages. The pressures associated with accessing water also causes stressors on the women exposing them to diseases. The term well-being is broad, but what readily comes to mind is the presence or availability of specific societal needs that makes day to day living worthwhile, such as education, medical care, income and availability of food and water. Most Nigerian communities lack these attributes and the area under this study is a typical example. The United Nations corroborated this observation when it noted that 70% of those without access to basic sanitation,26% use shared sanitary facilities,20% use improved facilities and 22% practice open defecation (UN-Water,2008).

Goal 4 which is aimed at ensuring inclusive and equitable quality education and promote lifelong learning opportunities for all (Gupta & Vegelin 2016). This goal is timely

and may contribute to an expedite action towards alleviating the huge socio-economic disadvantage women face as a result of inaccessibility to water. The equity women and girls need to pursue their aspirations are lacking as a result of the pathways discussed in chapter 2 by which a lack of access to water and sanitation correlates with socio-economic variables. If SDG 4 is going to be a success, then the issue of water in communities must be addressed holistically.

Goal 5 is targeting to achieve gender equality and empower all women and girls (Organization 2015,p.29). The importance of gender empowerment cannot be overemphasised. The development of any nation relies on the skills and knowledge of its educated populace. Education according to the late Nelson Mandela is the power in which to change the world. The need to empower women and girls through knowledge and skill acquisition will go a long way in building their self-development and improve their status which ultimately lead to national development. If women empowerment is going to be achieved under the present dispensation of the Sustainable Development Goals, then important issues that deny women deriving maximum benefits from being empowered should be prioritize and one of such issues is the lack of access to water and sanitation.

Goal 6 aims at ensuring availability and sustainable management of water and sanitation for all (Organization 2015). This is an important goal which if achieved, is capable of reducing to the barest the associated problems women face in accessing water and sanitation. Such problems as mentioned in chapter 2 and 3 of this study include enormous time wastage, insecurity, sexual harassment, health challenges relating to physical stress, lack of opportunity to build intellectual capacity, feeling of low self-esteem etc. The Nigerian government had held a high profile political forum on sustainable development which attracted stakeholders from the position of governance, in attendance were also the private sector, the academia, civil organisations, and

vulnerable groups such as women and people living with disability, as well as the media. Responsibilities were assigned to key government officers to identify and target vulnerable groups in communities. This might be one of the steps toward the right direction in identifying the plight of women in terms of access to water and sanitation and their general social development in their communities (UN Report, 2017). Similarly, the government of Nigeria can prioritize the issues of water and sanitation and its associated consequences by voting adequate funding, restructuring policies, collaborating with communities and seeking international collaborations to tackle this in a holistic manner. Kofoworola (2010, p.46) suggested that it is high time the decision-makers and leadership of Nigeria takes responsibility of past failures by correcting the ills of inadequate political frameworks that was not explicit enough in tackling water problems in Nigeria (Kofoworola 2010). If this is done, then I have no doubt that other social issues that women encounter as a result of lack of water and sanitation will gradually start to fade out.

5.3 Conclusion

This thesis demonstrates a consistent pattern of relationship between water and sanitation with the socio-economic status of women aged 15-49 in North-western Nigeria. This relationship was observed as occurring through multiple strategic pathways, namely poverty, lost time, a lack of technology, and cultural customs and beliefs.

Poverty has been linked to lack of water and sanitation, which is synonymous with most developing countries, not only Nigeria (Organization 2006). The effects of a lack of water and sanitation negatively impact women and girls more than their male counterparts, being exacerbated simply by their biological nature (Sen, George & Östlin 2002). A perfect example is a pregnant woman that journeys a distance from her

dwelling to access water for family consumption, while also using the bushes or share toilets for her sanitary needs. This social defect exerts enormous stress on her wellbeing.

The area under study is characterised by strong customary beliefs that women marry early and are basically the carers of the home and, as such, raising children, the preparation of food, the collection of firewood and the fetching of water are household daily activities which fall under their responsibility (Makama 2013). Strong patriarchal influences are another belief system that dominate the area studied and this affects women's autonomy in terms of decision-making. The findings of this study clearly show that women of all three socio-economic statuses (lowest, middle and highest SES) depend on their husbands or partners to decide on issues that pertain to them, even with regard to their personal healthcare. However, a percentage of women from the highest SES category was observed as making their own decisions regarding issues that pertain to them, independently of anyone else. This observation might be one of the reasons that women's participation and representation are generally low in society, both locally and nationally in the area studied (Ngara & Ayabam 2013,p.50). This study argues that judging from the results obtained, incorporating women from the grassroots, irrespective of their number, to be involved in decision-making in stakeholder forums, will boost the confidence of more women to voice out their plights concerning what affects them on the home front, in their communities and for all women across the nation in general. This is the fastest way their plight with respect to water access to water and sanitation can be reduced.

A lack of simple technology is one of the pathways that a lack of access to water and sanitation correlates to the SES of women in the North-western Nigeria (as discussed in chapter two of this study). Technology can be employed to improve water and sanitation access to women through simple hand pumps, boreholes or any means the

government of the day deems most appropriate for the type of environment under review.

Comparative global examples through reviews of past studies demonstrates how some nations such as Rwanda and Morocco have been in a similar dilemma in the past but have since made remarkable progress in improving water and sanitary access for their citizens, and the positive resulting effect which transcends to the SES of women in those countries. The enrolment of girls into education has increased in Rwanda and the percentage of girls who attain a higher level of education surpasses that of the area studied (Statistics 2014).

Secondly, Rwanda has also taken initiatives to improve the adequate representation of women in public offices and governance, as evidenced by having a 50% female representation in its parliament with a female Speaker in that parliament (Singh, A n.d).

Morocco, on the other hand, implemented has a long-term PPP agreement spanning thirty years with a target to address water and sanitation issues in morocco. The agreement is reviewed consistently to measure performance outcomes (Jamati 2003).

Morocco has also made water and sanitation its highest priority when receiving funding from international organisations. Morocco has signed Free Trade Agreement with other nations to gain expertise and technology for the improved access to water and sanitation by its people. In addition, Morocco has recognised the importance of availing a woman the opportunity to mount a strategic position on matters that have to do with this issue, with her recommendations to the UN recognising the plight of women in terms of a lack of improved access to water and sanitation in Morocco (Jamati 2003; McDougall 2011).

The findings in this study have shown with supportive evidence the distinct relationship that water and sanitation have with the SES in the area studied. The consistency has been such that the higher the level of the SES, the better the ranking in the related variable measured and vice versa. For example, in terms of the level of autonomy in

decision-making, 99.1% of the women with the lowest SES had no input in decision-making and had their husbands or partners make decisions on their behalf. In terms of sanitary conditions, 42% of the women with the highest SES enjoyed better conditions of sanitation and just 1.3% of women in that category endured unhygienic sanitary conditions.

Based, on these findings, this study arrives at the conclusion that an improved access to water and sanitation within the households of the women aged 15 to 49 in North-western Nigeria shows a strong correlation with the three levels of socio-economic status; namely the lower socio-economic status, the middle socio-economic status and the higher socio-economic status. The women from the highest SES, enjoyed better sanitary conditions, were more educated, enjoyed greater autonomy in decision-making, made their own decisions regarding their personal health care, were employed and were in a better wealth category than the women in the lowest and middle socio-economic levels.

There is high possibility to learn from other countries especially from Rwanda with its fast growing population but also Nigeria. However, in the case of Rwanda the government has prioritised the empowerment of women and has implemented legislative tools to identify and introduce reforms which tackle the problems of inaccessibility to water and sanitation since both issues concern women. The political and financial implications of addressing the same issues in Nigeria might be enormous but it is possible to start with engaging in a PPP for an extended period of time, as Morocco has done, with key performance indicators to measure progress and outcomes, and with constant reviews proposing new challenges and possible solutions.

Finally and most importantly, the intrinsic value of empowering women feeds back into the social-economic value, thus forming a virtuous circle. Easy access to water and improved sanitation for women is a precondition as imperative to strengthening the

socio-economic status of women. Failure to understand and accept this crucial role of water and sanitation can lead to a failure in empowering women and achieving sustainable development goals. This conclusion prompts the study to make the recommendations above with the aim of spurring policy-makers into action.

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