THE GEOGRAPHY OF HIV/AIDS AND AN ASSESSMENT OF RISK FACTOR PERSPECTIVES IN NIGERIA: THE CASE OF BENIN CITY AND MAKURDI

BY

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DISSERTATION

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ABSTRACT

Since the onset of the HIV/AIDS epidemic in the early 1980s, scholars have attempted to understand the fast spread of this epidemic in parts of Africa. Several theoretical approaches to explaining the prevalence of HIV/AIDS have been advance since then. This dissertation uses a number of these theoretical perspectives to explain the prevalence of HIV/AIDS at the national and local levels in Nigeria. Among the theoretical perspectives deployed in this research are the political economy approach, the gender relations context, and the role of certain cultural practices in the proliferation of HIV/AIDS in Nigeria. The study advances two central objectives. The first objective is to use a geographic approach to understand the spatial variation of HIV/AIDS at the national level. This objective sets out to examine the spatial landscape of this epidemic in order to identify regions of high prevalence versus those of low prevalence. The second objective of the study explores the factors that put people at risk of contracting HIV at the community levels using two carefully selected study sites, namely, Benin City and Makurdi.

In trying to understand the spatial variation of the HIV/AIDS rates at the national level, the study uses geospatial analytical methods which include Moran’s I, and Getis & Ord’s G_{i}^{*} statistic. These methods help to establish the presence or absence of clustering in terms of high or low levels of HIV/AIDS rates at the national level. For the micro level cases, the study of Benin City and Makurdi, using structured questionnaires and focus group discussions enabled an assessment of the understanding of risk factors by the residents. As such, this dissertation employs both quantitative analytical techniques (i.e. geographic information science or GIS and principal components analysis) and qualitative analytical techniques (questionnaires and focus group discussions). Both the principal components analysis and the focus group discussions
assisted in unraveling the major HIV/AIDS risk factors that respondents identified in the two study sites.

The results of the geospatial analysis indicated that Benue State is a major HIV/AIDS cluster in Nigeria both in time and in space. The intensity of HIV/AIDS prevalence radiates from Benue State to the southeast, northwest and southwest states of Nigeria. The results of the principal components analysis and the focus group interviews yielded very insightful results about the presence of key HIV/AIDS risk factors in the two study sites. The assessment by the respondents at the two study sites indicated the existence of both differences and similarities in their assessment of risk factors. For example, the major key risk factors that the respondents identified included truck stop activities, international sex trafficking of young females, international peacekeeping activities of Nigerian army officers, the presence of certain cultural practices such as wife inheritance and female circumcision, and more importantly the unequal gender relationships that greatly favor men over women. Other respondents mentioned the presence of a poorly funded and poorly structured health care system that has inadvertently contributed to the spread of the HIV/AIDS epidemic.

In conclusion, the results of this study have broader societal impacts particularly in their contribution to devising management strategies that are relevant to each specific locality as informed by the understanding of risk factors by the residents. This study also demonstrates the usefulness of advanced geospatial analytical techniques in identifying major HIV/AIDS clusters. Researchers, politicians and policy makers can then draw their attention to the high cluster zones as demonstrated in this dissertation with the cases of Benin City and Makurdi in Nigeria.
To all those who live with and have died of HIV/AIDS
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CHAPTER 1
INTRODUCTION

HIV/AIDS is a global pandemic that has significant consequences at the local level. According to the World Health Organization (WHO, 2009), HIV/AIDS is a major cause of mortality in developing countries and affects multiple facets of any society, such as human rights, social development, cultural practices, economies, and education. These impacts are profound at both the micro and macro levels within nations. Nigeria is not exempt from the deleterious effects of HIV/AIDS. The prevalence rate of HIV/AIDS in Nigeria is the highest in West Africa. However, within the country, the HIV/AIDS rate varies from one region or state to the next.

This dissertation has two central objectives. First, it sets out to determine the spatial pattern at the macro (national) level in order to understand the spatial variation of this disease. It is important to examine the spatial landscape of this epidemic in order to identify regions of high prevalence versus those of low prevalence. The second part explores the factors that put people at risk of contracting HIV, i.e. a micro (community) level analysis. Thus, the aim of this introductory chapter is to establish the need for both the macro- and micro-level approaches to the study of HIV/AIDS with reference to Nigeria.

The chapter begins by offering the current HIV/AIDS status in Nigeria. It then introduces the major theoretical perspectives that guide the research, such as political economy, the socio-cultural context, gender, and the health system approach. It concludes with a presentation of the research objectives and the significance of the study.
1.1 The Current HIV/AIDS Status in Nigeria


Demographically, HIV/AIDS has the most impact on those between 15-55 years of age, the sexually active age group. The adult HIV/AIDS prevalence rates among this age cohort increased from 1.8 percent in 1991 to 5.8 percent in 2001, making it one of the highest rates of HIV/AIDS among adults in West Africa (UNAIDS, 2002). In estimated numbers, this represents some 3.5 million people, keeping Nigeria as the country with the second highest burden of HIV in the world, only after South Africa (UNAIDS, 2012). The estimated prevalence rates among people aged 20-24 years rose from 4 percent to 10 percent between 1996 and 1998 (Mafeni & Fajemisin, 2003; Nigeria & ORC Macro, 2004). The number of children living with HIV/AIDS also increased during this period, a testament to the fact that mother-to-child transmission is still a central source of HIV/AIDS in children (Table 1.1). The Federal Ministry of Health (2007) reports there is a 40 percent chance of mothers passing the virus to their infants during pregnancy and at birth. Moreover, the number of orphans due to HIV/AIDS increased between 2001 and 2007 (Table 1.1). Furthermore, the poor health care system (inadequately screened blood transfusions and use of contaminated syringes, for example) exacerbates HIV/AIDS rates (Gisselquist et al., 2002; Oppong & Agyei-Mensah, 2004). Overseas military activities, forced migration (female trafficking), and large number of refugees are other factors that account for the proliferation of HIV/AIDS (Odunsi, 2005; Adeokun, 2006).
The HIV/AIDS rate in Nigeria also varies by gender. Table 1.1 shows that approximately half of those living with HIV/AIDS are women. Although the number of women living with the disease declined from 2.1 million to 1.7 million between 2001 and 2007, the number is still higher than the corresponding number of men in every year except 2005. This gender discrepancy requires further examination.

Table 1.1: Estimated number of people living with HIV/AIDS and deaths in Nigeria, 2001-2007

<table>
<thead>
<tr>
<th>People/Groups</th>
<th>2001(^a)</th>
<th>2003(^b)</th>
<th>2005(^b)</th>
<th>2007(^a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Adults and Children</td>
<td>4,200,000</td>
<td>3,600,000</td>
<td>4,200,000</td>
<td>3,200,000</td>
</tr>
<tr>
<td>Number of Adults (15-49)</td>
<td>3,500,000</td>
<td>3,300,000</td>
<td>3,800,000</td>
<td>2,900,000</td>
</tr>
<tr>
<td>Adults (15-49) Rate (%)</td>
<td>5.7</td>
<td>5.4</td>
<td>3.9</td>
<td>3.8</td>
</tr>
<tr>
<td>Number of Women (15-49)</td>
<td>2,100,000</td>
<td>1,900,000</td>
<td>1,600,000</td>
<td>1,700,000</td>
</tr>
<tr>
<td>Number of Children (0-14)</td>
<td>580,000</td>
<td>290,000</td>
<td>240,000</td>
<td>370,000</td>
</tr>
<tr>
<td>Number of Deaths due to HIV/AIDS</td>
<td>260,000</td>
<td>310,000</td>
<td>220,000</td>
<td>270,000</td>
</tr>
<tr>
<td>for Adults &amp; Children</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Orphans (0-17) Living</td>
<td>460,000</td>
<td>1,800,000</td>
<td>1,300,000</td>
<td>1,200,000</td>
</tr>
<tr>
<td>with HIV/AIDS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


\(^b\) UNAIDS/WHO Global HIV/AIDS Online Database (2008), [http://www.who.int/globalatlas/includeFiles/generalIncludeFiles/listInstances.asp](http://www.who.int/globalatlas/includeFiles/generalIncludeFiles/listInstances.asp)

A recent United Nations report shows an increase in HIV/AIDS prevalence rate among men having sex with other men (MSM) and among drug users who use injections in Nigeria (UNAIDS, 2010). In the same report, only half of surveyed youth correctly answered basic HIV/AIDS questions on how the disease could be transmitted, indicating a very low level of knowledge about the disease. In addition, only 48 percent of pregnant women reported using
antiretroviral drugs that can treat the disease, a rate that is below the global goal of reaching 80 percent of pregnant women on antiretroviral drugs (UNAIDS, 2010).

There exists geographic variation of the HIV/AIDS rates across the states in Nigeria with some states exhibiting high rates and others low rates. This disproportionate geographic pattern requires closer examination, which involves mapping and analyzing macro-level spatial patterns. The geospatial mapping determines areas of clusters with reference to the HIV/AIDS rates. Once the clusters are identified, it becomes easy to select a number of sites for an in-depth micro-level study to understand the underlying risk factors for HIV/AIDS. Understanding the spatial pattern of HIV/AIDS will enable a fuller understanding of the dynamics of HIV/AIDS as well as ways to manage the disease.

It is in this vein that this study focuses on understanding the factors that influence the spread of HIV/AIDS using a mixed methods approach and drawing upon a number of theoretical perspectives. As such, mapping, quantitative, and qualitative techniques are employed to unravel the major risk factors that people associate with the HIV/AIDS epidemic. The mapping methods involve geospatial analysis to identify geographic clustering of the disease. On the other hand, the quantitative and qualitative techniques use structured questionnaires, interviews, and focus group discussions to explore the perception of people at the community level. With reference to the theoretical perspectives, this dissertation draws upon the political economy approach, socio-cultural factors, the healthcare system, and gender power relations in order to situate this study within the broader HIV/AIDS literature.
1.2 Theoretical Background

The risk factors associated with HIV/AIDS are complex. For a full articulation of the intricate web of risk factors, the following interrelated theoretical perspectives are utilized: political economy, socio-cultural practices, gender power, healthcare systems, and geography of place. Understanding the influence of these perspectives on HIV/AIDS involves an exploration of people’s understandings of HIV/AIDS risk factors within the context of these explanations. The following section presents a preamble of the different theoretical explanations and their relevance to HIV/AIDS risk factors.

The Political Economy Theory

Economic activities based on political policies or decisions influence the outcomes and experiences of people in every community. For example, poor economic conditions or outcomes result in international labor migration and human trafficking (Perry, 1998). This study focuses on three areas where political and economic contexts influence activities that may be linked to HIV/AIDS risk. Within political economy and HIV/AIDS literature, it is clear that activities at truck stops, labor migration, and military assignments have profound impacts on the rates of HIV/AIDS at the local level (Smallman-Raynor & Cliff, 1991; Orubuloye et al., 1993; Jochelson et al., 1991; Hunt, 1996; Perry, 1998; Kalipeni et al., 2006; Cole, 2006; Sagala, 2006; Ferguson & Morris, 2007). The political economy perspective explores the link between these activities and the risk factors associated with HIV/AIDS at the micro level.

The Socio-cultural Practice Perspective

The socio-cultural practice perspective encompasses practices that hinge on sexual and non-sexual activities. These activities are purportedly associated with high risks for HIV/AIDS. The sex-related activities and practices include polygamy, wife/widow inheritance and spouse
sharing, multiple sex partners, concubine/mistresses, rape, dry sex, and HIV/AIDS in Africa (Caldwell et al., 1989; Dada et al., 1998; Buvé et al., 2002; Obidoa, 2004; Osagbemi et al., 2004; Kalipeni et al., 2006). The non-sexual cultural practices that reportedly influence HIV/AIDS include female circumcision, tattoos, skin perforations, and scarification (Omorodion, 1993; Uzukwu, 2005; Adeokun, 2006).

The Gender Context Perspective

There is a strong inverse relationship between socioeconomic class (education and income), cultural power, and the spread of diseases by gender. A study of the power structure in any setting is one way to understand the dynamics of gender power relationships and HIV/AIDS (Schneider & Gould, 1987; Osmond et al., 1993; Langen, 2005). In addition, Weiss et al. (1996) and Heise and Elias (1994) argue that gender profoundly influences the sexual lives of people and their vulnerability to HIV/AIDS. Men exercise tremendous power at home and within the community, which influences the vulnerability of women to HIV/AIDS (Osmond et al., 1993; Ampofo, 2001). Furthermore, socialization determines gender power relationships and arguably influences vulnerability to HIV/AIDS (Perry, 1998; Craddock, 2000; Thomas, 2000; Gilbert & Walker, 2002; Wojcicki, 2005). Uncovering the dynamics of gender relationships leads to an understanding of how inequality between men and women affects vulnerability to HIV/AIDS.

The Healthcare System Explanation

The underdeveloped and underfunded health care system in Africa is riddled with corrupt practices that affect the rate of HIV/AIDS (Gisselquist et al., 2002; WHO, 2009). Hospitals have reportedly become sources of HIV infection. There is evidence of iatrogenic transmission of HIV/AIDS through contaminated blood transfusion, multiple injections, unsafe practices of medical personnel, and induced abortion (Lawson, 1999; Gisselquist et al., 2003). There is a
growing interest in understanding the dynamics of HIV/AIDS in West African countries where prevalence rates have been reasonably low vis-à-vis hospital activities (Rosen et al., 2003; Onwuliri & Mohammed, 2001; Oppong & Agyei-Mensah, 2004).

The Geography of Place and Diseases

The geography of place emphasizes the meaning and influence of a location on the people (Kearns & Joseph 1993; Kearns & Gesler, 1998; Wiersma, 2008) while the disease perspective ties the political economy as well as socio-cultural and gender-related activities to location and place. Generally, place denotes emotional attachment to locations, values, meanings and symbolism that are constantly constructed and reconstructed within the cultural, historical and spatial context (Williams and Stewart, 1998). It is not only the physical location, but also a deep connection to the person, the inner self (Wiersma, 2008). Such places as towns, neighborhood, brothels and truck stops are value loaded that would affect the perception of people in regards to HIV/AIDS transmission. The characteristics of a place shape the experiences of people and their activities (Williams, 1998; Williams and Stewart, 1998; Fenner, 2011). The uniqueness of place and the lived experience of people are relevant to the understanding of HIV/AIDS patterns. Therefore, efforts to understand or decipher these relationships through studies that elucidate such location-specific data are paramount.

1.3 Objectives

Two central objectives drive this study. The first objective is to explore the geography of HIV/AIDS in Nigeria at the national level using advanced geospatial analysis and mapping to identify areas of clustering. The second objective uses the results of geospatial analysis to select two areas for an in-depth analysis of the perceptions of the major risk factors in the spread of
HIV/AIDS. It aims at an understanding of how these multiple risk factors—within the context of gender relations and the socio-cultural milieu at the community level—affect HIV/AIDS. The primary sources of data employed in this study are (1) government publications for the national level geographic analysis and (2) first-hand interviews with individual residents through questionnaire responses and focus group discussions.

The examination of the multiple dimensions of vulnerability to HIV/AIDS provides insight for targeting intervention programs and thus reducing severity and impact. Investigating these dimensions by studying people’s attitudes and perceptions is important for understanding the dynamics of the epidemic. This local knowledge base enhances policy design and implementation of HIV/AIDS management strategies. This focus on understanding the ways communities perceive the problem of HIV/AIDS adds value to planning programs because they are rooted in local knowledge about the subtleties of factors that affect the prevalence of HIV/AIDS.

1.4 Research Objectives

As noted in the preceding section, this study has two overriding objectives: (a) to determine where HIV/AIDS geospatially clusters and (b) to determine key HIV/AIDS risk factors at the community level. Below are related goals in this study:

- To determine the hotspots (clustering) of HIV/AIDS prevalence in Nigeria
- To determine the socio-cultural factors that play a role in HIV/AIDS risk assessment at the micro-level (or community level)
- To examine how respondents perceive the roles of specific locations, like truck stops, and economic factors that are contributing to the prevalence of HIV/AIDS
To examine the perceived role of the healthcare system as a risk factor in HIV/AIDS
To investigate the role of gender power relationships in HIV/AIDS vulnerability

1.5 Outline of Dissertation

There are eight chapters in this dissertation: Chapter 1 examines the status of HIV/AIDS in Nigeria, highlights the research problem, and includes a preamble of the theoretical background and the objectives of the study. Chapter 2 focuses on the literature review, conceptual framework, research questions, and specific objectives. Chapter 3 presents the research design and methodology. Chapter 4 examines the geospatial macro-level analysis of the geography of HIV/AIDS and the selection of study sites. Chapter 5 discusses study site number one (Benin City) and highlights the risk factors that respondents identified as contributing to the prevalence of HIV/AIDS. Chapter 6 examines study site number two (Makurdi) and discusses the main HIV/AIDS risk factors. Chapter 7 presents the cross-case analysis in comparing both study sites for similarities and differences. Chapter 8 is the conclusion of the dissertation, which presents a summary of findings, future directions, and applications of risk factors to policy development.

1.6 Significance of Study

This study contributes to understanding local HIV/AIDS risk factor dynamics in the Nigerian context. It focuses on studying the perception of people at the community level as socialization and experiences influence behaviors and activities. Understanding local knowledge can determine success in identifying HIV/AIDS risk factor patterns and effective management. Furthermore, this study shows the geographical pattern of HIV/AIDS in Nigeria. This geo-
visualization of HIV/AIDS rates over time draws attention to areas or regions with high prevalence rates.

1.7 Conclusion

Even though HIV/AIDS rates are on the decline, there is spatial, temporal, and demographic variation of the HIV/AIDS patterns in Nigeria. This chapter has highlighted the need for understanding HIV/AIDS risk factors at the local level. This chapter has also introduced the different theoretical explanations and briefly discussed the political economy approach, the socio-cultural practices approach, the gender relationships context, and healthcare system explanations that influence the spread of HIV/AIDS in Nigeria. In short, this chapter has laid out the thrust of this dissertation with its central arguments that there are important factors at play in local communities that result in HIV/AIDS vulnerability of the residents.
CHAPTER 2
LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

2.1 Introduction

Geospatial analysis of HIV/AIDS establishes spatial pattern over time, which is a reflection of the myriad of risk factors at local levels. This review concentrates on two aspects of HIV/AIDS studies, namely geospatial analysis and the assessment of risk factors. Geospatial analysis is important for exploring spatial variation in HIV/AIDS, for detecting spatial clusters of high prevalence and for investigating how the distribution of HIV/AIDS varies in time and space. The other area of focus is the local assessment of HIV/AIDS risk factors. While there is an ample set of national or regional studies of HIV/AIDS risk factors, there are fewer studies on micro-level assessment of risk factors. The conceptual framework guiding this research involves the examination of risk factors within the following elements: economics, socio-cultural practices, gender relationships, and healthcare systems.

Furthermore, the chapter reviews the role of risk factors in the gender and social power relations, socio-cultural practices, and political economy perspectives with reference to HIV/AIDS and is followed by a discussion of the conceptual framework. The chapter concludes with the research questions that guide the dissertation.

2.2 Spatial Analysis of HIV/AIDS Rates

Disease prevalence varies over geographic space, as people living in some locations have a higher prevalence and vulnerability to diseases than those living in other locations. This geographic variability in health and disease has been of great interest in health/medical
geography since Jacques May wrote about the role of ‘geogens’ in affecting disease prevalence (May, 1950; May, 1951; Jones & Moon, 1987). Moreover, for diseases ranging from cholera to obesity, mapping has been critically important in establishing the role of environmental factors in disease incidence and transmission. Although most of this research has involved straightforward choropleth or dot mapping, in the past two decades researchers have turned to geographic information systems (GIS) for mapping and geospatial analysis. For diseases like HIV/AIDS, GIS facilitates not only mapping, but also the identification of spatial clusters of high incidence or prevalence. Only a few studies of HIV/AIDS in Africa have utilized geospatial analytical techniques, and geospatial analyses of the disease in Nigeria are extremely rare.


Identifying where clusters of diseases exist is critically important for establishing areas of high and low risk of transmission or prevalence. This enhances geo-visualization of disease pattern and highlight areas where resources for prevention and management might better be deployed. Within exploratory spatial data analysis, techniques like Global and Local Moran’s I,
Getis and Ord's $G_{ij}$ are useful in identifying hotspots (Anselin, 1995; Getis & Ord, 1992). The studies reviewed above do not specifically address geospatial cluster analysis of HIV/AIDS, although some studies have used these methods in analyzing HIV/AIDS beyond the African context (Jongsthapongpanth & Bagchi-Sen, 2010). In general, geospatial data analytical methods have been underutilized in investigating the incidence and spread of HIV/AIDS in Nigeria.

Relevance of GIS to Health Studies

Rushton (1999) posits that geo-spatial data analysis in GIS plays crucial roles in confirmatory or exploratory analysis and investigation of disease patterns to determine the existence of clustering. Geo-spatial analysis is confirmatory when it establishes causal relationships, while exploratory when it merely shows patterns. Spatial clustering techniques can provide answers to questions that concern public health experts and policy makers. One such question is whether the patterns reflect a geographical clustering of high or low prevalence of the disease (Jongsthapongpanth & Bagchi-Sen, 2010).

Cluster analysis is applicable to various aspects of disease studies and therefore enhances intervention strategies. For instance, Ruiz et al. (2004), analysis of spatial clusters of West Nile Virus (WNV) cases in Chicago, Illinois, provides insight into the focal nature of differential risk factors for disease prevalence. In this study, the researchers' study emphasizes the relevance of understanding the multi-faceted roles of risk factors in disease determination (Ruiz et al., 2004). In Clennon et al. (2004), the study of urinary schistosomiasis in Kenya employs spatial clustering techniques to detect spatial pattern of the disease for better understanding and effective management. McElroy et al. (2006) investigate and establish geographic disparities in early breast cancer detection using GIS. Furthermore, Chaput et al. (2002) posit that the use of GIS
and spatial clustering methods assist epidemiologists in addressing the spatial aspects of disease rates and transmission without bias. Therefore, application of spatial clustering techniques in GIS assists with identifying significant concentrations of disease cases for specific location and intervention targeting. It enhances understanding of disease etiology and ecology.

In analyzing spatial clustering in health studies, certain critical requirements are necessary (Cromley and McLafferty, 2002). These include (a) the number of cases in relation to the population at risk and the prevalence rates, (b) the geographical extent or scale of clusters, like the area, and (c) the set of criteria for judging how and where the clusters exist. The results of spatial clustering tests are strongly influenced by decisions that are made about these criteria, emphasizing the need for further quantitative and qualitative studies to understand the cluster locations.

Despite their many advantages, geospatial methods focus mainly on spatial patterns and do not provide evidence about the processes influencing the geographies of diseases like HIV/AIDS. There is a need to investigate ecological and social factors of disease patterns as GIS lacks such detailed information (Tanser et al., 2000; Chaput et al., 2002; Gatrell, 2002; Vearey et al., 2010). Identifying the clusters is not enough, but discovering the role of ecological and societal factors through perception studies is vital. Geospatial studies on HIV/AIDS in Nigeria are largely silent in their examination of the relationships between social, cultural, economic, and gender variables with HIV/AIDS vulnerability at a micro level. The literature on GIS provides insight on the role of distance to highways and the travel of commercial sex workers to truck stops in the spread of HIV/AIDS, but often lacks examination of the socio-cultural context. Hence, the impact of cultural, political, economic, and gender factors at specific locations (micro scale) needs further investigation.
2.3 The Geography of Place and Disease (HIV/AIDS)

Places have been understood as location, loaded with social relations and social practices, as zones of experience and meaning, which influences the way of thinking, consciousness, the course life takes, social structures, health and well-being of people (Cresswell, 2004; Kearns & Gesler, 1998; Wilson, 2003). In essence, place is beyond the physical location, but the connectedness to the individual self (Wiersma, 2008). The interactions within places lead to perception, creation of mental pictures, ideas, concepts, meanings, symbols of places and landscapes (Williams, 1998) both for the individual and for society as a whole. The sense of place comprises emotional bonds with places, with values, meanings and symbols of places that are actively and continuously constructed and reconstructed within individual minds, with awareness of the cultural, historical and spatial context (Williams and Stewart, 1998; Fenner, 2011). Hence, Lengen and Kistemann (2012) posits that sense of place and place identify constitute a fundamental basis for understanding neuronal processes and implicitly other social, health and well-being actions. The characteristics of any given place play an important role in increasing or decreasing rates of disease. These characteristics are functions of local cultural socialization as well as political, ecological, and economic structures (Meade, 1977; Real, 1996; Gorbach et al., 2002; Vearey et al., 2010). Medical and health geographic studies focus on the relevance of location and place to causal and therapeutic analysis and the understanding of disease patterns (Meade, 1977; Schaerstrom, 1999; Asthana, 1998; Kearns and Gesler, 1998; Vearey et al., 2010). Furthermore, Dyck (1998) defines place in the prism of space within which women operate and renegotiate their identities and experiences. While place is studied with an appreciation for its meaning for people, space is evaluated in terms of its quantifiable attributes and patterns that affect the lives of people (Kearns and Joseph, 1993).
Historically, the study of the dynamics of diseases employed geographic approaches. For example, John Snow’s epic cholera study in England in 1854 linked the source of the disease to a specific place, highlighting the need for cluster analysis (See Croner et al., 1996; Haggett, 1994; Low-Beer, 2001). Whereas population-wide studies are too expensive to implement, studies limited to local high-risk areas may yield better understanding of disease patterns (Jongsthapongpanth & Bagchi-San, 2010). Therefore, understanding the perspectives of the people uncovers the dynamics of HIV/AIDS risk factors at the micro level. Few spatial studies have explored the relationships between people and place characteristics in the context of HIV/AIDS prevalence rates (Kalipeni et al 2004; Feldacker et al., 2010).

The epidemiological patterns of HIV/AIDS and other infectious diseases vary in different regions of the world (Asthana, 1998; Buvé et al., 2002; Ghosh, 2002). The factors that affect the spread of HIV/AIDS expectedly differ in distribution over space and time. Within countries like Nigeria, there are marked spatial variations in HIV/AIDS rates and the variables that influence the distribution of HIV/AIDS (Ross et al., 1999; Agyei-Mensah, 2001; Oppong & Agyei-Mensah, 2004; Obidoa, 2004; Hugo, 2000; Tanser and Le Sueur, 2002).

One weakness of some HIV/AIDS studies is lack of the incorporation of place in Nigeria. As such, there is a limited understanding of the underlying processes of HIV/AIDS rates at community levels. In addition, these studies do not explore in greater depth the social, cultural, gender, and economic dynamics of HIV/AIDS at the community level. The characteristics of a place are very complex and are hardly captured in a questionnaire or focus group discussion session. In spite of these difficulties, there is need for a careful study and understanding of the geographic, cultural, social, and economic dynamics of HIV/AIDS risk. The next sections
discuss some of the theoretical perspectives that inform our understanding of these dynamics in the context of HIV/AIDS in Africa.

2.4 The Political Economy Perspective and HIV/AIDS

The long historical interaction between Africans and colonial powers define the political and economic structures that place Africans at the receiving end of the HIV/AIDS scourge (Yeboah, 2004; Kalipeni et al., 2006). These lopsided structures are evident in contemporary political and economic policies and programs in Africa (Yeboah, 2004; Ayittey, 2005). Parker (2001) argues that social inequality and the political economy of HIV/AIDS shape the risks associated with the disease. According to Gatrell (2002), the political and historical setting of a nation or country determines health conditions of a people. As such, studies of diseases, including HIV/AIDS, need to fathom the underlying causes of the phenomena embedded in the political and economic systems of a place (Oppong, 1998; Young & Ansell, 2003; Kalipeni, 2004). The understanding or explanations of disease do not have to be at the individual level alone, but imbedded within the social context where individual economic and social behaviors are constructed and enforced.

Put succinctly, sickness lies not in the human body, but in the social, political, and economic structures where humans operate (Turshen, 1984). The political and economic structures define the conditions that predispose people to different diseases (Gatrell, 2002; Gilbert & Walker, 2002). Numerous HIV/AIDS studies squarely put the blame of high prevalence rates on personal risky behaviors (lack of condom use) and financial difficulties (commercial sex work) rather than on place and the political economy. Nonetheless, the influence of the political and economic systems determines the prevailing conditions in a locality.
and the vulnerability to diseases. The literature also documents the negative impact of HIV/AIDS on economic growth and human development (Ouattara, 2004; Masanjala, 2007).

Furthermore, social inequality that results from the political economic structure is the greatest foundation for HIV/AIDS transmission (Gilbert & Walker, 2002). Political decisions to spend money on health and other sectors of the economy significantly influence disease prevalence and patterns (Marks & Andersson, 1987; Djukpen, 2005). The location and development of truck stops and economic hubs also change the dynamics of a place (Ferguson & Morrison, 2007; Vearey et al., 2010).

The political economy of a place influences migration, economic status (poverty and unemployment), types of work (occupation), and the disease pattern (Altman, 1999; Vearey et al., 2010; Hunter, 2010). In addition, political and economic policies or programs can increase the level of internal and international migration for any given place and its people (Akokpari, 1999; Hunter, 2010). Adverse economic conditions, political instability, cultural environment, and social factors create the necessity for migration, and subsequently influence the social network for HIV/AIDS transmission across space (Akokpari, 1999; Masanjala, 2007). Forced migration and refugee problems occur when the environment or locality deteriorates into chaos and cannot maintain habitation (Richmond, 1994). All these factors affect the prevalence rates of diseases, such as HIV/AIDS, at any location.

Trucking and Truck Stops

Trucking activities and truck stops serve as channels for HIV/AIDS transmission. According to proponents of this theory, the pattern of HIV/AIDS prevalence corresponds roughly with the transportation networks (Marck, 1999; Ferguson & Morrison, 2007). The urban nodes and regional epicenters of activities are conduits where the virus gets into the hinterlands
through daily flows of commuters and workers (Gould & Wallace, 1994; Ferguson & Morrison, 2007). Gould and Wallace (1994) argue that HIV/AIDS is a human disease, and its prevalence and diffusion reflects proximity to major transport routes. The truck stops along these routes provide avenues for increased sexual interaction between truck drivers and local people, specifically commercial sex workers and unemployed young people (Hunt, 1996; Ferguson & Morris, 2007). Commercial sex workers frequent these stops along trans-African highways across the continent and along routes from Kenya to the Democratic Republic of Congo and to Western Africa, which are high-risk areas for HIV/AIDS transmission (Hunt, 1996; Marck, 1999; UNAIDS, 2002).

A number of studies have shown that the trucking and truck stop theory is relevant in explaining the HIV/AIDS pattern in eastern and southern African countries (Gould, 1993; Shannon et al., 1991; Tanser et al., 2000; Ferguson & Morris, 2007). In eastern and southern Africa, the pattern of diffusion of HIV/AIDS corresponds to the transportation network. Ferguson and Morris (2007) show that settlements along transport routes and truck stop are “vulnerable places” where “vulnerable groups” interact for survival. Thus, the sexual behavior of drivers and characteristics of the truck stop community ultimately provide a pool for the continuity of HIV/AIDS (Caldwell & Caldwell, 1993; Ekanem et al., 2005), a combination that is volatile for HIV/AIDS diffusion. Caldwell and Caldwell (1993) also note that the importation of disease agents from outside a homogeneous locale sustains an epidemic. In Nigeria, truck drivers and traveling market women present a risk for the spread of HIV/AIDS (Orubuloye et al., 1993). The determination of whether diseases migrate from a different place is significant at the micro level. Some HIV/AIDS studies have questioned the veracity of the truck stop theory based on data availability and accuracy (Ramjee & Gouws, 2002). Hence, there is a need for more
studies to explore research issues that relate to the local residents’ assessment of truck stops as an entry point for distribution of HIV/AIDS. Since truck stop studies focus predominantly on commercial sex workers and drivers, another point of investigation includes the activities of poor and unemployed young adults and families at truck stops.

*International Labor Migration and Human Trafficking*

The international labor migration and human trafficking theory focuses on people employed outside their home communities or countries, and hinges on certain occupations or behaviors that expose people to HIV/AIDS within the context of their primary economic support systems (Kalipeni, 2000; Kalipeni et al., 2006). Such employment involves migrating from one community or country to another. Horowitz (2001) describes this as “circular migration,” which involves constant movement of people into and out of a community. The creation of labor reserves and labor enclaves by colonial powers in southern Africa systematically made the international labor migration hypothesis a viable explanation for the HIV/AIDS epidemic (Hunt, 1989; Jochelson et al., 1991; Hunt, 1996; Hunter, 2010; Feldacker et al., 2010) because it sustains the circulatory movement. Similarly, a constant supply of female trafficking from Nigeria and other African countries to Europe ensures the risk of HIV/AIDS in both Europe and Nigeria (Cole, 2006).

Retrogressive economic conditions (unemployment, malnutrition, limited access to health care, and lack of development) make poverty a noteworthy “push” factor for international migration and human trafficking (Butler, 2000; Poku, 2002; Kalipeni et al., 2006; Feldacker et al., 2010). Human trafficking involves the deceptive recruitment of people for purposes of exploitation through commercial sex or forced labor (UNODC, 2004). This modern day slavery heightens HIV/AIDS risks worldwide. Studies in human trafficking indicate that Asian families
engage in the notorious sex trade (Maryniak, 2003). While studies in Asia show a relationship between the trafficking of women and HIV/AIDS rates (Ehrlich, 1996; Maryniak, 2003), studies in Africa that link women trafficking to HIV/AIDS are emerging (Kalipeni et al., 2006). Hence, Kalipeni et al. (2006) posit that human trafficking is gaining ground in Africa. Indeed, the recent repatriation of young women from Europe reinforces the relevance of the international labor migration and human trafficking hypothesis in the spread of HIV/AIDS (Cole, 2006).

The consequences of international labor migration and human trafficking include long absences of males and females from families, and breakdowns in the stability of families (Gilbert & Walker, 2002). International labor migration tacitly encourages the practice of multiple sexual partners and increases the chance to have sex with commercial sex workers as people are away from home for long periods of time (Hunt, 1996; Feldacker et al., 2010). According to Hunt (1996), migrant laborer's sexual activities account for the breakdown of African family values in southern Africa. Indeed, as noted earlier, studies in southern Africa show that the migrant labor system is a major explanation of the pattern of HIV/AIDS infection in this region (Campbell, 1997; Kalipeni et al., 2006). There is growing evidence that the increase in female trafficking from Nigeria to Europe is beginning to yield similar negative consequences – the breakdown of families and high rates of HIV/AIDS (Carling, 2006). The international labor migration fulfills the economic yearnings of the females and their families, but creates unfavorable HIV/AIDS conditions in the community.

In addition to international labor migration, uneven development between urban and rural areas creates vulnerability to disease. For example, urban centers with political and economic power attract laborers (skilled and unskilled) who may create social problems, like crime and high unemployment rates. In Nigeria, cities like Lagos, Ibadan, Abuja, Benin, Kano, Kaduna,
Jos, Makurdi, Port Harcourt, and Onitsha are regional economic players that attract people (Nwaka, 2005). Furthermore, conflicts (civil unrest) over oil resources in the Niger Delta region of Nigeria have resulted in internally displaced people (Obi, 1997; Ikelegbe, 2005). Displaced people usually find it difficult to obtain employment and better economic situations in their new environments (Obi, 1997). This difficulty in resettlement escalates the vulnerability of people to HIV/AIDS, especially females, at micro-level.

**Economic Uncertainty**

Economic recession generally affects the daily activities of people. Hence, lingering economic recession exacerbates poverty, unemployment, increases in informal sector activities, and internal movement to urban centers (Yeboah, 2004; Adeokun, 2006; Cole, 2006). These increases in informal activities contribute to social networks and migratory patterns that have implications for the prevalence of HIV/AIDS (Mahal & Rao, 2005; Kalipeni et al., 2006; Masanjala, 2007).

Political instability in the oil-rich states of Nigeria has resulted in increased crime and the decline in per capita income. This instability worsens the hardships people face (Lewis, 1999; Ikelegbe, 2005). Researchers and politicians point to poverty as a risk factor for the spread of HIV/AIDS (Butler, 2000; Poku, 2002; Masanjala, 2007). Furthermore, the decline in the quality of education and industrial sectors has profound consequences on human capital development now and during future economic recovery (Dauda, 2007). However, there is the growth in a shadow economy that has arisen to fill the vacuum of economic uncertainty (Lewis, 1999). The result is widespread smuggling of petroleum products, drug and human trafficking, corruption, and extensive economic fraud (Carling, 2006; Garuba, 2010). All these activities influence the
daily lives of ordinary people and raise the poverty rates since these people are excluded from the economic mainstay.

In addition, high unemployment rates worsen economic conditions, leading to illicit activities or survival-type occupations and activities. These illicit activities include drug use, syringe or injection exchanges, early sexual contact, gift sex, commercial sex work, rape crime, and the trafficking of women—all which expose people to higher risks of HIV/AIDS (Lewis, 1999; Kim et al., 2003; Carling, 2006; Elegbeleye, 2006; Utulu & Lawoyin, 2007). Furthermore, inequalities in rural and urban development aggravate hardships for poor people, leading to an increase in informal economies within urban areas (Nwaka, 2005). The deterioration in key public institutions like the judiciary and civil service as well as infrastructure has profound implications on people (Lewis, 1999). Therefore, this pattern of economic activities results in some sections of urban areas becoming centers for commercial sex activities and crime. There is the argument that these choices are individually made and devoid of economic hardship (Kraly, Bergman, & Padiet, 2009).

Military Assignment/Returning Officers

The military officer assignment perspective emanates from the classic association of warfare, civil disorder, and massive population movements with disease spread (Ebomoyi & Afoaku, 2000; Elbe, 2006; Sagala, 2006). Smallman-Raynor and Cliff (1991) hypothesized that ethnic (personnel) recruitment and military assignment patterns during the Ugandan civil war reflected the geographical pattern of HIV/AIDS. The assumption here is that military officers are often involved in the rape of women or engage commercial sex workers when away from their families on prolonged stay in war zones. Therefore, there is a positive relationship between HIV/AIDS rates and patterns and the military activities (Hunt, 1996; Ebomoyi & Afoaku, 2000;
Sagala, 2006; Ogboi et al., 2010). HIV/AIDS rates are high in the military and can influence local and regional patterns of this disease (Sagala, 2006). Furthermore, epidemiologic studies show connections between military officers, commercial sex workers, and HIV/AIDS rates as well as with other sexually transmitted diseases (Smallman-Raynor & Cliff, 1991; Sagala, 2006; Ogboi et al., 2010). Hence, the military officer assignment theory focuses on the role of army officers in the spread of HIV/AIDS. Army officers are often away from their families during times of war, quelling civil disorder and sometimes serving in peacekeeping missions in other countries in Africa (Smallman-Raynor & Cliff, 1991; Kalipeni & Oppong, 1998; Ebomoyi & Afoaku, 2000).

Many Nigerian army officers engage in peacekeeping activities in Liberia, Sierra Leone (West Africa), the former Yugoslavia (Eastern Europe), and Sudan and Somalia in East Africa (Adeokun, 2006). These international military assignments are on-going exercises and officers add to the risks of HIV/AIDS when they return to their respective communities (Ogboi et al., 2010). As noted above, while at their post away from families, military officers allegedly engage in sexual behaviors that expose them to HIV/AIDS (Heinecken, 2001; Sagala, 2006). Overseas military activities, forced migration, and the high number of refugees and returnees account for the “different strains” of HIV in West Africa (Adeokun, 2006). In addition, overseas military activities influence the spatial and temporal rates of HIV/AIDS in Nigeria (Adeokun, 2006; Ogboi et al., 2010). Studies assessing the sexual activities of military officers and the HIV/AIDS rates of local residents posit that increasing awareness campaigns in the military may reduce the impacts. Nonetheless, the rate of HIV/AIDS in the army is not as high as in the public and few officers are given overseas assignments (Adeokun, 2006).
There are increasing concerns about the impact of social and cultural structures that shape vulnerability to HIV/AIDS (Parker, 2001; Gilbert & Walker, 2002). The socio-cultural practice perspective hinges on sexual (Caldwell et al., 1989) and non-sexual practices (Bailey et al., 2002) that create vulnerability to HIV/AIDS. These practices include polygamy, wife inheritance and sharing, female genital mutilation or circumcision, and skin perforation as well as having multiple sex partners and engaging in (Buvé et al., 2002; Osagbemi, 2004; Kalipeni et al., 2006). Unveiling the socio-cultural model of explanation enhances the understanding of the dynamics of risk factors associated with the HIV/AIDS epidemic (Hunt, 1996). These social and cultural practices create conditions for sexual risk in specific contexts that are gendered (Parker, 2001; Gilbert & Walker, 2002). In other instances, these socio-cultural practices follow gender lines, which are influenced by the socialization process at the community level (Gilbert & Walker, 2002; Arndt, 2000; Masanjala, 2007; Mbilizi & Semu, 2009). Studies that focus on the role of socio-cultural practices in HIV/AIDS are limited for local areas, especially within the context of gender inequality (Gilbert & Walker, 2002). An understanding of the social and cultural milieu that influences the perceptions of the people is paramount in HIV/AIDS prevention management. However, this is challenging because it is difficult to determine the underlying reasons for a practice from simple questionnaire responses.

**Sexual Practices**

On the socio-cultural front, Caldwell et al. (1989) explore African sexuality in order to understand HIV/AIDS patterns. These authors argue that uncontrolled sexual desires put Africans at a high risk of HIV/AIDS infection. Furthermore, researchers in the socio-cultural theory of HIV/AIDS in sub-Saharan Africa posit that there are two fundamentally intertwined
concepts, sexuality and fertility, which raise the risk level (Caldwell et al., 1989). To Caldwell et al. (1989), the African cultural system emphasizes reproductive success through sex and high fertility. High rates of fertility and unbridled sexual urges are the hallmarks of these sorts of cultural activities (Caldwell et al., 1989; Rushing, 1995). Orubuloye (1997) argues that sexual networking at communal (ceremonial) activities provides proof that sexuality can explain HIV/AIDS prevalence. The common practices associated with this assertion include polygamy, polyandry, early marriage and infidelity in marriage, spouse sharing, wife inheritance, sexual pollution and cleansing, and dry sex (Ebomoyi & Afoaku, 2000; Osagbemi, 2004). The African cultural practices that relate to sexuality raise vulnerability to coital-related disorders or diseases, as they do not encourage chastity as a value among females (Caldwell et al., 1989; Rushing, 1995). Conversely, Ntarangwi (2009) posits that moral/sexual chastity is paramount in the African culture; hence, cultural silence on sexuality and the expectations of ‘good mannered’ females presents vulnerability to HIV/AIDS. Irrespective of the cultural practices and expectations in a community, it is unprotected sex, which exposes people to HIV/AIDS infection (Del Casino, 2001). However, the presentation of African sexuality as a major explanation for HIV/AIDS prevalence within the socio-anthropological paradigm (Rushing, 1995; Caldwell et al., 1989; Caldwell, 2000) is problematic (Oppong & Kalipeni, 1996). Hunt (1996) argues that sexual networking alone does not explain the historical patterns of sexual activities of women in different regions of Africa (North, West, East, Central, and South). Instead, a broader definition of sexuality may provide a better understanding of the spread of HIV/AIDS. The different dimensions of sexuality—like sexual orientation, gender identities and gender roles—influence vulnerability to HIV/AIDS (Oppong & Kalipeni, 1996; Ebomoyi & Afoaku, 2000).
The World Health Organization (WHO) defines sexuality as those aspects of life that include gender identities and roles, sexual orientation, pleasure, intimacy, and reproduction through sex (WHO, 2006). Sexuality includes experiences and expressions in thought, desires, beliefs, attitudes, values, socio-cultural practices, roles, and relationships. While sexuality includes all these dimensions, there are limitations to the expression of these facets by people locally. Understanding the limitations of these expressions is important in getting a handle on the HIV/AIDS scourge. There is a need to understand the extent to which sexuality is determined by the interplay of biological, psychological, social, cultural, ethical, legal, historical, religious, and spiritual factors on people (WHO, 2006). A comprehensive study of the interaction of sexuality factors through field interviews creates a better understanding of the HIV/AIDS epidemic.

Some researchers present sexual promiscuity as the sole reason for HIV/AIDS (Rushing, 1995; Orubuloye et al., 1993; Adeokun, 2006). Nevertheless, Oppong and Kalipeni (1996) argue that sexual promiscuity alone cannot fully explain HIV/AIDS. In fact, they argue that it is misleading to hinge HIV/AIDS studies on the sexual promiscuity theory since a consideration of other variables enhances the understanding of HIV/AIDS prevalence (Oppong & Kalipeni, 1996; Ebomoyi & Afoaku, 2000). This is a gap in HIV/AIDS research at a micro level. A proper understanding of the role of culture and sexuality amongst local resident cannot be underestimated.

Non-sexual Practices

Researchers link a number of non-sexual socio-cultural practices to HIV/AIDS prevalence in Africa (Weiss et al., 2000; Mill & Anarfi, 2002). These socio-cultural practices include male and female circumcision, skin perforation at initiation ceremonies, and body arts
like tattooing and scarification (Ebomoyi & Afoaku, 2000; Agot, 2001; Onwuliri & Mohammed, 2001; Bailey et al., 2002; Stillwagon, 2002). There is a need for a balanced view and understanding of these cultural practices vis-à-vis HIV/AIDS at community level, as Adeokun (2006) argues that emphasizing the negative aspects of African cultures does not help in the fight against HIV/AIDS. Kibombo et al. (2007) highlight the relevance of understanding individual HIV/AIDS risk assessment in Uganda. While people suspiciously link the practice of female circumcision to HIV/AIDS, male circumcision is not, especially in West Africa where the rate is low. Indeed, male circumcision has beneficial effects in preventing the transmission of HIV from female to male (Weiss et al., 2009). Circumcised men have a low probability of HIV/AIDS infection in comparison to males that are uncircumcised (Bonner, 2001). Some studies have cited the practice of male circumcision as a preventive measure and a reason for low prevalence rates of HIV/AIDS in some West African nations (Howe et al., 2000; Weiss et al., 2000; Bonner, 2001; Weiss et al., 2009). On the other hand, the primary reasons for female circumcision are to protect children from promiscuity and to act as a passage to womanhood (Omorodion, 1989). In spite of these reasons, the practices of female circumcision are illegal and are suspiciously viewed as a factor in HIV/AIDS transmission. Feminists also view the practice of female circumcision as an attack on the rights and well-being of women. Filling this gap is significant in increasing the HIV/AIDS body of knowledge in Nigeria.

2.6 The Healthcare System

Some researchers and local people believe that treatment at health care facilities contributes to HIV/AIDS transmission (Gisselquist et al., 2003; Djukpen, 2003). Studies indicate that iatrogenic transmission of HIV through contaminated blood transfusions, multiple
injection use, unsafe practices of medical personnel, and induced abortion occurs in Africa (Adegboye et al., 1994; Lawson, 1999; Gisselquist et al., 2002; Gisselquist et al., 2003; Oppong & Agyei-Mensah, 2004; Schneider & Drucker, 2006). This view is contentious but worthy of investigation. The iatrogenic pathway of transmission raises concerns in Ghana and Nigeria because of inadequate facilities for blood screening and the improper use and disposal of needles and syringes (Adegboye et al., 1994; Oppong & Agyei-Mensah, 2004). Although there is a 75 percent screening of blood before transfusion, the unscreened 25 percent is disastrous for HIV/AIDS rate. People express these concerns or fears by not using the health care facilities and being suspicious of healthcare personnel (Flynn & Taylor, 2009). This is not to imply that every blood transfusion ends in HIV/AIDS transmission.

There is another aspect of the healthcare system that researchers identify as a possible culprit in the high HIV/AIDS rates in Africa. This is outside the traditional healthcare system—the hospital—it is the local medicine/drug stores. Generally, Africans depend on medicine/drug stores and itinerant medicine vendors in rural areas for health care (Adikwu, 1996; Okeke et al., 2006). Often these private and small medicine/drug stores dispense medicines and treat ailments without the same standards as the hospitals. Poor economic conditions influence the patronage of these ‘roadside’ health care providers and influence the high risk of HIV transmission (Adikwu, 1996). Africans make numerous daily visits to medicine/drug stores for medications and treatments, which often include injection and intravenous (IV) administration (Adikwu, 1996). The link between medicine store treatment and HIV/AIDS transmission is limited, but the topic is still important.

The health care system in Africa is reportedly broken, under-funded, and riddled with corruption (WHO, 2009). As a result, it has become increasingly difficult for people to access
quality health care throughout Africa (Lewis, 1999; Kalipeni, 2004; Adeokun, 2006). African
governments also face difficulties providing efficient health care to their people due to the global
recession (Kalipeni, 2004). Within the context of a broken healthcare system, HIV/AIDS rates
can easily increase through unsafe practices. In spite of these concerns, the literature is scanty on
the link between HIV/AIDS and the healthcare system. Furthermore, studies on local
perceptions of the healthcare system and its link to the spread of HIV/AIDS are limited.

2.7 Gender Power Relations and HIV/AIDS

Gender denotes the personal characteristics and social positions that members of a society
attach to being female or male (Kassam, 1996; Macionis, 2007). Hence, gender operates as an
aspect of social organization, shaping how people interact with each other and think about
themselves. Gender involves hierarchy, ranking men and women differently in terms of power,
wealth, and other resources within a community (Ostergaard, 1992; Kassam, 1996; Macionis,
2007; Wangila, 2009). Therefore, gender affects the opportunities and challenges people face
throughout life (Gilbert & Walker, 2002; Macionis, 2007; Wangila, 2009; Flynn, 2011).

There is a strong inverse relationship between gender (male and female) power imbalance
and socioeconomic class (education and income), age, religion, cultural power, and disease
patterns (Gilbert & Walker, 2002; Wangila, 2009). A study of power structure and its influence
in any setting is one way to understand the dynamics of gender relationships and HIV/AIDS
prevalence (Schneider & Gould, 1987; Osmond et al., 1993). Heise and Elias (1994) and Weiss
et al. (1996) indicate that gender power difference profoundly influences the sexual lives of
females and their vulnerability to HIV/AIDS. Men exercise tremendous power in the home,
within the culture, and at the community level, politically, which can affect the vulnerability of
women to HIV/AIDS (Osmond et al., 1993; Ampofo, 2001). Specifically, some research shows that socialization and gender relationships influence the HIV/AIDS risk of females (Martin et al., 1988; Perry, 1998; Craddock, 2000; Thomas, 2000; Wojcicki, 2005; Mbilizi & Semu, 2009).

Gender inequality issues embodied in the cultural superiority of men play a role in the vulnerability of women to HIV/AIDS (Kassam, 1996; Dauda, 2007; Wangila, 2009). Nevertheless, gender socialization processes in societies play a key role in the fight against diseases (Brown, 2003).

Employing King’s theory of “multiple jeopardy,” Osmond et al. (1993) note the risk factors for women’s exposure to HIV/AIDS as interactive and intersectional (Collins 2000) in terms of social power relationships. Collins (2000) posits that intersectionality explores the diverse responses that each individual gives at a unique matrix of cross-cutting interests. These interests and the diverse responses of people emanate from their positions in society, such as race, economic class, gender, sexual identity, religion, ethnicity, marital status, and age. The examination of multiple factors (intersectionality) in accounting for female vulnerability yields better results for HIV/AIDS management (Aniekwu, 2002). Therefore, exploring these dimensions requires what Collins (2000) describes as ‘safe spaces’ for females to unwind. First is the personal space that females create on a daily basis. The personal space allows women to build personal relationships with other females at formal and public spaces, like churches, work or trade unions and organizations. The other two spaces are cultural and historical settings (Ogunyemi, 1985; Kassam, 1996; Arndt, 2000). Cultural spaces or activities include traditional roles and contemporary methods of survival of females. While the historical space highlights the context, where strong voices of other African females—past and present—within and outside society act as a motivation for making decisions today (Arndt, 2000). A notion Ogunyemi
(1985) describes as womanism, which is a philosophy that commits to the survival and wholeness of a people—male and female. Therefore, women play a key role in society whether in a patriarchal or matriarchal setting. In spite of the gender inequality in society, women have their own space to operate, which gives them an opportunity to effect changes (Arndt, 2000). Therefore, the assumption that females engage in extra-marital sexual relationships for financial survival is superfluous by the desire of some females for consumer goods, passion, and revenge for husband’s infidelity (Kraly, Bergman, & Padiet, 2009). Hence, the role of socio-cultural practices on vulnerability biased against females may be unfounded.

Osmond et al. (1993) show that gender subordination in the socialization process places women at a high risk of contracting HIV/AIDS. Furthermore, lack of trust in marital relationships engenders domestic violence and a high risk to HIV/AIDS (Oyediran & Isiugo-Abanihe, 2005; McDonnell et al., 2005). Trust within marital relationships also factors into a couple's decision to forgo using condoms with a spouse. Woman’s politeness, modesty, innocence, inexperience, and lack of assertiveness are all societal expectations inimical to HIV/AIDS risk reduction (Graddol & Swann, 1993; Kassam, 1996; Cash et al., 1997). Furthermore, female assertiveness, which is shown in their determination to control their destiny (Arndt, 2000), may lead to higher incidences of HIV/AIDS. For example, commercial sex workers (CSW) assert that they choose employment in the commercial sex trade as a normal job and not out of necessity (Kraly, Bergman, & Padiet, 2009). In other instances, female assertiveness may empower them to fight diseases and inequality. Therefore, linking the role of gender socialization vis-à-vis power relationships to HIV/AIDS discourse and reduction programming is noteworthy (Kassam, 1996).
In addition, cultural practices and limited access to socioeconomic resources also play an important role in gender relationships. The differential access to communal resources and decision-making abilities ingrained into the psyche of young males and females through the socialization process have long-term implications (Amoah, 1991; Ampofo, 2001; Sharp et al., 2003; Upton, 2003; de Silva, 2004; Monjok et al., 2007, Adeleye & Chiwuzie, 2007). Males are oriented towards work outside the home and females stay within the home. This creates an economic and social power differential relationship between males and females (Sharp et al., 2003). Parents, teachers, and community leaders tacitly empower males from childhood to exercise authority over females (Araoye et al., 1994; Ampofo, 2001; Sharp et al., 2003; Flynn, 2011). As a result, women are at the bottom of the totem pole of hierarchical power structures (Herbert III, 1973; Weitzman, 1975; de Silva, 2004), which has a profound effect on their vulnerability to HIV/AIDS.

In the violation of societal norms, there is favoritism in terms of sanctions against males. For instance, when a teenage female becomes pregnant, she often bears the responsibility of the pregnancy to term and beyond. Osmond et al. (1993) argue that the shame and economic sacrifices to care for the child is often borne by the female. Where adultery is committed, the female is severely punished, but the male is often not sanctioned, which is shown in a northern state where the Sharia legal system operated in Nigeria in 2011.

Another area where Osmond et al. (1993) indicate gender decision-making disparity is in condom use, even among commercial sex workers (CSWs). CSWs prefer clients to use condoms; however, the clients (males) do not always want to use condoms. For CSWs, the economic gains of not using a condom temporarily seem to outweigh practicing safe sex (Casale & Whiteside, 2006). The economic power of males (clients) and the powerlessness of females
(CSWs) determine condom use and vulnerability to HIV/AIDS. These power disparities also translate into non-commercial sex work environments (home), where women often depend on men.

Nonetheless, gender hypocrisy exists in socially pressuring girls to maintain their virginity and innocence in sexual matters. The marriageability value of females, which is tied to virginity and innocence in sexual relationships, raises the gender inequality schism. On the other hand, boys experience relatively less restrictions in such matters. In fact, their sexual exploits determine their masculinity and maturity (Weiss et al., 1996; Wagbatsoma & Okojie, 2006). The effect is a higher risk of exposure to diseases like HIV/AIDS and STDs among inexperienced young men (Weiss et al., 1996; Adeleye & Chiwuzie, 2007) that eventually affects females disproportionately.

Productive resources—such as land, education, and social capital—and the decision-making authority available to men and women differ significantly across cultures (Mehra et al., 1995; Gilbert & Walker, 2002; Adeyemi & Akpotu, 2004). Traditional measures enshrined in patriarchal societies empower males and limit females’ ability to influence decisions on issues like pregnancies, sexual relationships, and early marriages (Jegede & Odumosu, 2003). This ensures control over the sexual and reproductive choices of females. This lived experience, which is deeply rooted in the socio-cultural systems, influences their vulnerability to diseases (Owusu-Frempong, 2005; Kambou et al., 2006).

However, Ampofo (2001) notes gender bias in the ability to negotiate conflicts in healthcare decisions, which has a weighty influence on HIV/AIDS risk outcomes. For example, males ultimately decide when and how to accept certain healthcare activities, like surgeries or blood transfusions that exposes females to HIV/AIDS. Therefore, promoting healthcare
responsibility with a focus on gender inequalities and socio-cultural reconstruction designed to mitigate risks is vital (Ampofo, 2001; de Silva, 2004; Adeleye & Chiwuzie, 2007). The voice of females and males must play a part in understanding the dynamics of the HIV/AIDS risk factors at the community level.

2.8 Conceptual Framework and Research Questions

The conceptual framework helps to articulate the relationships between factors that play key roles in exposing people to HIV/AIDS. The model shows that one or a combination of these factors can lead to HIV exposure and transmission (Figure 2.1). The major factors include social/personal, political, economic, culture, location, gender, and the health care system. Furthermore, these factors play important roles in both the sexual and non-sexual understanding of HIV/AIDS. Even though these factors seem compartmentalized, these factors interact to create HIV/AIDS risks.

This conceptual framework is similar to that of Kalipeni et al. (2006) but differs in the scale of application. The framework by Kalipeni et al. (2006) focuses on the historical context of HIV/AIDS at the continental level, so some of the variables are not entirely applicable to a micro-level study. For example, the historical natural resource exploitation and physical geography (elevation) are not relevant to this study. However, many of the variables addressed in Kalipeni’s model can be scaled down to the local level. For example, the exploitation of natural resources has resulted in a complex transportation network that enables the movement of resources and migrant workers. At the local level, we find road junctions and truck stop locations that are important sites for HIV transmission (Figure 2.1). Although natural resource extraction and poverty are independent factors, they might converge at a location (truck stop)
through unprotected sex (commercial, gift, coerced sex, or rape) that elevates the risk of HIV/AIDS (Ajuwon et al., 2001; Fawole et al., 2003; Elegbeleye, 2006).

A combination of sexual and non-sexual factors plays an important role in the HIV/AIDS risk at the community level. The conceptual model (Figure 2.1) shows how various connections and combinations of factors can result in HIV/AIDS risk. A study that focuses on just one pathway limits the understanding of HIV/AIDS transmission patterns. There is the need to explore the interactions between different factors in the model and the link to HIV/AIDS (Figure 2.1) for a better understanding of the local patterns. As the model indicates, sexual and non-sexual factors intersect to create vulnerability to HIV/AIDS. A trigger can be political instability – for example war, conflict over resources, or ethnic conflict that displaces people and creates economic hardship (poverty and/or unemployment) that leads to survival activities or occupations and gift sex. These chain reactions, that both shape and are shaped by local places, lead to an exposure to HIV/AIDS and infections if people do not practice safe sex using condoms.
A few research questions emanate from the two overriding objectives and goals listed in chapter one: (a) to determine spatial pattern and significant cluster of HIV/AIDS and (b) to determine key risk factors in two selected study sites (communities). There are a number of related goals to achieve the set objectives:

- To determine hotspots of HIV/AIDS prevalence
• To investigate the socio-cultural and economic factors that people identify as HIV/AIDS risk factors
• To examine the perception of residents on the role of specific locations (like truck stops, brothels, and bars) in HIV/AIDS prevalence and risk
• To investigate the role of gender relationships and HIV/AIDS risk assessment at the community level
• To explore the role of healthcare activities in HIV/AIDS risk assessment by the people
• The interrelated research questions central to this study include the following:
  • Is there a significant spatial clustering of HIV/AIDS rates in Nigeria?
  • Are there specific gender-related variables (sex decision, condom use, fear of accusation of extra marital affairs, and domestic violence) that differentiate communities?
  • Do people consider social-related activities like intravenous drug users, rape, obligatory sex, and commercial sex as risk factors for HIV/AIDS?
  • Will local residents identify locations like truck stops, bars, and brothels as places of HIV/AIDS vulnerability?
  • Do people identify variables like returning army officers, female trafficking, and repatriated females as risk factors for HIV/AIDS?
  • Do people at the micro level identify foreign sources for HIV/AIDS risks?
  • Is visiting a hospital or other health care service a risk factor for HIV/AIDS at the micro level?
2.9 Conclusion

Through a comprehensive literature review, this chapter highlighted a number of theoretical approaches that explore the reasons behind the HIV/AIDS prevalence in African communities. The chapter establishes the need for a comprehensive study to understand HIV/AIDS at both macro and micro levels. At the macro (national) level, there exist gaps in spatial cluster literature, as there are few studies of HIV/AIDS in the Nigerian context. At the local level, there is the need for a concerted effort to understand perceived HIV/AIDS risk factors by people. The conceptual framework in this chapter indicates complex relationships of factors that operate to create vulnerability to HIV/AIDS at the community level. The framework shows that a seemingly minor trigger in a factor can create ripple effects that result in higher HIV/AIDS risks.
CHAPTER 3
RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter describes the data to be analyzed as well as the research design and methodology. The study utilizes both primary and secondary datasets. The primary datasets were collected from interview and focus group discussion during the fieldwork in two contrasting communities in Nigeria. The secondary data include information from government publications on HIV/AIDS rates in Nigeria. This chapter also describes elements of the administration of interviews, structured questionnaires, and focus group interviews. There is also a description of the demographic characteristics of respondents, including their age, marital status, religion, and education level. The analytical techniques applied in this research include geospatial analysis, quantitative techniques, and qualitative analysis. A description of the spatial analytical techniques—which includes formulas for computing Moran’s $I$, Getis and Ord’s $G$,*—opens the chapter. After that, I discuss the collection and analysis of qualitative data on perception of HIV/AIDS risk factors.

3.2 HIV/AIDS Data by State

This research relies on area data to analyze spatial variation in HIV/AIDS prevalence in Nigeria. Area data are aggregate disease incidence in a population, shown in prevalence rates at a given geographic unit of analysis such as a state, county, or district. The geographic unit of analysis in this study is the state (Figure 4.1). The choice of state as the geographic unit of analysis is due to the availability of health data at that level. There are 36 states and a federal territory-Abuja in Nigeria (Figure 4.1).
The data used in the spatial analysis are secondary in nature. These are the HIV/AIDS prevalence rates at the state level, which are estimates from the antenatal-based surveillance system. In many African countries, pregnant women at selected antenatal clinics have served as sources of HIV infection monitor since the early 1990s. For Nigeria, this dataset is in the *Annual Abstract of Statistics* published by the Federal Office of Statistics (FOS 1979 – 2006). The antenatal dataset is limited to few clinics and only pregnant women, hence, not a true representation of HIV/AIDS statistics and prevalence in Nigeria. Various government ministries, agencies, and departments participate in the collection and publication of these statistics. Other HIV/AIDS data sources utilized include the World Health Organization (WHO) and other international and non-governmental agencies. The primary goal of using these secondary datasets is to determine the spatial pattern and clustering of rates of HIV/AIDS.

Geographic information systems (GIS) applications in HIV/AIDS are limited in Nigeria as is the case in many developing nations (Hugo, 2000; Tanser et al., 2000). Even when data exist, missing values for some years or locations often render the data unusable. Although it is most accurate to use individual-level, geo-referenced point data in the analysis of HIV/AIDS prevalence, such data do not exist for Nigeria. Hence, this study and others have used area data instead of individual point data. As such, area data (state level) are the basic units of analysis in this study. Many studies that analyze spatial clustering of HIV/AIDS use area data (Tanser et al., 2000; Thomas, 2000; Hugo, 2000; Jongsthapongpanth & Bagchi-San, 2010). Area data have the advantage that individual data are aggregated into larger zones that represent the health phenomenon in a broader way and provide stable estimates of disease prevalence.
**The GIS/Geospatial Process**

A number of computer software packages for geospatial analysis are employed in this research. These software packages include Erdas Imagine 8.7, ArcGIS 9.0., Cluster Seer2, and GeoDa. To use these packages, a geospatial dataset was created containing the HIV/AIDS data and other socio-economic variables were created via a multi-step process. The first step in the process was to scan the map of Nigeria, import it into Erdas imagine, and geo-rectify it to the appropriate coordinates. The next step involved digitizing the map into ArcGIS (ESRI). The third step involved entering HIV/AIDS data from the *Annual Abstract of Statistics of Nigeria* by state into the database. The primary variable is the rate of HIV/AIDS based on the adult population for each state. HIV/AIDS rates were complete for all states in Nigeria for four years (1999, 2001, 2003 & 2005) used in this study. The study would have been richer if it could include data for other independent variables (poverty rates, number of hospitals etc.) to explain the variation and clustering of HIV/AIDS rates across states in Nigeria. However, due to the non-availability of these independent variables at the state level, explanatory regression analysis was not carried out at state level.

In the geospatial analysis, simple choropleth maps of HIV/AIDS rates were generated for those years that data were available in order to give us a picture of the variation of HIV/AIDS rates at the state level. The analysis involves the use of ClusterSeer 2.0 and GeoDa software to determine HIV/AIDS clustering. Specially, Moran’s *I* and Getis and Ord’s *G*_*i* values for the HIV/AIDS prevalence rates for 1999, 2001, 2003 and 2005 were computed to show spatial clustering of HIV/AIDS rates at the state level.

Choropleth maps are a common and effective way to represent area health data (Cromley & McLafferty, 2002). This process, though, is fraught with problems, such as variation in
geographic size of states and the fact that some states have small populations, and disease rates for relatively rare diseases in areas with small populations may vary greatly. In other words, states with fewer people might show higher HIV/AIDS rates when in fact the number of cases might be quite small. As such, the level of reliability for choropleth maps is uncertain. Probability mapping, on the other hand, effectively addresses “the small numbers problem” (Cromley & McLafferty, 2002, p. 133). However, there are problems with this method as well, such as the inability to preserve the content of the original data.

Methods like choropleth and probability mapping do not directly analyze the spatial relationships among disease rates. For example, are high rate areas spatially clustered near other high-rate areas? On the other hand, do low rates areas spatially clustered near low rates areas? The results of spatial clustering analysis highlight areas that require attention for policy development for the management of diseases. In addition to establishing spatial relationship among disease rates, cluster analysis also computes the effect of distance on rates and epicenter of diseases.

Anselin (1995) refines the spatial statistics methods for area data analysis to capture the local influence or spatial dependence on the patterns. He introduces the local indicators of the spatial autocorrelation (LISA) statistic to determine significant spatial clusters based on a local Moran’s I value (the local correlation of values). Another spatial cluster technique applied in this study is the Getis and Ord’s G_i* statistic that measures difference between values. Hence the difference between LISA and G* is in the measurement of association. Both techniques accounts for the influence of the association between a value at a particular place and values of a nearby area or region—distance (Getis & Ord, 1992). Both LISA and G_i* statistic are able to capture significant clusters of disease (Cromley & McLafferty, 2002; Chaput et al., 2002). A
cluster indicates a region or area with abnormally high rates of a health event (such as cases of the disease). These techniques are useful in the identification of HIV/AIDS hotspots or clusters in Nigeria. The following section presents a description of the different geospatial techniques.

**Moran’s I**

This study computes both global and local Moran’s statistics $I_i$ to determine spatial clusters and analyze spatial clustering. Moran’s I measures spatial autocorrelation and explain the degree of association between values of a variable over space (see Rogerson 2001). The formula for Moran’s I statistic is as follows:

$$I = \frac{n \sum_{i} \sum_{j} w_{ij} Z_i Z_j}{(n-1) \sum_{i} \sum_{j} w_{ij}}$$

(1)

Where $n$ is number of regions (states in this case, Figure 1.1), $W_{ij}$ is a measure of the spatial proximity between the states $i$ and $j$, and $Z$ is the standardized value of the variable of interest. The numerator sums the products of z-scores in nearby states, a conceptually important component of the formula. A pair of regions that exhibit above-average (or below-average) scores would contribute toward positive terms in the numerator, and these pairs would therefore contribute toward a positive spatial autocorrelation. Alternatively, a pair of neighboring regions that has divergent scores (e.g. one above the mean and one below) would contribute to a negative spatial autocorrelation (Rogerson, 2001). Hence, Moran’s I value of +1.0 indicates perfect spatial correlation or clustering of similar values. While negative values indicate negative autocorrelation – low values near high and vice versa. The higher the absolute values of Z score the more intense the positive spatial autocorrelation (clustering) or negative spatial
autocorrelation. The p-value determines whether the autocorrelation is statistically significant or not. Very high Z values and very low p-values — for example, below 0.05 — indicate a rejection of the null hypothesis that there is no spatial autocorrelation — i.e. there is no association between the HIV/AIDS prevalence rates of nearby states.

In order to identify local spatial clusters, local Moran’s $I$ statistic (LISA) is computed (Anselin, 1995; Jacquez & Greiling, 2003). This statistic evaluates the contribution of each location to the global Moran’s $I$ value for the whole area. Anselin (1995) defines local Moran’s $I_i$ statistics for an observation $I_i$ as follows:

$$I_i = p_i \sum_j w_{ij} p_j$$

(2)

Where $p_i$ is the difference between the disease rate in area $i$ and the mean disease rate, $W_{ij}$ is a weight denoting the strength of connection (geographic proximity) between areas $i$ and $j$ is standardized to adjust for the number of neighbors. The local Moran statistic ($I_i$) has a positive value when neighboring locations have similar values (these can be low values indicating a cold spot or high values indicating a hotspot), and negative if neighboring values are dissimilar. ClusterSeer uses significance values, z-scores, standard deviation and inter-quartile distance to find extreme local Moran’s $I_i$ values (ClusterSeer 2.0).

Getis and Ord’s $G_i^*$ Statistic

$G_i^*$ statistic measures localized spatial dependence (see Cromley & McLafferty, 2002, p. 140-141) based on either proximity or adjacency, with an area divided into $w$ subareas. Applied to Nigeria, each area is the state, while $x_i$ refers to the value of health indicator or disease (HIV/AIDS prevalence rates) for the area and $w_{ij}$ defines the nearness of the area $i$ to area $j$. The formula for the standardized $G_i^*$ statistic is:
\[ G_i^*(d) = \frac{\sum_j w_{ij}(d) x_j - W_i^* \bar{x}}{s \left[ \left( n S_{li}^* - W_i^* \bar{x} \right) / (n - 1) \right]^{1/2}} \] (3)

Where each element is shown below:

\[ W_i^* = \sum_j w_{ij}(d) \]

\[ S_{li}^* = \sum_j w_{ij}^2 \]

\[ \bar{x} = \frac{\sum x_j}{n} \]

\[ s = \left( \frac{\sum (x_j - \bar{x})^2}{n} \right)^{1/2} \]

Where Getis and Ord’s \( G_i^* \) turns out positive, there is a high rate of disease clustering in the local neighborhood of \( i \), indicating that there is a cluster of disease or geographical grouping of high prevalence rates. The \( G_i^* \) statistic determines the adjacency or proximity of disease factors or prevalence rates in a GIS environment.

Generally, the mapping of disease rates provides an overall view of the spatial pattern (Steinberg et al., 2006). As shown in Chapter 4, the results of cluster analysis of HIV/AIDS rates provide a visual display of spatial clusters and temporal changes. The results give visual meaning to the trend of HIV/AIDS rates in space and time.

Once the clusters of HIV/AIDS rates are determined, two study sites are selected to assess the risk factor perception at the micro, or community, level. This investigation involves the understanding of the roles social, cultural, economic, healthcare, and gender factors play in HIV/AIDS risk assessment. While geospatial analysis does an excellent job in determining clusters of disease, it does not help in answering why those clusters exist. For example,
geospatial analysis cannot answer questions related to socio-cultural practices and political economic factors. It cannot effectively reveal peoples’ perceptions of risk factors in HIV/AIDS prevalence at local levels. Therefore, the discussion of HIV/AIDS rates without a study of people’s assessment of risk factors is incomplete. As a result, this study used qualitative methods (focus group discussions – FGD and interviews) to explore the reasons for the clusters in the prevalence of HIV/AIDS in Nigeria. Specifically, questionnaires were administered to quantitatively explore the assessment of risk factors, and interview and FGD instruments were used to elicit qualitative information.

3.3 Structured Questionnaire Interviews

The source of primary data included structured questionnaires, interviews, and focus group discussions (FGD) conducted during fieldwork. The study asked specific questions about domestic power relationships and personal and social behavior as vulnerability factors to HIV/AIDS. This provides insight into HIV/AIDS risk factor perspectives at the community level. This study also explored the respondents’ perceived risk associated with workers, such as commercial sex workers and itinerant traders, in relation to HIV/AIDS. In order to uncover the connection between truck stops and trucking activities and HIV/AIDS, this study included interviews with local residents. The role of cultural practices, healthcare activities, and personal behavior in relation to HIV/AIDS risk factors were also explored.

The variables in the questionnaire were coded for quantitative analysis (Table 3.1). The goal of the questionnaire analysis was to determine HIV/AIDS risk factors assessment by respondents at the selected study sites. To derive the set of risk factors, the study utilized the Statistical Package for Social Scientists (SPSS) software to analyze quantitative data as coded
from the questionnaires. In the qualitative analysis, extracts, quotes and key terminologies from
the focus group discussions (FGD) and interview discussions with respondents are discussed.
The qualitative data provide insights into HIV/AIDS risk factor assessment by respondents. For
example, this study asked some open-ended questions such as what socio-cultural and economic
practices or factors influence HIV/AIDS prevalence in your community? Such questions assist
with collecting data that reflect how respondents perceive the HIV/AIDS risk at the community
level. The primary goal of employing the qualitative method of collecting data was to learn
about the respondents’ basic knowledge of HIV/AIDS risks and underlying factors that form the
basis of differences and/or similarities at the micro level.

Respondents answered questions to assess the relationship between cultural practices
such as circumcision, polygamy, widow inheritance, spouse sharing, and gender inequality with
reference to HIV/AIDS. In addition, data on social behavior such as condom use, injection use
by drug addicts, and casual sex with multiple partners were collected with questionnaire
instruments. The questionnaire also contained multiple items that appeared in different scales (1
to 5) to collect information from respondents. Respondents scored or checked the items
according to the seriousness of their assessment. For example, the scale to collect data on
relationships and domestic problems included the following facets: one (1) for least
important/serious and five (5) for very important/serious. In assessing HIV/AIDS risk factors, the
study also measured the level of risk with a scale or ranking of 1-10, where one (1) represents the
least risk and ten (10) the highest perceived risk for HIV/AIDS. In addition, the study sought
information on access to condoms and frequency of use from questionnaires. The primary data
also included demographic data such as gender, age, marital status, religion, perceived
socioeconomic status, and years of education. The questionnaire contained questions relating to
perceived social support, barriers, outcome, and condom use. Table 3.1 below shows the variables used to assess HIV/AIDS risk factors by respondents at the community level.
Table 3.1: Risk Factor for HIV/AIDS Assessment among Respondents

<table>
<thead>
<tr>
<th>Risk Factors</th>
<th>Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women not powerful enough to determine safety in sex</td>
<td>WNPF</td>
</tr>
<tr>
<td>Poverty (economic: unemployment etc.)</td>
<td>WPOV</td>
</tr>
<tr>
<td>Occupation</td>
<td>OCPT</td>
</tr>
<tr>
<td>Commercial sex workers</td>
<td>SEXW</td>
</tr>
<tr>
<td>Truck drivers</td>
<td>TDRI</td>
</tr>
<tr>
<td>War and social disorder</td>
<td>WSDA</td>
</tr>
<tr>
<td>Lack of condom use with casual partners</td>
<td>LCON</td>
</tr>
<tr>
<td>Sex with commercial sex workers</td>
<td>CSWS</td>
</tr>
<tr>
<td>Rape</td>
<td>RAPE</td>
</tr>
<tr>
<td>Domestic violence</td>
<td>DVIO</td>
</tr>
<tr>
<td>Polygamy</td>
<td>POLY</td>
</tr>
<tr>
<td>Wife sharing custom</td>
<td>WIFS</td>
</tr>
<tr>
<td>Female circumcision</td>
<td>FCIR</td>
</tr>
<tr>
<td>Male circumcision</td>
<td>MCIR</td>
</tr>
<tr>
<td>Sharing of unsterilized syringes by drug users</td>
<td>SUSY</td>
</tr>
<tr>
<td>Visit to the hospital (healthcare) surgery</td>
<td>VHOS</td>
</tr>
<tr>
<td>Inheritance of wife/widow of a deceased relation</td>
<td>WIHE</td>
</tr>
<tr>
<td>Mother-to-child-transmission</td>
<td>MTCB</td>
</tr>
<tr>
<td>Returning military officers</td>
<td>REMO</td>
</tr>
<tr>
<td>Returnee females from abroad</td>
<td>RGIL</td>
</tr>
<tr>
<td>Blood transfusions</td>
<td>BTRA</td>
</tr>
<tr>
<td>Multiple sex partners</td>
<td>SEXP</td>
</tr>
<tr>
<td>Get angry when asked to use condom</td>
<td>GANG</td>
</tr>
<tr>
<td>Fear of being accused of having sex with others</td>
<td>HSEX</td>
</tr>
<tr>
<td>Males more power in sex decision</td>
<td>SSEX</td>
</tr>
<tr>
<td>Male overall dominant power</td>
<td>MPOW</td>
</tr>
<tr>
<td>Power to decide use of condoms</td>
<td>SUCO</td>
</tr>
<tr>
<td>Lack of access to condoms</td>
<td>ACON</td>
</tr>
<tr>
<td>Selective use of condom</td>
<td>UCON</td>
</tr>
<tr>
<td>Oral sex</td>
<td>OSEX</td>
</tr>
<tr>
<td>Anal sex</td>
<td>ASEX</td>
</tr>
<tr>
<td>Mosquito bite</td>
<td>MSQB</td>
</tr>
<tr>
<td>Power of witchcraft</td>
<td>WITC</td>
</tr>
<tr>
<td>Injection at local medicine Store</td>
<td>JECT</td>
</tr>
</tbody>
</table>
The difficulty in the epidemiological forecasting of HIV/AIDS worldwide and especially in Africa necessitates the use of primary data. Loytonen (1991) highlights the need for both geographic and demographic data collection for epidemiological forecasting of HIV/AIDS. Palca (1991) argues that macro-level modeling based on demographic, behavioral, and epidemiologic data to determine projection rates is fraught with inaccuracies. Since detailed micro-level primary data are unavailable publicly, this study set out to collect these data during fieldwork. Collecting data at the individual level guarantees getting specific information from a community, for example, use of condoms, specific sexual activities, and perceived HIV/AIDS risk factors by the people (Orubuloye et al., 1993; Caldwell, 2000).

Research Design and Questionnaire Administration

In order to conduct a micro-level HIV/AIDS risk factor assessment, two study sites, one in the region of a major HIV/AIDS cluster (Makurdi) and another in a relatively lower cluster area (Benin City), were selected (Figure 4.1). The two study sites have some similarities and differences in economic, political, social, and cultural aspects. These cities serve as state capitals, local government (council) headquarters, transportation node centers, and university towns. Certain socio-cultural practices are somewhat similar. For example, the practice of polygamy, early marriages, and widow inheritance occur in both study sites. Both sites have military barracks that still deploy officers to foreign missions and troubled spots around the country, and there is a sizeable number of returning military officers in both sites. In terms of returning international labor migrants and human trafficking, Benin City has more female travelers from Europe, while residents (females) in Makurdi travel to nearby towns to “work.” In terms of gender relationship, men are culturally more powerful in both sites and exercise control over females in most aspects of life. The practice of wife/widow inheritance varies
among ethnic groups in both study sites. Makurdi has a more vibrant nightlife, as people stay out late at night. The relatively higher crime rates in Benin City limits nightlife as observed during fieldwork in 2007 and 2008. The research in this dissertation compares and contrasts HIV/AIDS risk assessments of respondents in both sites. The following paragraphs discuss the methods of questionnaire administration, including sampling techniques, used in this dissertation.

The existing sections or groups of neighborhoods formed the basis for sampling respondents and administering questionnaires in Benin City. This study combined several neighborhoods with major roads serving as boundaries for administrative purposes, which resulted in the creation of 22 sections in Benin City. The study administered 12 questionnaires in each section, targeting equal numbers of male and female respondents. Overall, 264 questionnaires were administered in Benin City. In Makurdi, 20 sections emerged using neighborhoods and major roads as boundaries. The study administered 13 questionnaires in each of these sections, targeting equal number of males and females in the administration of questionnaires. Overall, 260 questionnaires were administered in Makurdi. However, in the final analysis, only 500 questionnaires (250 each) were retained for analysis in both study sites due to incompleteness in some questionnaires.

The sampling technique used was accidental sampling in order to allow the administration of questionnaires to the most accessible population (Ferman & Levin, 1975; Djukpen, 1999; Onwuegbuzie & Leech, 2005). Only respondents who willingly wanted and were available to take part in the survey completed a questionnaire and interview. The first step was to determine if a respondent wanted to participate by asking a simple question if he/she wanted to be part of the study. The accidental sampling technique is an easy and cost effective
method because there are no efficient and comprehensive address books in the study sites to design a random sampling technique to select individual respondents. Furthermore, the sensitivity of a disease like HIV/AIDS and the associated level of stigma necessitate using a technique that is accessible to willing volunteers. There are also privacy concerns that necessitate the choice of this accidental sampling technique. The study excluded seemingly very busy people and shy individuals who did not want to talk about HIV/AIDS because of the associated stigma and other personal reasons. Therefore, only people that voluntarily wanted to answer questions participated in the interview, responded to questionnaires, and participated in focus group discussions (FGDs).

In spite of the merits of this technique, some questionnaires were incomplete and not included in the analysis. The limitations of this technique included the long time involved in the interview. It is also not systematic and the results are not easily duplicable, as one may hardly get the same person to interview again. However, the results reflect the views of the people in the study sites. The incomplete questionnaires have over a 50 percent non-response rate of the questions. Because of the stigma associated with HIV/AIDS, this study did not pressure respondents to answer any questions. In addition, the Institutional Review Board (IRB) of the University of Illinois requires that researchers do not pressure respondents and participants to answer any question they do not want to answer. The IRB granted permission for this study in June of 2007. It requires that the names (any form of identification) of the interviewees are not recorded during the interview or focus group discussion. The approval also stipulated strict adherence to the stated age group of respondents. Therefore, everyone who consented to an interview and discussion were within the acceptable age of 21 and older.
3.4 Focus Group Interviews

Studies show that using leaflets or questionnaires alone to understand perception and to promote the use of condoms, for example, do not always result in the desired change in behavior (Krahe et al., 2005). The impersonal method of questionnaire administration does not reveal a complete understanding of HIV/AIDS risk factors and behaviors of people (Onwuegbuzie & Leech, 2005). Qualitative research approaches, whereby individuals are engaged in discussion, reveal more perspectives than the questionnaire-type responses. Therefore, discussing issues such as sexuality and related behaviors in focus group settings is important in understanding HIV/AIDS risk factors (Bruhin, 2003; Zulu & Chepngeneno, 2003; Holschnieder & Alexander, 2003; Onwuegbuzie & Leech, 2005). The employment of focus group discussions and interviews gives a better assessment and understanding of the dynamics of HIV/AIDS risk factors at the community level. Ruxin et al. (2005) call for a comprehensive assessment and understanding of all HIV/AIDS risk factors at community levels. The development of acceptable HIV/AIDS management strategies depends on using both direct and semi-direct methods to collect data (Khan et al., 2004). This study used both direct (focus group discussions and interviews) and semi-direct methods (questionnaires) to collect data for analysis. It uses a multi-method approach to conduct the study.

In study site one (Benin City), focus group discussions (FGD) and interviews consisted of six (6) respondents per group. There are eight (8) groups selected from a list of all sections (groups of neighborhoods) for the FGD (Table 3.2). The study used a systematic random sampling technique to select sections/neighborhood to conduct focus group discussions. Starting from the first section/neighborhood, every fourth section was selected for the focus group discussions. The study separated males and females during focus group discussions/interviews.
The separation is to encourage unrestricted discussion, as Collins (2000) describes it ‘safe spaces’ for females to unwind and express their thoughts. The eight groups included four groups for males and the other four for females.

Table 3.2: Neighborhoods for Questionnaire Administration, FGD and Interviews

<table>
<thead>
<tr>
<th>Makurdi</th>
<th>Benin City</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Ankpa Ward *</td>
<td>Aduwawa*</td>
</tr>
<tr>
<td>2 N. Gboko Rd</td>
<td>Usen</td>
</tr>
<tr>
<td>3 S. Gboko Rd</td>
<td>Ikpema</td>
</tr>
<tr>
<td>4 Agboughut</td>
<td>Ekewan*</td>
</tr>
<tr>
<td>5 Laflia Park*</td>
<td>Wire Road</td>
</tr>
<tr>
<td>6 BSU</td>
<td>Mission Road</td>
</tr>
<tr>
<td>7 Old GRA1</td>
<td>Ugbowo*</td>
</tr>
<tr>
<td>8 Old GRA 2</td>
<td>Ekiadolor</td>
</tr>
<tr>
<td>9 Gyado Villa*</td>
<td>Uselu</td>
</tr>
<tr>
<td>10 W North Bank</td>
<td>GRA*</td>
</tr>
<tr>
<td>11 Logo</td>
<td>Isiohor</td>
</tr>
<tr>
<td>12 Com Villa</td>
<td>Uwelu</td>
</tr>
<tr>
<td>13 Wadatta *</td>
<td>Oluku*</td>
</tr>
<tr>
<td>14 Modern Market</td>
<td>Sakponba</td>
</tr>
<tr>
<td>15 NNPC Depot</td>
<td>Siluko</td>
</tr>
<tr>
<td>16 Hudco Quarters</td>
<td>Sapele Road*</td>
</tr>
<tr>
<td>17 Wurukum*</td>
<td>Ekosodin</td>
</tr>
<tr>
<td>18 High Level 2</td>
<td>Akpakpava</td>
</tr>
<tr>
<td>19 High Level 1</td>
<td>Ikpoba*</td>
</tr>
<tr>
<td>20 Stadium/Health Ministry*</td>
<td>New Benin</td>
</tr>
<tr>
<td>21 -</td>
<td>Uwasota</td>
</tr>
<tr>
<td>22 -</td>
<td>Ring Road*</td>
</tr>
</tbody>
</table>

*Focus group discussion neighborhood/section

In study site two (Makurdi), six (6) respondents were selected for each FGD session. The study selected every fourth neighborhood/section for use in the FGD in Makurdi (see Table 3.2). There were six groups in this study site, three each for males and females. As in study site one
(Benin City), males and females were separated during the focus group discussions and interviews for a freer discussion because of gender-related inequality issues.

**Demographic Characteristics of Respondents**

Those interviewed were male and female adults between 21 and 64 years of age. The occupations of the respondents in this study included trader, teacher, truck driver, commercial sex worker, civil servant, and other professionals. There were few unemployed individuals among respondents. The educational backgrounds of respondents varied from no education, to elementary (primary) and secondary (high) school, to university education. Marital statuses included unmarried, married, widowed, and divorced/separated. In addition, data on the religious background of respondents collected included Christian, Islamic, and animism. The tables below show the demographic distribution of the respondents.

**Table 3.3: Demographic Characteristics of Respondents: Education**

<table>
<thead>
<tr>
<th></th>
<th>No. School</th>
<th>Elementary</th>
<th>Secondary</th>
<th>University</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benin City</td>
<td>4(0.8%)</td>
<td>20(4%)</td>
<td>70(14%)</td>
<td>156(31.2%)</td>
<td>250(50%)</td>
</tr>
<tr>
<td>Makurdi</td>
<td>0</td>
<td>12(2.4%)</td>
<td>81(16.2%)</td>
<td>157(31.4%)</td>
<td>250(50%)</td>
</tr>
<tr>
<td>Total</td>
<td>4(0.8%)</td>
<td>32(6.4%)</td>
<td>151(30.2%)</td>
<td>313(62.6%)</td>
<td>500(100%)</td>
</tr>
</tbody>
</table>

Table 3.3 above shows the level of education of respondents in both study areas, showing that about 63 percent of respondents have a university education in both study areas. Those with secondary education are 30 percent, and the rest have either an elementary education or no school at all. With regard to the ‘no school’ category of respondents, field assistants used ‘Pidgin English’ to ask questions and code responses accordingly. Pidgin English—Naija Langwej—is a local variation of the official English Language spoken in Nigeria. It is a mixture of the Queen’s English and some Nigerian languages. This is not a problem as few respondents
who spoke this language during the interview (0.8 percent). The demographic characteristics affect the variation in HIV/AIDS risk factor perception among respondents. For example, the level of education influences the types of cultural practices, economic, and social factors respondents identified as risk factors for HIV/AIDS. It also determines the types of social and cultural practices that occur and are perceived as risk factors.

Table 3.4: Demographic Characteristics of Respondents: Age

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Benin City</th>
<th>Makurdi</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>21-31 years</td>
<td>74 (14.8%)</td>
<td>86 (17.2%)</td>
<td>160 (32%)</td>
</tr>
<tr>
<td>32-41 years</td>
<td>72 (14.4%)</td>
<td>70 (14%)</td>
<td>142 (28.4%)</td>
</tr>
<tr>
<td>42-51 years</td>
<td>91 (18.2%)</td>
<td>87 (17.4%)</td>
<td>178 (35.6%)</td>
</tr>
<tr>
<td>52-64 years</td>
<td>11 (2.2%)</td>
<td>7 (1.4%)</td>
<td>18 (3.6%)</td>
</tr>
</tbody>
</table>

Table 3.4 above shows the age distribution of respondents in the study sites. Three age categories—21-31, 32-41, and 42-51 years—dominate the sample, with only about 4 percent in the 52-64 years group. Age is important in research as it reflects the experiences of respondents in the assessment of HIV/AIDS risk factors. The age of respondents shows a relatively young population with about 60 percent below the age of 41 years. The sex of respondents shown in Table 3.5 indicates that 50 percent are males and the other 50 percent females, respectively. The balance in sex of the respondents helps to determine the influence of gender on HIV/AIDS risk factors between study sites. It is not accidental that respondents are 50 percent apiece for each sex after removing incomplete questionnaires. The incomplete questionnaires included those respondents who completed less than 50 percent of the questions and those with the least number of questions answered.
Table 3.5: Demographic Characteristics of Respondents: Sex

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benin City</td>
<td>125(25%)</td>
<td>125(25%)</td>
<td>250 (50%)</td>
</tr>
<tr>
<td>Makurdi</td>
<td>125(25%)</td>
<td>125(25%)</td>
<td>250(50%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>250(50%)</strong></td>
<td><strong>250(50%)</strong></td>
<td><strong>500(100%)</strong></td>
</tr>
</tbody>
</table>

There are three categories of religion in the study with ‘don’t have any religion’ as an option for those who prefer not to discuss religion. Table 3.6 shows that among the sampled respondents 84 percent were Christian and 12 percent were Muslim. In addition, those who practice African Traditional Religion (1.4%) and those who do not have any religion (2%) were few. Religion is a noteworthy part of an average Nigerian’s life, so its influence in HIV/AIDS risk factor assessment could show distinct patterns at the community level. Although this study did not engage in a detailed analysis of the influence of the religious belief system, it applies in the interpretation of results of the qualitative discussion.

Table 3.6: Demographic Characteristics of Respondents: Religion

<table>
<thead>
<tr>
<th></th>
<th>Christian</th>
<th>Muslim</th>
<th>African Traditional</th>
<th>Don’t have any</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benin City</td>
<td>211(42.2%)</td>
<td>24(4.8%)</td>
<td>6(1.2%)</td>
<td>9(1.8%)</td>
<td>250(50%)</td>
</tr>
<tr>
<td>Makurdi</td>
<td>209(41.8%)</td>
<td>39(7.8%)</td>
<td>1(0.2%)</td>
<td>1(0.2%)</td>
<td>250(50%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>420(84%)</strong></td>
<td><strong>63(12.6%)</strong></td>
<td><strong>7(1.4%)</strong></td>
<td><strong>10(2%)</strong></td>
<td><strong>500(100%)</strong></td>
</tr>
</tbody>
</table>

This study used five categories of marital status. Table 3.7 shows the marital status of the sampled respondents: 38 percent were unmarried, 50 percent were married, and only 12 percent were divorced and widowed/separated. There is no question that marital status has a bearing on HIV/AIDS vulnerability assessment. People socialize through peer interactions, and marriage
offers two avenues of such interactions. One is the interaction with spouse and another with fellow married people who may be colleagues at work, traders, or neighbors. These ‘safe spaces’ provide females opportunities to learn about health, coping techniques, and power relationships issues. Marital experiences and status may also shape assessment of HIV/AIDS risk factors. For example, being divorced or separated and widowhood may influence experience and assessments of HIV/AIDS risk factors.

The demographic characteristic sex (male/female) is included as a variable in the SPSS analysis of HIV/AIDS risk factors. It served as an indicator of gender influence on the assessment or perception of HIV/AIDS risk factors. Indeed, this study explores the influence of this demographic characteristic on HIV/AIDS risk factor perceptions among the selected respondents at the micro level.

### Table 3.7: Demographic Characteristics of Respondents: Marital Status

<table>
<thead>
<tr>
<th></th>
<th>Single</th>
<th>Married</th>
<th>Divorced</th>
<th>Widow/separated</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benin City</td>
<td>95(19%)</td>
<td>116(23.2%)</td>
<td>19(3.8%)</td>
<td>20(4.0%)</td>
<td>250(50%)</td>
</tr>
<tr>
<td>Makurdi</td>
<td>95(19%)</td>
<td>134(26.8%)</td>
<td>11(2.2%)</td>
<td>10(2.0%)</td>
<td>250(50%)</td>
</tr>
<tr>
<td>Total</td>
<td>190(38%)</td>
<td>250(50%)</td>
<td>30(6%)</td>
<td>30(6%)</td>
<td>500(100%)</td>
</tr>
</tbody>
</table>

**Quantitative Analysis**

This study used the Statistical Package for Social Scientists (SPSS) as the primary statistical package for the quantitative analysis. The main statistical technique utilized is the principal components analysis (PCA). Principal components analysis uses two major features — the study sites and sex as a basis of analysis. The primary function of the PCA is to reduce the HIV/AIDS risk factor assessments of respondents to determine unique or shared variability (Mertler & Vannatta, 2002; Pohlmann, 2004; de Vet et al., 2005). The Kaiser-Guttman’s
eigenvalue-greater-than-one rule and the Scree Test—visual inspections of the eigenvalue plot—are utilized in selecting and discussing the components that respondents assessed as risk factors for HIV/AIDS (Yeomans & Golder, 1982; Johnstone, 2001; Pohlmann, 2004). The break in the trend line where the eigenvalue indicates that the major portion of variance is explained by the factors (Pohlmann, 2004) was also utilized. This enables comparison and contrasts of the respondents’ assessment of risk factors at both sites and by gender. The analysis using the SPSS software package assists in the creation of the patterns of HIV/AIDS risk factor assessment of the respondents. The software package also helped in the generation of bar charts to display results for the frequencies of HIV/AIDS risk-related terms that respondents used during focus group discussions and interviews. In short, the quantitative analysis greatly helped to accomplish the stated objectives and questions for this research in chapter one and two.

With reference to the principal components analysis, the research in this study used only the first five components or factors for the discussion of risk factor assessment. Furthermore, it used variables that scored over 0.50 on the factor loading in each of the components in order for us to establish a pattern and determine the meaning of the factor. The five highest scoring factors were assigned the name of the highest scoring variable in the components analysis. In comparing both study sites, only variables in the first five components that score over 0.50 loadings were used. This ensured uniformity in the comparative discussion of the results. On the other hand, the comparison of gender perception of risk factors at both sites was based only on the highest scoring variable in each principal components matrix. The decision to discuss only the first five variables and those with over 0.50 factor loadings is convenience. There are no hard and fast rules for determining interpretation cutoff, nevertheless analysts frequently use values between (0.3) and (0.6) for the factor coefficients (Pohlmann, 2004). The orthogonal
rotation used in this study is the varimax, which provides the simplest interpretation of structure for the factor loadings (Mertler & Vannatta, 2002; Pohlmann, 2004).

Qualitative Analysis

The qualitative analysis essentially discusses results from focus group discussions (FGD) and interviews. It explores the FGD and interview transcripts for clues into the perceptions of HIV/AIDS risk factors. The quotes from respondents form the basis of discussion and analysis in chapters 5, 6, and 7. Special words or terms and concepts that depict vulnerability to HIV/AIDS during interviews and FGDs were counted. Graphs to represent the frequencies of these concepts to show differences and similarities between the study sites and groups (male/female) of respondents were generated in SPSS. For example, in the analysis of the focus group results, words and concepts like commercial sex workers or related local terms like ‘ashawo,’ ‘hustling,’ and ‘man must survive’ were searched. Other words that highlight risks in their perception included ‘polygamy’ and ‘wife inheritance,’ and they were also searched for in the transcripts. The study relied on the “find function” in Microsoft word to search for special words, and then the total numbers or frequencies for each word or phrase were charted. The charts are incorporated into the discussion in chapter 7.

3.5 Conclusion

This chapter set out to describe the research design and the methodology in this dissertation. The chapter began by describing the geospatial techniques. It indicated that simple choropleth maps generated to show the variation of HIV/AIDS rates fail to detect hotspots (clusters). On the other hand, more advanced geospatial analysis using advanced geospatial mapping and analytical techniques assist in detecting areas of high clustering and/or low
clustering. Therefore, the need for geospatial analytical methods in HIV/AIDS studies goes beyond simple choropleth or thematic maps. In addition, this chapter laid out the quantitative and qualitative techniques used in the research that follows. The research design and methodology for both quantitative and qualitative techniques were described in detail. With reference to quantitative analysis, the results from structured questionnaires were subjected to principal components analysis to assess HIV/AIDS risk factors by respondents and to establish a set of factors at the community level. The chapter also demonstrated the need for qualitative (focus group discussions) in further teasing out the respondents’ perceptions about the HIV/AIDS epidemic at the local or micro level.

Finally, the chapter discussed the demographic characteristics of the respondents selected for the interviews in this study. It described the composition of the respondents with reference to religion, sex, education level, and other characteristics that were likely to have a bearing on the perceptions on HIV/AIDS risk factors. The data shown in this chapter indicates that respondents are mainly educated people – secondary and university educated. The drawback of this demographic is that assessment of risk factors would reflect the views of the elite class. In terms of age, young people make up over 60% of respondents under the age of 41 years. The religious background of respondents indicates that Christianity is the dominant voice in both study sites. In terms of marital status, the majority of respondents are either unmarried or married. Fewer respondents are in the divorced and widowed/-separated categories. It is therefore very likely that the views expressed in the FGDs and interviews are products of both Christian religious faith or beliefs and marital status.
4.1 Introduction

HIV/AIDS is a global public health problem, and Nigeria is no exception to the menace of this disease. HIV/AIDS rates reached an alarming proportion of 5.8 percent of the adult population in 2005 (Federal Ministry of Health Nigeria, 2007). Since then, HIV/AIDS rates have steadily declined. In spite of the declining trend, there are noticeable spatial disparities at the state level within the country (Federal Ministry of Health Nigeria, 2007). Despite efforts by the international community and the Nigerian government to curtail the spread of HIV/AIDS, the HIV/AIDS rates continue to maintain an upward trajectory in certain states and regions. This chapter sets out to address this question: Is there spatial clustering of HIV/AIDS in Nigeria? In accomplishing this, the following hypothesis is tested with Moran’s $I$ statistic. There is a significant HIV/AIDS spatial clustering while the null hypothesis is that there is no association between the prevalence rates in neighboring states (no spatial autocorrelation). This chapter gives a brief description of exploratory spatial data application, discusses the macro study area of Nigeria, and presents the results of geospatial analysis of HIV/AIDS rates. The chapter concludes with the selection of two study sites for micro-level or community investigation to determine the risk factor assessment by selected individuals in the communities.

Exploratory spatial data analysis (ESDA) examines the spatial variation of HIV/AIDS rates at the macro level. The ESDA tools include Moran’s $I$ (global and local) and Getis and Ord’s $G_{i}^*$, which determine the influence of neighboring areas on health phenomena in other
surrounding places. In so doing, this study provides insightful geo-visualization of the HIV/AIDS epidemic.

Exploratory spatial data analysis techniques help to answer questions at two geographic scales, namely the macro (national) and micro (community) scales. One of the central objectives of this study focuses on the determination of spatial clustering of HIV/AIDS at the national level. As such, ESDA techniques utilize maps to show spatial variations and identify spatial clusters at the macro or national level. The unavailability of data at the community level necessitates the application of ESDA at the national level. This resulted in the use of published HIV/AIDS rate data at the state level to determine any significant clustering. The following sections describe the study area, the results of the spatial cluster analysis, and the selection of the study sites for the micro-level exploration of risk factor assessment.

4.2 Study Area

Nigeria is located in West Africa and is bordered by Niger Republic to the north, Benin Republic to the west, Cameroon on the east, Chad Republic on the northeast, and the Bight of Benin and the Gulf of Guinea (Atlantic Ocean) to the south (Figure 4.1). Nigeria has an area of 923,768 square km and an estimated population of over 160 million people (Federal Ministry of Health, 2007). It is the most populous nation on the African continent and the eighth most populous country in the world today. The geopolitical structure of Nigeria has evolved through the years.

Nigeria evolved from the northern and southern protectorates of colonial Britain to the present day structure of thirty-six states and a Federal Capital Territory (Abuja). For regional studies, Nigeria is divided into six geopolitical zones (Figure 4.1): 1) Southwest: Ekiti, Lagos,
Ondo, Oshun, Oyo and Ogun; 2) South-south: Delta, Edo, Rivers, Cross Rivers, Bayelsa, and Akwa Ibom; 3) Southeast: Abia, Anambra, Ebonyi, Enugu and Imo; 4) Northwest: Jigawa, Kaduna, Kano, Katsina, Kebbi, Sokoto and Zamfara; 5) Northeast: Adamawa, Bauchi, Borno, Gombe, Taraba and Yobe; and 6) North-central – middle belt: Benue, Kogi, Kwara, Nassarawa, Niger, Plateau, and the Federal Capital Territory (FCT) (Federal Office of Statistics, 2001; Nigeria & ORC Macro, 2004). For the spatial analysis, the thirty-six states and the Federal Capital Territory (FCT) structure are applied. Furthermore, in presenting the results of the analysis, the study refers to these six geopolitical zones using terms like “region” and “regional” to denote a combination of more than one state or geopolitical zone.
4.3 Results of Cluster Analysis

The purpose of spatial analysis is to show the existence of significant HIV/AIDS clusters. The results in this study indicate that key spatial variations exist in the HIV/AIDS prevalence rate. Generally, there are high rates of HIV/AIDS in the central, southeast, and northeastern states of Nigeria (Figure 4.2). The regional HIV/AIDS rates vary from 16 percent in the South-South to about 3 percent in the Northwest geopolitical zones (Figure 4.2). There is evidence of rural/urban differences in HIV/AIDS rates in the six geopolitical zones (Nigeria & ORC Macro,
HIV/AIDS rates experienced an increase from 2.3 percent in 1995 to 16.8 percent by 1999 in states (places) such as Benue State, a dramatic rise within a short time period. Similarly, seven other states have HIV/AIDS rates of greater than 7.0 percent of the adult population. Abia State alone recorded a rate of 13.0 percent in the southeast area (Onwuliri & Mohammed, 2001; Federal Ministry of Health Nigeria, 2007). From 1999 to 2001, twenty-five states (68 percent) showed an increase in HIV/AIDS rates (Figures 4.2). However, the 1999 map shows that Kaduna, Nassarawa, and Benue states in north central region, and Abia and Akwa Ibom in southeastern Nigeria have the highest HIV/AIDS rates (9.3 to 16.8 percent). The adjacent states like Niger, Plateau, and Abuja (Federal Capital Territory) in the north and Ebonyi, Cross River, Anambra and Imo (southeast), and Edo (south) and the Lagos states in the west have rates between 5.5 and 9.3 percent. Twelve states fall into 3.3 to 5.5 percent group (Figure 4.2). The remaining ten states have HIV/AIDS rates below 3.3 percent. The 2001 and 2003 HIV/AIDS maps show a broader distribution of rates than the 1999 map (Figures 4.2). The term ‘broader’ in this context indicates that more states shown on the maps have relatively moderate to high rates of HIV/AIDS.

The 2001 map shows a higher rate of HIV/AIDS for the southeastern half of the country (Figures 4.2). Apart from Sokoto, Jigawa, and Ekiti, which reported low rates, other states showed an increase in HIV/AIDS rates. There is a decline in prevalence rates in three states between 1999 and 2001: Kaduna state from 11.6 percent to 5.6 percent and from 13 percent to 3.3 percent in Abia State. Lagos State experienced a drop from 6.7 percent to 3 percent. However, states with an upsurge in HIV/AIDS rates in 2001 include Rivers, Ondo, Bauchi, Gombe, Bayelsa, Yobe, Cross Rivers, and Federal Capital Territory (FCT) Abuja. Furthermore, the 2001 map (Figure 4.2) shows a shift in states with high HIV/AIDS rates. For example,
Niger, Kaduna, Gombe, Adamawa, and Rivers indicate an increase in HIV/AIDS rates. Although, HIV/AIDS generalized rate or distribution is low, the intensity is higher in Benue and Cross Rivers. However, the generalized distribution pointed to a decline in HIV/AIDS rates in 2001 as indicated by 13 percent being the highest rate, and many states have rates near that threshold.

Thus, the 2001 HIV/AIDS prevalence rate map (Figure 4.2) shows that 13.5 percent is the highest prevalence rate, slightly lower than the 1999 rates. Two states, Benue and Akwa Ibom, and Abuja (Federal Capital Territory) have rates above 8.5 percent. Twelve states have rates between 5.8 and 8.5 percent, while thirteen states have rates between 3.8 and 5.8 percent and ten states have less than 3.8 percent. As the 2001 map (Figure 4.2) indicates there is a more generalized prevalence rate of HIV/AIDS. In the western region, Ondo State replaces Lagos as a high prevalence rate for HIV/AIDS from the 1999 prevalence rate map (Figure 4.2). While 2001 prevalence rate map (Figure 4.2) shows that six northern states (Sokoto, Zamfara, Katsina, Kano, Jigawa, and Yobe) have a rate of less than 3.8 percent, which is the lowest HIV/AIDS region in the country.
Nevertheless, the 2003 map (Figure 4.2) shows a different pattern with Benue and Cross River having the highest rates of HIV/AIDS. The north central states and southern states of Rivers and Akwa Ibom show a more generalized prevalence rate (5 to 8.4 percent). The western states have low rates with Lagos and Oyo recording 3.1 to 5 percent. In the east, Anambra and Imo record very low rates, while three states also record low rates in the north (Kebbi, Katsina, and Jigawa). Although there is an overall decline in the number of states with the lowest rate in
the north, the states of Sokoto, Zamfara, Kano, and Yobe experienced a slightly higher rate of HIV/AIDS from 2001. There was also a surge in the number of states in the north with rates between 5 and 8 percent from 5 states to 9 states, and a decline in the south from 6 to 2 states. Generally, the results of HIV/AIDS prevalence rate mapping indicate that there is addition of HIV/AIDS ‘hotspots’. The 2005 HIV/AIDS prevalence rate map indicate that Benue and Akwa Ibom have the highest rates, and 7 states (Kaduna, Nassarawa, Taraba, Kogi, Cross River and FCT Abuja) have rate between 6 and 9 percent.

When prevalence rates maps are considered, the geographic pattern shows a noticeable expansion of high prevalence rates of HIV/AIDS over time. Indeed, an examination of maps in Figure 4.2 shows north central and southeastern states as areas of high HIV/AIDS concentration. These states have the highest HIV/AIDS rates in the country. However, HIV/AIDS patterns based on prevalence rates show that western states do not stand out as high or significant areas of HIV/AIDS rates. This pattern seems to obscure any impact of HIV/AIDS in the western states, especially in Lagos, Oshun, and Oyo. Lagos is one of the commercial centers of the country and expectedly should have a high HIV/AIDS rate. Focusing attention on the mapping of prevalence rates alone does not fully reveal the dynamics of HIV/AIDS risk. Hence, the application of exploratory spatial data analytical (ESDA) techniques is crucial in determining HIV/AIDS clustering. These techniques enhance our understanding of the spatial dynamics of HIV/AIDS. While prevalence rate mapping gives a generalized view of HIV/AIDS, geospatial analysis draws attention to areas with clusters. Figures 4.3 show the results of cluster analysis, revealing HIV/AIDS patterns that are different from the generalized distribution via simple choropleth maps as given in Figure 4.2. The following paragraphs discuss the analysis of spatial clustering
using geospatial techniques such as local and global Moran’s $I$ and the Getis and Ord’s $G_i^*$ statistic.

The global Moran’s $I$ statistics show clusters of HIV/AIDS (Table 4.1). Furthermore, the Monte Carlo simulation of 999 and p-value of 0.00200 and test statistic of 0.509935 shows significant clusters. In addition, the z-score values and significance level of normality and randomization assumption show that there is spatial clustering of HIV/AIDS rates in Nigeria. The global and local Moran’s $I$ statistics and Monte Carlo simulation tested the hypothesis that there is significant HIV/AIDS spatial clustering. The null hypothesis was that there is no association between the prevalence rates in neighboring states (no spatial autocorrelation). Results in Table 4.1 indicate a rejection of the null hypothesis and the acceptance of the alternative hypothesis with a z-score value of 5.495 for normality assumption of -1.96 to + 1.96 in 2005. The same applies to other years in Table 4.1. Therefore, results in this research indicate that there is significant HIV/AIDS clustering in Nigeria.

**Table 4.1: Moran’s $I$ results of HIV/AIDS prevalence rates in Nigeria**

<table>
<thead>
<tr>
<th>Year</th>
<th>Normality Assumption</th>
<th>Randomization Assumption</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Value</td>
<td>Z-score</td>
</tr>
<tr>
<td>1999</td>
<td>0.310641</td>
<td>3.4589</td>
</tr>
<tr>
<td>2001</td>
<td>0.308983</td>
<td>3.4420</td>
</tr>
<tr>
<td>2003</td>
<td>0.381498</td>
<td>4.1832</td>
</tr>
<tr>
<td>2005</td>
<td>0.509935</td>
<td>5.4959</td>
</tr>
</tbody>
</table>

However, the identification of global clustering does not identify states' key clusters or outliers of HIV/AIDS. Thus, the local Moran’s $I$ was computed using the HIV/AIDS rates at state level (see Table 4.2). The result of the analysis presented in Table 4.2 shows major spatial clustering or hotspots for HIV/AIDS. Benue State and Abuja - FCT show significant spatial
clustering with the local Moran’s \( I \) value and the Monte Carlo simulations at the 0.05 level of significance (Table 4.3). From these results, the HIV/AIDS cluster states include Abuja - Federal Capital Territory (FCT), Cross River, Akwa Ibom, Benue, and Nassarawa. The results show that HIV/AIDS radiates from this epicenter in the north central states to the southeast, west, and north. Overall, the Monte Carlo simulation shows increase overtime in the number of states at the 0.05 level of significance with HIV/AIDS clusters (Table 4.3). The local Moran’s \( I \) from 1999 to 2005 shows major clusters in the same states with Benue State, exhibiting a major HIV/AIDS cluster for all four years: 1999, 2001, 2003 and 2005 (Table 4.2). The variation is unique in that four states (Nassarawa, Akwa Ibom, Cross River and FCT-Abuja) appear to be clusters in three years between 1999 and 2005.

Table 4.3 shows some unique features in the HIV/AIDS significant clusters. The use of more methods (Monte Carlo stimulations) may seem repetitious, but it adds new states that may form a pattern of clusters for planning and management. In 1999, states like Cross River, Oshun, Enugu, and Abuja – FCT appear in the Monte Carlo simulations as significant cluster states. In 2001, only four states (Taraba, Benue, Nassarawa, and Cross River) show HIV/AIDS clusters; while in 2003, seven states exhibit clusters, including Akwa Ibom, Abuja, Benue, Ebonyi, Nassarawa, Oshun, and Oyo. The results of geospatial analysis establish a core-peripheral type of cluster zone for HIV/AIDS, with the core cluster in Benue State and the peripheral states in the southwest, south-south, northeast, and northwest regions.

Table 4.2 shows that Benue State consistently appears as a significant HIV/AIDS cluster state for the three years of analysis. Applying the queen relationship and 1.5 interquartile distance rule to establish neighbors and determine the HIV/AIDS spatial clustering (Table 4.2), certain states stand out as outliers in the local Moran’s \( I \). These cluster states include Akwa
Ibom, Benue, Cross River, Nassarawa, and Abuja – FCT. The computation indicates that these states appear more than once in the three years of analysis.

Figure 4.3: Spatial clustering (local Moran’s I) of HIV/AIDS rates
Source: Author, Base map from Geological Surveys of Nigeria (1986), Djukpen (2010) and data [http://www.nigerianredcross.org/campaign.php](http://www.nigerianredcross.org/campaign.php) and analysis in GeoDa; ClusterSeer2

The local Moran’s I values for 1999, 2001, 2003 and 2005 that represent results of the geospatial analysis of HIV/AIDS rates are shown in Figures 4.3. These maps indicate that the following states—Benue, Nassarawa, Cross Rivers, Oshun and Abuja - FCT—have HIV/AIDS clusters. This area forms the principal core zone of HIV/AIDS cluster.
Generally, HIV/AIDS clusters between 1999 and 2005 (Figure 4.3) show five states with clusters. The explanation for the existence of these clusters lies in the social and economic factors specific to these states. For example, Utulu and Lawoyin (2007) assert that socio-cultural, political, and economic factors in these middle-belt states account for this pattern of HIV/AIDS clustering. The detailed discussion of respondents’ assessment of risk factors in both study sites is in chapters 5, 6, and 7.

The Getis and Ord’s $G_i*$ statistic also shows spatial clustering of HIV/AIDS. This statistical technique determines the influence of distance on spatial association or clustering. At the 180 km distance and the significance level of 0.05 computed in ClusterSeer2, eleven states show spatial clusters between 1999 and 2005 (Table 4.4). In 1999, six states exhibit significant spatial clusters. These states include Benue, Nassarawa, Abuja - FCT, Ebonyi, Enugu, and Cross River (Table 4.4). In 2001, HIV/AIDS clusters show that Abuja is not on the list while Borno enters the key HIV/AIDS cluster states, and the 2003 rates indicate that Benue, Nassarawa, Ondo, Oshun, and Oyo states have clustering at the 0.05 level of significance.

This shift towards the southwestern states (Lagos, Ondo, Oshun, and Oyo) signals a possible new trend in HIV/AIDS rates due to internally displaced persons and refugees. The religious and ethnic/civil riots and adoption of Sharia law in some northern states triggered internal migration in the country to relatively peaceful places like Lagos and the southwestern states. In addition, the Niger Delta ‘resource control’ crises also forced migration to Lagos and other southwestern states. Interestingly, the 2005 Getis and Ord’s $G_i*$ statistic shows seven (7) states combined from both the southwestern and southeastern states with Abuja, Benue, and Kwara as an HIV/AIDS cluster. Since the southwestern states have a relatively high population density, this trend requires further investigation.
Table 4.4: States with significant $G_i^*$ test at Alpha level 0.05 & 180 km

<table>
<thead>
<tr>
<th>State</th>
<th>1999</th>
<th>2001</th>
<th>2003</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abuja-FCT</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benue</td>
<td>*</td>
<td>*</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>Borno</td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>Cross River</td>
<td>*</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>Ebonyi</td>
<td>*</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>Enugu</td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>Nassarawa</td>
<td>*</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>Ondo</td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>Oshun</td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>Oyo</td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>Kwara</td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
</tbody>
</table>

Table 4.4 above shows a matrix of states with clusters from 1999 to 2005. At a glance, the spatial and temporal trend of HIV/AIDS clusters is clearly shown in this table, highlighting consistent clusters and those that fluctuate over the years. For example, Benue and Nassarawa have had HIV/AIDS clusters since 1999, but Borno, Ondo, Oshun, Oyo, and Kwara states are only one-year HIV/AIDS cluster states. While Cross River, Ebonyi, and Enugu are three-year cluster states, Abuja - FCT is a two-year HIV/AIDS cluster location. This matrix of states assists in identifying states with a pattern of major clusters that can be a target for HIV/AIDS reduction programs. Geospatial analysis indicates that states with clustering are contiguous and could form the basis for strategic planning and management of HIV/AIDS.
Table 4.2: Local Moran’ I results of HIV/AIDS prevalence rates in Nigeria, 1999-2005

<table>
<thead>
<tr>
<th>States</th>
<th>1999 Value</th>
<th>Z-score</th>
<th>P-value*</th>
<th>State</th>
<th>2001 Value</th>
<th>Z-score</th>
<th>P-value*</th>
<th>State</th>
<th>2003 Value</th>
<th>Z-score</th>
<th>P-value*</th>
<th>State</th>
<th>2005 Value</th>
<th>Z-score</th>
<th>P-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Akwa Ibom</td>
<td>1.079</td>
<td>2.069</td>
<td>0.038</td>
<td>FCT Abuja</td>
<td>1.403</td>
<td>3.527</td>
<td>0.000</td>
<td>Benue</td>
<td>1.773</td>
<td>5.413</td>
<td>0.000</td>
<td>Benue</td>
<td>2.970</td>
<td>9.057</td>
<td>0.000</td>
</tr>
<tr>
<td>Benue</td>
<td>1.338</td>
<td>4.121</td>
<td>0.000</td>
<td>Cross River</td>
<td>1.102</td>
<td>2.457</td>
<td>0.014</td>
<td>Cross River</td>
<td>1.899</td>
<td>4.189</td>
<td>0.000</td>
<td>Nassarawa</td>
<td>1.574</td>
<td>4.414</td>
<td>0.000</td>
</tr>
<tr>
<td>Abia</td>
<td>0.967</td>
<td>3.002</td>
<td>0.003</td>
<td>Benue</td>
<td>1.912</td>
<td>5.824</td>
<td>0.000</td>
<td>Oshun</td>
<td>1.575</td>
<td>3.932</td>
<td>0.000</td>
<td>Cross River</td>
<td>1.299</td>
<td>2.303</td>
<td>0.004</td>
</tr>
<tr>
<td>Ebonyi</td>
<td>1.428</td>
<td>3.185</td>
<td>0.001</td>
<td>Nassarawa</td>
<td>1.091</td>
<td>3.063</td>
<td>0.002</td>
<td>Ogun</td>
<td>1.103</td>
<td>2.458</td>
<td>0.013</td>
<td>FCT Abuja</td>
<td>1.445</td>
<td>3.176</td>
<td>0.001</td>
</tr>
<tr>
<td>Nassarawa</td>
<td>1.409</td>
<td>3.955</td>
<td>0.000</td>
<td>FCT Abuja</td>
<td>1.449</td>
<td>3.640</td>
<td>0.000</td>
<td>Oshun</td>
<td>1.368</td>
<td>4.123</td>
<td>0.021</td>
<td>Oyo</td>
<td>1.026</td>
<td>2.438</td>
<td></td>
</tr>
</tbody>
</table>

*P-value obtained from the normal approximation and based on the 1.5 (Interquartile distance) rule
Table 4.3: Monte Carlo simulations at alpha level of 0.0555

<table>
<thead>
<tr>
<th>State</th>
<th>1999 Value</th>
<th>P-value*</th>
<th>State</th>
<th>2001 Value</th>
<th>P-value*</th>
<th>State</th>
<th>2003 Value</th>
<th>P-value*</th>
<th>State</th>
<th>2005 Value</th>
<th>P-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>FCT Abuja</td>
<td>0.665</td>
<td>0.006</td>
<td>Cross River</td>
<td>1.102</td>
<td>0.023</td>
<td>Akwa Ibom</td>
<td>1.211</td>
<td>0.020</td>
<td>FCT Abuja</td>
<td>1.445</td>
<td>0.003</td>
</tr>
<tr>
<td>Cross River</td>
<td>0.198</td>
<td>0.001</td>
<td>Benue</td>
<td>1.912</td>
<td>0.028</td>
<td>FCT Abuja</td>
<td>1.449</td>
<td>0.018</td>
<td>Benue</td>
<td>2.970</td>
<td>0.001</td>
</tr>
<tr>
<td>Oshun</td>
<td>0.374</td>
<td>0.043</td>
<td>Taraba</td>
<td>0.289</td>
<td>0.003</td>
<td>Benue</td>
<td>1.773</td>
<td>0.004</td>
<td>Cross River</td>
<td>1.299</td>
<td>0.004</td>
</tr>
<tr>
<td>Ebonyi</td>
<td>1.428</td>
<td>0.008</td>
<td>Nassarawa</td>
<td>1.091</td>
<td>0.005</td>
<td>Taraba</td>
<td>0.482</td>
<td>0.017</td>
<td>Nassarawa</td>
<td>1.574</td>
<td>0.003</td>
</tr>
<tr>
<td>Nassarawa</td>
<td>1.409</td>
<td>0.009</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

*P-value obtained from Monte Carlo distribution and at 999 iterations
4.4 Explaining the Presence of HIV/AIDS Clusters

The geospatial analysis indicates a cluster pattern of HIV/AIDS that has its nucleus in the north central states of Benue, Nassarawa, and Abuja - FCT. This spatial pattern prompts a research question: what community-specific risk factors account for this HIV/AIDS cluster pattern? This section examines the literature to address this question, setting the stage for a micro-level assessment of respondents’ perceptions of HIV/AIDS risk factors. A community-level exploration and discussion of risk factors follows in chapters 5 and 6 after the selection of the study sites, using the focus group interviews and questionnaires.

Reports in the literature show spatial difference in the pattern of HIV/AIDS knowledge, level of education, socio-cultural practices, condom use, and economic activities of people. The population of women with no formal education is about 41 percent, and those with access to newspapers, television, and radio constituted only 16 percent in 1999 (Nigeria & ORC Macro, 2004). Low levels of education and poor access to information influences the sexual choices, power relations, and behavior of people (especially women) in relation to contracting HIV (Mafeni & Fajemisin, 2003). For example, 74 percent of the women have knowledge of HIV/AIDS, but only 5 percent of the women ask their partners to use condoms. Thus, knowledge of HIV/AIDS alone does not translate into a change in sexual behavior (Mafeni & Fajemisin, 2003; Nigeria & ORC Macro, 2004; Smith, 2004). Gender inequality and social power relations also explain spatial differences in HIV/AIDS rates in Nigeria. Obidoa (2005) indicates that unequal gender power relations have a role in the proliferation of HIV/AIDS and assessment of vulnerability. Certain cultural values or practices, such as patriarchal and matriarchal rule or dominance and monogamous and polygamy marriage arrangements, vary geographically and affect the choices people make. Geographic differences based on
Christian/Muslim religious beliefs and governance on Sharia laws and non-Sharia laws can explain the patterns shown in the results of geospatial analysis.

In addition, occupations like commercial sex work (CSW) and truck driving are major HIV/AIDS risk factors. The sero-prevalence rates among sex workers in major cities rose from 30.5 to 34.2 percent between 1996 and 1998. Although there is limited HIV/AIDS data related to commercial sex workers today, some of the major cities like Lagos (Lagos State), Makurdi (Benue State), Abuja - FCT, and Calabar (Cross River) have a high population of commercial sex workers. Of these cities, Makurdi, Calabar, and Abuja are located in the high HIV/AIDS cluster zone. This upward trajectory of commercial sex workers has continued over the years and has been a source of concern for HIV/AIDS planners and the government (Onwuliri, 2002; UNAIDS, 2002). To this end, some states have adopted policies to handle the issue of commercial sex workers, and some of these policies are adversely affecting the attempts to reduce HIV/AIDS prevalence. For example, the adoption of Islamic Sharia laws in the northern states led to commercial sex workers taking their activities underground, away from the public view. In some areas, the adoption of Sharia laws in the northern states triggered migration to the middle belt and southern states (Mafeni & Fajemisin, 2003). Could this be a plausible reason for a shift in the HIV/AIDS hotspot centers in the northern region (Figure 4.2 and 4.3)? As shown in the 1999 map (Figure 4.2), Niger and Kaduna have over a 5.5 percent HIV/AIDS rate, and the 2001 map (Figure 4.2) shows a change in the rate with Niger registering 3.8 and Kaduna registering 5.8. The impact of the adoption of Sharia law code in Kaduna, a state in which commercial sex workers may have gone underground thereby raising the risk associated with HIV/AIDS, would need further examination.
Some cultural practices (wife inheritance, polygamy, and spouse sharing) influence HIV/AIDS rates in certain states in Nigeria. For example, Osagbemi et al. (2004) state that the spouse sharing practice among the Okun people in Plateau is a high risk factor for HIV/AIDS. The Okun people live in the periphery of the high cluster states (Figures 4.3). Gbor (2006) argues that the major ethnic groups, such as the Tiv and Idoma who live in Benue, do not practice spouse sharing. This opposing view calls for further investigation to determine any connection between HIV/AIDS rates and such practices and we rightly include a question on spouse sharing in the research instrument to shed light on this issue.

Despite this counter argument, HIV/AIDS rates are high in Makurdi and Benue, even though this practice is not allegedly a factor. Thus, the role of “wife sharing” as a factor in the proliferation of the HIV/AIDS epidemic needs further investigation. In spite of not practicing spouse sharing, Benue shows high HIV/AIDS trajectory over the years. Poverty and “sex-for-favor” among young people are key factors identified for HIV/AIDS rates in Benue (Utulu & Lawoyin, 2007). Another risk factor associated with high HIV/AIDS rates is the presence of military establishments and foreign assignments by officers (Odunsi, 2005).

The inadequate supply and non-use of condoms show a relationship with HIV/AIDS infection. A study by Rossem et al. (2001) confirms that non-use of condoms is widespread in Nigeria. A number of studies reveal several factors that account for the resistance to condom use, including a lack of sexual satisfaction, breakage, the risk of the condom being lost inside the woman, and the unnaturalness of condoms. There is always suspicion and an assumption of promiscuity for those who buy and use condoms (Kalipeni, 1996; Akeroyd, 2004). All these factors need further investigation at a micro level. Such community-level investigation increases the understanding of HIV/AIDS risk factors and assists with management. To carry out a study
at the micro level, this dissertation selected two study sites. The following section discusses the selection of the two study sites for further examination of HIV/AIDS risk factor assessment through questionnaires and focus group discussions. The expected result is a risk factor assessment at both study sites and a comparative analysis of the differences and similarities of the two sites.

4.5 Selection of Micro-level Study Sites

The prevalence rates and geospatial cluster maps show different epicenters of the HIV/AIDS epidemic in Nigeria over time. The southwestern states generally show low HIV/AIDS rates, but the north central states of Benue, Nassarawa, and Abuja - FCT exhibit high rates and clusters. This high cluster zone is consistently the same throughout the selected years of analysis. The states that exhibit high rates and hotspots include Ebonyi, Cross River, and Abia in the southeast. HIV/AIDS is present in all states, but the states mentioned above have significant clusters. The new trend in Table 4.4 calls for serious attention as Kwara entered the high-risk club. It also shows that Abuja - FCT reentered the HIV/AIDS high-risk ‘club’ after five years of absence. The geospatial results in this study indicate a need for more effective community-level or specific studies to understand the factors responsible for this pattern. The geospatial analysis carried out in this chapter established major HIV/AIDS clusters at state level, which showed that certain states have higher HIV/AIDS rates while others have low rates.

Because of the distinct cluster pattern, the study selected two study sites to carry out further investigation to understand HIV/AIDS clustering or spatial patterns. One criterion for selecting these study sites is that sites should be from two different zones of spatial clusters. One study site must be from the high cluster zone and another from a relatively low cluster zone. The two study sites selected were Benin City in Edo and Makurdi in Benue. Benin City is located in
a low to moderate HIV/AIDS rate zone. Makurdi is located in a high HIV/AIDS cluster zone in north central Nigeria (see Figure 4.1, and Figure 4.3). Personal interest and experience also informs the choice of these two study sites, providing a strong base of knowledge of local conditions. The researcher had his undergraduate education in Benin City and worked there for a few years. Makurdi is a convenient distance to and from Benin City, and the researcher visited Makurdi a few times, becoming familiar with the city. It is also cost-effective to use these two study sites because of the distance factor.

As shown in the literature, certain cultural practices and socio-economic factors also necessitate this choice. As stated earlier, Osagbemi et al. (2004) posit that people in the north central states practice spouse sharing. According to Osagbemi et al. (2004), it is a risk factor for HIV/AIDS in the region and this research seeks to investigate the accuracy of that study, especially in the light of the relatively high HIV/AIDS rates in Makurdi. Human trafficking has implications for HIV/AIDS proliferation. Cole (2006) states that Benin City has instances of female trafficking to Europe as well as occasional repatriation of these women back to Nigeria. The trafficking of women definitely raises the risk of the spread of HIV at the place of origin, destination, and return. On the other hand, this dissertation also seeks to investigate the influence of the repatriation and human trafficking and HIV/AIDS in Benin City. As shown earlier, HIV/AIDS is relatively low in Benin City. Considering these factors, Benin City and Makurdi are selected for a more intensive micro-level exploration of risk factor assessment of local residents.

4.6 Conclusion

This chapter has shown that the geography of HIV/AIDS in Nigeria is unique. Its distribution is uneven and exhibits different HIV/AIDS spatial clusters over time. The use of
ESDA techniques show significant HIV/AIDS clusters in Nigeria. The computation of global Moran’s I, Local Moran’s I (LISA), and Getis and Ord’s G\(_{ij}\) indicates that certain states exhibit significant cluster characteristics. For example, Benue consistently exhibited HIV/AIDS clusters from 1999 to 2005 and a few other states like Abia, Enugu, Ebonyi, Cross River, Nassarawa, Abuja - FCT, and Oshun showed clusters in some years. This chapter has also shown that the north central (middle belt) and southeast states form the core of HIV clusters. Radiating from the core are zones of lower HIV/AIDS rates and a potential cluster in the northern states of Jigawa, Katsina, and Kano. With this pattern of core and peripheral regions of HIV/AIDS, this study selected two sites to investigate the perceptions of individuals at the micro level with the view of teasing out the major risk factors in the spread of HIV/AIDS.

Study site one, Benin City, is in an area of relatively low HIV/AIDS rates. The review of the literature in chapter two indicated that certain socio-cultural practices and economic factors drive HIV/AIDS prevalence rates in Africa, which includes Nigeria (Table 3.1). Some of the factors include polygamy, female circumcision, occupations (like truck driving and itinerary trading), and poverty. This chapter has also shown that study site number two, Makurdi, has certain risk factors that raise the stake for HIV/AIDS. Socio-cultural, economic, and personal behaviors, amongst other factors, drive the HIV/AIDS rate in this site. For instance, polygamy, wife inheritance, non-use of condoms, occupations like truck driving, and poverty are factors that may drive HIV/AIDS rates in Makurdi. The next two chapters explore the assessment of HIV/AIDS risk factors by respondents at these two study sites and establish a pattern for comparison in chapter seven.
CHAPTER 5

CASE STUDY 1: PRINCIPAL COMPONENTS ANALYSIS OF PERCEPTION OF HIV/AIDS RISK FACTORS IN BENIN CITY

5.1 Introduction

The prevalence of HIV/AIDS, like many diseases in a population depends on risk factors. The economic status, political conditions, personal and social behaviors, and cultural practices also influence the vulnerability of people to diseases. However, these conditions and practices vary according to the culture, background, socialization, and gender relationships at the community level.

The first section of this chapter focuses on the perception of HIV/AIDS risk factors of respondents in study site one – Benin City, Edo State. The overriding objective is to determine the key risk factors and examine the influence of gender on the assessment of the HIV/AIDS risk factors. The exploration of gender characteristics of respondents deepens the understanding of HIV/AIDS vulnerability at the community level. As described in chapter 3, the study uses the principal components analysis (PCA) technique to determine the key risk factors. The PCA data (quantitative) analysis emanates from questionnaires, and the qualitative analysis uses focus group discussions and interviews to assess the HIV/AIDS risk factor perception of respondents. The next section offers a brief geography and characteristics of the study sites before embarking upon the discussion of the findings.

5.2 Study Site Description

Benin City is the administrative headquarters of the Oredo Local Government Council and the capital of Edo State. Benin City is approximately 230 miles (370 kilometers) from the
Federal Capital of Nigeria, Abuja (Figure 4.1). In 1991, the city had a population of over 760,000 people and was estimated to be over 1.2 million people in 2006 (Brinkhoff, 2009). The population of Benin City is ethnically and religiously diverse because of its central location in Edo State and the southern region of Nigeria. The central location of Benin City in Edo State facilitates the development of truck and bus stops near Benin City, such as at Aduwawa, Oluku junction, and Auchi and Aviele (Figure 5.1). These stops have become hubs for human interaction and commercial sex activities (Omorodion, 1993; Onokerhoraye, 1995). Benin City is a gateway town to many cities in Nigeria. Furthermore, economic difficulties such as high unemployment and poverty expedite the growth of the city into an important hotspot for international trafficking of women and children (Unuigbe & Ogbeide, 1999; Fauci, 1999; Adesina, 2006; Cole, 2006).

**Benin City: History and Socio-cultural Characteristics**

Benin City is the historic political headquarters of the ancient Benin Kingdom that had influence during its peak to the present day Republic of Benin in West Africa (Oronsaye, 1996). The ancient city has evolved into a relatively modern urban center and home to various tertiary institutions of learning like the University of Benin and Benson Idahosa University (Aisien, 1995; Onokerhoraye, 1995; Ozo, 2009). Other important public institutions in Benin City include the College of Education, School of Health Technology, Edo State Nursing School, the University of Benin Teaching Hospital, and the Central (specialist) Hospital. Many industries—such as brewery industries, bottling companies, and tertiary services like banking, insurance, and commerce—exist in the city. All these factors contribute to the phenomenal growth of Benin City during the last four decades (Onokerhoraye, 1995; Ozo, 2009).
Demographic data shows that about 45 percent of the population of Benin City is young, between the ages of 18 and 30 years (Nigeria & ORC Macro, 2004). The population is heterogeneous due to the centrality and functionality of institutions in Benin City that attract people of diverse cultures from the surrounding regions (Onokerhoraye, 1995). As a result, there are many languages and ethnic groups in the city. Although Bini is the dominant language, other languages spoken in the city include Esan, Etsako, Igbo, Isoko, Urhobo, Ijaw, Itsekiri, Owan, Yoruba, and Hausa. Edo State also has cultural relationship with the Yoruba-speaking people in the west and the Igbo-speaking folks in the east (Omorodion, 1993). The cultural mixture influences different responses and views on sexual and non-sexual behavioral issues that affect the understanding of HIV/AIDS dynamics.

The rapid growth of Benin City into the administrative headquarters of Edo State has a number of implications for understanding social, environmental, economic, and health issues, such as the HIV/AIDS dynamics (Aisien, 1995; Ozo, 2009). The growth of Benin City outstrips its ability to provide sufficient employment (Okojie, 1984; Ozo, 2009), so residents work in both the formal and informal sectors of the economy. The occupations of residents include government employees (civil servants), bankers, and other industrial workers in the formal sector. The occupations in the informal sector include itinerant trading for women, farming, commercial sex work, child labor, and street vending (Okojie, 1984). A number of commercial sex centers also exist in this sprawling ancient city. Of course, the growth of these commercial sex centers in the city is a trend that has implications for HIV/AIDS and STDs (Omorodion, 1993; Onokerhoraye, 1995).

Benin City serves as a nodal center connecting the southern and eastern states (Delta, Rivers, Bayelsa, Anambra, Imo, Enugu, and Abia States) to a number of western states,
including Lagos, which is the economic nerve center of Nigeria (Figure 5.1). The city connects a number of northern states and the Federal Capital Territory - Abuja to the southern states (Figure 5.1). Figure 5.1 below shows the major routes and the truck stops in Benin City and Edo State.

Figure 5.1: Edo State showing Benin City and major roads to other states
Source: Dept. of Lands and Surveys, Benin City 1986 & Djukpen 2003

Trafficking of women abroad for economic purpose emerges as a major factor in understanding HIV/AIDS in this study site (Cole, 2006). Recent reports show that over 50 percent of Nigerian commercial sex workers (mostly women) who repatriated from Europe
(notably Italy) came to Benin City (IRIN, n.d.; Fauci, 1999; Adesina, 2006; Cole, 2006). In spite of the efforts of the Edo state government to stop the trafficking of women and young girls, most families see trafficking as the only way to survive economically. The implication is that any form of exposure to the world of sexual exploitation puts these girls and women at risk of HIV/AIDS infection. Another factor studied in Benin City site for HIV/AIDS prevalence is that many women and youths do not use adequate protection (condoms) against transmittable diseases during sexual activities (Unuigbe & Ogbeide, 1999; Cole, 2006).

HIV/AIDS-related deaths in Benin City are highly stigmatized; as such, family members of the deceased prefer to report HIV/AIDS deaths as caused by diseases like fever, TB, poisoning, and witchcraft (Omorodion, 1993; Okonofua, 1999; Unuigbe & Ogbeide, 1999; Djukpen, 2003). Although there are no recently published data of HIV/AIDS prevalence rates for Benin City, a 1999 sero-prevalence survey of pregnant women in Edo State indicates a growth from 1 percent to 6 percent between 1993 and 1999. This indicates a high rate of HIV/AIDS prevalence in Benin City, but the geospatial cluster analysis in chapter 4 did not identify Benin City in Edo State as a hotspot. Nonetheless, the selection of these risk factors by respondents seems to create a different perspective for HIV/AIDS prevalence. Therefore, the questions for consideration here are included despite the low rate of HIV/AIDS prevalence in Edo State. Will the assessment of respondents reveal underlying dynamics of risk factors in Benin City, the state capital of Edo State?

There are also strong cultural practices and belief systems that enshrine male superiority into the female psyche during early socialization. Females’ financial dependence on men drives them to ‘survival practices’ that often involve unprotected sexual activities (Groenewold et al., 2005). Additionally, residents of Benin City reportedly have an early age of entry into active
sex life: it is as low as 13 years for girls and 15 years for boys (Omorodion, 1993; Unuigbe & Ogbeide, 1999). This implies that inexperienced youths may be vulnerable to HIV/AIDS. These factors and practices work against the progress of women, especially, in Benin City. With the presence of all these risk factors for HIV/AIDS, the questions that need to be addressed are why is the reported HIV/AIDS rate low in this locality in comparison with the national average? Will respondents identify similar risk factors as in other cities in the high rate zone in Nigeria? The following section presents and discusses the results of the questionnaire that assessed the risk factor perceptions of respondents.

5.3 Results of Structured Questionnaires

The structured questionnaire contained thirty-four items to assess the respondents’ HIV/AIDS risk factor perception (see Table 3.1). As indicated in chapter 3, the Kaiser-Guttman’s eigenvalue-greater-than-one rule and Scree plot cutoff point are applied in the selection of the components or factors for discussion. Overall, these factors explained over 60 percent of the variance. In addition, only variables that scored over 0.50 on the PCA factor loadings in each component made the discussion in identifying any emergent patterns of the risk factor assessment.

The respondents in Benin City identified eighteen (28) risk factors in all, which form five (5) distinct groups from the 34 vulnerability variables in the principal components matrix. The group of factors that emerge in study site one are gender, social/personal behavior, occupation, economic, healthcare system, and socio-cultural practice – circumcision (see conceptual framework in Figure 2.1). Table 5.1 shows the results of the principal components analysis matrix in study site one.
As shown in Table 5.1, the first component is gender-related, as there are two variables with the same score. The dominant variables ‘male dominant power’ and ‘more power in sex decision’ score 0.87 of the factor loading in the component matrix. Second is political and social behavior—war and disorder and lack of condom use, sharing syringes by drug users; third, is occupational—‘commercial sex worker, economic hardship’; fourth is healthcare related and culture—‘visit to hospital, wife/widow inheritance’; fifth is culture based factors—‘female and male circumcision.’ The sixth component is economic/international labor and healthcare related—returnee females, military officers and blood transfusion. Seventh factor in the PCA is gender related—domestic violence and decision-making ability. The eighth component scores negative and is personal behavior related—access to condom and selective use of condoms. The ninth and tenth factors are social and personal behavior related—anal and oral sex respectively.

5.3.1 Factor 1: Gender-related issue - male dominant power

Gender involves much more than just sex (male or female) or the biological classification, but the overall socialization and cultural process that defines how people perceive their role in society and what is important to them. To gain a better understanding of the role of gender in HIV/AIDS risk factor assessment, this study utilizes male and female (gender) in the principal components analysis as described in chapter 3. The response to a question is a function of the overall experience (gender socialization and cultural processes) of a person.

In component or factor one, there are five (5) variables that factor loading scores exceed 0.500 that explain HIV/AIDS risk factor perception of respondents. These are ‘males getting angry when asked to use a condom by spouse’ with a factor loading score of 0.722, ‘fear of being accused of having sex with others’ scored 0.753, ‘who has more say in sexual matters’ scored 0.875, ‘male dominant power’ scored 0.879, and ‘power to decide to use condoms’ scored
0.855. The variables in this component fall into the gender relations category in the conceptual framework. Table 5.1 shows that variables in this component matrix score over 0.700 factor loadings and that gender relationships and activities have influence in the HIV/AIDS risk perception of respondents. The variables indicate that male and female respondents suffer adversely from the activities of males. For example, males have multiple sexual partners and are often not willing to use condoms. The literature shows that females in most African cultures are powerless (Sharp et al., 2003), thereby contributing to a higher risk level of HIV/AIDS.
<table>
<thead>
<tr>
<th>Variables</th>
<th>Components/Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Women not powerful enough for safe</td>
<td>.170</td>
</tr>
<tr>
<td>sex</td>
<td></td>
</tr>
<tr>
<td>Poverty</td>
<td>.094</td>
</tr>
<tr>
<td>Occupation</td>
<td>-.011</td>
</tr>
<tr>
<td>Commercial sex worker</td>
<td>.013</td>
</tr>
<tr>
<td>Truck drivers</td>
<td>.041</td>
</tr>
<tr>
<td>War &amp; social disorder</td>
<td>.068</td>
</tr>
<tr>
<td>Lack of condom use</td>
<td>.129</td>
</tr>
<tr>
<td>Sex with commercial sex workers</td>
<td>.056</td>
</tr>
<tr>
<td>Rape</td>
<td>-.007</td>
</tr>
<tr>
<td>Domestic violence</td>
<td>-.050</td>
</tr>
<tr>
<td>Polygamy</td>
<td>-.111</td>
</tr>
<tr>
<td>Wife sharing</td>
<td>.085</td>
</tr>
<tr>
<td>Female circumcision</td>
<td>.016</td>
</tr>
<tr>
<td>Male circumcision</td>
<td>.030</td>
</tr>
<tr>
<td>Sharing syringes by drug users</td>
<td>.072</td>
</tr>
<tr>
<td>Visit to hospitals</td>
<td>-.085</td>
</tr>
<tr>
<td>Wife/widow inheritance</td>
<td>.016</td>
</tr>
<tr>
<td>Mother to child transmission</td>
<td>.030</td>
</tr>
<tr>
<td>Returnee military officer</td>
<td>-.072</td>
</tr>
<tr>
<td>Returnee females</td>
<td>.081</td>
</tr>
<tr>
<td>Blood transfusion</td>
<td>.098</td>
</tr>
<tr>
<td>Multiple sex partners</td>
<td>-.066</td>
</tr>
<tr>
<td>Get angry when asked to use condoms</td>
<td><strong>.722</strong></td>
</tr>
<tr>
<td>Fear of being accused of sex with</td>
<td><strong>.753</strong></td>
</tr>
<tr>
<td>others</td>
<td></td>
</tr>
<tr>
<td>More power in sex decision</td>
<td><strong>.875</strong></td>
</tr>
<tr>
<td>Male dominant power</td>
<td><strong>.879</strong></td>
</tr>
<tr>
<td>Power to decide use of condoms</td>
<td><strong>.855</strong></td>
</tr>
<tr>
<td>Access to condoms</td>
<td>-.127</td>
</tr>
<tr>
<td>Selective use of condoms</td>
<td>.069</td>
</tr>
<tr>
<td>Oral sex</td>
<td>.024</td>
</tr>
<tr>
<td>Anal sex</td>
<td>-.058</td>
</tr>
<tr>
<td>Mosquito bite</td>
<td>-.206</td>
</tr>
<tr>
<td>Power of witchcraft Power</td>
<td>-.152</td>
</tr>
<tr>
<td>Injection at local drug store</td>
<td>.068</td>
</tr>
<tr>
<td>Eigenvalue</td>
<td>3.57</td>
</tr>
<tr>
<td>Rotated Sum of Squares</td>
<td>10.5</td>
</tr>
<tr>
<td>% of total explanation</td>
<td>10.5</td>
</tr>
<tr>
<td>Cumulative % of total explanation</td>
<td>10.5</td>
</tr>
<tr>
<td>No. of variables in the components &gt;.500</td>
<td>5</td>
</tr>
</tbody>
</table>
The variables in component one relate to the dynamics of male power at home, which raises the HIV/AIDS risk for women.

Gender assessment of HIV/AIDS risk factors

This assessment increases the knowledge of gender roles in the dynamics of HIV/AIDS at the community level. Table 5.2 below shows respondents’ perception of HIV/AIDS vulnerability. It uses the highest factor loading score of each of the components in the matrix. The ten components account for about 66.24 percent of total explanation of the variables or risk factors. Male respondents identified six variables in all as major HIV/AIDS risk factors. These include ‘sex with commercial sex workers,’ ‘poverty,’ ‘visit to hospital,’ ‘female circumcision,’ ‘male dominant power,’ and ‘power to decide use of condom’ (Table 5.2). These variables fall into the social/personal behavior, cultural, and economic group of factors for HIV/AIDS vulnerability (conceptual framework Figure 2.1). Furthermore, male respondents identified economic and occupation-related variables like ‘poverty’ and 'commercial sex work' as significant risk factors. Others include healthcare-related variables like ‘visit to hospital’ and cultural practices like ‘female circumcision’. The other variables, ‘power to decide use of condoms’ and ‘male overall dominant power,’ fall into the gender power category.

Female respondents identified five top scoring variables as major HIV/AIDS risk factors in the first five components of the matrix. Table 5.2 above shows that female respondents identified gender-related variables as important HIV/AIDS risk factors. The identified variables include ‘more power in sex decision,’ which is related to male decision making power; ‘sharing syringes by drug users’; having ‘sex with commercial sex workers,’ which is a personal behavior; cultural practices like circumcision; occupational factors such as ‘commercial sex
work’; and healthcare activities like ‘blood transfusion.’ Women identified these risk factors as reasons for high HIV/AIDS prevalence.

**Table 5.2: Gender and Risk Factor Assessment in Benin City, Edo State***

<table>
<thead>
<tr>
<th>Variables</th>
<th>Males</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poverty</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Commercial sex workers</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Sex with commercial sex workers</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Male circumcision</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Female circumcision</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Sharing syringes by drug users</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Visit to hospital</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Blood transfusion</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>More power in sex decision</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Male dominant power</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Power to decide use of condoms</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

*Based on highest score variables of first five components in the PCA matrix

Although male and female respondents identified similar (major) categories of risk factors (see conceptual framework Figure 2.1), the specific (minor) variables or risk factors that raise the stake for HIV/AIDS vary by gender. For example, in healthcare-related variables, males identified ‘visit to hospital’ while females identify ‘blood transfusion.’ There is also a difference between males and females in the identification of circumcision, as males identify female circumcision and females identify male circumcision. The perception of females here indicates that women are not passive and oppressed people in the locality, but active and have a voice. This view appears in the qualitative analysis that follows in the next section.
5.3.2 Factor 2: Political and social/personal behavior - lack of condom use

Although lack of condom use represents this second factor, four variables in this component score over 0.500. These variables make up the social/personal behavior factors that include ‘having sex with commercial sex workers’ (0.709); ‘sharing unsterilized syringe by drug users,’ with 0.555 of the component; ‘war and social disorder’ at 0.553; and ‘lack of condom use’ at 0.773. The second factor or component generally falls under social/personal behavior and political instability categories in the conceptual framework (Figure 2.1). The non-use of condoms is a personal choice that respondents identified as a risk factor for HIV infection. Research in Benin City and Nigeria has shown that people do not always want to use condoms, which ultimately increases the risk of infection with HIV (Rossem et al., 2001; Ekanem et al., 2005). The identification of variables like lack of condom use when having sex with commercial sex workers and sharing unsterilized syringes by drug users in the same component indicates a high-risk assessment by respondents. Since people do not generally like to use condoms, the risk of infection with HIV becomes high (Ekanam et al., 2005). The results here, like the other researchers' results above, show that people do not always want to use condoms and other personal behaviors like drug use are key risk factors in HIV/AIDS prevalence.

5.3.3 Factor 3: Occupation and economic uncertainty – commercial sex work

There are four variables in the third factor with a PCA factor loading score of over 0.500, namely ‘commercial sex work’ (0.679), ‘truck drivers’ (0.544), ‘women not powerful enough to ask for safe sex’ (0.678), and ‘poverty’ (0.678). This factor or component falls into the occupation (economic) categories with three closely related factors, such as truck drivers, commercial sex workers, and poverty. The third variable in this component is closely linked to gender-related issue and shows that the variables are not mutually exclusive, but fluid and have
interrelationships. The identification of commercial sex workers and truck drivers as an HIV/AIDS risk factor is in tandem with the results of another study in this same study site (Omorodion, 1993). During the focus group discussions, respondents were able to identify places where people visit commercial sex workers within the city and nearby towns such as Oluku and Jatto near Auchi. According to some respondents, the activities of commercial sex workers and truck drivers are key risk factors for the spread of HIV/AIDS.

Closely related to commercial sex work is poverty, a reason many people give for engaging in commercial sex work and “gift sex” or “gratitude sex.” Poverty portrays a highly gendered view as cited here by respondents. Respondents in the focus group interviews stated that poverty and economic hardship forced many young women into commercial sex work. Overall, the respondents in this study sites concur that poverty, commercial sex work, and truck driving are major risk factors for the diffusion of HIV/AIDS. The findings in this study are supported by Adesina’s (2006) study, which highlights the connection between poverty, desperation, human trafficking, and the emergent international sex trade and human trafficking in Benin City.

5.3.4 Factor 4: Healthcare related and culture — visit to hospital

In the fourth component, the healthcare-related category of risk factors scores over 0.500 with ‘visit to hospital’ scoring 0.735 in the matrix. This indicates that respondents identified visits to a healthcare facility as risk factor for HIV/AIDS. There are two tertiary (University of Benin Teaching Hospital and Central Hospital) and many private hospitals as well as clinics in this study site. Respondents identified activities that take place in the hospitals and clinics, such as blood transfusions, injections, abortions, and surgeries as factors that raise the risk of HIV/AIDS. The healthcare sector in Nigeria faces financial crisis from under funding,
which affects the quality of services and overall safety. Other studies have shown that healthcare-related activities (immunizations and blood transfusions) are a source of HIV/AIDS transmission (Gisselquist et al., 2003; Oppong & Agyei-Mensah, 2004). There are local stories of HIV/AIDS infection at the hospital, a rumor expressed in the focus group interviews.

In addition to the healthcare variable, respondents identified ‘wife inheritance’ (0.607) and ‘mother to child transmission’ (0.585) as risk factors in component four. The variable ‘mother to child transmission’ may have a bearing on hospital visits, as there are limited and expensive drugs that an infected mother can take to avoid HIV transmission to their offspring. Wife inheritance, on the other hand, is a cultural practice, which encourages or forces widows to remarry into the late husband’s family. The practice of wife inheritance presents two challenges to people in this study site. One, they will infect others with HIV/AIDS if they are positive. Two, they will be infected by the new spouse. This is paramount as routine HIV tests are not required before remarriage. There is also the issue of domestic violence (abuse) that relates to the non-use of condoms that raises the stake for infection with HIV.

5.3.5 Factor 5: Culture based factors — circumcision

Respondents perceive circumcision (female and male) as the only HIV risk factor in component five with factor loading scores of 0.789 and 0.808 for ‘male circumcision’ and ‘female circumcision’ respectively. This factor falls into the cultural practices category in the conceptual framework (Figure 2.1). It highlights the persistence of this dangerous cultural practice (female circumcision) even though it is illegal. Since respondents identified it as one of the main risk factors, it indicates that people still practice female circumcision. The reasons people still practice female circumcision are twofold, as stated in chapter two: passage into womanhood and mitigating promiscuity among young people.
In summary, Table 5.1 shows that respondents consider few components of different variables as key risk factors in Benin City. The first component in the principal components analysis shows that gender-related variables are identified as high risk factors in the diffusion of HIV. The second identified risk factor is lack of condom use, which indicates a reluctance to use condoms. The next set of HIV/AIDS risk factors includes ‘commercial sex workers,’ ‘visit to hospital,’ and ‘female circumcision.’ The remaining factors are variations of the five groups in the conceptual framework, such as the sixth component highlight economic/international labor and healthcare related—returnee females, military officers and blood transfusion. Some form of domestic violence—decision-making ability makes up the seventh factor. While the eighth component record negative values and relates to personal behavior related—access to condom and selective use of condoms. Social and personal behavior related—anal and oral sex constitute the ninth and tenth factors. Now, the focus of the discussion is the results of the group interview, which forms the basis of the qualitative analysis.

5.4 Results of Focus Group Interviews

The results from the focus group discussions show that some respondents identified and discussed certain risk factors for HIV/AIDS. Extracts of respondents’ perception on these risk factors are presented in the following section. These risk factors include gender and power-related issues, lack of condom use, female circumcision, commercial sex work, and visits to hospitals.

*Gender-related risk factors*

Generally, the dominant exercise of male power influences the decision-making ability of people. The qualitative evidence shows that gender-power relationships influence the ability of females to make safe sex and other domestic decisions that affect vulnerability to HIV/AIDS.
The excerpts below demonstrate that female respondents agree that unequal gender-power relationships affect their ability to avoid HIV/AIDS risk. For example, the same respondent indicated that nobody questions the movement or whereabouts of men in the society. In addition, there is a major difference in sexual experiences between male and female, as men have sexual freedom and women are to remain virgins until marriage. A woman is to remain as a faithful wife to one man (husband) whereas men can flirt and engage in extramarital affairs with concubines and mistresses. The respondents described this practice as ‘gender hypocrisy.’ As the respondent below expresses it, this creates a superior-inferior hierarchical structure, with males on top. The female respondent:

…Males dominate and dictate everything here. . . . Nobody tells him (husbands or males) what to do or questions his activities. . . . It is very oppressive and biased against females. The society has given men that status of being superior. The man (even a very young boy) is socially expected to have girlfriends and experience sex or be active sexually without any form of opposition from society, whereas, girls are expected to be virgins at marriage and be virtuous at all times (Female Respondent 1, Aduwawa, Benin City).

Female economic dependence on males emerges as a risk factor for HIV/AIDS. The argument is that females cannot make independent decisions if they solely depend on males for financial (economic), social, and cultural needs. Female respondent #4 in the Aduwawa sector stated that working/trading females usually give all their income and revenue to their husbands. She added that males treat females as personal property, as such have unlimited access to and control of family resources. Furthermore, men have strong control over the sex life of their wives and in the use of condoms. Some respondents mentioned frequent beating and other forms
of domestic violence against females associated with the request to use condoms. The respondents indicated that domestic violence creates self-esteem problems that emanate from fear, stress, and inability to ask questions, as a study by McDonnell et al. (2005) demonstrates. In that study, the authors link domestic abuse and HIV status to the quality of life of females: “Married women are dependent on their husbands. . . . Women who work or trade give their income to their husbands. . . . Men control all the financial decisions (resources) of the family. . . We are just like owned properties of low value” (Female Respondent 4, Aduwawa, Benin City). Another respondent indicated that “Wife beating and domestic violence is a common thing in our city or community” (Male Respondent 2; Aduwawa, Benin City) while another female respondent added that, “Domestic violence creates fear in the woman and the inability to ask for safe sex” (Female Respondent 4, GRA, Benin City).

Generally, collective decision making by all within the home promotes peace and reduces tension, stress, and violence. However, if only one person (male) makes all the decisions, it can be difficult for the powerless one (female), raising the stress level in the home as indicated in the focus group discussions. Respondents in this study site show that domestic violence does occur because of seemingly small decisions and actions that have considerable influence on the welfare of the entire family.

Beyond the home front, another area where unequal gender power affects relationships is in the overall exercise of rights and privileges in the community. There are gender biases against females in the rights and privileges of inheritance of property and widowhood practices. According to the respondent below, females experience oppression and ill treatment when their husbands or fathers die, as they do not benefit by way of property inheritance. The principle of primogeniture and inheritance law in Benin City stipulates that every property passes to the
eldest son and not daughter(s) or wife when the man (father or husband) dies (Ugiagbe, 2007).

While educated women have, better chances of surviving these widowhood practices than less educated women, females generally suffer hardships when they become widows.

The respondents noted that the current inheritance practices lead to disempowerment of females economically, and this contributes to their vulnerability to HIV/AIDS. The excerpt below indicates that females face discrimination and disinheritance in this study site, factors that increase their vulnerability to HIV/AIDS. Female respondent:

There is a lot of discrimination against women in our society. Women do not have many rights as in overseas countries. When your husband or father dies, you see the level of oppression in our society. The women lose all the properties, like the house and cars, even children. Sometimes . . . a well-placed (educated) woman can suffer as members of her husband’s family seize the opportunity to deal with her. It is . . . payback time for her (Female Respondent 3, Aduwawa, Benin City).

The respondent above shows how females suffer disinheritance in two ways: in their biological and matrimonial family. This is a ‘double tragedy of disinheritance’ for females. Furthermore, another respondent related the inequality that females experience, where they (females) are disempowered and do not have a say in decision-making. The respondent below indicated that only males make the decisions while the females just follow:

Men are powerful, while women do not have much say at home and community.

For example, we have landlord/landlady associations here, where every house owner should have equal right or power, but, women cannot have their ways and their suggestions are not taken into consideration . . . In fact, I attended this meeting once; it was very odd, for women not to have any say. I was not allowed to say a word, in fact I
was asked to leave after sometime. It was oppressive . . . only one woman was in the executive committee. On that day, only two of us attended. Women usually avoid it because they are not allowed to make any important points. . . . Therefore, women do not have equal opportunity in the community in decision-making issues (Female Respondent 1, Sapele Road, Benin City).

As in domestic settings, the community political structure also supports and promotes patriarchal practices so that females do not have much influence in decision-making. Few women hold political offices, which mean they depend on males for most public decisions. This gendered political power structure and relationship affects the safe health practices of respondents, especially women, making it difficult to enact protective legislation. A male respondent stated that succinctly: “There is also, the issue of political power that is exclusively left in the hands of the males in our community. Although a few women do hold political office, they do not strongly influence policies, so they are powerless” (Male Respondent 2, Aduwawa, Benin City). While there are laws to protect women, implementation often is a problem since there are fewer women in law enforcement and in political decision-making positions (United Nation CEDAW Report, 2006). For example, when rape cases occur, male law enforcement officers do not treat it seriously and fairly because there are few or no female officers, as a female respondent indicated, "Rape cases are mostly handled by men. Sometimes these men do not treat the victims as victims, but say that the women deserve to be treated that way or raped because of their behavior" (Female Respondent 4, GRA, Benin City).

Female rape victims seldom report the crime because of the shabby treatment from law enforcement and society, as the respondent below stated that people blame rape victims for the
crime. The society accuses rape victims of immodest dressing and suggestive body language; as such, silence about rape is the best option for a victim. Therefore, the current situation for a victim of rape is a “triple tragedy of burden” in society. The triple burden encompasses ‘victim of the rape crime,’ ‘blame from society,’ and ‘lifelong stigma’ for the crime committed against them. This respondent alluded to this triple tragedy of burden: "I think women do not report all their experiences for fear of being laughed at, or being blamed for the crime, so women generally decline to report their experiences" (Female Respondent 4 GRA, Benin City). This obviously affects the level of protection females receive in society and has a profound influence on HIV/AIDS vulnerability and rates.

The socialization of boys and girls introduce preferential treatments that give boys an edge in adult life and perpetuate the gender gap. Respondents identified differences in privileges given to young children at home, which lay the foundation for gender difference. Accordingly, boys get preferential treatment. This reinforces the power of males later in life. The respondent below shows how families inadvertently install discriminatory tendencies into children of different sexes. She states:

“I see difference from childhood upwards. Our people discriminate against girls from early age in the family. The house chores we give to boys and girls show that we favor boys against girls. This can lead to women’s inability to defend themselves in the future. This puts the females in a second-class citizen position in our society (Female Respondent 3, GRA, Benin City).

This gender discrimination serves as a blueprint for the future inability of females to ask for safe sex, and independence later in life. The tendencies to give children a gender-biased and discriminatory upbringing set the stage for vulnerability and inability of adults (especially
females) to exercise power within a safe limit at home or in society. The expression of the respondent above is loaded and shows the hierarchical structure and the idea of first and second-class citizen positions in society is ingrained into the children from early on.

There are inadequate structures put in place to address the needs of women who have difficulties due to economic or socio-cultural conditions. For example, widowed or divorced women have to fend for themselves, as there are no community economic support systems for widows, which often leads to survival practices or decisions that raise their HIV/AIDS vulnerability. The respondents indicate that these economic and socio-cultural difficulties and the non-existent safety net are causes of concern for HIV/AIDS risk. In some instances, where early remarriage is the only viable option for the survival of a widow, there is no mandatory HIV test before remarriage. There lies the danger, the assumption that everyone is HIV/AIDS free. Hence, respondents state that the surviving mate can become vulnerable to HIV/AIDS:

If the woman is unmarried, widowed, and divorced, she has the sole responsibility of caring for herself and children. Once the women are alone (divorce or death of husbands) the society and government does not have anything (structures) that provide adequately for the protection of women and children. . . . Women are powerless and must respond to the dictates of men. (Respondent 5, Ekewan, Benin City)

It implies that female dependence on males, instead of institutions for survival, creates a higher chance of exploitation and risk. Therefore, the hierarchical structure of gender power relationships is a determining vulnerability factor for HIV/AIDS.

However, there are alternate and opposing views that some respondents expressed during the FGD. Some respondents in the focus group interviews indicated that control of females by men is a good thing in society. In fact, the male respondent below said that such control is
beneficial to handle many social problems, such as an increase in the divorce rate, unwanted pregnancy, and rapes in society. The following excerpt is from this male:

Males exercise control over the women in our society. It is for the benefit of our society economically, socially, and politically. If there is no such control, we will have those problems Americans have like very high divorce rate, single parent households, and the killing of spouses. We do not want that in our society, so controlling females is beneficial (Male Respondent 1, Ekewen, Benin City).

The quote above is a reflection of the thoughts of a few males in the FGD, since some male respondents concurred. This indicates gendered expressions and tendencies that create oppression and vulnerability in society. It is an indication of the fact that males are not interested in sharing or giving up power. It was clear in the focus group discussions that gender-power relations have a strong influence on the level of vulnerability to HIV/AIDS. The exercise of absolute control by males breeds fear and unhealthy relationships at home.

*Lack of condom use*

Participants in the focus group discussion (FGD) were asked the following question: “Why do people refuse to use condoms?” The respondents indicated that people generally know that condom use is helpful in HIV/AIDS prevention, but express dissatisfaction using it. The male respondents stated that condom use is unnatural and does not feel right. Respondents cited socio-cultural values (fertility) and gender relationships for the non-use of condoms. The respondents below noted that sexual dissatisfaction and fertility are reasons people give for not using condoms and added that fertility is a mark of honor for females. Therefore, using condoms does not promote the value or worth of women, as they will have fewer children than desired or none at all.
It is unnatural and not enjoyable . . . people want to have children as a mark of honor in our society . . . My friends always say ‘skin to skin’ is the best ‘sexual’ experience. Well, if they are doing it with different people without condom, then they might have this disease. (Male Respondent 1, Sapele Road, Benin City)

In addition, the female respondent below attributes the non-use of condoms to the oppressive gender power relationships that highlights the authority of males to make the decision to use condoms: "My husband can be very bitter and can land me in serious problems if I ask him to use a condom, it may bring all those negative thoughts. For me, no way, I will not ask that man at all." (Female Respondent 4, Aduwawa, Benin City) This creates animosity and fear at home, which affects the vulnerability of females to HIV/AIDS.

The female respondent above states that asking her spouse to use condoms at home results in domestic violence. She expresses the fear that many females have, which is physical abuse by husbands. As a result, females generally do not ask their husbands to use condoms, which raise the risk factor for HIV/AIDS. Condom use in the family and other heterosexual intimacy is not a popular practice.

Respondents give reasons for limited use of condoms in spite of its efficacy in retarding HIV/AIDS transmission and other STDs. These reasons include lack of sexual satisfaction, cultural barriers, and societal expectation of fertility (Olley & Rotimi, 2003). The results in this study, like in other studies, show that some people do not want to use condoms despite the relative safety, awareness, and acceptability at the community level (Olley & Rotimi, 2003). Studies evaluating condom use by young people in Nigeria have indicated that it has not fully been accepted (Dada et al., 1998; Olley & Rotimi, 2003). These studies have shown that over 50
percent of these youths do not use condoms consistently, even though they know it is useful and safe (Dada et al., 1998; Olley & Rotimi, 2003).

Commercial sex workers and truck stops/drivers

The political economy structure or exigency that results in poverty creates vulnerable groups and vulnerable places. As shown earlier in chapter 2, these economic conditions (poverty and unemployment) create vulnerability. The respondents indicate that occupations like commercial sex work and truck driving are risk factors for HIV/AIDS. They gave specific reasons for women going into commercial sex work: it includes poverty, unemployment, and general economic hardship. The expressions of respondents in this section highlight both economic (occupations) as risk factors as shown in the conceptual framework (Figure 2.1). For example, the respondents below link poverty to activities at truck stop as a risk factor for HIV/AIDS:

I think poverty … can lead a person to do something that is bad.

Everywhere you turn, you see people who were unemployed. If you go to motor parks or bus stops, you will see what I am talking of. For example, here at Ikpoba hill park and at Oluku, during the weekend or at night, you will see young women trying to get the truck or trailer drivers to ‘help’ them. They call it ‘hustling.’

(Male Respondent 2, Ikpoba, Benin City)

As one of the HIV program officer in the state, many young people I meet, who engage in questionable behavior, give hardship (poverty) as the major reason for what they do. The women always complain that unemployment and hardship, and their inability to support themselves; hence, they have to find a way to survive. (Female Respondent interview, Ring Road, Benin City)
I think hardship leads people to commercial sex work or what some call “hustling life” especially here in Oluku. Many of the women here who are involved in this job say it is not a good job, but they must survive. Some of these women come from other states, like Delta and the north. (Female Respondent 3, Oluku, Benin City)

The three respondents above show that economic difficulties lead people to commercial sex activities at Oluku (truck stop), and they describe commercial sex work as ‘hustling,’ a term that gives a legitimate face to struggle for daily survival in Nigeria. The apparent justification of commercial sex work (CSW) with poverty and economic hardship only heightens HIV/AIDS vulnerability.

The comments made by respondents indicate that certain activities that take place in these locations (truck stops, brothels), such as alcohol use, drugs, and low condom use, creates the key factors in HIV/AIDS infection. This alludes to the significance of the concept of place in health geography described in chapter 2. Every place has characteristics that define it and in this case, activities like high alcohol use, CSW presence, and low condom use highlight the vulnerability at truck stops. The excerpt below refers to this fact:

The presence of ‘truck or bus stops’ around our city is a factor for HIV/AIDS. Places or bus stop stations like Oluku, Iyaro, Aduwawa and Jatto near Auchi about 60 km (37 miles) away are hot spots for HIV/AIDS. If you go to those places in the evening or weekends, you will see our young women selling themselves… In fact, whenever, I travel through those truck stops and I see these young girls flocking around those truck drivers, I feel very sorry for their family and the society as a whole. (Female Respondent 1, Aduwawa, Benin City)
From the start, the respondents in Benin City show that certain occupations, such as commercial sex work and truck driving, put people at a high risk for HIV/AIDS and are closely associated with poverty and economic hardship, which then serves as pull factor for young people to these truck stops. Respondents mentioned truck drivers and stops, implying that truck stops are places where people engage in sexual activities (social and personal behavior categories of risk factors) that might elevate the risk for HIV/AIDS.

Female circumcision

The primary reasons for female circumcision among the Benin people are two-fold: to protect children from promiscuity and as a passage to womanhood (Omorodion, 1989). Female circumcision, which people still engage in even when it is illegal and controversial, is another risk factor that participants identified for HIV/AIDS prevalence. Although there are no direct links to HIV/AIDS statistics in this study site, respondents identified it as a risk factor because of the ‘contaminated’ instruments used during group circumcision. Again, there is no scientific evidence that these ‘contaminated’ instruments really transmit HIV in females. However, the excerpts below show that people are apprehensive of the tools used in the circumcision:

Female circumcision can lead to HIV/AIDS. I think so because the instruments used for circumcision may be dirty (contaminated) and female circumcisions not always performed in the hospitals. . . Sometime families (women) take their female children to rural areas for circumcision, performed in groups setting during youth initiation ceremonies. (Female Respondent 3, Aduwawa, Benin City)

I think female circumcision practices, especially in the villages (outside Benin City) where group circumcision occurs during age grade initiation
ceremonies, can be a source of HIV infection. I am from Edo North - Esan and Etsako. My people practice adult female circumcision during initiation of age grade for both males and females. (Male Respondent 4, Ugbowo, Benin City)

It is obvious that participants in this focus group interview identified female circumcision as an HIV/AIDS risk factor. Above, respondent number 3 states that people still travel to the village with their young or infant female children to perform circumcision. As the respondents reveal, female circumcision is both a human rights issue as well as a dangerous cultural practice against womanhood. However, male circumcision is different because qualified healthcare personnel like doctors and nurses do perform male circumcisions at hospitals or clinics. Generally, the respondents in this focus group discussion do not associate male circumcision with risks to HIV/AIDS. In spite of the strong views of respondents, there is no hard evidence linking female circumcision to HIV/AIDS in the study area. The respondents mentioned that women travel to the village to perform female circumcision on their daughters, but none of the women in the FGD admit practicing it. As a result, this is an indication that the assertion that female circumcision is a risk factor could be an academic one rather than the reality.

*Visit to hospital*

The healthcare facilities and sector in Nigeria, as in many other African nations, face financial problems and low quality of service, which researchers associate with HIV/AIDS risk (Gisselquist et al., 2002; Gisselquist et al., 2003). Respondents indicate that hospitals are a source of HIV infection, attributable to the use of contaminated syringes, blood transfusion, abortion, and surgery. The excerpt below shows that respondents identify hospital visits and treatments at local drug/medicine stores as sources of HIV/AIDS risk:
The hospitals (public or private) are unsafe places to go for treatment in our community. The syringes and operation instruments are not very safe for me to trust them with my life…. ‘Local drug/medicine stores’ owners who administer injections may use completely unsterilized or inadequately treated needles on clients. (Male Respondent 1, Ekewan, Benin City)

Some respondents in the focus group discussion stated that owners of local drug/medicine stores administer injections to clients and may use contaminated syringes, which respondents consider a risk for HIV/AIDS. The respondents stated that the quest to make quick money (corruption) accounts for these practices and raises the risk for HIV/AIDS. Although there is no data and research linking HIV/AIDS to drug/medicine stores in this study site, respondents expressed concern about the possibility of HIV/AIDS transmission at these healthcare facilitates.

I also think that the hospitals and local drug/medicine stores can be a source of this disease. . . . Local drug/medicine sellers can be a source, if they use fake and unsafe needles or recycle needles not well treated. I just think of these possibilities due to the economic hardship and the ’sharp’ corrupt practices by ‘quacks’ in the health sector. (Male Respondent 3, Oluku, Benin City)

Generally, respondents in Benin City indicated their suspicion of using private and public hospitals or clinics because of fear of HIV/AIDS transmission through contaminated syringes. The research of Adegboye et al. (1994), and Oppong and Agyei-Mensah (2004) indicate that health care facilities and the practices within create high probability for HIV/AIDS infection. For example, this male respondent at the Ugbowo section noted that hospitals are places where people can get HIV: "Some people do not take injections at the hospitals. . . I am one of those. I do not trust those syringes at all". (Male Respondent 3, Ugbowo, Benin City)
Another possible reaction to the healthcare risk factor is the decision not to use the healthcare facilities, as stated by some of the previous respondents. These respondents stated that they do not accept injections at any healthcare facilities (public and private hospital or drug/medicine) for fear of contracting HIV or other diseases. A lack of trust in the health care system has major implications for those already affected by HIV/AIDS who do not want to go for treatment and for those affected with additional health issues. For example, hospital personnel (doctor and nurses) who do not know how to treat people with sensitive issues can alienate patients, as argued by Flynn and Taylor (2009) in their study of Canadian Black women. Moreover, this type of fear generally accounts for the low immunization coverage against many childhood diseases like measles, polio, and diphtheria in Nigeria (Djukpen, 2005). Therefore, lack of confidence in the health care system adversely affects both preventive and curative medicine, which is an important issue in HIV/AIDS. Besides, a risk factor closely associated with healthcare system is blood transfusion. Blood transfusion appears to account for 5-10 percent of new HIV infections annually in developing nations (Tapko et al., 2009). A 2009 report by Tapko et al. showed that about 75 percent of blood was screened for HIV before being used for transfusions in Africa, while 25 percent was not screened: that is enough to influence HIV/AIDS rates. The unscreened 25 percent of blood is imperative given the rate of HIV/AIDS in Africa. Hence, respondents below linked high risks of HIV/AIDS to blood transfusions that occur during surgery:

When women go to the hospital, they are exposed to treatments or procedures such as blood transfusion, C-section during delivery. I believe that women can get HIV through all these treatments at the hospital. I have one experience, long time ago, one woman, who went to the hospital to deliver a baby,
got some rare sickness from the hospital. The woman died from the disease later. Today I suspect it is HIV/AIDS. (Female Respondent 2, Ugbowo, Benin City)

Blood Transfusion . . . there are many stories of people contracting HIV from hospital after operation. I remember some years ago (in the 1990s) a doctor committed suicide because he was HIV positive and that he had infected a young girl with the disease through blood transfusion. (Female Respondent 3, Aduwawa, Benin City)

The above excerpts from the FGD indicate that iatrogenic transmission through blood transfusion and the possible use of contaminated syringes in the healthcare system are HIV/AIDS risk factors of concern to respondents. Studies in other areas indicate that blood transfusion and iatrogenic transmission of HIV is a risk factor for HIV/AIDS (Gisselquist et al., 2002; Gisselquist et al., 2003; Oppong & Agyei-Mensah, 2004; Schneider & Drucker, 2006). In this study, respondents also identified blood-related issues and the health care system as key risk factors. Therefore, to these respondents, the use of healthcare facilities poses a high risk for HIV/AIDS transmission.

5.5 Conclusion

This chapter shows two trends of HIV/AIDS risk factor assessment by the respondents in this study site: a general perception and gender-specific influence on the assessment. In the general perception of HIV/AIDS risk factors, respondents identified five components as risk factors for HIV/AIDS in the principal components analysis (PCA). These risk factors include gender relations (inability to make decision as females), social/personal behavior (lack of condom use), occupation (commercial sex work), healthcare (visits to hospitals and blood
transfusions), and culture (female circumcision). These dominant HIV/AIDS risk factors or components score very high in the PCA matrix in this study site.

In the gender risk factor assessment analysis, male respondents identified six risk factors and females identified five risk factors for HIV/AIDS. This testifies to the fact that at the community level there is difference between males and females in the perception or assessment of risk factors. For example, male respondents identified the following variables as major HIV/AIDS risk factors: ‘poverty,’ ‘sex with commercial sex workers,’ ‘female circumcision,’ ‘visit to hospital,’ ‘power to decide to use a condom,’ and ‘male dominant power.’ On the other hand, female respondents identified the following factors: ‘commercial sex work’ (occupation), ‘male circumcision,’ ‘sharing syringes by drug users,’ ‘blood transfusion,’ and ‘male power to make decision on sex matters.’ The difference in assessment between the respondents based on sex in this study site shows that the gender influences perception of risk factors. This seemingly simple classification highlights the relevance of the fact that gender characteristics and socialization do influence the choices, opportunities, challenges, and activities of people as indicated in the literature (Gilbert & Walker, 2002; Macionis, 2007; Wangila, 2009; Flynn, 2011). In addition, the focus group interviews also indicate that respondents have perspectives on these risk factors. The quotes in this chapter show that respondents identify gender power relations, lack of condom use, commercial sex workers, visit to hospital and female circumcision as risk factors. The perspectives of respondents in this research are profound and revealing, creating a better and insightful understanding of the key HIV/AIDS risk factors for the study site.

In all, the respondents identify some of the key components of risk factors in the conceptual framework in Benin City. Drawing from the conceptual framework, risk factors within five out of the seven major components clustered in the selection. For example, within
the health care system component, visits to hospitals for treatment and blood transfusion clustered together. In terms of culture, female circumcision seems to be the selected risk factor, even when there is no specific evidence of anyone in the study site contracting HIV from the practice. From the start, it is obvious that CSWs who are in that line of work due to economic reasons (poverty) is a key factor in HIV/AIDS vulnerability. To some extent, being male or female (gender) also influenced the choice of risk factors associated with HIV/AIDS in Benin City.
CHAPTER 6
CASE STUDY 2: PRINCIPAL COMPONENTS ANALYSIS OF THE PERCEPTION OF HIV/AIDS RISK FACTORS IN MAKURDI

6.1 Introduction

The geographic, cultural, and socio-economic peculiarity of a place influences the level of vulnerability to diseases. Understanding the spatial distinctiveness vis-à-vis HIV/AIDS is paramount for management since places are unique and defined by certain characteristics and the intensity of human interaction. This chapter examines the HIV/AIDS risk factor assessment in study site two, Makurdi. First, it discusses the geographic characteristics of this study site in relation to HIV/AIDS. Second, the general perception of respondents uses gender (male and female) for the assessment of HIV/AIDS risk factor. The establishment of a set of risk factor assessments by respondents increases understanding of HIV/AIDS vulnerability at the community level.

6.2 Study Site Description

Makurdi is the administrative headquarters of the Makurdi Local Government Area and is the capital city of Benue State. It is located in the north central geopolitical zone (Figure 1.1) and is surrounded by the following states: Nassarawa, Taraba, Kogi, Enugu, Ebonyi, Cross River States, and the Republic of Cameroon. The Federal Capital Territory – Abuja is about 205 miles northwest of Makurdi, and there is daily transportation between the two cities. People commute daily from other mid-sized towns—such as Gboko, Oturkpo, Katsina-Ala, Jos, and Lafia—to Makurdi for economic and social reasons. This increase in interaction between Makurdi and other towns is a recipe for high HIV/AIDS prevalence in the community.
Makurdi’s location provides the status and function as a “gateway” city to both the northern and southeast states of Nigeria and the Republic of Cameroon. There are different modes of transportation such as roads, rail, river, and air that exist in Makurdi. The location of Makurdi on the Benue River provides water transportation within Nigeria and to/from the Republic of Cameroon. Makurdi is also a terminal on the main railway running north from Port Harcourt to Jos and Kaduna, and serves as a major truck stop with links to many states in Nigeria (Benue State of Nigeria, 2010).

*Makurdi and HIV/AIDS: History and Socio-cultural Characteristics*

In 2010, Makurdi had an estimated population of 311,207 and a projected annual population growth rate of 2.6 percent (Ojoawo et al., 2006; Benue State of Nigeria, 2010). The major ethnic groups in Makurdi include the Tivs, Idoma, Jukun, Igalla, and people from other ethnic groups in Nigeria as well as foreigners (Abeghe, 2005). The dominant religion in the city is Christianity with a small population of Muslims. The people live in relative peace (low crime rates) and are very hospitable and friendly to visitors. In terms of occupation, the residents are mostly farmers, civil servants, students, and traders. The city has a well-planned road network and maintains high environmental standards (little refuse seen on streets) because of the strict enforcement of environmental sanitation legislation (Ojoawo et al., 2006). Makurdi serves as a base for the Nigerian Air Force (Jaguar aircraft squadrons), and some of the officers have served in Liberia and Sierra Leone and other African nations as United Nations and African Union peacekeepers (Utulu & Lawoyin, 2007; Benue State of Nigeria, 2010).

Makurdi city and adjoining rural areas are predominantly agriculture-based with sizable mineral resources production. Makurdi and its environs produce a variety of fruits such as oranges and mangoes in commercial quantities, which provide the raw materials for the juice
canning industries. Other crops produced in commercial quantities include yams, cassava, soybeans, groundnuts, rice, and sweet potatoes. The establishment of a fertilizer blending plant in Makurdi has further boosted agro-allied production and has positioned the city as the main agricultural processing area in the region, which attracts people who trade and ship these crops nationally, and internationally (Benue State of Nigeria, 2010).

However, this increase in population, resulting from the high agro-based production and other activities, raises the interaction level of the people, which provides the possibility of people mixing freely in different contexts and place, such as at truck stops and bars. This interaction has serious implications for HIV/AIDS prevalence and vulnerability. Indeed, Makurdi has a high rate at over 10 percent for many years (Onwuliri & Mohammed, 2001; Federal Ministry of Health, 2007). Generally, like most Nigerian cities, Makurdi suffers from social, economic, and political problems. For example, high rates of unemployment and economic hardship result in survival activities that raise the HIV/AIDS risk factor (Utulu & Lawoyin, 2007). Makurdi’s socio-cultural environment with practices such as wife/widow inheritance, female circumcision, tattooing, scarification, and polygamy can facilitate the spread of diseases like HIV/AIDS. In addition, Osagbemi et al. (2004) note that people in the surrounding states or regions (Jos area) engage in the cultural practice of spouse sharing.

Furthermore, the literacy rate is low, especially among females, and the poverty rate is high in the city and Benue State in general. The less educated population and higher poverty rate, especially among females, creates situations where people are socio-culturally and economically disadvantaged. There is a busy truck stop in the north bank district of Makurdi that attracts truck drivers, commercial sex workers, and other unemployed individuals, increasing economic activities that present a risk factor for HIV/AIDS proliferation (Utulu & Lawoyin,
All these factors have implications for the HIV/AIDS prevalence rates in the city and state. The results of the principal components analysis and the focus group discussion in this study site suggest the fact that respondents identify certain key risk factors for the proliferation of HIV/AIDS.

6.3 Results of Structured Questionnaires

The factors in the principal components matrix show a distinct set of HIV/AIDS risk in this study site – Makurdi (Table 6.1). As shown in chapter 3, the Kaiser-Guttman’s rule - eigenvalue-greater-than-one and Scree plot cutoff point are applied in the selection of the risk factors for discussion. Eight components emanated from the PCA that accounted for about 65 percent of total explanation. This section discusses the highest scoring variables in each principal components matrix and uses these factors to compare the study sites. Furthermore, the name of each risk factor in this section is the highest scoring variable within a component in the matrix. As shown in chapter 2, this research classifies HIV/AIDS risk factors into seven broad categories that represent the conceptual framework in chapter 2 (Figure 2.1). Respondents identified risk factors that fall within four broad categories of the conceptual framework: social and personal behavior, cultural practices, gender, and healthcare system.

The principal risk factors in this study site are wife inheritance, male dominant power, circumcision, lack of condom use, and anal sex. These have the highest scores in each component. In addition to the highest scoring factors, the discussion here includes other risk factors that have a factor-loading score over 0.500 in assessment by respondents.
<table>
<thead>
<tr>
<th>Variables</th>
<th>Component / Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women not powerful enough for safe sex</td>
<td>0.055  0.086  0.001  0.104  0.009  <strong>0.781</strong>  0.134  0.130</td>
</tr>
<tr>
<td>Poverty</td>
<td>0.067  0.102  0.022  0.377  0.003  <strong>0.727</strong>  0.157  0.149</td>
</tr>
<tr>
<td>Occupation</td>
<td>0.035  -0.016  0.217  <strong>0.534</strong>  -0.010  0.505  0.065  0.254</td>
</tr>
<tr>
<td>Commercial sex worker</td>
<td>0.450  0.152  0.128  0.348  0.002  0.375  -0.016  0.379</td>
</tr>
<tr>
<td>Truck drivers</td>
<td><strong>0.561</strong>  0.075  0.251  0.204  0.007  0.317  0.091  0.296</td>
</tr>
<tr>
<td>War &amp; social disorder</td>
<td>0.200  -0.023  0.163  <strong>0.733</strong>  -0.027  0.167  0.031  0.104</td>
</tr>
<tr>
<td>Lack of condom use</td>
<td>0.030  0.003  0.081  <strong>0.758</strong>  0.100  0.236  0.005  0.021</td>
</tr>
<tr>
<td>Sex with commercial sex worker</td>
<td><strong>0.595</strong>  0.016  0.146  0.207  -0.062  0.253  0.018  0.372</td>
</tr>
<tr>
<td>Rape</td>
<td><strong>0.603</strong>  -0.049  0.426  0.239  -0.034  0.190  0.187  0.069</td>
</tr>
<tr>
<td>Domestic violence</td>
<td>0.398  -1.08  <strong>0.638</strong>  0.142  -0.082  0.171  0.174  0.118</td>
</tr>
<tr>
<td>Polygamy</td>
<td>0.180  -0.051  <strong>0.613</strong>  0.181  0.091  0.380  0.191  -0.013</td>
</tr>
<tr>
<td>Wife sharing</td>
<td>-0.079  0.173  <strong>0.614</strong>  0.082  0.067  -0.213  0.110</td>
</tr>
<tr>
<td>Female circumcision</td>
<td>0.215  0.103  <strong>0.700</strong>  0.168  0.024  0.141  0.075  0.007</td>
</tr>
<tr>
<td>Male circumcision</td>
<td>-0.009  0.065  <strong>0.803</strong>  0.232  -0.005  0.004  0.041  0.100</td>
</tr>
<tr>
<td>Sharing syringes by drug users</td>
<td><strong>0.667</strong>  0.104  0.286  0.110  0.080  0.177  -0.052  0.106</td>
</tr>
<tr>
<td>Visit to hospital</td>
<td>0.431  -0.064  <strong>0.639</strong>  0.012  -0.020  0.053  0.060  0.177</td>
</tr>
<tr>
<td>Wife/widow inheritance</td>
<td><strong>0.778</strong>  0.005  0.216  0.046  0.050  0.148  0.029  0.025</td>
</tr>
<tr>
<td>Mother to child transmission</td>
<td><strong>0.751</strong>  0.038  0.095  0.133  0.017  0.230  -0.070  0.130</td>
</tr>
<tr>
<td>Returning military officers</td>
<td><strong>0.772</strong>  -0.024  0.273  0.074  -0.032  0.007  -0.073  0.095</td>
</tr>
<tr>
<td>Returnee females</td>
<td><strong>0.661</strong>  0.003  0.273  0.074  -0.032  0.007  -0.073  0.095</td>
</tr>
<tr>
<td>Blood transfusion</td>
<td>0.079  0.017  <strong>0.125</strong>  0.407  0.055  0.427  -0.467  -0.283</td>
</tr>
<tr>
<td>Multiple sex partners</td>
<td>-0.125  0.032  -0.041  <strong>0.087</strong>  -0.005  0.104  -0.021  <strong>0.766</strong></td>
</tr>
<tr>
<td>Get angry when asked to use a condom</td>
<td>-0.004  <strong>0.743</strong>  0.130  0.004  0.001  0.091  -0.079  0.073</td>
</tr>
<tr>
<td>Fear of accusation to have sex with others</td>
<td>-0.053  <strong>0.674</strong>  -0.020  0.035  -0.102  0.049  -0.052  -0.191</td>
</tr>
<tr>
<td>More power in sex decision</td>
<td>0.018  <strong>0.843</strong>  0.050  -0.090  0.007  0.047  -0.032  0.122</td>
</tr>
<tr>
<td>Male dominant power</td>
<td>0.090  <strong>0.892</strong>  -0.051  0.061  0.006  -0.017  0.023  0.044</td>
</tr>
<tr>
<td>Power to decide use of condoms</td>
<td>0.021  <strong>0.868</strong>  -0.073  0.068  0.029  0.040  -0.020  0.153</td>
</tr>
<tr>
<td>Access to condoms</td>
<td>-0.079  -0.091  <strong>0.223</strong>  -0.172  0.060  0.233  <strong>0.663</strong>  -0.125</td>
</tr>
<tr>
<td>Selective use of condoms</td>
<td>-0.011  0.063  -0.030  0.008  0.097  0.040  <strong>0.758</strong>  0.029</td>
</tr>
<tr>
<td>Oral sex</td>
<td>-0.028  0.029  0.166  -0.005  <strong>0.676</strong>  -0.138  -0.039  0.227</td>
</tr>
<tr>
<td>Anal sex</td>
<td>-0.033  -0.057  -0.125  -0.063  <strong>0.826</strong>  0.078  0.045  -0.037</td>
</tr>
<tr>
<td>Mosquito bite</td>
<td>0.062  0.153  0.076  -0.391  0.481  -0.258  -0.006  0.250</td>
</tr>
<tr>
<td>Power of witchcraft</td>
<td>0.049  -0.094  -0.057  0.102  <strong>0.749</strong>  0.035  0.198  -0.114</td>
</tr>
<tr>
<td>Injection at local drug store</td>
<td>0.015  0.011  0.011  0.112  <strong>0.781</strong>  0.097  0.026  -0.082</td>
</tr>
</tbody>
</table>

Eigenvalue Rotated Sum of Squares: 4.41  3.44  3.33  2.76  2.61  2.50  1.51  1.49
% of total explanation: 12.97  0.11  9.80  8.13  7.70  7.36  4.46  4.39
Cumulative % of total explanation: 12.97  3.09  32.89  41.03  48.73  56.10  60.56  64.96
No. of variables in components >0.500: 8  5  5  4  4  2  2  1
6.3.1 Factor 1: Cultural practice - wife/widow inheritance

Wife/widow inheritance, which involves the marriage of a widow to male relatives of the late husband, is an acceptable cultural practice in this study site (Utulu & Lawoyin, 2007). In the field survey, respondents identified wife inheritance as a high risk factor with a factor loading score of 0.778 in the first factor of the principal components matrix (Table 6.1). Since HIV testing is limited and stigmatized, people generally do not know their HIV status, even when a spouse dies of HIV/AIDS. Therefore, remarriage without testing may expose the surviving mate and new spouse to the risk of HIV. In addition to wife inheritance, other variables score over 0.500 in this component in the matrix (Table 6.1). These include returning military officers, returnee females, rape, and sharing syringes by drug users.

The variables ‘returning military officers’ and ‘returnee females’ represent the next high scoring variables in component one. The presence of a military/air force base in Makurdi explains the selection of this risk factor by respondents. The respondents indicated that the participation of officers in peacekeeping activities in Liberia and other foreign missions accounts for the high HIV/AIDS rate in the city. Ogboi et al. (2010) presented similar results in their study that shows the contributory role of military officers in HIV/AIDS proliferation. In that study, Ogboi et al. (2010) identified activities such as rape, sex gifts, and patronizing commercial sex workers by officers in the war areas as sources of HIV/AIDS transmission.

'Returnee females' is the other variable that is associated with the activities of young females who go to nearby cities like Gboko, Otukpo, Abuja, and Jos for economic survival or hustling. Hustling or economic survival in this context denotes commercial sex work or sex for material gains (Utulu & Lawoyin, 2007). The respondents attributed high HIV/AIDS rates in
Makurdi to the activities of these returning females from these nearby cities, which supports the hypothesis that HIV/AIDS comes from sources outside of a local community.

Furthermore, the respondents identified ‘rape’ and ‘sex with commercial sex workers’ as risk factors in this component (Table 6.1). The presence of two universities and the truck stop at Lafia Park are strong reasons for the assessment of ‘rape’ and ‘sex with commercial sex workers’ as key risk factors for HIV/AIDS. There has been a spike in the number of rape crimes against females in Nigerian universities in recent years (Elegbeleye, 2006). Hence, with two universities in the city and the reported national increase in university rape crimes, there is the possibility of linking rape to HIV/AIDS. The respondents also mentioned gang rape as a high risk factor for HIV/AIDS in their community during the focus group interviews. Since commercial sex workers are present in every Nigerian city, it is also no surprise that respondents identified them as a source of HIV/AIDS.

Another variable respondents identified is ‘sharing syringes by drug users’ in the principal components analysis matrix. The fact that ‘rape’ and ‘sharing syringes by drug users’ are identified on the first component indicates a strong relationship between drug use and rape. In the literature, there is a link between rape, drug use, and HIV/AIDS (Fisher et al., 1995; Fitzgerald & Riley, 2000). Granted that universities are institutions of higher learning and centers for producing future leaders, the characteristics of the young people who attend these institutions might be responsible for the linkage of rape to HIV/AIDS risk. As Elegbeleye (2006) puts it, these individuals are full of energy and inexperienced, which under the influence of drugs or mere competitiveness can lead to committing this despicable act: rape. Hence, the combination of these two variables—‘rape’ and ‘sharing syringes by drug users’—is important for understanding HIV/AIDS prevalence in Makurdi.
In summary, respondents identified the cultural practice of wife inheritance as an HIV/AIDS risk factor. Although there is no published data that directly links the practice of wife inheritance to HIV/AIDS infection, respondents selected it as a risk factor. The other variables in this component, such as ‘rape’ and ‘sharing syringes by drug users,’ fall within the social and personal behavior group, and returning military officers, returnee females, and commercial sex workers fall into the occupation category of the conceptual framework (see Figure 2.1).

6.3.2 Factor 2: Gender relations — male dominant power

There are five variables with factor loading scores over 0.500 in the second component of the matrix that accounts for 10 percent of total explanation, all falling into the gender relations category (Figure 2.1). The variable with the highest score is ‘male dominant power’ with a score of 0.892 in the components matrix (Table 6.1), which captures the role of gender power relationships in the risk to HIV. Males dominate the decision-making process in domestic and community relationships, which has a deleterious impact on female HIV/AIDS risks (Osmond et al., 1993; Ampofo, 2001; Sharp et al., 2003). Indeed, the results of the analysis in this chapter support the assertion that males dominate the decision-making process both at home and in the community. Generally, research shows that males are very powerful in African societies and the socialization processes give males the power to dominate females from early childhood (Perry, 1998; Craddock, 2000; Thomas, 2000; Wojcicki, 2005). Gender differences have a profound influence on risks to HIV/AIDS, especially leaving females at a disadvantage (Heise & Elias, 1994). This culturally endowed superiority of men (i.e. the gender inequality issue) plays a key role in the vulnerability of women to HIV/AIDS. The respondents in this study acknowledged the role of male power as a key risk factor as it prevents females from taking safe measures against HIV/AIDS.
Other variables in this component are ‘power to decide use of condom’ and ‘who has more power in sex decisions.’ In addition to that, respondents classified ‘spouse getting angry when asked to use condoms’ and ‘fear of being accused of having sex with others’ as HIV/AIDS risk factors (Table 6.1). The second component in this matrix clearly highlights the prominence of gender-related factors as a key risk factor. Hence, the respondents in this study site identified gender-based factors as risk for HIV/AIDS. This demonstrates the level of understanding that respondents have on gender-related issues. For example, participants in the FGD identified some gender related influences as key HIV/AIDS risk factors such as ‘male dominant power’ and ‘fear of being accused by spouse.’ Below is a presentation of the influence of gender differences on HIV/AIDS risk factor assessment.

**Gender assessment of HIV/AIDS risk factors**

Research shows that gender-influenced perceptions of HIV/AIDS risks due to the socialization process are prevalent in the community (Sharp et al., 2003). This section examines how male and female responses differ in HIV/AIDS risk assessment. It uses the highest scores of each of the first five components in the principal components analysis. Table 6.2 indicates that male respondents identified wife inheritance, power to decide use of condoms, and anal sex as major risk factors for HIV/AIDS. The limited use of condoms is often associated with the decision-making power of males at home and in the community. This corroborates with other studies, which show that condom use is limited and that males determine the use in Nigeria (Osmond et al., 1993; Rossem et al., 2001). The result demonstrates and confirms that males are indeed powerful decision makers and ultimately key players in the proliferation of HIV at the community level.
The female respondents, on the other hand, specifically selected ‘mother-to-child
transmission’ and ‘male dominant power’ as risk factors for HIV/AIDS. These variables reflect
the gender bias that exists and the experience of females with mother-to-child transmission and
male dominant power as risk factors for HIV/AIDS. Another risk factor that female respondents
identified was the ‘power of witchcraft,’ a common misconception of HIV/AIDS risk factor in
the literature. Generally, witchcraft is not a positively documented risk factor for HIV/AIDS, an
indication of the influence of unfounded rumors and stigma that persist at the community level.
Witchcraft involves the use of supernatural (demonic) powers to inflict pains or illness on
people, in this case, the use of witchcraft power to cause HIV infection on other people.

Table 6.2: Gender and Risk Factor Assessment in Makurdi, Benue State*

<table>
<thead>
<tr>
<th>Variables</th>
<th>Males</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of condom use</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Male circumcision</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Wife/widow inheritance</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Mother to child transmission</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Male dominant power</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Power to decide use of condoms</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Anal sex</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Power of witchcraft</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

*Based on highest score variables of first five components in the PCA matrices for males and
females separately (tables not included here)

The difference in perception between males and females is that male respondents identify
culture (wife inheritance) and personal behavior (condom use, anal sex) related risk factors,
while female respondents identify healthcare factors (mother to child transmission), the gender
factor (male dominant power), and power of witchcraft (a misconception) as risk factors.
6.3.3 Factor 3: Cultural practice — male circumcision/polygamy

Circumcision (male and female), domestic violence, and polygamy are variables that score over 0.500 in the third component and account for about 10 percent of total explanation. Table 6.1 shows male circumcision (0.803), female circumcision (0.700) with domestic violence (0.638), and polygamy (0.613) factor loading scores in the component matrix. The respondents in this study site associate circumcision with HIV/AIDS as a risk factor. However, female and not male circumcision is often associated with high risk of HIV/AIDS. As discussed elsewhere, the practice of male circumcision is often associated with low prevalence of HIV in regions like West Africa. The respondents here scored male circumcision as a high risk factor, which might be referring to rural settings where unsafe male circumcision takes place. The use of contaminated instruments for such group circumcision may account for this assessment.

The other variables respondents identified here were ‘domestic violence’ and ‘polygamy,’ which relates to the dynamics of gender relationships. In this patriarchal society, males have the power to control and make decisions at home and community, which is manifested in reports of domestic violence and the practice of polygamy.

6.3.4 Factor 4: Social and personal — lack of condom use

The fourth component in the principal components matrix accounts for 8 percent, with four variables scoring over 0.500: these are lack of condom use, war and social disorder, truck drivers, and wife sharing (Table 6.1). This component has two variables that score over 0.700, ‘war and social disorder’ and ‘lack of condoms’ as risk factors for HIV/AIDS (Table 6.1). Lack of condom use is a personal choice that respondents also identified as a risk factor that falls into the social and personal behavior group in the conceptual framework (Figure 2.1). Even though the use of condoms is a personal choice, it is highly gendered as males and females have strong
opinions about when and how to use it. Research has shown that people generally do not always want to use condoms for one reason or another in Nigeria (Rossem et al., 2001; Ekanem et al., 2005).

The other variable that scores high in the PCA matrix includes ‘war and social disorder’ (Table 6.1). There exists a positive relationship between war (conflicts) and increase in HIV/AIDS rates (Elbe 2002). According to Elbe (2002), military officers are a high-risk group and vectors of disease when they serve in conflict zones within the country or abroad. Furthermore, Sagala (2006) reports that military officer often engage in rape and other sexual crimes during deployment to these regions of war and civil disorder. The respondents identified returning military officers and war and social disorder as HIV/AIDS risk factors because of the presence of the military barracks and overseas peacekeeping activities. In addition, the selection of these variables as risk factors is appropriate, as military bases are often a beehive of some of these risky behaviors: for example, rape, heavy alcohol drinking, limited condom use, and multiple sexual network (Ekanem et al., 2005; Sagala, 2006).

Other groups of risk factors or variables respondents identified in this component include occupational and cultural practice. The occupation factors include all economic activities like truck driving, trading, and commercial sex work that can expose people to HIV/AIDS. The respondents classified these variables as risk factors with factor loading scores over 0.500 in the PCA matrix. It is only in this fourth component that respondents scored ‘wife sharing’ with 0.614. Wife sharing is the practice of permitting a wife to have sex with a guest of the husband (Osagbemi et al., 2004). Those who practice wife sharing consider it culturally and socially honorable to allow a guest to have sex with one’s wife. The respondents in the FGD did not associate this practice of wife sharing with HIV/AIDS except here where it scored 0.614 in the
principal components factor loadings matrix. The reason for this result is unclear, as the practice of wife-sharing is strongly opposed in this study site.

The variable ‘lack of condom use’ scores high in this component, and it supports the existing research that highlights the non-use of condoms among Nigerians as a major healthcare issue. Generally, people give many excuses for not using condoms, including personal dissatisfaction, the loss of the condom inside the woman, and the unnaturalness as well as the desire to more children (high female fertility) in the community (Kalipeni, 1996; Ekanem et al., 2005).

6.3.5 Factor 5: Social and personal — anal sex

Anal sex scores high in the fifth component of the matrix with 0.826 factor loading and another variable that closely relates to anal sex is ‘oral sex’ (0.676 loading). These risk factors fall into the social and personal behavior category in the conceptual framework (Figure 2.1). Respondents in the focus group discussions stated that the presence of two universities and the air force base in the city account for this trend. A study by Druten et al. (1992) is relevant to the discussion in this section. Druten et al. (1992) associate anal sex with homosexual activities and link it to the spread of HIV/AIDS among men who have sex with other men (MSM) in western nations. There are gay movements in Nigeria today fighting for freedom and recognition. However, the increase in men who have sex with men has become a big challenge for HIV/AIDS and sexual health in Nigeria (Allman et al., 2007). The challenges stem from the limited use of condoms in Nigeria and the possibilities of these gay men having sex with women without protection (Rossem et al., 2001; Allman et al., 2007). The results and discussion of respondents indicate that gay-related activities are key HIV/AIDS risk factors at the community level.
Another variable respondents identified in the fifth component is ‘injection at medicine stores’ (Table 6.1). The fear of contracting HIV/AIDS from injections at the medicine stores and hospitals is a reason why some people avoid hospitals and intravenous treatment. Gisselquist et al. (2003) show that use of contaminated syringes is a source of HIV transmission in southern Africa, which confirm the fears raised by the respondents in this study. In addition, Oppong and Agyei-Mensah (2004) report these concerns about HIV transmission at healthcare facilities in Nigeria and other West African nations. This variable falls within the healthcare system category in the conceptual framework (Figure 2.1). On the one hand, the variable ‘power of witchcraft’ also turns out to be high in this component and scores 0.749 in the matrix (Table 6.1). This result underscores the level of misconception that still prevails about HIV/AIDS.

In summary, the results of the principal components analysis indicate that cultural practices (wife inheritance, polygamy, and circumcision), healthcare system (injection at medicine store), gender related issues (domestic violence and male dominance in decision making at home). The other category of factor is social/personal risky behavior (selective use of condom, lack of condom use, multiple sex partners) that respondents assessed. The female respondents in this study site also identified one additional variable, power of witchcraft, certainly a misconception that comes up due to rumors, misunderstandings, and the stigma so often attached to HIV/AIDS. Another relatively controversial risk factor is ‘wife sharing,’ which respondents identified as a risk factor in this community. In collaboration to the findings presented above, the following section presents the results of FGD discussions in Makurdi.

6.4 Results of Focus Group Interviews

This section reports the qualitative discussion of respondents in study site two, Makurdi. In summary, the results from the focus group discussions in this site show that respondents are
able to identify and discuss a number of risk factors that account for the prevalence of HIV/AIDS. In like manner to the factors presented in the previous section, the identified risk factors in the focus group interviews include wife/widow inheritance, male dominant power, anal sex, circumcision, and lack of condom use.

*Cultural practices – wife/widow inheritance*

In the Makurdi study site, respondents during the focus group interviews stated that the practice of wife/widow inheritance is common and acceptable to keep the family lineage intact, especially if the couple did not have any children. It has a long cultural heritage and historical importance among the people in this study site (Abeghe, 2005). The practice of wife/widow inheritance is a risk factor since testing for HIV is not a requirement before remarriage. Therefore, the risk of HIV infection is high if causes of death for the deceased husband are not determined before remarriage takes place. The following quote from a female respondent testifies to this fact:

> I think wife inheritance and polygamy are two cultural practices that expose women to HIV infection. The wife inheritance practice is when a widow marries members of her husbands’ family … cause of death is not investigated to ascertain if he died of HIV, so it is risky for women to be subjected to this practice. (Female Respondent 1; Health Ministry, Makurdi)

The respondents attributed the high risk associated with the practice of wife inheritance and polygamy to unequal gender relationships. As already indicated in the previous chapter and sections, these cultural practices expose females to activities that are likely to result in the transmission of the virus to them from the husband’s brother or relative and vice-versa (Utulu &
Lawoyin, 2007). This raises the HIV/AIDS risks for new the new spouse if the death was HIV-related.

Another factor closely associated with the practice of wife/widow inheritance is poverty or economic hardship as well as social isolation. This respondent alluded to the fact that hardship associated with wife/widow inheritance is a precursor to commercial sex work or gift sex: "Wife/widow inheritance practice in our society subjects women to hardships that could lead to sexual 'gift' giving or commercial sex work to survive" (Female Respondent 3, Ankpa, Makurdi).

Closely related to wife/widow inheritance is the practice associated with widowhood, which involves widows performing certain rituals, like shaving their hair, sleeping on a bare floor at home for many months, and remarrying one of their male in-laws. This rite and ritual creates hardships for females, especially if they refuse to participate in the above listed activities. Should a widow refuse to do so, resources might be withheld from her, putting her at a higher risk of getting involved in survival sex for gifts. In short, the rituals and economic hardships women undergo after losing a spouse create several potential avenues for vulnerability to HIV/AIDS.

*Gender related issues – male dominant power*

In addition to the rituals and customs discussed above, the focus group interviews indicate that respondents identify gender power relationships as a risk factor to HIV/AIDS. Gender relations cover many aspects of life, such as domestic care and decision-making power during sex. For example, the use and non-use of condoms as well as the control of finances are within the purview of males. Furthermore, the female respondents indicated that society does not hold males responsible for extra marital affairs and stated that it is hypocritical because men do not have any serious sanctions in the community. The respondents pointed out that males have the
right not to use condoms, while females do not have the freedom to request condom use for fear of being battered. The expression of the female respondent below testifies to the fact that society discriminate against females:

Males in Makurdi and environs have privileges and 'rights' to have girlfriends and even wives, here and there (promiscuous), while the wife cannot and should not have a male friend with any sexual involvement. In fact, the women do not have such rights in our culture. Therefore, the number of wives or girlfriends the man keeps is uncontrolled in our cultural setting. (Female Respondent 2, Health Ministry, Makurdi)

Furthermore, the male respondent below attributed the non-use of condoms to the sole authority of males. The expression “only one captain in the boat” indicates that a female cannot object to unprotected sex, even if she feels unsafe. This is a powerful indication of unequal power relationships and the depth of the patriarchy system in the community.

She cannot ask me to use a condom. Who is the boss of the house? Only one captain in the boat, and I am the captain. Therefore, my wife dare not ask such a stupid question, or else she goes home to her parents. I am the only person that can suggest the use of condom, period! (Male Respondent 1, Ankpa, Makurdi)

The female respondents also noted that asking for condom use before sex results in domestic violence that creates fear within the household. As such, females desist from asking that their spouses use condoms, putting them at high risk of infection with HIV.

Some of the female respondents further intimated that women often take directives from men even in very small matters at home. For example, males make decisions on the type of food
to cook, clothes for children, and even matters that are within the so-called “women affairs” or domain at home. The frank discussions at the focus group sessions indicated that some husbands even go to the extent of deciding the type and color of lipstick their wives wear as well as the extent of the wives’ relationship with extended family members. The implications of this inimical control is that females do not have the ability to make their own decisions about safe sexual practices, such as demanding use of condoms and many health care decisions. Therefore, women in this type of relationship are vulnerable to HIV/AIDS. Hence, one female respondent described it as being “prisoners in their marriages,” which certainly has a tragic bearing on the spread of HIV at the community level. It implies lack of freedom for women in such situations to make informed decisions and choices.

Women are powerless even in so called strictly women’s activities in the home. For example, we cannot always directly influence things like type of food cooked in the home sometimes. In fact, the woman must ask her husband for the choice of food before she prepares it. . . . If there are extended family issues to be discussed, say, involving money, the women usually do not have the right or privilege to suggest ways to handle these money matters or who to give the money to. . . . It is the man who solely decides what will be done in such situations, even if she works and brings money home, … the women are like ‘prisoners’ in their marriages. (Female Respondent 3, Health Ministry, Makurdi)

It is clear from the start that women consider gender-related matters as a major risk factor for HIV/AIDS. The theme that stood out in the women’s discussions is that women are in subservient positions that create conditions of vulnerability to HIV in the area.
Female circumcision – cultural practice

Participants in the focus group interviews also discussed female circumcision as a risk factor. They did not consider male circumcision as a problem. Since health professionals often perform male circumcision at the hospitals, risks of HIV/AIDS transmission are not associated with it. The HIV/AIDS literature associates the low prevalence rate with the practice of male circumcision in the West African region. The respondents acknowledged the fact that female circumcision is illegal in this study site and many local government areas in Nigeria, yet people practice it. Since many non-governmental organizations work to stop the practice of female circumcision and raise awareness about the dangers of the practice, it was one of the major topics raised by the respondents at the interviews. The excerpts below highlight female circumcision as one of the key risk factors for HIV/AIDS that has rural and urban divide. Since, there are legal ramifications for performing female circumcision in the urban areas, individuals travel to villages or rural areas to have it done for their daughters. In the rural areas where the cultural practice of female circumcision is still revered, urbanites send their daughters there for the performance. As discussed elsewhere, the performance of female circumcision fulfills the obligatory passage into adulthood for the young females and checks promiscuity. Either reason does not justify the practice as the World Health Organization (WHO) considers female circumcision inimical to the well-being of women. However, one female respondent stated her view of the practice of female circumcision: "One thing I fear in our society is 'female circumcision' because some people perform it in the village" (Female Respondent 2, Ankpa, Makurdi). Another female respondent stated the following:

Female circumcision is another dangerous cultural practice in the state.

Many communities are stopping it and hence not a very common practice, but still
practiced in some Local Government Areas (LGA) within Benue State. In fact, people still practice circumcision in my LGA . . . Surprisingly, educated (elite) women are involved in the practice. ‘I know one senior female government officer in the ministry of health who took her daughter to the village to get circumcised. She thinks the daughter would not be "cultured" and responsible within marriage if uncircumcised. (Female Respondent 3, Health Ministry, Makurdi)

Further discussions on female circumcision and its relationship to HIV/AIDS revealed disturbing concerns. One of the female respondents captures the overall assessment of respondents in this regard. The instruments used in female circumcision are crude and unsterilized instruments, hence contaminated to say the least. She said the following:

It might still be a factor considering the sharp and barely unsterilized instruments used for female circumcision. These instruments may be contaminated and transmit HIV and any disease in communities where female circumcision is performed in age group settings. (Female Respondent 2, Health Ministry, Makurdi)

The above female respondent noted that group circumcision during initiation ceremonies presents a high risk for HIV/AIDS due to the possibility of contaminated instruments. Furthermore, the respondent in the quote below indicates that the practice of female circumcision continues despite the government’s efforts to stop it. Indeed, several respondents noted that people often secretly travel to villages to perform female circumcision, citing passage into womanhood as a major cultural reason for the continuation of the practice. It is obvious that young people and their families desire the respect of fellow women and the community at large
through participation in female circumcision (FC). Performing the rite of passage into adulthood through FC affords women the full privileges in the community, so participation in female circumcision rituals exposes these individuals to HIV/AIDS.

They still practice group circumcision in the villages in Benue State where I suspect the repeatedly use of the same instruments with little or no sterilization, which may be very dangerous for HIV infection. . . . To me it is still a problem in HIV/AIDS, because of the sharp instruments used in the process of circumcision (sometimes with no sterilization). It is possible we will not see female circumcision in Makurdi city. However, it is done in the villages, and sometimes in a group setting as a rite of passage to adulthood for the females. (Female Respondent 3, Health Ministry, Makurdi)

The continuous practice of female circumcision for the reason of cultural passage to womanhood raises the stake for HIV/AIDS and raises the issue of gender inequality. This indicates gender bias in the practice of female circumcision as the responses of participants in this study and the literature indicates. According to the female respondents in the focus group interviews, there is a link between female circumcision and HIV infection in this area, but there was no mention of male circumcision as a risk factor of HIV/AIDS. As mentioned earlier, male circumcision is associated with clean and safe instruments used by health care professionals at the hospitals.

*Lack of condom use – social and personal behavior*

Another HIV/AIDS risk factor respondents discussed during the focus group interview is lack of condom use. The respondents cited many reasons for the limited use of condoms in this study site, which included the inadequate supply and cost of condoms, dissatisfaction, and
cultural desire for high fertility and the associated stigma of being infertile. In addition, female respondents stated that there is an inadequate supply of condoms and they are costly, especially for those with limited financial resources. Participants in the focus group discussions were asked this question: “Why do people refuse to use condoms?” The respondents indicated that people generally know that condom use is helpful in HIV/AIDS prevention, but they expressed displeasure with it. Some said it is unnatural and does not feel right. Furthermore, respondents cited socio-cultural fertility status of females and gender power relationships for the non-use of condoms. In the following excerpt, this male respondent noted that personal sexual dissatisfaction and fertility needs are reasons people do not use condoms:

I also think lack of condom use may be a problem in marriage, because many people including women believe that we must have all the children God gives us, so using condoms may work against the will of God… You see, a man may want to use a condom, but the wife does not want it, because she does not like it. In this case, it is not the man’s fault. (Male Respondent 2, Lafia, Makurdi)

The above quote speaks to the importance of religion relative to matters concerning sex. A few of the respondents indicated that condom use is against the will of God. Participants argued that married couples should concern themselves with child bearing rather than avoiding pregnancy using condoms. This kind of thinking does not promote the use of condoms, even in attempts to prevent sexually transmitted diseases among the people, and can be a recipe for higher HIV/AIDS risk. In addition to male chauvinism, invoking the ancestral and divine curse for using the condom promotes high risk to HIV/AIDS. HIV/AIDS and other preventable STDs will continue to spread in this community and others if the family and the community does not encourage and support increasing the use of condoms. The invocation of religion as a basis for
The non-use of condoms does not fully represent the Biblical teaching or stance of preserving one's health through good health care practices.

The respondents further stated that condoms are for naughty people in the community, resulting in the stigma associated with condom use. There is no question, that, this view has resulted in the unacceptability of condom use at the family and community levels. Therefore, people shun condoms and consider it as unacceptable for family planning purposes as well as for preventing STDs in the community. This view confirms the excerpt from one respondent who argued that using condoms is a bad thing, used only by bad people: "The condom is for those bad boys, men and women and in fact for all those wayward people. It is for prostitutes, I cannot use it" (Male Respondent 3, Lafia, Makurdi).

Fear and suspicion is another reason respondents highlighted for not using condoms. Many of the respondents interviewed did not want to use condoms because of fear that their spouse would be suspicious of their HIV or STDs status. Therefore, asking that a spouse use condoms heightens that suspicion and creates fear on the part of the mate. Nevertheless, one of the male participants stated that he uses condoms upon request by his wife. He further noted that he would check his HIV status immediately: "Well, I have seen too many people die without any cause, so if my wife wants me to use condoms I will use it. But, will go check my HIV status, and ask her to check too, so we can make love without condoms" (Male Respondent 3, Ankpa, Makurdi). This is an indication that males can and do listen to the request of spouse to use condoms and goes against the rule that male do not want to use condoms. Even though the reason for using condom here is self-saving, it is insightful for HIV/AIDS management. Furthermore, it shows that females have a potentially powerful voice in this issue of condom use and is a harbinger of good things to come in disease management.
The issue of gender power difference is profound in the use of condoms. When, where, and how to use condoms is always an issue of who make the decisions. The outcome has an impact on the overall well-being of people, so it is important that there is balance in the decision-making process. The female respondent below shows that the preference to have sex without condoms is a gendered decision. The men dominate the decision-making process for condom use, except for the respondent above who agreed to use condom.

Sir, the issue of condoms is another area where women are powerless. They cannot negotiate when, where, and how to use condoms in their marriage. In other words, women cannot negotiate safer sex within the family circle. . . . Sometimes the man says he has never used it before, so he questions the wife about her knowledge and use of condoms. This creates problems within the home. Sometimes the men are blunt about not using condoms, that they want “skin-to-skin” i.e. body-to-body contact. They do not enjoy the real thing with the condom on. . . . the power to make this decision belongs to the man and not the woman.

(Female Respondent 3, Health Ministry, Makurdi)

The above quote equates condom use or non-use to unequal gender power difference because females are powerless when it comes to the negotiation of condom use at home and in the community. A simple request by a woman for her husband to use a condom can trigger unwarranted tensions and domestic violence in the home. The expression ‘skin-to-skin’ is an idiom for people to signify that they do not want to use condoms. The following quote from one of the female respondents in the discussions alludes to domestic violence that results from the demand to use condoms by the wife: “My husband can be very angry and can put me in serious
wahala (problem) if I dare ask him to use a condom. As for me, no way, I will never ask my man to use condoms”, (Female Respondent 4; Ankpa, Makurdi). Generally, the female respondents in this study indicated that asking for condom use before sex results in domestic violence, which is a powerful indication of the gap in gender relations that exists between men and women. This inability to ask and use condoms is an important risk factor for the diffusion of the HIV/AIDS epidemic in the study site.

The results support the findings of other studies, notably that of Olley and Rotimi (2003) and Dada et al. (1998). These studies show that in spite of the escalating HIV/AIDS epidemic, people resist the adoption of the condom as a protective gadget. For example, Dada et al. (1998) and Olley and Rotimi (2003) evaluate condom use behavior among young people in Nigeria. The results from those studies indicate that over 50 percent of the youth do not use condoms consistently, even though they know it is useful and increases their safety. Nevertheless, it was a general agreement, by both male and female focus group participants that sex without the use of condoms is enjoyable and preferable.

The respondents in the focus group interviews showed limited use of condoms, and even though commercial sex workers request condom use, clients do not always oblige (Bruhin, 2003; Rossem et al., 2001). The major reasons for shunning the condoms as discussed by the participants in the group discussions included lack of sexual satisfaction, general dislike, cultural barriers, cost or affordability, availability, and societal expectations of high female fertility rates. This is consistent with the studies of Olley and Rotimi (2003) and Kalipeni (1996), which listed these factors as reasons why people do not use condoms.
Anal sex – social and personal behavior

Anal sex is the top scoring variable in the fifth component of the principal components analysis matrix (Table 6.1) and respondents in the focus group discussions mentioned the presence and recent upsurge of homosexual activities in Makurdi. The participants mentioned the burgeoning homosexual activities on the university campuses at Makurdi without using the word anal sex, which is associated with homosexuality in the country (Allman et al., 2007). Here are a couple of quotes illustrating this fact: “I hear that males have sex with each other on campus. Homosexuality can be a reason for the high HIV among the students in this town. Our people just follow what they see in Oyinbo (foreign) movies” (Female Respondent 3, Health Ministry, Makurdi). Another respondent stated, “That is true; I have heard that there are men who have sex with men (homosexuals) in our universities. That is very bad. These males also rape the women on campus and can spread HIV” (Female Respondent 5, Health Ministry, Makurdi). The female respondent #5 attributes high risk of HIV/AIDS to the homosexual activities (males having sex with males - MSM) and rape at the university campuses.

In addition, respondents stated that homosexual orientation and practice is a foreign concept that people copy from foreign movies, which raises the risk of HIV/AIDS. The expression ‘oyinbo,’ used by the respondent above, implies foreign or Western sources of the practice of homosexuality. The danger of this kind of orientation is stigma, misconception, and misunderstanding of how this can lead to HIV/AIDS as well as effective management strategy. The works of Harries (1994) and Epprecht (2005) negate the notion that homosexuality is foreign. These works indicate that homosexual tendencies are ingrained in African sexuality and culture, but benignly invisible in both
sexuality literature and discourses. The quotes indicate that respondents do not consider homosexual activities overtly or surreptitiously as African way of life.

6.5 Conclusion

This chapter has presented the quantitative and qualitative results of what the respondents in Makurdi consider the major risk factors to HIV in this study site. The geographic and socio-cultural background of the study site presents a link to HIV/AIDS. For example, the location of truck stops, military bases, and the presence of two universities all are seen as creating a high-risk environment for HIV/AIDS by the respondents. As presented here, Makurdi functions as a nodal and gateway town as well as an agricultural center that attracts people from everywhere in the state. The boom in human interaction in this town raises the likelihood of HIV/AIDS risks. Furthermore, economic hardships due to unemployment and poverty create conditions for increased activities at truck stops that raise the risks of infection with HIV.

The quantitative analysis using the principal components method shows some key HIV/AIDS risk factors. The results of this analysis indicate that the respondents in this study site were able to identify or group what they considered as factors for the proliferation of HIV in the area. Eight components stand out, with each of them scoring above 0.500 factor loadings in the PCA analysis matrix. The highest scoring variables in each component or factor in the matrix included ‘wife inheritance,’ ‘lack of condom use,’ ‘male circumcision,’ ‘anal sex,’ and ‘the dominant power of males’ (i.e. unequal gender relations). Other risk factors scored high in the principal components matrix that adds significantly to the vulnerability of HIV in the community. Some of these variables are poverty, women not powerful enough to seek safe sex, multiple sex partners and access to condom use.
On the other hand, the results of the focus group interviews corroborated the results of the quantitative analysis. The participants engaged in an insightful discussion of the dynamics of HIV/AIDS proliferation at both the household and community levels through the five factors or components and the associated variables in the quantitative analysis. Generally, the respondents highlighted the role of unequal gender relations in their HIV/AIDS risk factor assessment. For example, the respondents consider gender power difference as a reason for the continuation of the practice of wife inheritance. The participants in the focus group interviews also attribute the lack of condom use at home as a direct result of gender inequality amidst dissatisfaction with the performance when the condom is in use and the desire for the high fertility of females within the culture. Both the quantitative and qualitative analysis in this chapter highlighted the central role of unequal gender relations as a major determinant of HIV/AIDS risk at both the household and community levels.
CHAPTER 7
CROSS-CASE ANALYSIS OF PRINCIPAL COMPONENTS ANALYSIS OF THE PERCEPTION OF HIV/AIDS RISK FACTORS IN STUDY SITES

7.1 Introduction

This study examined two cities with similar and different geographic and socio-cultural characteristics that create HIV/AIDS vulnerability. Using similar criteria to select the risk factor assessment with principal component analysis, respondents identified peculiar risk factors in both study sites. The major criterion is to use only risk factors or variables that have factor-loading scores above 0.500 in the PCA. This criterion results in the selection of 29 out of the 34 HIV/AIDS risk factors presented to the respondents. From this process, conclusions can be drawn about how each study site classifies HIV/AIDS risk. While these selections of risk factors are insightful by themselves, it is possible to draw further conclusions about how peculiar characteristics of the cities may influence the choice of risk factors.

The objective of this chapter is to conduct a cross case analysis. By comparing and contrasting the results from each case study, it is possible to make theoretical generalizations about HIV/AIDS risk factor assessment. Similarities between the two cases may point to larger themes that are occurring in many other communities across Nigeria. Differences between the cases can also be insightful because they may highlight location-specific forces that influence HIV/AIDS prevalence and vulnerability. The results of the analysis will lead to stronger generalizations to theory and to the development of a model of HIV/AIDS risk assessment at micro level. First, this chapter presents the similarities in the risk factor assessment and related terms by respondents between each study sites. Second, it present differences in the assessment
of respondents between the two cases. This chapter also presents results of everyday terms used by people to describe HIV/AIDS related risk factors.

7.2 Similarities in HIV/AIDS Risk Factor Assessment

The results presented in Table 7.1 show the existence of similar scoring on a number of variables by respondents at both study sites. It is clear from the table that respondents at both study sites are aware of risk factors that contribute to the spread of HIV/AIDS in their respective communities. In terms of similarities of assessment in study sites one and two, respondents identified 15 similar risk factors, including ‘lack of condom use,’ ‘truck drivers,’ ‘war and disorder,’ ‘sex with commercial sex workers,’ and the ‘sharing syringes by drug users.’ Also identified were other risk factors such as ‘female and male circumcision,’ ‘visit to hospital,’ ‘wife inheritance,’ and ‘mother to child transmission.’ The remaining five risk factors are gender-related variables, such as the dominance of male power (Table 7.1).

Generally, condom use is a problem in Africa. As shown in chapters 5 and 6, people do not like to use condoms for personal, religious, and cultural reasons. In both study sites, respondents indicated that condom use lessens sexual satisfaction and is unnatural. The desire for high fertility for women is another major obstacle in the use of condoms. From a cultural point of view, among the peoples of both study sites, the worth of a woman in society lies in her fertility and the number of offspring she bears. The more children a woman have the higher her status in the community. Respondents in both study sites also mentioned the stigma associated with buying and using condoms. As shown in the preceding chapters, one participant in the focus group interviews noted that condom use is associated with “wayward or bad boys and women” in the community. Terms such as ‘skin-to-skin,’ ‘against the will of God,’ and ‘not the ‘real thing’ came up in the discussions concerning condoms. These terms show the problematic
nature of condom adoption by the populace of these two study sites. In short, both results of the structured questionnaires and focus group interviews show the rejection of condoms in these two societies as a gadget for family planning or for prevention of the transmission of HIV and other sexually transmitted diseases. Indeed, as pointed out in the preceding two chapters, requests by wives or female commercial sex workers to use a condom triggers domestic violence.

In addition, respondents at both study sites identified the gender-related factors listed below as HIV/AIDS risk factors. Variables under this factor or component included ‘male dominant power,’ ‘gets angry when asked for condom use by spouse,’ and ‘power to decide to use condom.’ There is a strong cultural bias and support for the dominance of men, which begins early in childhood through the socialization process at home and in the communities. This difference in gender power at both home and in the community contributes significantly to the vulnerability of women to HIV/AIDS. Respondents in both study sites agreed that the dominance of males is largely to blame for the rapid proliferation of the HIV/AIDS epidemic in this region. Men express and use their power in various ways, which ultimately raises the probability for HIV/AIDS infection of women. For example, males have control over family finances, domestic matters, and even the relationships of their wives with extended family members. In spite of this control, there was an exception in Makurdi where one male respondent agreed to use condoms on his wife’s request. Often the exercise of this cultural power by males has a negative bearing on female’s protection in both communities. For example, polygamy, wife inheritance, and widowhood practices are within the power and control of males. In terms of politics at local or state government level, males have more power and privileges. Males also dominate the decision-making apparatus at community level. One respondent in Benin City noted that males dominate the decision-making process at the landowner association meetings.
Precisely this gender power difference is a significant factor and means a lot for the vulnerability of females to HIV/AIDS in both communities.

Other variables in which both communities were similar in their assessment of the HIV/AIDS risk factors included cultural practices such as wife inheritance and female circumcision. Respondents in both study sites practice wife inheritance for reasons like continuation of family lineage and support for widows and orphans. In the focus group interviews, wife/widow inheritance was described as a risk factor since there is limited HIV testing before remarriage. According to respondents, wife inheritance will continue to be a problem unless people modify or stop the practice. The modification of the culture of wife/widow inheritance involves changes that will protect or empower women. For example, before any inheritance is complete, in case it becomes necessary to remarry, there should be mandatory test for transmittable diseases. Furthermore, it can also be ceremonial; meaning that actual remarriage into a family must not take place immediately as the case is now.

Also mentioned in the discussions at both study sites was the practice of female circumcision as a risk factor for HIV/AIDS. The cultural reason for the existence of this practice in these communities has to do with passage of females into womanhood. As noted earlier, the government of Nigeria has banned this practice. However, in spite of this ban, many people still practice it secretly. The female respondents state that people usually take their daughters to the surrounding villages to perform the circumcision individually or as part of a group in female initiation ceremonies.

Occupation-related risk factors, like working as truck drivers and having sex with commercial sex workers, are likely to be prevalent at busy truck stops at both sites. In Makurdi, respondents described the activities of poor young females, traders, and unemployed people at
the truck stops as risk factors. Benin City respondents mentioned the activities at Oluku, Jatto (truck stops), and brothels as reasons for HIV/AIDS vulnerability. Although, respondents identified ‘war and social disorder’ as a risk factor, there were no civil unrests in both sites during the fieldwork (2007-2008). However, there were problems in nearby states or regions that caused people to migrate into the study sites. For example, the civil crisis in the Niger Delta regions, and the religious-ethnic unrest in the north central states created a sizable population of displaced people in Benin City and Makurdi. War and social disorder is an indirect risk factor of HIV/AIDS, particularly through the mixing of displaced peoples, who often have no employment. Unemployment for displaced individual females might mean engaging in risky activities such as commercial sex work to generate survival incomes. As highlighted in the previous two chapters, another aspect of civil war abroad are returning army officers who may have gone for peacekeeping assignments. People in both study sites identified these individuals as possible carriers of HIV from abroad, who then introduce the virus into these communities.

Visiting the hospital and mother-to-child transmission are two variables that highlight the role of the healthcare system at the community level. As shown in chapter five, the rumor of HIV infection at hospitals may be responsible for the selection of ‘visit to hospital’ in Benin City. It was stated that one HIV positive doctor deliberately infected a patient with the disease in the 1990s. This story still circulates among the people in these communities (Djukpen, 2003).

**Gender similarities in HIV/AIDS risk factor assessment**

Being male or female influences the assessment of risk factors at the micro levels. Males in both study sites identified ‘power to decide use of condoms’ (Table 7.2) as one of the risk factors. The similarity in the identification of the variable ‘power to decide use of condoms’ by males at both study sites is an indications of the socialization of the male as being
superior to females. Throughout the interviews, the dominant story that came out was that males have more power in decision-making within the home and the community with profound implications for vulnerability to HIV/AIDS.

One surprising factor that female respondents identified in both study sites is ‘male circumcision’ (Table 7.2). The reason for this choice by the females is not clear. It is therefore uncertain why females in both localities cited male circumcision as a risk factor. However, female respondents were not quizzed further to explain why they thought male circumcision was a risk factor. This fertile topic of circumcision in general warrants further research in the future in this region. There is no question that there is need for more specific studies on the link between male circumcision and HIV/AIDS at the micro level. There is need for more studies on this topic to clear misconceptions and to raise awareness about the significant protective role of male circumcision on HIV/AIDS, as shown in the literature (Howe et al., 2000; Bonner, 2001; Weiss et al., 2009).
Table 7.1: Similarities and Differences in Risk Factor Assessment in Both Study Sites*

<table>
<thead>
<tr>
<th>Variables</th>
<th>Benin City</th>
<th>Makurdi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women not powerful enough for safe sex</td>
<td>(.678)</td>
<td>(.534)</td>
</tr>
<tr>
<td>Poverty</td>
<td>(.678)</td>
<td></td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
<td>(.534)</td>
</tr>
<tr>
<td>Commercial sex workers</td>
<td>(.679)</td>
<td></td>
</tr>
<tr>
<td>Truck drivers</td>
<td>(.544)</td>
<td>(.561)</td>
</tr>
<tr>
<td>War &amp; social disorder</td>
<td>(.553)</td>
<td>(.733)</td>
</tr>
<tr>
<td>Lack of condom use</td>
<td>(.773)</td>
<td>(.758)</td>
</tr>
<tr>
<td>Sex with commercial sex workers</td>
<td>(.709)</td>
<td>(.595)</td>
</tr>
<tr>
<td>Rape</td>
<td></td>
<td>(.603)</td>
</tr>
<tr>
<td>Domestic violence</td>
<td></td>
<td>(.638)</td>
</tr>
<tr>
<td>Polygamy</td>
<td></td>
<td>(.613)</td>
</tr>
<tr>
<td>Wife sharing</td>
<td></td>
<td>(.614)</td>
</tr>
<tr>
<td>Female circumcision</td>
<td>(.808)</td>
<td>(.700)</td>
</tr>
<tr>
<td>Male circumcision</td>
<td>(.789)</td>
<td>(.803)</td>
</tr>
<tr>
<td>Sharing syringes by drug users</td>
<td>(.555)</td>
<td>(.677)</td>
</tr>
<tr>
<td>Visit to hospital</td>
<td>(.735)</td>
<td>(.639)</td>
</tr>
<tr>
<td>Wife/widow inheritance</td>
<td>(.607)</td>
<td>(.778)</td>
</tr>
<tr>
<td>Mother to child transmission</td>
<td>(.585)</td>
<td>(.751)</td>
</tr>
<tr>
<td>Returning military officer</td>
<td></td>
<td>(.772)</td>
</tr>
<tr>
<td>Returnee females</td>
<td></td>
<td>(.661)</td>
</tr>
<tr>
<td>Blood transfusion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple sex partners</td>
<td>(.722)</td>
<td>(.743)</td>
</tr>
<tr>
<td>Get angry when ask for condom by spouse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fear of being accused of having sex others</td>
<td>(.753)</td>
<td>(.674)</td>
</tr>
<tr>
<td>More power in sex decision</td>
<td>(.875)</td>
<td>(.843)</td>
</tr>
<tr>
<td>Male dominant power</td>
<td>(.879)</td>
<td>(.892)</td>
</tr>
<tr>
<td>Power to decide use of condom</td>
<td>(.855)</td>
<td>(.868)</td>
</tr>
<tr>
<td>Access to condom</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Selective use of condom</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral sex</td>
<td>(.676)</td>
<td></td>
</tr>
<tr>
<td>Anal sex</td>
<td>(.826)</td>
<td></td>
</tr>
<tr>
<td>Mosquito bite</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power of witchcraft</td>
<td>(.749)</td>
<td></td>
</tr>
<tr>
<td>Injections at medicine stores</td>
<td>(.781)</td>
<td></td>
</tr>
</tbody>
</table>

*Based on variables scoring over 0.500 in the first five components of PCA matrix both sites
Table 7.2: Comparison of Gender Risk Factors Assessment in Both Study Sites*

<table>
<thead>
<tr>
<th>Variables</th>
<th>Males Benin City</th>
<th>Males Makurdi</th>
<th>Females Benin City</th>
<th>Females Makurdi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poverty</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commercial sex workers</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of condom use</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Sex with commercial sex workers</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male circumcision</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Female circumcision</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sharing syringes by drug users</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Visit to hospital</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wife/widow inheritance</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Mother to child transmission</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Blood transfusion</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>More power in sex decision</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Male dominant power</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Power to decide use of condoms</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anal sex</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Power of witchcraft</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

*Based on the highest factor loading scores of variables in each of the first five components in the PCA matrix

7.3 Differences in HIV/AIDS Risk Factor Assessment

In spite of the presence of similarities as discussed above, a comparison of the two study sites also shows differences in the assessment of HIV/AIDS risk factors. The respondents identified fourteen different risk factors between the two study sites. These risk factors also cut across the spectrum of the conceptual framework (Figure 2.1). This section discusses the differences in risk factor assessment in both study sites while also examining the gender differences in the assessment of risk factors across the two study sites – Benin City and Makurdi.
Study site one – Benin City

In study site number one, Benin City, respondents identified three risk factors exclusively and these include ‘commercial sex workers,’ ‘poverty,’ and ‘women not powerful enough to ask for safe sex’ (Table 7.1). The unique identification of these risk factors indicates that respondents have different perspectives on the causes and transmission of HIV/AIDS. The presence of commercial sex centers or brothels and truck stops in and around study site one may account for the selection of commercial sex work as a risk factor. In addition, the repatriated females from Europe to study site one may also inform the choice of commercial sex work and the truck stop at Oluku near Benin City as risk factors. Cole (2006) reported similar findings: that most returnees from Europe came to Benin City and that there is a strong community of Nigerians from Benin City in Italy (Europe). In the focus group interviews, respondents indicated that young females frequent truck stops and travel abroad for economic reasons. The second variable that respondents uniquely identify here is ‘poverty’ (Table 7.1). The focus group discussion indicates that poverty and commercial sex work have a causative relationship. Respondents stated that poverty is a primary reason for females going into commercial sex work. The third variable respondents identified is ‘women not powerful enough to ask for safe sex’ in the PCA matrix. This reflects the unequal gender power relationship from many angles. However, it shows specifically that females do not have the freedom to ask for safe practices during sexual encounters, even in consensual arrangements. Nevertheless, in Makurdi one female respondent asks her spouse to use condoms, to which he obliges. It is a harbinger of good things in the future. Thus, the two major factors identified by the respondents of Benin City were the unequal gender power relationships and poor economic conditions as key drivers of this disease.
Study site two - Makurdi

On the other hand, in study site two, Makurdi, respondents specifically identified eleven risk factors. These include ‘anal sex,’ ‘oral sex,’ ‘rape,’ ‘domestic violence,’ ‘occupation,’ ‘returning military officers,’ and ‘returnee females.’ Other risk factors are ‘polygamy,’ ‘wife sharing,’ ‘injections at medicine stores,’ and ‘power of witchcraft’ (Table 7.1). Generally, anal sex is associated with homosexual activities. There is an increase in men having sex with men (MSM), a concern raised by Allman et al. (2007) for HIV/AIDS management. The respondents in focus group interviews reported that homosexual activities and gang rape crimes occur on university campuses. The HIV/AIDS literature supports unprotected anal sex as a risk factor among homosexuals. Therefore, an increase in men having sex with men raises the stake for HIV/AIDS risk at the community level. This is particularly dangerous and risky because of the overall low usage of condoms in Nigeria (Rossem et al., 2001). Furthermore, respondents identified oral sex in addition to anal sex as risk factors for HIV/AIDS.

In both focus group interviews and questionnaire responses, respondents identified domestic violence as a risk factor for HIV/AIDS. Respondents related causes of domestic violence to simple requests for condom use, type of food to cook and eat at home, and control over family finances. It is pertinent to state that domestic violence has psychological effects on the victims that may create vulnerability to HIV/AIDS. Other unique risk factors respondents identified in Makurdi were ‘polygamy’ and ‘wife sharing.’ These cultural practices also have a significant influence in HIV/AIDS risk. While respondents in focus group discussions agreed that polygamy is a key risk factor, they disagreed on wife sharing as a risk factor, which indicates a disagreement between focus group participants and those responding to the questionnaires. The relationship between the causes of domestic violence and HIV/AIDS stems
from gender inequality and the inability to make independent decisions (especially by females). This inability to make everyday choices affects the self-confidence of females and the chances of making good healthcare decisions. However, there are few exceptions, especially, in the case where one female asked her spouse to use condoms, an indication of a possible change in the status quo. As regard polygamy, while respondents agreed that it is a risk factor, there are no published data linking the practice of polygamy to HIV/AIDS. In fact, the geography of HIV/AIDS in Africa indicates that Islamic countries in North Africa that religiously permit polygamy have the lowest HIV/AIDS prevalence rate (Gray, 2004).

Respondents in Makurdi also identified occupation, returning military officers, and returnee females specifically as risk factors in this community. The local people here show that military officers who serve in foreign assignments return home to be active members of the community. Since there are no legal requirements for HIV testing of military officers after such foreign assignments, the risks are high for HIV/AIDS if officers are infected while on tour of duty abroad. Respondents described the activities that take place at barracks as contributing to a high risk for HIV/AIDS. Interviewees also mentioned activities such as heavy drinking and the presence of commercial sex workers as occurring at or near the military barracks. Furthermore, many young females who return from nearby cities like Gboko, Jos, Oturkpo, and Abuja are responsible for the high HIV/AIDS rate in study site two. One healthcare variable respondents identified was ‘injection at medicine stores.’ Although local medicine stores are common in Nigeria, only in Makurdi did respondents identify it as a risk factor for HIV/AIDS. The respondents also identified the ‘power of witchcraft’ as a risk factor for HIV/AIDS. In the literature, witchcraft is not a classic risk factor for HIV/AIDS transmission, but a misconception. There is no evidence that witchcraft can cause HIV/AIDS infection. In the early days of
HIV/AIDS, people discriminated against elderly people, accusing them of inflicting HIV/AIDS on young people through witchcraft power. It seems that some people still believe in witchcraft power as a source of HIV/AIDS infection in Makurdi.

**Gender differences in HIV/AIDS risk factor assessment at both study sites**

This section explores the differences in risk factor assessment by the sex of respondents at both study sites. It uses only the highest scoring variables of the first five components in the principal components analysis matrix (Table 7.2) between the study sites—Benin City and Makurdi. A presentation of the separate assessment of male and female respondents follows below.

**Male respondents**

In terms of gender influence, male respondents in the two study sites identified nine different risk factors—five in Benin City and four in Makurdi. The male respondents in study site one (Benin City) identified five variables: ‘poverty,’ ‘sex with commercial sex workers,’ ‘female circumcision,’ ‘visit to hospitals,’ and ‘male dominant power’ as risk factors (Table 7.2).

As shown in chapter 5, respondents in Benin City link poverty to commercial sex work. Wherever commercial sex activity exists, there will be clients and the risks to HIV/AIDS especially as related to poverty and unemployment are high in study site one—Benin City. Females turn to commercial sex work for survival, as indicated by male respondents in the focus group interviews. Furthermore, male respondents in this site identified ‘visit to hospital’ as a risk factor. As indicated previously, hospitals in study site one (Benin City) has been a rumored source of infection in the past. Other variables identified in this site include ‘female circumcision’ and ‘male dominant power.’ This study shows that female circumcision continues
for the reason of cultural passage into womanhood. The respondents in study site one stated that the practice of female circumcision has direct links with the exercise of male power.

In study site two, Makurdi, male respondents identified four variables—‘lack of condom use,’ ‘male circumcision,’ ‘wife inheritance,’ and ‘anal sex’—as risk factors (Table 7.2). The continuation of family lineage is one cultural reason for wife inheritance practice. The other reason is economic and social support for females and their children. However, the continuation of the practice of wife inheritance raises HIV/AIDS risk since HIV testing is not mandatory before remarriage. Male respondents identified male circumcision as an HIV/AIDS risk, even though the literature shows otherwise. As shown in this study, respondents noted that contaminated instruments and group circumcision during youth initiation is a reason for HIV/AIDS risk. With increasing homosexual activities in Nigeria and other African nations, male respondents now list anal sex as a concern for HIV/AIDS risk. A study by Allman et al. (2007) shows similar HIV/AIDS risk concerns with an increase in homosexual activities. Another sad aspect of the epidemic, as indicated in the preceding sections, is the rejection of the use of condoms by the residents of both study sites. Lack of condom use is indeed a major HIV/AIDS risk factor. Males in this study site stated that condom use is unnatural and dissatisfactory.

**Female respondents**

Generally, female respondents in both study sites identified eight different HIV/AIDS risk factors, four in Benin City and four in Makurdi. In study site one, Benin City female respondents identified four variables: ‘commercial sex workers,’ ‘sharing syringes among drug users,’ ‘blood transfusion,’ and ‘more power in sex decisions.’ These variables are different from those identified by the females of the Makurdi study site. Female respondents in study site
one identified commercial sex worker activities as a risk factor for HIV/AIDS. The focus group interview results in chapter 5 indicated that female respondents observe young women at brothels and truck stops ‘hustling,’ another term for engaging in commercial sex work. In addition, female respondents identified blood transfusion as a risk factor, partly because of the presence of two tertiary hospitals and many clinics in this study site. In the focus group discussion, respondents described use of tainted blood during surgery as an HIV/AIDS risk factor. The gender specific variable of ‘more power in sex decisions' highlights the direct relationship between the exercise of male power and HIV/AIDS transmission risk. For example, respondents indicated that males use their power to avoid condom use and impose their whims on females, which creates a high risk for HIV/AIDS.

In study site two, Makurdi, female respondents identified four variables, which are ‘lack of condom use,’ ‘mother to child transmission,’ ‘male dominant power,’ and ‘power of witchcraft’ as risk factors. These four variables are different from those identified by the females in the Benin City study site. As shown in the focus group interviews, the non-use of condoms relates to the exercise of male power, dissatisfaction with the condom, and high fertility expectations for females. Furthermore, female respondents in Makurdi identified ‘mother to child transmission’ as a risk factor, possibly due to the number of HIV/AIDS-related orphans in Nigeria (see Table 1.1). Respondents also indicated that drugs for HIV/AIDS positive mothers are expensive and in short supply. This is one reason the World Health Organization (WHO) has developed action plan to implement HIV/AIDS drug programs to ameliorate the problems. The variable ‘power of witchcraft’ is a misconception that still has currency in this study site. It highlights the belief system of Africans that the unknown spirit world or ancestors have an influence on the daily lives of people. The choice of male dominant power could be a reflection
of the level of education of respondents – Table 3.3 shows over 90 percent of respondents in Makurdi and Benin City have secondary and university education. The higher the level of education attained by people, the more rational they tend to be and make informed choices they make.

In short, the above discussion is testament to the implication of the fact that place, as a geographic concept, really matters. The social, economic, and political characteristics of a place influence the choices and decisions that the people make in relation to their health care. Factors perceived as risk factors in one place may not necessarily be the same as those in another place. The respondents in Benin City and those in Makurdi identified some similar factors but also different ones. This finding has a bearing on HIV/AIDS programs and management. Policy makers need to take into consideration the factor of “place” in devising policies to combat a deadly disease such as HIV/AIDS. They also need to take into consideration the different assessments of what are the critical factors identified by both males and females as the case studies of Benin City and Makurdi testify.

In terms of similarities and differences, the analysis shows that there are more differences between the two study sites than similarities. There also exists a significant influence on the risk factor assessment with reference to the sex of respondents. The implication of this analysis is that there is place or location-specific risk factors. These risk factors are associated with the activities and ways of life of the people.

7.4 Analysis of Key Terms in Focus Group Discussions

This section examines some key terms that respondents used during the focus group discussions and interviews. These expressions or terms are in use every day by residents of both study sites, something that directly comes from the socialization processes and everyday living
experiences. The frequency of usage of terms indicates the level of awareness of that term and the links to HIV/AIDS risk. These terms relate to socio-cultural practices as well as economic, social, and personal behaviors (like sexual activities). Some of the specific terms this study explores include truck stops, gender-related differences, empowerment, and occupations. Graphs are used to show the number of times the identified terms occurred in interviews and/or conversations. This study compares the frequencies of usage of these terms between the study sites - Benin City and Makurdi. The purpose of comparing frequencies helps to identify the risk factor terms that are commonly in use among peoples at the micro level. HIV/AIDS managers can take advantage of the familiarity and usage of these terms for prevention planning purposes.

Generally, terms mentioned over 50 percent become vital for consideration. Those that occur between 26 to 49 percent of the times are of less importance, and those used less than 25 percent in the conversation are unimportant. This categorization makes it easy to compare the two study sites as well as with the gender aspects in the use of these terms. The ‘find function’ in Microsoft Word enabled the search for each term in the focus group interviews transcripts.

The terms that relate to social and personal behavior shown in Figure 7.1 indicate how many times respondents mentioned these terms in the interviews. For example, respondents in Benin City mentioned abstinence, condom use, premarital sex, adultery, engaging in commercial sex, and multiple sexual partners 50 percent of the time (see Figure 7.1). While in Makurdi, respondents used terms related to condom use, adultery, and multiple sexual partners over 50 percent of the time in their conversations. The Makurdi respondents mentioned abstinence and premarital sex less than 20 percent during the focus group discussion. Some of the expressions used by respondents to describe adultery, multiple sex partners and flirting activities included ‘walkabout,’ ‘chuk-chuk babe,’ ‘away match,’ and ‘sharp eyes’. For example, ‘sharp eyes’ also
is an expression that describes young girls who engage in premarital sex. In addition, respondents also used terms like ‘spare tire’ and ‘small madam’ to label other sexual partners other than the regular partner or spouse. Other terms used to describe condoms in this study included ‘raincoat,’ ‘rubber,’ and ‘socks.’ Terms used to describe a visit to a commercial sex worker and to have casual sex were ‘release stress’ and ‘ECOMOG’ (a rather humorous term for sex workers that refers to the Economic Community of West African States Monitoring Group [ECOMOG] which is a West African multilateral armed force established by the Economic Community of West African States). The term ECOMOG describes the connection between returning military officers, commercial sex workers, and HIV/AIDS from their tours of duty abroad. Respondents also used terms like ‘no do,’ ‘stay away,’ and ‘hold your body’ to describe abstinence.

![Bar chart showing sexual behavior-related terms](chart.png)

**Figure 7.1: Sexual behavior-related terms**

Figure 7.2 below shows terms that respondents used with reference to occupation and HIV/AIDS risks in both study sites. Commercial sex workers, truck drivers, and overseas travel

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were used over 50 percent during the focus group discussions in Benin City, while military, truck drivers, and sellers (traders) at the truck stops accounted for 50 percent among Makurdi respondents. Other terms respondents utilized during focus group discussions to describe commercial sex workers and activities included ‘prostitution,’ ‘ashawo,’ and ‘hustling.’ Terms such as ‘soldier’ and ‘ECOMOG guys’ are used to describe military officers, and terms like ‘akata’ or ‘akatarian’ are used to describe international human trafficking and sex work abroad.

In Makurdi, respondents mentioned commercial sex workers about 32 percent of the time. Respondents in Makurdi mentioned traders and people who visit truck stops for economic reasons about 42 percent of the time. During the focus group discussions and interviews, respondents in Makurdi mentioned overseas travel about 40 percent of the time.

**Figure 7.2: Occupation related terms**

Figure 7.3 below shows the number of times respondents used terms that relate to gender differences and privileges. In Makurdi, terms or expressions that relate to fertility dominated the discussions among respondents. For instance, respondents in Makurdi stated that having
children (fertility) is a status symbol for females. As a result, females cannot control their sexual safety due to this societal expectation of bearing as many children as they can. Certain expressions were used to highlight the importance of children, such as ‘pikin good oh’ (meaning it is good to have a child), ‘when you are old you become a witch if you no get pikin,’ and ‘person wen no get pikin, na problem’ (if you do not have a child you will have problems in the future). These expressions emphasize the need or benefits of the female fertility in society. As Figure 7.3 shows, female respondents mentioned fertility-related terms about 90 percent of the time in Makurdi and 10 percent of the time in Benin City. In the same vein, terms like domestic violence (beating, fighting, cursing and insults), powerlessness of females, powerful males, and sugar daddy occurred over 50 percent of the time in the Benin City discussions. However, in Makurdi, the terms related to the powerlessness of females appeared less than 25 percent of the time, such as domestic violence and ‘sugar daddy.’ The term ‘sugar daddy’ got mentioned about 30 percent of the time in the discussions. The term ‘sugar daddy’ indicates the practice of casual sex occurring between older men and young girls. It occurs for economic reasons on the parts of the girls and self-aggrandizement for the men. In these relationships, males primarily make the decision to use condoms and hence determine sexual safety. The obvious conclusion here is that the frequent use of all these terms in the study sites indicates the level of awareness and understanding of HIV/AIDS risk factors.
Furthermore, other terms respondents used to describe the power of males in this study include ‘oga sir,’ ‘oga kpatakata,’ ‘the main G,’ ‘agbalagba,’ and ‘the boss.’ These terms define the gender relationship between males and females. Some males, on the other hand, used terms like ‘oga madam,’ ‘open eye madam,’ ‘sabi sabi lady,’ and ‘oyinbo madam’ to describe powerful females or even commercial sex workers. Terms such as ‘beating me,’ ‘slap me,’ ‘hit me,’ ‘shout or scream at me,’ and ‘curse me’ were used to describe domestic violence at home.

Figure 7.4 below shows concepts that relates to cultural practices like widowhood and wake keeping activities, which dominated the discussions of the Benin City respondents (75 percent). In Makurdi, wife inheritance, polygamy, and wife sharing dominated the conversations (over 50 percent). The mention of stigma-related terms like shame and fear dominated the conversations of Benin City respondents, while Makurdi respondents mentioned these terms only about 35 percent of the time of discussions. Polygamy gets about equal amount of times among the respondents in both study sites because it is a common cultural practice in Nigeria.
One term that occurred about 70 percent of the time in the discussions among Makurdi respondents was wife sharing. Although the times respondents used this term appear high, they argued that the practice of wife sharing does not occur in their communities. On the other hand, the respondents in Benin City mentioned wife sharing about 30 percent of the time. These respondents denied the fact that the practice occurs in their community, but pointed to Makurdi communities as the place where this practice occurs as stated earlier in chapter 5.

The discussion of sex as a cultural taboo came up in the conversation of the focus group discussions in Benin City and Makurdi. Terms that relates to sex as a cultural taboos occurred about 54 percent and 46 percent of the time in conversations in Benin City and Makurdi, respectively (Figure 7.4). Respondents used coded language when discussing sex amongst adults so that young people did not understand the discussions. Even during the focus group interviews, respondents used terms or expressions such as ‘do not talk about sex,’ ‘did you just say that … referring to the mention of sex,’ and ‘… you said it just like that’ to describe the freeness with which the researcher used terms related to sex and condoms. The facial expression and body language of female respondents during the focus group interview indicated that they were uncomfortable discussing sex-related issues. This also indicates that the discussion of sex-related matters is still a taboo in the study sites. Since discussions of sensitive issues such as sex is a taboo, it is an obstacle to meaningful prevention, reduction, and elimination efforts of HIV/AIDS at the community level. The implication here is that policy makers should consider this information when putting programs in place to manage the epidemic at the local level.
As shown in Figure 7.4, respondents used a number of culture-related terms during the interview. These included polygamy, widowhood practice, wife/widow inheritance, and wake-keeping ceremonies. Comparing the two study sites, widowhood practices and wake-keeping activities seem more prevalent in Benin City as respondents used the terms that refer to these practices about 70 percent of the time in the focus group interviews. Wife/widow inheritance also occurs more among Makurdi respondents, who mentioned it about 70 percent of the time in the discussions. Polygamy appears in equal frequency of occurrence in both study sites, which indicates that it is a common practice throughout the country. Stigma and cultural taboo relating to shame and fear about HIV/AIDS discourage people from discussing matters related to HIV/AIDS in public. Furthermore, asking about HIV status is not usually allowable and people dodge that question because of the stigma associated with the disease. The result is silence,
which certainly does not promote a healthy discussion of the ways to reduce the scourge of HIV/AIDS at the community level.

7.5 Conclusion

This chapter presented and discussed results that show similarities and differences in the assessment of HIV/AIDS risk by respondents in Benin City and Makurdi. It also demonstrated that gender (male and female) had an influence on the assessment of HIV/AIDS risks in both study sites. In terms of similarities, respondents identified fifteen HIV/AIDS risk factors across the two study sites. These risk factors are characteristically seen in the exercise of gender power, healthcare system failure, and occupational categories as provided in the conceptual framework. Some specific cultural practices like wife inheritance and female circumcision are part of the similarities of risk factor assessment that exist in both study sites. Other social and personal behavior factors like sex with commercial sex workers and lack of condom use appear in both sites. In terms of differences, respondents identified fourteen HIV/AIDS risk factors, with three in study site one and eleven in site two. Generally, the respondents in site one identified economic and gender-related categories of HIV/AIDS risk factors. However, respondents in study site two identified risk factors in four different categories in the conceptual framework: economic, social and personal behavior, cultural practices, and healthcare system (see Figure 2.1). Thus, in terms of differences in the identification of categories of risk factors, the two study sites indicate unique selections. Only the economic category shows a similarity, but respondents of the two study sites selected specific risk factors within each category differently.

In summary, this chapter demonstrates the significant influence of gender in matters relating to HIV/AIDS risk factor assessment. It highlights the major similarities and differences in the risk factor assessment of respondents at the community level. The results indicate that
male respondents identified power to decide the use of condoms in both study sites as important, which highlights gender relationships that favor males. The female respondents identified male circumcision as an HIV/AIDS risk factor in both study sites. In terms of difference in risk factor assessment, Table 7.2 shows that respondents identified four different risk factors in Benin City and Makurdi. The details shown in Table 7.2 indicate that specific risk factors matter to each “place” or group of respondents according to gender and their lived experiences.
CHAPTER 8
CONCLUSIONS

8.1 Summary of Findings

This study has advanced two aspects with reference to the HIV/AIDS epidemic in Nigeria. First, the study has explored the geospatial pattern of HIV/AIDS rates in Nigeria. Second, it examined HIV/AIDS risk factor assessments or perceptions of respondents at the community level in two study sites, Benin City and Makurdi. In this concluding chapter, a summary of the findings is presented and directions for future research and policy implications of the results are presented. The summary of findings covers the results of the geospatial analysis of HIV/AIDS at the macro level and risk factor assessments by respondents at both study sites – Benin City and Makurdi. The future direction section discusses the potential areas of HIV/AIDS research in the study sites, and the section on the applications to policy examines areas of specific relevance to HIV/AIDS-related policy.

Geospatial Findings

The prevalence rate maps show a generalized pattern of HIV/AIDS. For example, the HIV/AIDS rate maps in Figure 4.2 - 1999 show five states with very high rates while the 2001 shows three states with the highest rates and 2003 map shows only two states that have the highest rates. In addition, the 2005 map shows two states with the highest rates of HIV/AIDS. However, the maps generated by advanced geospatial analysis highlight the HIV/AIDS hotspots or clustering (Figure 4.3) that closely resembles the prevalence rate maps. Furthermore, the geospatial maps 1999, 2001, 2003 and 2005 in chapter 4 indicate that HIV/AIDS clusters also vary over time and space. These maps show a slight variation of the epicenter of HIV/AIDS over space and time. The results of Moran’s I indicate that certain states appear to have
HIV/AIDS clusters from 1999 to 2003. There are three groups of states in these categories. These are states with clusters for all three years, for two years, and for one year. In the first group, only Benue State has an HIV/AIDS cluster for all four years of analysis. Four states display clustering for two years, and these are Akwa Ibom, Nasarawa, Abuja - FCT, and Cross River. States with only one year of clustering are Abia, Ebonyi, Oshun, and Ogun. The analysis of Moran’s $I$ further shows that nine out of the thirty-six states including Abuja (the Federal Capital Territory) have HIV/AIDS clustering. This nine-state clustering can form the focus of HIV/AIDS management and further risk factor assessment or understanding.

A comparison of the prevalence maps and the geospatial analytical maps show differences in terms of areas of high HIV/AIDS concentration. The 2001 prevalence map (Figure 4.2) indicates three states – Benue, Akwa Ibom, and Abuja - FCT – with the highest HIV/AIDS rates. However, the geospatial analysis map of 2001 HIV/AIDS rates (Figure 4.3) shows four states with clusters, including Benue, Nasarawa, Cross River, and Abuja - FCT. The 2001 map (Figure 4.3) shows that all the HIV/AIDS cluster states are contiguous, which is good for cost effective management and understanding the risk factors responsible for the transmittable or expansion diffusion model of the HIV/AIDS epidemic. The 2003 set of maps (Figures 4.2 and 4.3) also exhibits similar characteristics. In the 2003 prevalence maps (Figure 4.2), two states (Benue and Cross River) have the highest HIV/AIDS rates. The geospatial (Moran’s $I$) map (Figure 4.3) of the HIV/AIDS rates in 2003 indicates that five states have clusters. These are Benue, Cross River, Abuja - FCT, Akwa Ibom, and Oshun. In this map, only three (Benue, Cross River, and Akwa Ibom) of the five states are contiguous, while one is far away in the western region (Oshun) and the other (Abuja) is near the epicenter in the middle belt. In the HIV/AIDS prevalence rates map for 2003, Oshun State does not have more than a rate of
3.5 percent. Hence, it does not appear in the high rate states and can easily be left out of any HIV/AIDS management plan. On the other hand, the geospatial analysis of HIV/AIDS rates draws attention to the needs of the people in Oshun State and indeed the western states as emerging hot spots of the epidemic. This illustrates the power of advanced geospatial analysis to detect clusters that would otherwise be undetected if simple choropleth maps of HIV/AIDS were used.

Additionally, Getis and Ord’s $G_i^*$ statistics show a core-peripheral spatial distribution with high HIV/AIDS radiating from north central states of Benue State and Nasarawa. The Getis and Ord’s $G_i^*$ geospatial analytical technique utilizes distance to determine the extent of HIV/AIDS hot-spots. The $G_i^*$ values show states with HIV/AIDS spatial clustering. In this study, states with spatial clustering in all four years (1999, 2001, 2003, and 2005) of analysis using $G_i^*$ are Benue and Nasarawa. Four states have three years of spatial clustering, including Cross River, Enugu, Ebonyi, and Abuja - FCT. The states that show only one year of HIV/AIDS spatial clustering are Borno, Ondo, Oshun, Oyo, and Kwara (Table 4.4). In all, eleven states have cluster characteristics with $G_i^*$ analysis. The $G_i^*$ analysis determines the influence and relationship of distance to truck stops and the activities that occur there for HIV/AIDS planning.

The use of geospatial analysis identifies states with clusters that can be targeted for HIV/AIDS reduction programs. All the states that have spatial clustering of HIV/AIDS between 1999 and 2005 are presented in Figures 4.2, 4.3, and Table 4.4. Generally, geospatial analysis shows states that are contiguous to these cluster states, thereby forming a core-peripheral zone. As noted earlier, this is useful for strategic HIV/AIDS planning that may include nearby states or communities across state boundaries. This would maximize benefits and minimize the cost of HIV/AIDS reduction programs. For example, provision of employment or skill training
programs should not be restricted to one city, but regional programs that cover a number of states. Furthermore, Table 4.4 and Figures 4.2 and 4.3 show possible central areas that can form an HIV/AIDS comprehensive planning zone, which represents several economic growth poles as well as a number of socio-cultural centers of influence. From the results of the Getis and Ord’s $G_i^*$ analysis, three groups of states could possibly form HIV/AIDS comprehensive planning zones. These are as follows: region one (Benue, Abuja - FCT, and Nassarawa, Ebonyi, Cross River, and Enugu) and region two (Ondo, Oshun, and Oyo in the west), while Borno in the northeast of Nigeria represents the epicenter of a possible third region.

Community Level HIV/AIDS Risk Factor Assessment

This section presents the summary of findings of HIV/AIDS risk factors by respondents at both study sites – Benin City and Makurdi. The results of the perceived risk factors analysis indicate that there exist a number of similarities and differences between the two study sites. Furthermore, the incorporation of gender into the analysis in the principal components analysis shows some influence in the assessment of HIV/AIDS risk factors at the community level.

Differences in study sites risk factor assessments

Generally, the HIV/AIDS risk factor assessments shows that respondents in study site one, Benin City, identified 18 variables. These risk factors score over 0.500 in the principal components analysis (PCA). The risk factors identified by the respondents of Benin City fall into five categories of factors in the conceptual framework (Figure 2.1), including occupation, culture, social/personal behavior, gender relation, and healthcare system. The highest scoring variables in study site one—Benin City analysis matrix are gender-related, which are ‘male dominant power’ and ‘more power in sex decision.’ It accounts for 10.52 percent of the total
explanation in the PCA matrix. The second component that accounts for 8.23 percent of the explanation in the matrix is ‘lack of condom use’ (Table 5.1).

The respondents in study site two, Makurdi, identified different risk factors that fall into four categories. These are culture, gender relation, social/personal behavior, and healthcare system (see conceptual framework - Figure 2.1). The highest scoring factor in component one of the matrix of study site two, is related to culture, which is wife inheritance and accounts for 12.97 percent of the total explanation in the principal component analysis matrix. The second variable that respondents identified as a risk factor is male dominant power, accounting for 10.11 percent of the total explanation (Table 6.1).

The dissimilarities of assessment among respondents also have implications for planning and show the “power of place.” The differences show the risk factors that respondents identified, with the implication that those respondents are likely to accept policies that address those risk factors. For example, respondents identified fourteen different risk factors between the two study sites as significant risk factors. Respondents in study site one, Benin City, identified three risk factors exclusively, namely poverty (economic), women not being powerful enough to ask for safe sex (gender relation), and commercial sex work (occupation). Respondents in Makurdi exclusively identified eleven risk factors: occupation, returning military officers and returnee girls (occupation), rape, oral and anal sex (social/personal behavior), domestic violence (gender relation), and polygamy and wife sharing (culture). These differences highlight the key HIV/AIDS risk assessment by respondents at the community level. It implies that policy planners can design HIV/AIDS management strategies according to the specific needs of communities.
In Makurdi, respondents discussed the role of returning military officers and girls in HIV/AIDS prevalence at community levels. Although military bases are located throughout the country and army officers across the nation serve in foreign assignments, Makurdi respondents specifically identified the military as a risk factor. Furthermore, the new movement for the recognition of gay rights in Nigeria calls for serious concern about the risks of HIV/AIDS. This is a challenge in HIV/AIDS management especially at the community level, as people do not yet freely disclose their sexual orientation. It is illegal and improper to indicate that an individual is gay. Respondents in Makurdi identified risk factors closely associated with homosexuality and HIV/AIDS such as rape and oral and anal sex without openly indicating sexual orientation. These risk factors fall into the social/personal behavior group of the conceptual framework.

Similarities in study sites risk factor assessments

The two study sites show some similarities in risk factor assessments. Respondents at both study sites identified fifteen similar risk factors as key risks for HIV/AIDS (see Table 7.1). In all these fifteen similar factors, gender-related risk factors scored high in the PCA matrix (Table 7.1). Risk factors such as ‘more power in sex decision,’ ‘male dominant power,’ and ‘power to decide to use condoms’ scored very high in the PCA matrix, which underscores the importance of gender issues. In terms of occupation, only truck drivers appeared on the list of risk factors of respondents at both study sites. In addition, respondents at both sites identified ‘war and social disorder’ in the political instability categories of the conceptual framework (Figure 2.1). Respondents also identified ‘lack of condom use,’ ‘sex with commercial sex workers,’ and ‘drug users sharing needles’ in the social/personal category of risk factors. These similarities in the assessment of respondents present an overview and understanding of risk factor perception at community level. It implies that communities with similar assessments can
use closely related strategies for HIV/AIDS management, which will affect cost and maximize benefits.

**Summary of gender influence in assessment of risk factors**

According to respondents in both study sites, gender-related factors or issues present high risks to HIV/AIDS and serious challenges to its management. The power difference between males and females occurs both in the home and at the community level. At home, gender power difference affects the decision-making ability of females from many fronts, activities, and angles. Generally, women are subordinate in many African societies. This power difference engenders fear and low self-esteem, which raises the risk of HIV/AIDS at the community level. In this study, respondents gave examples of how seemingly small matters like condom use, the type of clothing to buy and wear, and decisions about what food to cook can all result in domestic disagreements and violence. The respondents identified domestic violence and inability to make independent decisions as a gender-related HIV/AIDS risk factor. Males are so powerful that no one really has any form of control over what they do in the community. Hence, issues that relate to gender power relationships are perceived as key HIV/AIDS risk factors.

Respondents stated in chapters 5 and 6 that gender strongly influences the perception of risk factors. In the use of condoms, for example, males determine when, how, and where to use condoms. One male respondent expressed how powerful men are in the matter of condom use, using expressions such as ‘who is the boss!’ and ‘only one captain in the ship’ to illustrate the power of males. Although general dislike, inconvenience, stigma, and unnaturalness are reasons for non-use of condoms, the exercise of power by males plays a key role in the limited use of condoms. Some respondents expressed their dissatisfaction with the use of condoms with terms like ‘skin to skin’ and ‘the real thing.’ Despite this male dominance, there was an exception
where a female demanded the use of condom and the husband obliged. Respondents also
expressed concern with the excessive powers of males, which include financial control within the
home and political power at the community and local government levels. Some respondents in
the focus group interviews indicated that cultural practices are in place to control females. For
example, wife inheritance and widowhood practices are aimed at controlling the activities of
females.

Further respondents mentioned failures in the healthcare system as risk factors for
HIV/AIDS. Some female respondents at both study sites stated that blood transfusion,
contaminated needles, and mother-to-child transmission are HIV/AIDS risk factors. The
prohibitive cost and unavailability of antiretroviral (ARV) drugs for pregnant women is an
obstacle to achieving the goal of reducing mother-to-child transmission of HIV/AIDS.
Generally, respondents expressed fear and doubts about the safety of treatments at hospitals.
Some respondents specifically stated that they do not go to the public hospitals or private clinics
because of fear of HIV infection and transmission.

In short, respondents at both sites identified more similarities in risk factor assessment
than differences. The similarities of risk factor assessment can be taken advantage of by policy
makers to guarantee some level of acceptance of measures to manage these risks. However, the
dissimilarities pose a challenge for HIV/AIDS management, requiring further investigation to
design specific programs carefully tailored for each specific community. These differences in
risk factor assessment highlight the unique perception, understanding, and needs of the people at
the community levels.
8.2 Future Directions

A number of trends emanate from this dissertation for future research, including aspects of geospatial and perception studies in order to foster a better understanding of the patterns of HIV/AIDS at both the national and the local levels. For example, the results in Table 4.4 indicate that some states like Kwara, Abia, Nasarawa, Oshun, and Abuja - FCT need attention as these enter the high-risk ‘club.’ The results in this table (Table 4.4) show that Abuja - FCT reentered the HIV/AIDS high-risk ‘club’ after five years of absence. There is need for more detailed future studies to explain the presence or absence of the spatial clusters in the HIV/AIDS cluster zone. Collectively the geospatial techniques, Moran’s (global and local) I, Getis and Ord’s Gi* analysis shows 9 out of the 36 states, including Abuja - FCT, have HIV/AIDS clusters.

The existence of spatial variation in clustering of HIV/AIDS rates over time and space offers an opportunity for future research to focus on dynamic modeling to capture changes in HIV/AIDS rates and risk factors over space and time. This approach will enhance our understanding of the dynamics of this disease in space and time and inform its management by policy makers.

The geospatial results show the need for more micro-level studies to understand the risk factors throughout the country. The results of the two communities point to the fact that there are differences in the perception of risk factors of HIV/AIDS between the two communities. Detailed studies should not be restricted to high and low cluster states but conducted across all communities. Future studies can also focus on geospatial analysis, with the design of a comprehensive data collection and management system throughout the country. A comprehensive data collection at the micro level is necessary to geocode social, economic, and health data as independent variables to explain the spatial variation of HIV/AIDS.
In as far as perception studies are concerned, certain risk factors need to be studied further. For example, the cases of male and female circumcision in the transmission of HIV/AIDS require further elucidation through well-designed research. As shown in the results of respondents in the two study sites, there was a conflicting assessment of the risk associated with circumcision. Many of the respondents in this study linked female circumcision to HIV/AIDS as a risk factor, and some respondents identified male circumcision as a risk factor in the spread of HIV/AIDS while literature indicates otherwise. Indeed, HIV/AIDS literature associates male circumcision with a low prevalence rate in West Africa (Marck, 1997; Weiss et al., 2000; Bonner, 2001). With no data linking circumcision to HIV/AIDS, this discrepancy is a fertile topic for further investigation. Another fruitful area of research in the future is the link between visiting hospitals and HIV/AIDS rates. In this study, respondent identified the healthcare system as a risk factor for HIV/AIDS. Furthermore, respondents identified treatment at local medicine stores as being high on their list of risk factors at study site two, Makurdi. Since healthcare is a key determinant of development, understanding its role in HIV/AIDS prevalence helps in any programs designed to reduce the prevalence of HIV/AIDS. Indeed, future studies could be helpful in establishing a credible link, positive or negative, between the healthcare system and the spread of HIV/AIDS at the community level.

8.3 Applications to Policy

The findings in this research apply to HIV/AIDS policy development in two ways: (1) the development and collection of data for application in a geospatial analytical system and (2) the application of policies to social, economic, and cultural practices for HIV/AIDS management at community levels.
**Geospatial policy application**

The use of geospatial analytical techniques in disease studies enhances visualization of the rates. The use of geospatial techniques contributes to a better understanding of the spatial epidemiology of HIV/AIDS. The various maps demonstrated shifts in HIV/AIDS clusters over time and space. States or areas that consistently have spatial clustering and those that fluctuate over time were identified through geospatial analysis of HIV/AIDS rates. For example, Benue and Nassarawa had consistent HIV/AIDS clustering since 1999 while Borno, Ondo, Oshun, Oyo, and Kwara had HIV/AIDS clusters that lasted one year. On the other hand, Cross-River, Ebonyi, and Enugu exhibited spatial clustering over a three-year period and Abuja FCT experienced a two-year clustering of HIV/AIDS rates. As such, geospatial analysis is an excellent geographic method designed to reveal patterns of spatial clustering of HIV/AIDS which can then assist in the design of specific management programs. In this vein, geospatial analysis reveals the presence of either contagious or expansion diffusion of relocation diffusion in space and time. This also leads to the identification of states that are contiguous to states with high clusters, which could then form the basis for strategic planning and management (Figures 4.3). In this way, geospatial analysis enables policy makers and stakeholders to visualize the locations or areas that need special attention.

Furthermore, Getis and Ord’s $G_i^*$ spatial analysis is another useful geographic technique that can assist policy makers and planners to take into consideration the proximity and presence of activity centers like bars, truck stops, and university campuses in cities. Due to a lack of data, this study did not include a full-fledged analysis that reflects the proximity of people to truck stops, the number of drivers, and their activities. To this end, the development of strong HIV/AIDS data collection and management systems in Nigeria is necessary. This computer
database system, Comprehensive HIV/AIDS Data Collecting and Reporting System (CHDCRS), will generate geographic information (with geo-coordinates) of health-related events for easy geospatial analysis. Some of the geographic data should include locations of truck stops, brothels, hospitals, and medicine stores as well as details of related activities.

The collected data could include variables such as those in Table 3.1: community poverty rate, polygamy, use and sales of condoms, number of sex workers and “job sites,” number of truck stops, and the volume of these activities. The volume of activities could include the daily number of trucks, number of drivers, number of service providers, and the duration of truck drivers' stay at the location. Furthermore, gender, age, and economic status classification is useful. Data like location of healthcare facilities and numbers of people who use these facilities are useful in determining the influence of distance and disease epidemiology in general. Other healthcare data could include all private and public medical laboratories test reports and treatment. All medical laboratories should report every HIV/AIDS test to a central body at different level of operation. Such detailed and standardized data collection process would improve spatial analysis and management of HIV/AIDS and other diseases. Today, data aggregation at the state level is inadequate concerning possible geographic information, thereby hindering detailed micro-level geospatial analysis. This comprehensive data collecting system will solve the data problem discussed earlier. The availability of comprehensive data would assist in making advanced analysis of HIV/AIDS rates with the attendant explanation of why the disease has spatial clusters. This enhanced understanding of the underlying factors that influence HIV/AIDS at the community level could then be used to stop the disease in its tracks. This program will serve as a disease intelligence and surveillance system that focuses on the collection of data from the micro level for policy formulation. Finally, this bottom-up approach
involves data collection at the neighborhood (blocks or groups of homes), and the census
e Enumeration area, local and state government level to the national level. This hierarchical
structure raises the quality of data collection and its applications in HIV/AIDS management.

Policy applications in micro/community-level assessment

The results indicate that respondents identified various risk factors that require specific
policy development. Some respondents suggested modifying certain cultural practices to reduce
HIV/AIDS risks. For example, HIV testing for surviving spouses and partners before remarriage
would go a long way to reduce the risk to HIV/AIDS transmission in places where wife
inheritance still occurs. There is the need to implement policies that would focus on the
development of special legal, social, and economic support systems that should assist with
conducting HIV testing before remarriage. This policy should also apply to divorcees who will
remarry and even those who are newly contemplating marriage. The HIV/AIDS testing
programs that emanate from this policy should be neighborhood or community based.

Another policy development that may reduce HIV/AIDS risk is the modification of the
property inheritance laws. As shown, females do not inherit properties in their biological as well
as marital families. It affects economic independence and ability to survive widowhood, which
raises the HIV/AIDS risks for females. Hence, females suffer unduly from the present unjust
inheritance system. The current inheritance practices lead to the economic disempowerment of
females, raising the HIV/AIDS risks. Some respondents described the present inheritance
system as a ‘double tragedy’ of inheritance, where females do not have inheritance through their
biological as well as their marital families. It is therefore crucial to put in place a deliberate
policy formulation to make female inheritance legal and equal to that of males. This would
translate into a better quality of life for many females in the community.
In Makurdi, the respondents identified returning military officers and females as HIV/AIDS risk factors. To fully understand these risk factors and prevent further HIV transmission, this research proposes the development of policies and programs to address the needs of military officers and returning female migrants. These policies and programs should be in every community across the nation where military bases exist. Specific education and behavior programs to raise awareness of HIV/AIDS and empower military officers to stay safe through incentives are needed. Military officers should get financial incentives to test regularly for HIV and given special rewards if they are HIV/AIDS negative and continue to maintain their negative status.

In addition, respondents identified certain locations like truck stops, motor-parks, and commercial sex centers (brothels) as possible risk avenues for HIV/AIDS at the community level. There is the need for the development of policies and programs that ensure safety for people who visit or do business at these places. For instance, authorities can pass laws to restrict underage people from visiting these places (truck stops and brothels). Furthermore, these places (truck stops and brothels) can become ‘ground zero’ for more HIV/AIDS awareness and empowerment campaigns. The introduction of innovative programs like female condoms and intensification of the use of condoms in the family should take place at these venues.

The results in this study suggest the need for open discussion as a policy measure to tackle the problem of stigmatization and stigma associated with HIV/AIDS. Open discussion enables and empowers people to make safe healthy decisions. It opens the debate for people and the acceptability of measures emanating from local respondents. For example, modification of cultural practices, early sex education, and female condom adoptions are achievable with open discussion. Open discussion of issues relating to HIV/AIDS can be through television, movies,
and radio programs. The fast-growing Nigerian movie industry can be utilized by the
government to sensitize the people about different aspects of HIV/AIDS. Furthermore, the
inclusion of people living with HIV/AIDS (PLWHA) may help combat stigma by raising
awareness at personal, community, and national levels. Besides, using PLWHA furnishes
information such as how and when HIV infection occurs and the type of people who are
vulnerable. This piece of information fills the gaps at the micro level in the understanding of
HIV/AIDS dynamics.

Additionally, a policy of economic development at the community level to improve the
economic activities of the people will have a positive influence on the reduction of HIV/AIDS
risk factors associated with economic conditions. Government intervention in the economic
activities of people will improve their well-being and empower them, especially females. These
economic interventions can be in the form of tax incentives, reduced documentation to start
businesses, and easy property acquisitions for businesses to create more jobs for the people.
Additionally, this will reduce female trafficking, commercial sex work, and sex for gifts at both
study sites and beyond. The positive impact of economic development could translate into an
overall reduction of human trafficking and economic empowerment among people. Such
economic programs can reduce the vulnerability of commercial sex workers to HIV/AIDS. As
respondents indicated in the focus group discussions (FGD), economic programs like skill
training, micro-loan assistance, and more female enrollment in school can help in HIV/AIDS
reduction. These policies and special programs, which provide economic resources and financial
independence, are useful tools in the management of HIV/AIDS scourge. Wherever skill-
training programs that presently exist, the government should consider increasing funding and
logistical support.
As the FGD analysis showed, the health care system requires an overhaul to allay the fear of people getting diseases from hospitals. The respondents indicated that private health practitioners need better oversight to mitigate possible transmission of HIV in these facilities. There is the need for a public-private healthcare initiative to work at HIV/AIDS vulnerability reduction. Furthermore, the need for more accountability in the healthcare system to allay the fears of citizens who use the private hospitals and medicine stores is necessary. The government should increase healthcare expenditures and capital development in the health care sector.

Another policy application is in the area of female empowerment programs to reduce vulnerability to HIV/AIDS. Such programs should include the introduction of female condoms, the provision of legal support, and enactment and enforcement of new laws to protect females from dangerous socio-cultural practices. For example, wife/widow inheritance and widow remarriage could only take place after HIV/AIDS test and counseling. New and fully enforceable anti-human trafficking laws should be enacted in order to stop trafficking abroad. Furthermore, programs to punish rapists and to facilitate rape victims' full rehabilitation into society are paramount. These policies and programs on rape, wife inheritance, and cultural practices will reduce the stigma associated with HIV/AIDS. Emanating from the analysis in this study, HIV/AIDS gender-related issues (wife inheritance, widowhood practices, and female circumcision) in the socio-cultural realms should be elevated to human rights issues. This way, people will view any socio-cultural maltreatment and practices as rights violations, not just privileges under the control of some powerful males. As respondents indicated, HIV/AIDS policy makers may encourage symbolic female circumcision to satisfy those who want to keep that cultural identity of graduating into womanhood. The symbolic circumcision may create a sense of identity without compromising the health of females. This follows a pattern in a district...
in Kenya, where female circumcision occurs in a symbolic way. The symbolic female circumcision involves simply touching the private parts or genitals of the females in a ceremony of passage into adulthood. It does not involve any sort of cutting of the genitals with knives or such instruments.

8.4 Limitations of Study

This study has a number of limitations. One of these is the sample of respondents during the fieldwork. The demographic composition of respondents indicated that there are people that are more educated (higher institution of learning) in the interview and focus group discussion sessions. This has the potential of skewing the assessments of risk factors by the respondents at each study area. It could also have an impact on the implementation of management strategies. Another limitation is inadequate secondary data at the micro-level for geospatial analysis. Due to incompleteness, some questionnaires were removed and thrown out from the PCA analysis. Although these were few, nevertheless they are likely to have had an impact on the final result. Apart from the equal number of males and females in the study, other demographics might also have an impact on the perceptions of assessment of HIV/AIDS risk factors. For example, more Christians and married people were sampled for this study, which could affect the assessment of risks.
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