

AN ABSTRACT OF THE DISSERTATION
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Nigeria, Pakistan, and Afghanistan are the three remaining polio-endemic countries in the world. This study investigated the reasons for resistance to polio immunization information in Kano, Nigeria. From a social constructionism perspective and Chatman's theory of normative behavior as a theoretical framework, content analysis methods were used to examine 72 documents (105,400 words) published from 2002-2013 that reported polio immunization information practices in Kano. The researcher used an analytic inductive process to identify 339 narratives explaining resistance to information about polio immunization. The narratives are organized into 20 recurring topics and further collapsed into six emergent categories to explain resistance. Findings indicated that Kano residents resisted polio immunization information for several reasons: 1) suspicion of Western nations; (2) they placed polio as a lower health priority; (3) suspicion of the polio vaccines; (4) distrust of the Western health care system; (5) concerns about the administration of polio immunization services; and (6) the negative perception of promoters of polio immunization services. Findings interpreted using

Chatman's theory suggests that for there to be a sustained acceptance of polio immunization information, there must be change in the manner that information is communicated within the peculiarities of the social norms and worldviews of the discourse groups.

Keywords: Resistance to polio immunization, acceptance of polio immunization in Kano, Nigeria, information behavior, non-use of health-related information

**RESISTANCE TO POLIO IMMUNIZATION INFORMATION
IN KANO, NIGERIA**

by

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LIST OF ACRONYMS

CDC: Centers for Disease Control and Prevention

GPEI: Global Polio Immunization Initiative

HIB: Human Information Behavior

IMB: Independent Monitoring Board

IPV: Inactivated Polio Virus Vaccine

Kano: Kano State

KNSG: Kano State Government

LIS: Library and Information Science

NIH: National Institutes of Health

OIC: Organization of Islamic Conference

OPV: Oral Polio Virus Vaccine

UNESCO: The United Nations Children's Fund

WHO: World Health Organization

WPV: Wild Polio Virus

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CHAPTER 1

INTRODUCTION

Polio: The Dangers

Around the world, polio threatens people's health, well-being, and lives. Polio is an incurable infectious disease caused by a virus (Inam & Furth, 1999). The World Health Organization (WHO) cautioned that one in 200 infections from the polio virus leads to irreversible paralysis and among those paralyzed, 5–10% die when their breathing muscles become immobilized. Although adults can contract the disease, polio most often affects children under five years of age (WHO, 2012).

Of the three types of polio virus, Types 1 and 3 are wild and circulate globally. Type 2 has been eradicated (Eulberg, 2012; U.S. Centers for Disease Control and Prevention, 2012). The fear of polio rests on four basic premises: (a) polio is contagious, (b) polio has no cure, (c) polio causes mortality, and (d) polio causes morbidity. These four basic premises, as they existed prior to 1955, provide context for the development of the polio vaccine, the Global Polio Eradication Initiative Program (GPEI) discussed in this chapter, and the resistance to polio immunization information. The latter—resistance to polio immunization information—is the focus of this dissertation.

Polio Rates before Polio Vaccines

Polio is a highly contagious disease that affects many people in the world. Countries plagued with the polio virus prior to the development of the vaccine include the United States (U.S.), Sweden, Australia, Czechoslovakia, Denmark, and the United Kingdom. From 1950 to 1954, the U. S. recorded an annual average of 48,333 polio cases (Post-Polio Health, 1999). Between 1950 and 1955, Sweden recorded an annual

average of 1864 polio cases (Axelsson, 2004, 2009). From 1951 to 1955, Australia had 2,187 polio cases, Czechoslovakia 1,081, Denmark 1,614, and the United Kingdom had 4,381 (Paul, 1971).

Before the development of the polio vaccine, the fear of polio was largely associated with risk of infection from the disease, fear of stigmatization, and of isolation. In many countries, particularly the United States, houses of polio victims were marked with placards and victims were quarantined (Figure 1). Parents had to have special permission to visit their hospitalized children who were infected with the polio virus. Additionally, the fear of polio was associated with long and painful procedures for managing the infection from the disease. Many victims of polio whose breathing muscles become immobilized were placed inside cage-like iron lungs (Figure 2). An iron lung is a mechanical ventilator used to maintain respiration. Shocking pictures of children in iron lungs horrified parents.

Furthermore, the fear of polio is linked to the risks of morbidity. Polio was feared because it caused paralysis. Millions of people suffered paralysis from polio. As of 2001, the WHO estimated the global number of people with paralytic polio at between 12-20 million (Trojan & Cashman, 2005; World Health Organization, 2001). Similarly, anxiety over polio was associated with having a deformed physical appearance, having to wear leg braces, using crutches, or being confined to a wheelchair for life, thereby limiting mobility and causing difficulty in obtaining employment, participating in social activities, and establishing a family. This historical reference indicates the seriousness of polio in these developed countries, which motivated the development of the polio vaccines.

The Development of the Polio Vaccine

According to the U. S. Centers for Disease Control and Prevention (CDC) (2011), Peters (2005), Miller (2004), and Dorothy (1992), polio vaccine development received a boost in the U.S. after Franklin D. Roosevelt's infection with the polio virus. In 1938, Roosevelt, who was later elected President of the U. S., assisted in establishing a polio foundation called the "March of Dimes." The purpose of the foundation was to assist polio victims and to fund polio research.

With support from the foundation, two polio vaccines were developed. The first vaccine—the inactivated polio virus vaccine (IPV)—was developed by Jonas Salk and certified effective by the National Institutes of Health (NIH) on April 12, 1955. The second vaccine, developed by Albert Sabin in 1957, was the oral polio virus vaccine (OPV). The Salk vaccine contains dead virus and is given by injection. The Sabin vaccine contains live weakened virus administered by drops into the mouth. Mass polio immunization began in 1955, using both the Salk and Sabin vaccines, however, the Sabin vaccine had the advantage of being easier to administer and less expensive, so it is the vaccine of choice for mass national immunization programs in many parts of the world (Pan American Health Organization, 1960).

Polio Immunization

Polio immunization has reduced polio-related mortality and is the best way to lessen the risk of infection from the disease (CDC, 2012a; Liu, Levin, Makinene, & Day 2003; Vaccines and Biologicals, 2004). Mass immunization has eradicated polio in many countries, as exemplified by the U. S., Canada, Sweden, and Cuba. In 1955, the U. S. was first to introduce mass polio immunization, with the number of polio cases dropping

after its introduction. In 1956, 15,140 polio cases were recorded; in 1960, 3,190 cases were reported; and only 31 cases were reported in 1972 (Smallman-Raynor & Cliff, 2006). The last cases of wild polio in the U. S. were recorded in 1979.

Similar to the U. S., Canada eradicated polio through mass immunization beginning in 1955 (Francis et al., 1955). The incidences of polio infections dropped in Canada from an estimated 8,878 cases in 1953 to about 1,021 cases in 1955 and 188 cases in 1961 (Ruttry, 1996). The last indigenous cases of wild polio virus (WPV) in Canada were reported in 1977. In 1994, Canada was certified free of WPV by the WHO (Public Health Agency of Canada, 2012). In Sweden, mass polio immunization was introduced in 1957 (Fagraeus & Böttiger, 1980), immediately decreasing polio infections. In the same year mass immunization was introduced, cases of polio dropped to about 160 cases. In 1962, approximately 14 polio cases were reported, and in 1963, 1964, and 1965, zero cases, one case, and two cases, respectively, were recorded. In Cuba, polio immunization started in 1962. As in other countries, incidences of polio infection dropped after mass polio immunization began. Cuba recorded 46 cases in 1962, one case in 1963, and zero cases in both 1964 and 1965 (Cruz, 1984; Lago, 1999).

The success of mass polio immunization campaigns in several countries has laid the foundation for the worldwide effort to eradicate polio. Encouraged by the successes of mass polio immunization at the national level, Rotary International an international service organization with about 12 million members (Rotary International, 2013), proposed a campaign of global polio eradication to the WHO (Pigman, 2005). The ambitious Rotary vision gradually gained popularity among public health experts. During the International Symposium on Polio in Washington, DC in 1984, many public

health professionals argued in favor of global elimination of polio (Gregg, 1984). Thus, in 1988, the World Health Assembly (WHA) adopted a resolution on the global eradication of polio through mass immunization and created the GPEI.

The Global Polio Eradication Initiative

The GPEI is a coalition of organizations controlled by four bodies: The WHO, Rotary International, The CDC, and The United Nations Children's Fund (UNICEF). Other members of the GPEI include governments of countries affected by polio and private-sector foundations (e.g., The UN Foundation, The Bill and Melinda Gates Foundation), development banks (e.g., The World Bank), donor governments of 31 countries, the European Commission, humanitarian and non-governmental organizations (e.g., The International Red Cross and Red Crescent societies and the Global Poverty Project), corporate partners (e.g., Sanofi Pasteur and Wyeth), and individual volunteers (e.g., 20 million people participating in mass immunization campaigns in developing countries (WHO, 2012a). The composition of the GPEI indicates the widespread and diverse response of the international community to the problem caused by the polio virus. It also indicates the importance of eradicating the disease globally.

The ultimate goals of the GPEI are zero polio incidence and complete disruption of WPV transmission (Birmingham et al., 1997). According to the WHO (2012b), the objectives of the GPEI are: "interrupt transmission of wild poliovirus as soon as possible; achieve certification of global polio eradication; contribute to health systems development and strengthen routine immunization and surveillance for communicable diseases in a systematic way" (para. 7). The objectives will be attained through four strategies:

(a) high infant immunization coverage with four doses of oral poliovirus vaccine (OPV) in the first year of life; (b) supplementary doses of OPV to all children under 5 years of age; (c) surveillance for wild poliovirus through reporting and laboratory testing of all acute flaccid paralysis (AFP) cases in children under 15 years of age; and (d) targeted “mop-up” campaigns when wild poliovirus transmission has been limited to a specific local area. (WHO, 2012b, para. 8).

A country is certified polio free when it can satisfy three conditions: (a) at least three years with no cases of polio; (b) meeting international standards in its disease surveillance efforts; and (c) proving its ability to detect, report, and respond to imported cases of polio (WHO, 2005).

Immunization is a critical aspect of the GPEI. “Since 1988, more than 2.5 billion children have been immunized against polio” (Global Polio Eradication Initiative [GPEI], n.d., para. 1) and the cooperation of parents in having their children immunized is needed. Thus, information on the dangers of polio must be disseminated to parents. UNICEF is responsible for communicating the benefits of polio immunization in polio-endemic countries on behalf of the GPEI. The strategic role of information has been highlighted by UNICEF (2012): “to succeed in eradicating polio . . . we have to reach every last parent . . . to ensure they have the knowledge they need to make critical choices about vaccinating their children” (para. 4).

To engage parents concerning polio immunization, UNICEF (2012) discussed adoption of the communication for development (C4D) strategy, which is focused on discourse (UNICEF, 2013). The strategy is based on three common principles: evidence based, participatory, and right based centered on the rights to information,

communication and participation. Discourse is evidence based because it gathers social and behavioral data to plan, implement, monitor, and evaluate communication initiatives. It is participatory because it involves all stakeholders throughout the C4D strategic process, allowing “local and cultural specificities and perspectives to be included in the design, testing, and implementation of communication strategies” (UNICEF, 2013, para. 4). Finally, it is rights based because it “creates awareness of people’s own rights by empowering participation in social and political issues and rights so that people can successfully advocate for changes and policies that would improve their well-being and living conditions” (UNICEF, 2013, para. 5).

Information programs on the dangers of polio are among the most successful programs of the GPEI. Obregón et al. (2009) detailed how UNICEF’s polio immunization information programs have contributed to the acceptance of polio immunization, leading to reduction in the numbers of polio-endemic countries and polio victims. The number of polio-endemic countries declined from 125 in 1988 to three countries in 2012. Worldwide incidences of polio dropped from 350,000 annually in 1988 to fewer than 250 in 2012—a 99% decrease (GPEI, 2012). Through the GPEI (2013a) “more than 10 billion doses of oral polio vaccine (OPV) have been administered to more than 2.5 billion children worldwide; more than 10 million people are walking today who would otherwise have been paralysed” (p. 20).

Despite the success of the GPEI, immunization coverage remains a problem in some countries, leaving children vulnerable to the polio virus. Nevertheless, a disease once widely feared is now history in all but three countries (WHO, 2013).

Problem Focus for This Study

Nigeria, Pakistan, and Afghanistan are the only three remaining polio-endemic countries in the world. A country is polio endemic if it has “never stopped indigenous wild poliovirus transmission” (Sharma, 2012, para. 1). Among the three countries, Nigeria has the highest number of cases of wild polio virus transmission. In 2012, Nigeria recorded 122 polio incidences, Pakistan 58, and Afghanistan 37 (GPEI, 2013a); figure 3 present incidences of WPV in Nigeria.

Most of the polio cases in Nigeria “occurred in high-risk northern states” (CDC, 2012b, para. 7). In the northern region, Kano has one of the highest rates of resistance to immunization. For example, from January to November 25, 2011, Nigeria recorded 43 cases of WPV in eight northern states. Kano tops the list with 14 WPV (Laulajainen, 2011). Despite the high cases of polio in Kano, the state has proved to be particularly resistant to normal efforts to reach unimmunized populations. Normal strategies aimed at stimulating the demand for the polio vaccines prove difficult to implement in Kano.

Three examples illustrate: first, in areas of high resistance to polio immunization, UNICEF adopted “local networks of community, religious, and cultural leaders” to stimulate the demand for polio vaccination (Coates, Waisbord, Awale, Solomon, & Deyc, 2013). This strategy has worked well in other countries, including Saudi Arabia, and in the Indian states of Uttar Pradesh and Bihar (Taylor, 2009); however, networks of community, religious, and cultural leaders in Kano suspended the polio immunization campaign in 2003 because of fears about the efficacy of the vaccine (Obadare, 2005). The suspension was lifted in July 2004 after several national and international consultations with the community leaders (Allo, 2008). Although the suspension was

lifted, it has cast doubt on the importance of the polio vaccines in Kano (Goswami, 2007).

Second, in areas of high resistance to polio immunization, UNICEF uses the services of local women to promote polio immunization (Coates et al., 2013). This strategy has worked well in a number of countries, including India; however, in February 2013, nine of the women employed to administer the polio vaccines were killed by unknown gunmen (“More Vaccine Worker Killings,” 2013). Killing the nine women appeared to be a ploy to discourage women from actively promoting the polio immunization program. Public health experts consistently warned that inadequate mobilization of women's groups in northern Nigeria “is a key barrier to the demand for polio vaccines” (Mohammed, Datta, Jamjoom, Magoba-Nyanzi, Hall, & Mohammed 2009, p. 15).

Third, UNICEF uses mass media to stimulate the acceptance of polio vaccines in areas resistant to polio immunization (Coates et al., 2013). In Kano, even though mass media are used to stimulate the demand for polio vaccines, an anti-polio immunization campaign has been aired by some radio stations (“Wazobia FM Journalists Arraigned,” 2013, February 12). The airing of the anti-polio immunization program was interpreted by many as a strategy to reduce the demand for the polio vaccines.

These examples make resistance to polio immunization in Kano remarkable and worthy of investigation. For instance, when polio vaccinations stopped in Kano from April 2003 to July 2004, there was a “...decrease in the OPV (oral polio vaccine) acceptance in all northern Nigerian states,” which led to increase in the number of polio cases (Lahariya, 2007, p. 487). Confirmed polio cases in Nigeria increased from 202 in

2002, to 355 in 2003, and 782 in 2004. Of the 782 polio incidences in Nigeria in 2004, 184 cases occurred in Kano, representing 24% of national polio incidences (CDC 2005, September 9). Nigeria accounted for 62% of the 2004 global polio case burden (1,266 cases) (CDC April 29, 2005).

Furthermore, the incidences of polio in Kano constitute a threat to the well-being of children in Nigeria and other countries. The World Health Organization [WHO] (2012a) cautioned that, as long as a single child remains infected with polio, children in all countries who are not immunized are at risk of infection from the polio virus. The risk of re-infection is not an empty threat. Many previously polio-free countries have experienced polio outbreaks following the importation of the WPV. By 2005, more than eight countries that were previously certified polio-free have been re-infected with the polio virus from Nigeria: Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Côte d'Ivoire, Ghana, and Togo (Arevshatian et al., 2007). Consequently, Nigeria poses a high risk to international health. This issue compelled the WHA to pass a resolution urging Nigeria to reduce the risk of international spread of the polio virus (Mohammed et al., 2009).

A critical next step toward eliminating polio in Nigeria and the spread of polio virus in Kano is to determine answers to the following questions. What factors account for the resistance to polio immunization in Kano? How can this resistance be explained through the framework of Chatman's (2000) information perspective of social norms, worldview, social types, and human information behavior? These research questions need to be investigated because studies of resistance to polio immunization indicate that "mothers and fathers are critical to the (GPEI) Programme's success, but do not have a

voice within it” (Donaldson, Toole, ElSayed, Quadros, Koplan, Mogedel, Nduiti, & Singhai, 2012, p. 7). Consequently, information programs on polio immunization do not appeal to some parents in Kano (Independent Monitoring Board, 2012). The problem is that information about its value has not overcome parents’ resistance to polio immunization. To improve the effectiveness of information programs on polio immunization, the reasons for the resistance to polio immunization information must be considered.

Significance of the Study

This study identifies the social and cultural factors involved in the resistance to polio immunization information in Kano and analyzes these identified factors using Chatman’s (2000) theory of normative behavior. The analysis will be used to develop a conceptual model that identifies and outlines concepts relevant to tactical problem resolution and practical steps that can potentially be used by policy makers, government officials, community volunteers, and others involved in dissemination of polio immunization information. The conceptual model will also be used to inform new approaches to polio immunization education, dialogue, and ultimately acceptance by more members of the public.

CHAPTER 2

LITERATURE REVIEW

A review of theory on resistance to information begins with identification of meta-theory or theory about theory. Over time, scholars have addressed how people know what people know and have identified ways of thinking about thinking. The nature of reality and methods of investigation are central to this discussion of meta-theory. Various foundational concepts, including paradigms, theories, and perspectives relevant to information science and the tasks of research are discussed in this chapter.

Research Paradigm: Interpretive Paradigm and Social Constructionism Frame

Kuhn (1970) defined *paradigm* as a set of beliefs, values, and assumptions that regulate inquiry within a discipline. A paradigm provides a lens that guides the choice of theory and methods in research (Guba, 1990; Weaver & Olson, 2006). An example of a paradigm, one selected for this study, is the interpretative paradigm (Burrell & Morgan, 2006). The interpretative paradigm provides a means for articulating and making visible the voices, concerns, and practices of individuals in particular places (Schwandt, 1994).

In their inquiry, scholars who subscribe to the interpretative paradigm assume that reality is socially constructed through language, consciousness, and shared meanings (Myers, 1997). In this sense, the role of the researcher is to expose the opinions of participants (Orlikowski & Baroudi, 1991). This paradigm “sees the world as an emergent social process created by the individuals concerned” (Burrell & Morgan, 2006, p. 31). The assumption in using this paradigm is “that our knowledge of reality is gained only through social constructions such as language, consciousness, shared meanings, documents, tools, and other artifacts” (Klein & Myers, p. 69). Thus, it makes possible a

research design that will give voice to people whose situations are represented in publications documenting the current polio outbreak in the region of Kano, Nigeria.

Social Constructionism

The interpretative paradigm has generated “premises upon which empirical research and theorizing is based, one example [of premise] is the social constructionism” (Tuominen, Talja, & Savolainen, 2005). Social constructionism refers to the “importance of language and social interaction in knowledge formation and in establishing social/power relationships” (Case, 2007, p. 159). This definition indicates that social constructionism is not based in objective reality; it considers knowledge as grounded in “ongoing conversations” as well as in “discourses” (Talja, Tuominen, & Savolainen, 2005, p. 82). Therefore, the heart of social constructionism is how knowledge is created. Social constructionists contend that knowledge must be created before it can be used. They consider knowledge as subjective, created through language and context.

The origin of social constructionism and the notion that knowledge is socially constructed is rooted in the writings of Gergen (1985), Berger and Luckmann (1966), and Garfinkel (1984). Gergen (1985) postulated that people’s understanding of the world comes within a context that is highly subjective and that people understand the world through “social artifacts” and “interchanges among people” (p. 267). According to Gergen, the process of understanding is not automatically driven by the forces of nature but is the “result of an active, cooperative enterprise of persons in relationship” (p. 267), which is rooted in culture and histories. Therefore, to understand the process of construction, the need exists for inquiry into the historical and “cultural bases” of various forms of world construction (p. 267). Gergen has identified the role of intersubjective

relationship in the process of understanding and making meaning in society. Peoples' understandings of the world are shaped by culture, experiences, and histories.

Berger and Luckmann (1966) argued that reality is socially constructed and the sociology of knowledge must analyze the processes in which this construction occurs. In explaining the social reality of knowledge, they posited,

What is 'real' to a Tibetan monk may not be 'real' to an American Businessman.

The 'knowledge' of the criminal differs from the 'knowledge' of the criminologist. It follows that specific agglomerations of 'reality' and

'knowledge' pertain to specific social contexts, and that these relationships will

have to be included in an adequate sociological analysis of these contexts. (p. 15)

Berger and Luckmann further suggested that understanding knowledge should be concerned with the criteria each society attaches to its knowledge rather than from a reality that is imposed from outside.

Therefore, drawing from the social constructionist perspectives of knowledge, an approach to the study of information in social context emerged. This approach is referred to by Pettrigrew, Fidel, and Bruce (2000) as the social approach to information, which is located within the human information behavior theory.

Human Information Behavior (HIB)

The HIB approach addresses how people seek, manage, give, and use information in different contexts (Fisher, Erdelez, & McKechnie, 2005). "In the mid-and late 1990s [a] flurry of theoretical activity coincided with emerging consensus" about the concept of HIB within Library and Information Science (p. X1X). HIB encompassed "information seeking as well as the totality of other unintentional or passive behaviors (such as

glimpsing or encountering information), as well as purposive behaviors that do not involve seeking, such as actively avoiding information” (Case, 2007, p. 5). HIB theories developed because of a shift of focus from the structure of information systems toward users of information.

Three theoretical approaches to HIB are apparent in the literature: cognitive, social, and multifaceted (Pettigrew, Fidel, & Bruce, 2001). The cognitive approach deals with the individual as the principal actor in information behavior. The social approach is focused on the social context of information. The multifaceted approach considers multiple types of contexts.

Social Approach to Information

Pettigrew et al. (2001) traced the history of the social approach to information behavior from the seminal article by Dervin and Nilan (1986), which called for a shift from a system or resource approach to a user-centered approach. The social approach to information focused on understanding the effect of interpersonal relations of information flow in society, especially addressing the “meanings and values associated with social, sociocultural, and sociolinguistics aspects of information behavior” (Pettigrew et al., 2001, p. 54). The social approach is informed by philosophies, theories, and concepts, including gratification theory, alienation theory, insider/outsider theory, diffusion of innovation theory, and the concepts of strong and weak ties. These theories and concepts provided frameworks to scholars in exploring sociocultural barriers to information practices.

Chatman (1996), a leading theorist of the social approach to information, applied gratification theory, alienation theory, and diffusion theory as conceptual frameworks to

explore people and their relations to information in social settings. She asserted, “how people use information to reshape, to redefine, or to reclaim their social reality . . . is a central concern driving my research efforts” (p. 197). Since the 1980s, Chatman was the “sole researcher focusing mainly on social aspects of information” in the library and information science (LIS) field. (Pettigrew et al., 2001, p. 59). Her work laid the foundation for the social approach to information.

In the 1990s, more theorists emerged, including Williamson (1998), Pettigrew (1999), Tuominen, and Savolainen (1997). Chatman (2000) is concerned with social barriers to information. She explored the ways individuals interact with information in the context of social and cultural perspectives of the “small world” setting. *Small world* is defined as a social group in which “mutual opinions and concerns are reflected by its members and in which the interests and activities of individual members are largely determined by the normative influences of the small world as a whole” (Chatman, 1999, p. 213).

Two of Chatman’s (1996, 1999) earlier theories—the theory of information poverty (IP) and the theory of life in the round prepared the groundwork for the development of the theory of normative behavior. They are summarized:

Information poverty theory. The IP theory identified social barriers as being responsible for why members of the small-world setting do not use information that is potentially useful to them. Social barriers identified by Chatman (1996) are (a) “secrecy and deception” (p. 195) arising from a sense of mistrust regarding the interest or ability of others to provide useful information; (b) membership in a social group inhibit information use because the social group establishes norms that dictate what is right and

wrong for members by “[restricting] members from seeking information” outside the group (p. 197); and (c) members of a small world group rejecting information that does not conform to their “shared common sense reality” (p. 203).

IP theory identifies group norms as accounting for barriers to information use. The norms include perception by group members of a dearth of information resources relevant to the needs of the group, suspicion toward information coming from outsiders, and secrecy and deception to maintain a sense of control over everyday life. These group norms are mechanisms of managing relationships within the group and outside the group. Consequently, group norms relate to revealing and hiding information about everyday life practices. In this sense, Fine and Holyfield (1996) concluded that issues of trust, secrecy, and information sharing are influential means of group acceptance among those who practices unsafe behaviors.

Theory of life-in-the-round. Chatman (1999) developed the theory of life-in-the-round after the IP theory. She studied the information lifestyles of female prison inmates and found the following:

Life in the round will, for everyday purposes, have a negative effect on information seeking. People will not search for information if there is no need to do so. If members of a social world choose to ignore information, it is because their world is working without it (p. 214).

The theory posits that members of a small-world community will not cross boundaries of their small worlds to seek information. Information from outside the small-world group will be consulted if “(a) the information is perceived as critical, (b) there is a collective

expectation that the information is relevant, and (c) a perception exists that the life lived in the round is no longer functioning” (p. 214).

Chatman’s (1999) theory of life-in-the-round indicates the importance of relevance and context in designing information programs. What is relevant in one community may be considered trivial in another. Relevancy of information is related to the idea of knowledge claim, not to the value attached to knowledge by others, because knowledge is considered subjective and generated within a community.

Theory of Normative Behavior

The theory of normative behavior (TNB) by Chatman (2000) asserts that the norms and value system of the community govern behaviors and information (Burnett, Besant, & Chatman, 2001). Normative behavior provides four conceptual constructs (social norms, worldview, social types, and information behavior) that aid in analyzing how individuals’ everyday worlds may shape their information actions.

Social norms. Social norm is the first component of the theory of normative behavior. Chatman (2000) defined *social norms* as the acceptable public behaviors of members of the small-world group. Social norms provide directions for understanding what is right or wrong in social appearances and activities. According to Burnett, Jaeger, and Thompson (2008), social norms dictate the behaviors of people, including the value people place on information. Information coming to the small world from outside may be either “ignored” or “dismissed” if it is perceived to be at odds with the norms and values of the small world (Burnett, Jaeger, and Thompson, 2008, p. 8). Social norms subconsciously guide and dictate the acceptable behaviors of people, including their attitudes toward information.

The concept of social norms defines “standards with which members of a social world comply in order to exhibit desirable expressions of public behavior” (Chatman, 2000, p. 13). Social norms determine the value of information coming to the small world from outside. Information may be either disregarded or actively dismissed if it is perceived to be at odds with the norms and values—or standards—of the small world group. Members of a group regulate behaviors of each other to ensure compliance with social norms, which dictate rightness and wrongness in social appearances (Chatman, 2000).

Worldview. The term *social norms* refer to observable actions of the members of a small world, according to Chatman (1999), *worldview* is a collective perception held by members of a social world concerning those things that are deemed important or trivial. Worldview is a philosophy that shapes beliefs. It is a system of shared experiences that provide an outlook or point of view (Pendleton & Chatman, 1998).

In this sense, social norms shape the worldview of members of small-world groups, and the worldview provides the lens or boundary of behaviors. Factors that shape worldview are “language, values, meaning, symbols, and a context that holds the worldview within temporal boundaries” (Chatman, 1999, p. 214). A worldview serves to unify members of small worlds. It filters the aspects of the world, both local and global, that are worth attention, including the relative importance attached to information.

Chatman’s (1999) concept of a worldview relates to Savolainen’s (1995) theoretical postulations of *habitus* to describe the information practices of people. *Habitus*, according to Savolainen, refers to the ways in which an individual’s upbringing and social environment create dispositions to act, interpret experiences, and think in

certain ways. Drawing from the concept of habitus, Savolainen introduced the idea of the mastery of life, which denotes the acquisition and effective use of information to survive in one's habitus. Savolainen noted that mastery of life directs individuals to approach everyday problems that align with personal values, including information seeking. This theory indicates that if a community considered an issue to be of low value (e.g., polio immunization), the community would not expend much effort to search for information on the issues. Therefore, worldview constrains or inhibits members of the small world from using certain types of information.

A worldview also relates to the idea of "taken for granted" beliefs by Gergen (2009, p. 32) and the idea of "frame of reference" by Mezirow (1997). *Frames of references* are the "structures and assumptions through which we understand our experiences (Mezirow, 1997, p. 5)" They are "primarily the result of cultural assimilation and the idiosyncratic influences of primary caregivers" and the agents of socialization: teachers, the media, and religious institutions (Mezirow, 1997, p. 5). This theory suggests the strong role of culture and social environment in nurturing people's worldviews. In this sense, Burnett et al. (2008) suggested that, when different small worlds with conflicting worldviews come into contact, they may act at cross-purposes with one another.

Social types. Social types are applied to members of a social world; they pertain to a "classification of a person or persons" (Chatman, 2000, p. 10). Social types limit and determine how individuals are perceived and what they may credibly do within the group. They categorize and assign roles to members of social groups. Social types influence the acceptance or rejection of information within the small-world group. For example,

Burnett & Nocasian (2008) reported that “information (even if it is accurate) coming from an individual typed as untrustworthy or from one who is seen to be at odds with the norms of the world will, often, not find an easy welcome from other members of the world” (para. 14).

Social types provide a system of generalizations about people, their roles, and the typical behavior associated with those roles (Chatman, 2000; Pendleton & Chatman, 1998). The theory of normative behavior has attached great importance to typecasting in a community. Each society stereotypes certain classes of people. This stereotyping has implication for information behaviors. For example, some individuals are stereotyped as untrustworthy in Nigeria (e.g., corrupt politicians) and consequently not trusted. They are considered “spoilers” and exploiters of the common person (Renne, 2010).

Information behavior. Information behavior (IB) is the final concept of Chatman’s (2000) theory of normative behavior. It refers to acting or not acting on available information (Chatman, 2000). Burnett, Jaeger, and Thompson (2008), explained information behavior in the context of the small world. It is the full spectrum of normative behavior regarding the information behaviors of members of a small world. These behaviors include information seeking, informal exchanging information among friends, posting fliers, and actively avoiding information. Chatman’s (2000) notion of information behavior relates to Wilson’s (2000) definition of *human information behavior* as “the totality of human behavior in relation to sources and channels of information, including both active and passive information seeking and information use” (p. 4). It is also related to the definition by Fisher, Erdelez, and McKechnie (2005) who

conceptualized human information behavior as how people need, seek, manage, give, and use information in different contexts.

Chatman's (2000) TNB interrelates with the IP theory and the theory of life in the round by clarifying the importance of cultural dynamics regarding human information practices through five propositional statements:

- a) Social norms are standards with which members of a social world comply in order to exhibit desirable expressions of public behavior.
- b) Members choose compliance because it allows for a way by which they affirm what is normative for this context at this time.
- c) Worldview is shaped by the normative values that influence how members think about the ways of the world. It is a collective, taken-for-granted attitude that sensitizes members to be responsive to certain events and to ignore others.
- d) Everyday reality contains a belief that members of a social world do retain attention or interest sufficient enough to influence behavior. The process of placing persons in ideal categories of lesser or greater quality can be thought of as social typification.
- e) Human information behavior is a construct in which to approach everyday reality and its effect on actions to gain or avoid the possession of information. The choice to decide the appropriate course of action is driven by what members' beliefs are necessary to support a normative way of life. (p. 13–14)

Previous Studies of Theory of Normative Behavior

The theory of normative behavior has generated scholarly discussions and research efforts (Burnett, 2009; Burnett et al., 2001; Burnett et al., 2008; Jaeger & Thompson, 2004; Turner, 2008). Scholars have applied Chatman's (2000) TNB to study the information behavior in small-world group settings. A small-world setting is described as "a specific context that serves a particular population to permit members to conduct their business in a routine, expected manner" (Burnett et al., 2001, p. 536). Life within the small-world setting motivates people to access and use certain types of information. Conversely, it also prevents access to and the use of some information.

Using a mixed-methods approach to data collection, Turner (2008) investigated the information practices of people in an online discussion group, considered a small-world setting by the researcher. The study applied the four concepts of Chatman's (2000) TNB (social norms, worldview, social type, and information behavior) to frame research questions and analyze data. Turner's (2008) findings indicated the presence of social norms in the online community studied. The social norms included politeness behaviors of conducting research on an issue before asking questions and not chastising others. Turner identified four categories of social types: (1) readers, those who did not directly contribute; (2) questioners, those who asked questions; (3) communicators, those who asked and answered questions; and (4) answerers, experts who answered questions.

Furthermore, Turner (2008) identified information seeking and information avoidance among the information behaviors of the group. Problems with technology prompted information seeking. Participants avoided information that did not fit the norms of the group: "If the information seeking process was not polite the question would

almost always be ignored and if the information giving occurred in a disrespectful way, the answer was somehow deemed less useful” (p. 205). The results of the study in terms of Chatman’s (2000) TNB showed that the online newsgroup was a small world with norms and members had a sense of identity among themselves (wanting to learn about technology). The analysis also revealed that, in the small world of the newsgroup, information seeking is “normative for everyone while information sharing is normative for experts” (Turner, 2008, p. 209).

Burnett (2009) used the concept of “worldview” derived from the TNB to examine the controversy that erupted in the Live Music Archive (LMA) of archive.org in November 2005. The context of the study was an online public domain founded in 1995 to provide access to a wide range of digital materials. Archive.org houses a collection of concert recordings of the band Grateful Dead. The controversy was triggered when access to a collection of live concert recordings by the Grateful Dead was limited. Burnett adopted content analysis of the posts made by the archivists and participants in the forum and statements by band members to situate the controversy “as an instance in which participants shared some elements of a common worldview but, because they understood those elements differently, emerge as three different small worlds” (p. 694).

According to Burnett (2009), the three small worlds involved in the controversy were the archivists, the Deadheads (fans of the American jam band, the Grateful Dead), and the band members. The three groups were linked to one another through a common collection of the music (information) stored in the archives; however, the study indicated that the three groups had different worldviews concerning the purpose of the collection and decisions made about the collection. From the perspective of the theory of normative

behavior, the conflict was triggered by differences in worldviews of the three groups. While the Deadheads were devoted to open exchange of information (live recordings), the band members had economic interest in transforming the information in the archives into commodities for sale, and finally, the archivists had a worldview that is focused on open access to information on public domain and the legal limits of such access.

The controversy investigated by Burnett (2009) showed the importance of understanding worldviews in a society or group. Differences in worldviews concerning an issue may cause conflict. This dissertation relates to Burnett's study in terms of choice of theory (TNB), methodology (content analysis), and problem investigated (conflict between small-world groups that share different worldviews of a common issue). Burnett (2009) also demonstrated the importance of context in disseminating information. Information is embedded within the context of the norms, values, and worldviews of a society and draws its significance from the values and norms of such a society.

In another study, Burnett et al. (2001) investigated the information worlds of online communities and feminist booksellers. They used the four concepts of the TNB (social norms, worldview, social type, and information behavior) to frame their investigation. The study findings indicate the prevalence of social norms among feminist booksellers. The norms "govern not only behavior, but also influenced attitudes, interest, and the language of participants" (p. 542). The findings also indicate a common worldview among the participants: gender inequality as a social evil to be actively opposed. Concerning social types, the virtual communities were categorized according to insider-outsider status. The insiders were the owners and staff of the bookstores; this

group was further divided into those considered professional booksellers and those who simply worked at the bookstores. Subtypes within the online community included lurkers and newbies.

Information behaviors occurred in the form of information exchanges: queries, replies, posting announcements, and links to relevant information sources. The findings also indicated value attached to information. For example, messages and information coming from outsiders were less valued and likely to be disregarded by insiders. Burnett et al. (2001) illuminated the information practices of feminist booksellers, considered a small-world community.

Drawing on Chatman's (2000) work, Jaeger and Thompson (2004) used the TNB as a lens to explain why some populations resist e-government information via the Internet. E-government information is a method used to increase democratic participation. According to the authors, one reason some groups do not use e-government information is that it "is not worth the effort to find or use" (p. 104). The authors argued that when a group of people shared the view that e-government information is not worth the effort to find or use, they create social norms of not using e-government.

In this case, the information behavior of individuals was dictated by the view that e-government information has minimal value. The authors also argued that some people may reject information coming from the Internet "because of a worldview that the globalized information is akin to information imperialism or they may only access Web pages with information that agrees with their current point of view" (Jaeger and Thompson, 2004, p. 100). In this manner, the normative behavior of individuals deters

them from using e-government (Jaeger and Thompson, 2004, p. 103). Jaeger and Thompson's study relates to this study in two ways: the delineation of the problem (nonuse of information) and the choice of Chatman's (2000) TNB as a frame to explain the nonuse of information.

Burnett, Jaeger, & Thompson (2008) applied Chatman's (2000) TNB to study the social aspect of information access. The authors posited that the TNB has significant implications for understanding social access to information in two primary regards. First, social norms, worldview, and social types influence what information is permissible for members of a small world to access and what information from the outside world will be accepted by the group. Second, normative information behaviors define the appropriate mechanisms and activities involved in information access within the constraints prescribed by the worldview and social norms of the small world. The authors cited three case studies to demonstrate how normative behaviors of groups caused conflict within social settings.

The three case studies of Burnett et al. (2008) were (a) the debate on the introduction of technology and the weeding of print materials in the San Francisco Public Library, (b) the incidence of book banning in 1951 in the Oklahoma Public Library, and (c) the restrictive information policies enforced during the Bush administration. In the case of the San Francisco Public Library, a conflict erupted between the library staff and the users of the library when the library decided to weed books from the library collection. Using the concept of worldview from Chatman's (2000) TNB, Burnett et al. (2008) demonstrated that a public library consists of two small-world groups: the library staff and the library users.

Although the library staff considered the weeding of books a process for maintaining and making other information more accessible, some library users viewed weeding as equivalent to denying access to information. The analysis of Burnett et al. (2008) supported the idea that worldview is a source of conflict in the social world.

Burnett and Nocasian (2008) studied how individuals interact with information in a virtual world. Using the four concepts from Chatman's (2000) TNB, Burnett and Nocasian examined a print-based virtual community that interacted in the pages of the Romanian magazine *Formula As*. The authors considered readers of *Formula As* to be a small-world group. The magazine published letters from its readers, who sought practical information on many aspects of life, including traditional Romanian medicine, Romanian cultural tradition, Romanians viewed from abroad, emigration, and so on.

The findings of Burnett and Nocasian (2008) indicate a specific worldview, as well as specific sets of social norms, social types, and information behaviors. The findings indicate the worldview of the *Formula As* community centers around issues related to emigration, distance from home, and maintaining Romanian values. The social norms of the *Formula As* community include a culture of seeking and providing information, as well as a strong belief in the accuracy and reliability of the information offered by others (Burnett and Nocasian, 2008). The concept of social typing in the *Formula As* community occurred in three ways. First, the magazine's editor was typed as a legendary and almost supernatural person; second, the magazine was typed or referred to as an active agent that "removes distances on the map." Third, the readers of the magazine were typed as a single group by the commonality of being Romanian.

Information behavior was manifested in the *Formula As* community through information seeking and information exchange. For example, in the “Health” section of the magazine, readers requested information as well as gave information. Other information behaviors included the value attached to information and the acceptability of information in the *Formula As* community. The acceptability of information was largely a matter of how it was presented, usually according to the level of detail. Information was more valued if it emerged from “lived experience” rather than from an educational background or medical training. Burnett and Nocasian (2008) investigated the information practices of a small-world community, which is related to this study.

The notion of a social network relates to the concept of social type in Chatman’s (2000) TNB. Using Chatman’s (1996) theory of IP, Hersberger (2003) studied information transfer among the homeless people in Seattle, Washington. The study shows that social network relationships play important roles in the information practices of the homeless community. It also reveals that the homeless do not have an elaborate social network, indicating that an information network in a small-world community does not have to be complex. Hersberger’s conclusions were similar to those of Chatman (1992) in a study of the information world of retired women, in which Chatman found interpersonal linkages as important channels of information exchange. Reaffirming the value of social networks in information practices, Williamson (1998) investigated the information-seeking practices of senior citizens using a social network approach. Findings indicate that people obtain information both purposely and accidentally through personal networks.

Both Williamson (1998) and Hersberger (2003) focused on the concept of social network that Chatman (1992) borrowed from sociology to study information practices of people in a small world setting. These studies provide insight into the importance of social network relationships within the context of a small-world setting. The notion of a social network relates to the concept of social type and has implications for what sources of information are considered worthy of attention in a social setting. Social networks could explain why some individuals avoid information that is outside their strong network ties and prefer information from friends, relatives, and other close ties.

TNB and Resistance to Polio Immunization Information

Many studies have adopted Chatman's (2000) four concepts of TNB for investigating individual resistance to information. Table 1 displays a summary of TNB as used by identified authors (with examples). The four concepts of the theory of normative behavior can explain the factors that account for individuals' failure to make use of polio immunization information disseminated by the GPEI.

One example of a study that reported resistance to polio immunization information in northern Nigeria is by Renne (2010), a US based anthropologist who studied the implementation and reception of the GPEI in Zaria Kaduna State, Nigeria. Renne conducted an ethnographic study about polio immunization in Zaria. Field notes, interviews and document analysis were used to collect data. Community leaders, health workers, and the public were interviewed about the polio immunization program and their willingness to receive polio treatments provided by the GPEI. Findings indicates that:

While many Northern Nigerians saw the benefits of vaccinating their children against polio, some protested against the campaign by refusing to have their children immunized. They were often characterized as misled by Muslim leaders, as deceived by rumors, or as illiterate and irresponsible parents. One might well question the ethics of parents who reject immunization against polio or other infectious disease for their children; however, those who refused saw their actions as the most ethical ones possible in the face of uncertainty about the safety of the polio vaccines. (p. 3)

Renne's study discussed the resistance to polio immunization in Zaria from the perspective of those who practiced it. Renne explored the political and social dynamics of the Northern Nigerian response to the GPEI from 1988 to 2009. Reasons for resistance to polio immunization in Zaria as reported by Renne's (2010) study include:

Example 1:

No I don't allow my children to have the vaccine because I don't trust the vaccine. Because they said they are going to do it free of charge. And if we go to the hospital, we have to buy medicine (p. 41).

Example 2:

If I believe in polio or go to the hospital and have medicine free of charge, like this polio, I can accept the polio vaccine. But if I have to pay for (other) medicine in the hospital, I will not accept this one (p. 41).

Example 3:

We went to one village in Zaria and we were stoned while we were attempting to do routine immunization.” They said, “You are bringing infertility to our women (p. 60).

Example 4:

Anyone that says Zaria residents reject immunization is only saying something that is far from the truth. What we rejected was the Polio immunization because we saw no reason why they were disturbing us with Polio immunization when they did not effectively handle killer diseases like measles. Our point of contention is that, it is only on rare occasions that one comes across death caused by Polio or even a victim of it, then why the prominence? This is what we reject, not immunization generally” (p. 61).

Example 5:

Both *malamai* (religious leaders) and the big people now (government officials/politicians) they are not honest. They spoiled the world (p. 64).

Example 6:

Natural immunity is the real immunization. The other immunization is not important because I never had it. If God wishes, the one who had immunization will be sick but the one who didn't have immunization will be in good health. But immunization can protect a person if the person believes in it and (also believes) that it is only God who will protect them... Islam believes in immunization because God said, “wake up and I will help you.” It is not that God says it is not good, it is just that people don't want it...that is why they don't take

immunization. And there are some who don't take Western medicine, they only take traditional medicine (p. 107).

This review of literature on HIB, theory of IP, theory of life in the round, and the four constructs of the TNB provided a background and a framework for the analysis of information practices in social settings. The theory provides scholars with an epistemological frame for understanding and explaining information practices. However, while many scholars have applied the TNB to explain information practices in developed countries, its application in less developed countries has been minimal.

CHAPTER 3

METHODOLOGY

Study Purpose

The objective of this case study (Cresswell, 1988; Merriam, 1988; Yin, 1994) is to identify the social and cultural factors in resistance to polio immunization information in Kano. It analyzes these factors from the perspective of Chatman's (2000) TNB as well as Renne's (2010) reasons for resistance to polio immunization information. The goal is to provide fresh and enhanced insights into the phenomena of resistance to polio immunization information. These insights may guide future actions by public or private agencies charged with providing access to polio-specific information on immunizations and the ultimate elimination of polio in Kano State.

Research Questions

This study is bounded by its geographical region (Kano State, Nigeria) and the period of publication of documents selected for the content analysis (2002-13). It emphasizes detailed contextual analysis of one condition—resistance to polio immunization information. Using the constructionist view of reality and Chatman's (2000) TNB, the study posed these questions:

1. What are the reasons for resistance to polio immunization information in Kano State, Nigeria, and how do these compare to those identified by Renne in Zaria, Kaduna state, northern region Nigeria?
2. How does Chatman's (2000) theory of normative behavior and her perspective on social norms, worldview, social type, and information behavior explain resistance to polio immunization information in Kano State, Nigeria?

3. What human information behaviors exist that are associated with resistance to polio immunization information in Kano State, Nigeria?

Qualitative Content Analysis

Content analysis has its roots in the study of mass communications in the 1950s and has been widely used as a research method in the past 50 years. It is “a research technique for making replicable and valid inferences from texts to the context of their use” (Krippendorff, 2004a, p. 18). It is “a research method for subjective interpretation of content of text through the systematic classification process of coding and identifying themes or patterns” (Hsieh & Shannon, 2005, p. 1278). Following the explanation of Hsieh and Shannon, this study adopted a system for coding and identifying themes from the selected published content relevant to the reasons for resistance to polio immunization information in Kano State. According to Elo & Kynga (2008), themes in content analysis can explain a phenomenon or build a model.

Researchers in many fields—anthropology, LIS, management, political science, psychology, and sociology—have used content analysis (White & Marsh, 2006). In LIS, content analysis “is one of the top five preferred methodologies” (Denise, Slater, & Crumley, 2004). Examples of the use of content analysis in LIS include McKechnie, & Pettigrew (2002), Reeves & Hahn (2010), Turcios, Agarwal, & Watkins (2012), and Jackson–Brown (2013). Some of these studies are briefly explained below.

McKechnie & Pettigrew (2002) conducted a content analysis of 1,160 articles published in six LIS journal between 1993 and 1998. The purpose was to examine the use of theory in LIS research. Six journals constituted the unit of analysis for the study. The journals were purposively sampled because they are prominent and contain peer

reviewed articles covering most areas of research in LIS. Each article was coded for the first author's affiliation as listed in the article, subject area, and type of article. Subjects were further grouped under the broad disciplinary categories of humanities, social sciences, and sciences. Theories cited in the articles were counted and coded as to whether they originated within LIS, the sciences, social sciences, or humanities, and where they were used in the article. Findings indicated that 34.2 % of articles incorporated theory in the title, abstract, or text, resulting in a total of 1,083 incidents of theory use or an average of .93 theory incidents per article.

Reeves & Hahn (2010) adopted a content analysis methodology to study online library/archival job advertisements (ads) published between 15 April, 2006 and 10 May, 2009. The authors purposively sampled *American Libraries* and *Library Journal*, two electronic lists (*Maryland's iSchool Discussion list* and the *Archives and Archivists list* sponsored by the Society of American Archivists) and two Internet job banks (*USAJobs.gov* and *LISJobs.com*). Selection criteria included ads that publicized entry-level positions, did not require professional experience as a job requirement, and required an MLS or MLIS degree from an ALA accredited institution. Findings indicated that a graduate degree in library or information science was required, but not sufficient, to enter the profession. Practical experience was essential for new graduates seeking employment. The majority of postings did not require a subject expertise, second Master's degree, or knowledge of a foreign language.

Turcios, Agarwal, & Watkins (2012) used content analysis methodology to determine the percentage of the LIS literature published in 2011 that qualified as "research." The unit of analysis was the 2011 LIS journal collection at Simmons College

Library. All the 2011 LIS journal collection were sampled. A content analysis form was developed to categorize several key elements of each article in the selected journal, including journal title, journal volume and issue, article title, page numbers, author name(s), objective(s), method(s) used in the study, and findings of the study. This is research in progress; the “data is expected to show the distribution of the literature, including what percent is research and non-research, the methods used, and the topics covered.” (p. 3).

Jackson-Brown (2013) adopted a content analysis to study how librarian blogs are used for professional development, political advocacy for libraries, research, and other information dissemination uses. The study adopted purposive sampling technique to identify 12 blogs having two or more comments. Findings showed that professional development was a major focus of the blog content during the period of study. The findings contributed to knowledge regarding the attraction of blog readers to blogs that support professional continuing education around technology, conferences, career advising, and other areas.

Data Collection Procedure

Purposive sample. This involves selecting participants who are best able to help the researcher understand the problem and answer the research question (Creswell, 2003). In purposive sampling, the researcher decides what information is needed and seeks informants or documents that are most likely to provide information that can answer the questions of the study (Krippendorff, 2004b). Purposive sampling is appropriate for this study because it offers a frame for identifying sources that will uncover the reasons for resistance to polio immunization information in Kano. Purposive sampling technique was

employed to identify relevant documents (research reports, newspaper reports/articles, evaluation reports, and video) that could answer the research questions for this study. The purposive sampling comprised of two phases: The first identified sources of the documents while the second involved the selection of relevant documents from the sources in phase one.

Phase one involved selecting the document source. Two sources were used to collect documents for this study: websites of GPEI partners (WHO, UNICEF, Rotary, the CDC) and the websites of non-GPEI partners (Communication Initiative website and Google). Websites of GPEI partners were chosen because they are the principal actors involved in the dissemination of polio immunization information in Nigeria. The Communication Initiative website and Google were chosen to identify documents that were not authored by the GPEI and reported resistance to polio immunization information in Kano.

The Communication Initiative websites archived information on health and developments topics, including issues related to polio. The database has over “500 different taxonomy codes that facilitate a filtered search process” (Communication Initiative 2012, para. 6). Google was chosen in order to supplement information that might have been missed in either the GPEI websites or the Communication Initiative website. These sources provided varied content for understanding the resistance to polio immunization information in Kano. The use of multiple sources to collect documents on the controversies of the resistance to polio immunization information in Kano is in accord with Glaser and Strauss (1967), who stressed the importance of using a maximum variation technique in selecting samples for inquiries in which the phenomenon is

sufficiently complex. A maximum variation sample is a purposefully selected sample of persons or settings that represent a wide range of experience related to the phenomenon of interest. The objective is to try to represent a range of experiences related to what one is studying (Maykut & Morehouse, 2000).

The various documents identified from these sources include mass media reports, evaluation reports, government reports, scholarly articles, and news analysis documentaries on resistance to polio immunization information in Kano. Reports from mass media were purposively chosen because they report voices of Kano locals on resistance to polio immunization information. Scholarly articles were selected because they present the result of investigations by diverse individuals/organizations on resistance to polio immunization information in Kano. Evaluation reports were chosen because they contain analysis of polio immunization information programs. These documents, taken together, fairly represent the situation in Kano related to resistance to polio immunizations information.

Selecting of relevant document. Phase two of purposive sampling for this study relates to selecting of relevant documents. Content analysis methods should ensure that the texts selected answer the research questions of a particular study (Krippendorff, 2004a). To identify relevant documents from the websites of GPEI partners, Communication Initiative, and Google, this researcher devised a search strategy using the following key terms: barriers to polio immunization in Kano/northern Nigeria, polio immunization in Kano, resistance to polio immunization in northern Nigeria. Boolean search techniques were used to exhaust search possibilities for documents on polio immunization information resistance in Kano. Quotation marks were used to ensure that

the search result contains the exact phrase of the search terms. The Boolean search term of OR was also used to identify documents. This allows search to be performed using combination of terms.

Documents were then selected based on uniqueness and availability using the following criteria:

1. The document reports reasons for the resistance to polio immunization information in Kano or in northern Nigeria in either qualitative or narrative format.
2. The document reports the reasons for resisting polio immunization information given by parents, caregivers, health workers, GPEI partners, and from scholars and journalists who conducted interviews or studies on polio immunization in Kano/northern Nigeria/Nigeria.
3. The document was published between 2002-13. This date range was chosen because it corresponds with the period of resistance to polio immunization information in Kano.

The use of criteria in selecting documents for this study is in accord with the advice offered by Merriam (1988) and Creswell (1998), who noted that researchers must delineate the criteria for their sample selections. Furthermore, adopting criteria in sampling ensures the sample in the study meets predetermined standards, thereby providing a measure of quality assurance (Miles & Huberman, 1994). These criteria were used to select documents for this study from November 2012 to June 2013 (eight months).

The data collection stopped when all content (words, phrases, paragraphs) relevant to the research questions was identified and entered into a Microsoft Excel spreadsheet. This is similar to the concept of saturation, the point in data collection when no new or relevant information emerges from analysis of the data sources. It is the point at which no new information emerges in the analysis of data. Data saturation has been recommended in qualitative content analysis by Glaser and Strauss (1967) and is used by scholars (Bluff, 1997; Byrne, 2001).

Analysis of the Selected Documents

Analysis of the selected documents addressed identifying statements and narratives that indicate the reasons for resisting polio immunization information in Kano State, Nigeria. This study focused on narratives from parents, caregivers, health workers, and community members (e.g. political leaders, religious leaders) who have resisted polio immunization information. Only narratives that reported reasons for resistance to polio immunization information were selected in the documents for coding. This researcher adopted and used Auerbach and Silverstein's (2003) standards for selecting relevant text: Does it relate to the research concern? Does it help in understanding the participants better? Does it clarify the researcher's thinking? Does it seem important, even if the researcher cannot explain why?

The researcher manually selected words, sentences, and phrases that described rejection or avoidance polio immunization information. The selected narratives (passages from the documents) were then sorted into categories based on similarities among significant statements (Krathwohl, 1998; Krippendorff, 1980). The selected

narratives were cut and pasted into the researcher's coding template and into a Microsoft Excel spreadsheet. The sample of the coding template is presented in Table 2

Data were then analyzed using the steps for coding narrative data adopted from Krathwohl (1998), who defined coding as interpreting narrative data and making decisions about what the data means. In coding, this researcher assigned a descriptive word or phrase to each selected unit of narrative. In assigning descriptive words as a code, this researcher used the language from the narratives as it appeared in the documents.

This researcher used Krathwohl's (1998) steps for coding narratives as a guide in the coding of narratives from Kano locals:

1. Each document was read to get a sense of the content and to identify patterns, occurrences, and repetitions of the reasons for the resistance to polio immunization information. Occurrences were highlighted in the document, which laid the foundation for coding.
2. Highlighted phrases that clarify the reasons for the resistance to polio immunization were copied, and arranged in the Microsoft Excel spreadsheet by year of publication.
3. The researcher read the narratives again, at this stage highlighting key words that explained the reasons for the resistance to polio immunization information. This helped in separating the actual reasons for the resistance from the long phrases isolated in step two. At this stage, the researcher began to notice emerging and recurring codes. This prompted the researcher to establish categorization rules for the emerging codes.

4. At this stage, codes emerged from the raw data.
5. The codes were analyzed looking for overlap and redundancy. Similar codes were placed into sub-categories.
6. The sub-categories were analyzed for redundancy and placed into wider categories.
7. The sub-categories and categories were tabulated and condensed into themes. Figure 4 presents steps one through seven.
8. Instances of verbatim narrative were then selected from the data for each of the sub-categories and wider categories.
9. Each of the wider categories were then defined and explained. The aim was to identify the content of the category. Each category was described stating data generalities, general perceptions or perspectives, and typologies of resistance to polio immunization information. The description includes a couple prime examples of each of the reasons taken from the narratives. The descriptions for each of the categories also include inferences.

Limitations

While the documents used in this study include strong indications of the voices of multiple stakeholders related to the dissemination of polio immunization information in Kano State, Nigeria, the study is limited in its coverage of views of all potential stakeholders, to some, for example, that could be included through personal interviews. An attempt to alleviate any weakness in the content analysis method and selection of documents that include voices of stakeholders has been made to include all documents including stakeholder voices located in an exhaustive search of the literature from 2002-

13. The researcher used the following terms: barriers to polio immunization in Kano/northern Nigeria, polio immunization in Kano, resistance to polio immunization in northern Nigeria, and Boolean searching technique to exhaust search possibilities.

Another limitation of this study is that findings are not fully generalizable to other populations of northern Nigeria also experiencing resistance to polio immunization information. The objective of this qualitative content analysis research was a better understanding of the resistance to polio immunization information in Kano State. As, Lincoln and Guba (1985) argued, “The goal of qualitative research, however, is not generalizability” (p. 297).

The data range for this study 2002-2013 is a limitation. This study collected data from 2002-2013, reasons for resistance to polio immunization information outside the data range are not included. Findings cannot be generalized outside the 2002-2013 period. Another limitation for this study is that the researcher is from northern Nigeria and has spent over 20 years in Kano. In order to reduce bias the procedures and methods used to collect and analyze data was outlined. More so, this study is a content analysis, data were collected from published documents.

CHAPTER 4

FINDINGS AND ANALYSIS

Data in the form of phrases and sentences about polio information resistance in Kano were collected from 72 documents (Table 3) comprised of an estimated 105,000 words published by 33 different authoritative sources representing a diversity of voices on this topic. The selected documents published from 2002-13 provided multiple views and insights into the complex social and cultural factors relevant to polio information resistance in Kano. Figure 5 illustrates the year of publications of the documents. The published sources were in six media types: newspaper, video, radio documentary, newsletters and reports, journals, and a weblog. Each media type is explained below:

Newspaper. These newspapers provided views and voices of individuals about resistance to polio immunization information in Kano area. Newspapers were from the following countries: Nigeria, Germany, United States, China, South Africa, and Britain.

Video. Two videos that presented accounts of polio immunization information resistance in Kano were uncovered during the search for documents. The video resources were selected and analyzed. The first video was by the Voice of America news and was a documentary on polio immunization resistance in Kano. The second was a first-person account of polio information resistance recorded by a volunteer working door-to-door in Kano to educate the public about polio vaccinations. The Voice of America video was transcribed and published in full-text documents.

Radio Documentary. A radio documentary on resistance to polio immunization information in Kano that was transcribed and published in full-text documents was analyzed. This documentary included news analysis and interviews with local Kano

individuals as they discussed polio information resistance. The radio programs responsible for the documentary were sponsored by National Public Radio (U.S.) and Radio Deutsche Welle (Germany).

Newsletter and Report. Newsletters and reports published by UNICEF, a key GPEI partner, provided accounts of polio information resistance in Kano. The newsletter published by UNICEF featured stories, analysis, and interviews with Kano locals. It contained accounts on polio immunization resistance from health workers, polio immunization volunteers, parents, and caregivers. Other than newsletters, reports provided a data source for this study. Reports by the IMB of the GPEI were data sources in this study. The IMB, comprised of global experts from a variety of fields such as medicine, communication, and public health, met quarterly to independently evaluate progress towards the objectives of the GPEI (global eradication of the polio virus by immunizing every child under five years old), and issued a report after each meeting. (“Global Polio Eradication Initiative,” 2013).

Journal. The selected articles consulted consisted of scholarly analysis and the results of qualitative studies (supported by transcriptions of interviews) about resistance to polio immunization in Kano. The journal articles included results of ethnographic surveys over prolonged periods of engagement with individuals who resisted polio immunization in Kano.

Weblog. This was an electronic publication by William Henry “Bill” Gates III sharing his personal account of his visit to Kano to evaluate polio immunization programs. Gates, the current chairman of Microsoft, is the largest single donor to GPEI programs. The report was published in text and on video.

Document Analysis

Each of the 72 documents was read, examined, and re-examined using an analytic inductive process described by Creswell (2013) wherein the “researcher works back and forth between the themes and the database until the researcher has established a comprehensive set of themes” (p. 186). While reading the documents, the researcher highlighted sentences, phrases, and passages that dealt with the resistance to information on polio immunization.

Three hundred and thirty nine (339) narratives explaining resistance to information on polio immunization were highlighted and recorded in the spreadsheet. An iterative analysis method informed by Krathwohl (1998) employed a series of steps for coding the highlighted narratives. Following these steps, the researcher read through the data looking for variances and similarities in the narrative. Twenty recurring topics were identified as classification sub-categories (Table 4). Table 5 presents illustrative quotes for each of the classification sub-categories. The classification sub-categories were then further collapsed into six emergent categories. Table 6 presents the descriptions of the six categories, while Table 7 displays the six categories arranged by sub-categories, frequencies, and percentage of frequencies. Table 8 presents the data analysis steps. Figure 6 is another depiction of the data analysis, this time illustrating the frequencies in which each theme appeared by each publication year.

Descriptions of Six Emergent Categories of Comments

There are six wide categories shown in Table 7 by categories, sub-categories, frequency, and percentage of frequency. They emerged from underlying issues related to specific concerns: (1) suspicion of Western nations reflected in narratives related to the

mission of the GPEI program; (2) polio of lower priority reflected in narratives related to the health-care priorities of the Kano community; (3) suspicion of polio vaccines reflected in comments related to the perceptions of polio vaccine; (4) distrust of Western medicine reflected in accounts related to the set of beliefs and common approaches to polio immunization; (5) administration of polio immunization revealed narratives about the procedure used to administer polio vaccines; and (6) perceptions of promoters of polio immunization this takes into account comments related to labeling and classifying promoters of polio vaccines. The six wide categories are explained below, and are presented from underlying issues to specific concern. Underlying issues are concerns that are causal to polio information resistance and are rooted in experiences and histories.

Category one—Suspicious of Western Nations. The suspicion of Western nations (79/339; 23.30%) category includes narratives related to the mission of the GPEI program (eradicating the WPV globally by immunizing every child below the age of five). This category is divided into five sub-categories depicting the mission of GPEI as a ploy by the West to spread a killer disease and render children sterile (56/339; 16.5%) and citing antiwar sentiments and the middle east conflict (9/339; 2.6%), Pfizer drug test (5/339; 1.47%), neo-colonialism (4/339; 1.17%), and the free cigarette promotion in Kano by Britons in the 1950s (1/339; 0.29%). These five sub-categories are explained below.

A plot by the West sub-category. This is comprised of explanations of allegations by Kano residents that the mission of the GPEI is part of a Western plot to depopulate developing countries through birth control measures and by spreading the Human Immunodeficiency Virus (HIV), a disease that causes AIDS. Community leaders in northern Nigeria popularized the notion that the alleged mission of the GPEI program is a plot by Western nations. A Kano physician and community leader claimed that Western nations wish to promote infertility drugs in developing countries, including Nigeria, through covert strategies. He noted that a document exists that shows population as the most important factor for Western hegemony in the world and that since the West cannot rapidly increase their population, “the only way for them to dominate is to depopulate the Third World. This is the (GPEI’s) motive, as far as we (Kano) are concerned” (Donnell, 2004, para. 26).

The concerns over the mission of the GPEI reached a peak level when a community leader during a media briefing professed that the polio virus does not exist. He contended that the polio virus is either “an imaginary thing created in the West or it is a ploy to get us (Kano and northern Nigeria) to submit to this evil agenda (GPEI programs)” (Bomford, 2006, para. 24). Kano residents were initially advised by community leaders to be wary of the polio immunization campaign and to consider the GPEI programs “in a much wider perspective and to be mindful of the current Western global agenda” (Kazaure, 2003, November 8, para 21). One community leader echoed, “All we were trying to tell our people is to be wary of these [Westerners] who pretend they want to help us because they’re actually killing us” (“Government Blames Polio Vaccine,” 2007, June 7, para. 9).

Accordingly, Kano residents became wary about the mission of the GPEI programs and also about Western nations (the key sponsors of the GPEI programs). One Kano resident alleged that the GPEI program is a way of “introducing more killer diseases to African countries, rather than one of preventing Africans from disease or disability” (Kazaure 2003, para. 1). A polio health worker noted that the Kano community was apprehensive about Western nations “so whatever comes from the (West)... no matter how good it is, people will reject it” (Donnell, 2004, para. 6).

Anti-war sentiments and the Middle East conflict. Accounts of anti-war sentiments and the perceptions, understandings, and interpretations of the conflict in the Middle East are indicated as reasons for distrusting the West and resisting information about polio immunization. Kano residents perceived the West as domineering and interpreted the Middle East conflict as a Western strategy to control other nations, including the Muslim world. Explaining how the conflict in the Middle East contributed to apathy and resistance to information on polio immunization in the predominantly Muslim Kano community, a WHO official stated, “What is happening in the Middle East has aggravated the situation. If Western nations are fighting people in the Middle East, the conclusion is that they are fighting Muslims” (Murphy, 2004, para. 5).

Documents also include accounts of community leaders in Kano linking the Middle East conflict to the resistance to polio immunization. An example of a statement by a community leader is, “There is nothing wrong with the polio vaccine. The major reason why people reject it is the deep-seated suspicion they harbour against the West... especially the war in Iraq and Afghanistan” (“Analysis: Roots of Polio, 2013, para. 5”). A Kano cleric observed and stated that “invasion of Iraq and Afghanistan —which

caused deaths and destruction—is seen by many Muslims here [in Kano] as a war on their brethren” (“Analysis: Roots of Polio,” 2013, para.6).

Akin to community leaders, Kano locals make statements that link polio immunization with the Middle East conflict. Illustrating the connection, one resident noted, “It doesn’t make any sense that you offer to save my children from a crippling disease yet are killing my brothers [in the Middle East]” (“Analysis: Roots of Polio,” 2013, para. 7). Another resident observed and stated, “They [the West] claim that the polio campaign is conceived out of love for our children. If they really love our children, why did they watch Bosnian children killed and 500,000 Iraqi children die of starvation and disease under an economic embargo?” (“Nigeria Muslims Oppose Polio Vaccination,” 2002, para. 8). One medical officer in charge of the Kano State polio immunization program who struggled to persuade Kano residents not to hold this belief stated that Kano residents were worried about the gulf between the Western nations and the Islamic world. They believed almost all the difficulties are caused by Western nations. “It’s the only language people seem to know” (Donnell, 2004, para. 20). The content of documents indicates that the Kano community is apprehensive about the West and the GPEI program because of the Middle East conflict.

The 1996 Pfizer drug test in Kano. Apart from the Middle East conflict, the documents indicate another reason for distrusting the West and resisting information about polio immunization. This reason is rooted in the prior experiences, understandings, and histories of members of the Kano community regarding alleged medical malpractice by a Western-based pharmaceutical firm, Pfizer. Documents indicated that in 1996 there was a meningitis epidemic in Kano (Frishman, 2009). Pfizer offered humanitarian relief

by sending medical personnel and free drugs. Kano residents alleged that Pfizer was testing a new drug (Trovan) on patients during the medical relief exercise without disclosing the intent and risks to parents and patients. About 200 children were involved in the alleged Trovan experiment (Frishman, 2009):

Of the 200 children, eleven died due to Trovan and low dosages of chloramphenicol, and many others suffered injuries (paralysis, deafness, blindness, brain damage, liver damage, and joint disease) from Trovan. The U.S. Food and Drug Administration (FDA) approved Trovan for adults in 1997 but severely restricted its use in 1999. Europe banned it outright. (p. 1860)

The families of the victims sued Pfizer in 2001 (Frishman, 2009). In 2009, Pfizer offered settlements to the victims.

Many Kano residents feared a recurrence of the alleged Pfizer case in Kano. Community leaders therefore established a link between the Pfizer incident and the polio immunization in Kano. One community leader stated the Pfizer incident “was the wake-up call” for the community, “We must protect our children at all costs” (McKenzie, 2004, para. 24). Another leader observed that the Kano community harbored strong reservations about the safety of the population because of the Pfizer saga, in which Kano “people were used as guinea pigs with the approval of the (Nigeria) federal Ministry of Health, and the approval of all the relevant UN agencies” (Raufu, 2003, para. 6). Similarly, the Kano State Attorney General stressed that the “rejection of polio vaccines by citizens of Kano State is a direct consequence of the 1996 actions [of Pfizer]” (“Government Blames Polio Vaccine,” 2007, para. 2).

Among residents in Kano, the Pfizer incident became a reference point for the suspicion of Western relief efforts and Western nations, and for rejecting the polio vaccine. One Kano resident who resisted polio immunization observed, “We cannot trust the White man or our federal government because many years ago they were in partnership when they brought medicine [Pfizer’s Trovan] to poison our people. Our government does not have our interests at heart; that is why these people [Western nations] can come in any time they want and do whatever they want. It is only God that is protecting us” (Yahya, 2007, p. 29).

Neo-colonialism. The fear of neocolonialism is another reason identified for distrusting the West and resisting information about polio immunization. Many residents in Kano are conservative and hold to traditional practices and values, detesting modernity and westernization. Resistance to polio immunization in Kano is viewed by some as a struggle against neocolonialism, a strategy of resisting Western influences and lifestyles. The objective is to preserve the community’s cultural heritage. Kano residents interpreted the polio immunization program as linked to neocolonialism because of the colonial conquest of Kano City in the 19th century and the subsequent withering of its traditional lifestyles.

Clarifying the reasons for resistance to polio immunization in Kano to the fear of neocolonialism, the president of the Kano State Polio Victims Trust Association noted:

Almost a century after the introduction of Western education, there are still parents who don’t enroll their children in school because they believe it is a ploy to convert them to Christianity, and the suspicion has its roots in the British

conquest. It is the same sentiment playing out with the polio vaccine” (“Roots of Polio Vaccine,” 2013, para. 17).

The consequences of polio immunization resistance notwithstanding, some Kano residents considered the suspension of polio immunization by political leaders in Kano in 2003 a victory in their struggle against westernization. Traditional herbalists and those who do not believe in Western orthodox medicines feared the negative consequences of Western influences in health-care delivery because it could destroy the indigenous system of healing polio disease (which is rooted in spirituality) and reduce the power of traditional herbalists.

Cigarettes. Another reason given for distrusting the West and resisting information about polio immunization is the experiences of Kano residents concerning the introduction and promotion of cigarettes several decades ago. Residents explained that, over 50 years earlier, cigarettes were marketed in Kano by placing money inside the cigarette packages, making it as though getting cigarettes free. The money was gradually reduced as people became addicted to the cigarettes. Some residents equated the free polio immunization program in Kano—promoted by Western nations—with the promotion of cigarettes in Kano—also promoted by Westerners (Britons).

The cigarette experience increased Kano citizens’ apprehension about Western nations, resulting in resistance to information on polio immunization. As example of this sentiment is seen in one resident’s observation that, “We now know what [the] cigarette does to human health. The White man will never give anything for free. It is the same thing with [the] polio vaccine. They are hiding something.” (“Roots of Polio Vaccine,” 2013, para. 19). Many residents believed that the Western White man is smart and

ingenious. One way to outsmart the Western White man in Kano or in northern Nigeria is to resist information on polio immunization. As a Kano resident noted, “How could I be so naive as to allow my children to be given polio drops?” (“Roots of Polio Vaccine,” 2013, para. 10).

Category two—polio a lower health priority. Beyond the distrust of the GPEI mission, the Kano community also considered polio a lower health priority. This category (37/339; 10.91%) explains the belief that the polio disease is a low health priority among the Kano population compared to other killer diseases like malaria, measles, typhoid fever, and cholera. This category consists of two sub- categories showing narratives indicating the low priority attached to polio: (1) far worse killer diseases needed attention (30/339; 8.84%), (2) social amenities were needed more (6/339; 1.76%), and other reasons (1/339; .029%).

Far worse killer diseases need attention. Many community leaders felt that polio is not a major concern and placed it as a low health priority for Kano. Leaders express lack of understanding about why donor agencies spend millions of dollars to fight a disease of less urgency to them. One community leader confronted the GPEI officials during an advocacy visit in his palace stating “There are diseases which are far, far more devastating to world population and especially Nigeria than poliomyelitis. Take measles, for example, your document here (waiving a copy of WHO pamphlet) says measles kills about two million children annually” (“We Will Not Submit,” 2003, para. 7).

The focus on polio in Kano over other diseases by donor agencies created doubts concerning the GPEI programs. Datti, a medical doctor, cleric, and community leader, observed, “If the donor agencies are sincere, they should help the country in combating

the more dangerous killer diseases such as malaria, measles, meningitis, cholera, and typhoid fever” (Raufu, 2003, para. 8). In the same vein, a community leader, a lawyer, stressed the importance of setting health priorities right to WHO officials in his palace, he noted:

To wipe out 109 (polio) cases in Nigeria, how much is being spent on Nigeria? How many children [die] of measles; how many children die of malaria and diarrhoea? Why are you not spending those monies to supply our hospital with drugs to fight malaria, typhoid, measles?... We don't want our people to get diseases, but polio is not our priority, we have to set our priority; just because someone has vaccines to discard, you push them to our people; no, we won't accept that. (“We Will Not Submit,” 2003, para. 18)

There is indication in the content that the resistance to information on polio immunization in Kano resulted from a conflict in health care priority between the WHO and the Kano community. The health care priority of WHO is the eradication of polio. Unfortunately, that objective contrasted with the health-care priorities of the Kano community. Kano residents believed that polio is a low priority, and the polio immunization program is a misuse of scarce resources by donor agencies in the light of dreadful diseases such as malaria, measles, cholera, and typhoid fever. This conflict in objectives triggered suspicion and many parents considered it unwise to immunize children against a disease not high on their list of concerns. Mamman Nababa, a father in Kano, remarked on the ill-advised idea of vaccinating his children for polio “while the government has failed to provide medication for most urgent diseases affecting us such as malaria and typhoid” (Abubakar, 2013).

Social amenities needed. There are indications in the content that the absence of social amenities increased the resistance to information about polio immunization in Kano. Many communities in Kano are impoverished and lack basic social conveniences. Some residents believed the government should provide them with drinking water, electricity, and clinics. A father in Kano who refused to immunize his children demanded why he should accept polio immunization “when there is no health care nor clean water in our village?” (Laulajainen, 2011, p.6). For many communities in Kano and northern Nigeria, the GPEI program appears to have provided a channel for citizens to demand services from the government of Nigeria.

Category three—suspicion of polio vaccines. Apart from the suspicion of the West and placing polio at the bottom of health agenda is the suspicion of the polio vaccine itself. The Kano community viewed information on polio vaccines with skepticism, apprehension, and discontent. This category provides some explanations for the perceptions of the Kano community toward the polio vaccine. It is divided into three main sub-categories: apprehension about the polio vaccine (54/339; 15.92%), fear the polio vaccine could be contaminated with HIV virus (18/339; 5.30%), fear the polio vaccine could be contaminated with infertility drugs (4/339; 12.09%), and others (2/339; 0.58%). These are explicated below:

Apprehension about polio vaccine. This category discussed the understandings of the Kano community about the polio vaccines. Many residents believed that the polio vaccine is contaminated and dangerous without giving specific concerns. They resisted information on polio immunization because of fear about the polio vaccine. Lawal Hamisu, a father in Kano, said, “I believed the claim that polio vaccine was harmful to

children, and I would not allow my three under-five children to be immunized” (“Jail Threat for Polio,” 2011, para. 14). Another resident, Shehu Gomo, a father of five, noted, “I don’t allow my children to take any (polio) immunization because I don’t believe they are safe” (Abubakar, 2013, para. 8). The apprehension about the polio vaccine in Kano received a boost from conflicting reports by different parties in 2003/2004 on the alleged claim that the polio vaccine was contaminated. Some of the key parties in the controversies were state governments in northern Nigeria, the Federal House of Representatives, the Federal Government of Nigeria, and the Jama’atu Nasril Islam (the umbrella Muslim organization in Nigeria). Each of these groups formed a technical committee to investigate scientifically the allegation that the polio vaccine was contaminated.

The committee set up by the Federal House of Representatives disclosed that the polio vaccines contained undeclared contaminants. The chairman of the committee, Dr. Lawal Alhassan Bichi noted that it is unethical to recommend the polio vaccine because it contains undeclared substance (Pindiga, 2003). The finding of the House of Representatives aligned with the findings of the Kano State government and the technical committee set up by the Jama’atu Nasril Islam. They both reported finding contaminants in the polio vaccines they tested. Professor Kaita, the Dean of Pharmaceutical Science at Ahmadu Bello University, Zaria, and leader of the investigation team for Jama’atu Nasril Islam (faith-based organization), indicated the polio vaccine contained “undeclared contaminants that can cause malfunctioning of the testes and cause infertility in women...It also contained some toxic substances” (Raufu, 2004, para. 2). The Kano State investigation team also reported finding undeclared contaminants in the polio

vaccine. The governor of Kano State declared, “Tests carried out on the vaccines by scientists in the state last year . . . found traces of hormones. We want explanations” (Ogundipe, 2004). The Kano State government requested a fresh, uncontaminated vaccine to be shipped to Kano by the GPEI. The Kano State Governor noted, “What we are saying is that, since the vaccines in use have been found to be contaminated, we need these donor agencies to bring new consignments, which we will test. . . . If we find them to be safe, we will gladly continue the exercise” (“Nigerian Muslims Foil Polio Campaign,” 2004, para. 16).

Reassuring citizens that the vaccine is safe, the Federal Government of Nigeria tested the same polio vaccines and certified them free of contaminants (Kazaure, 2004); however, the results of the test by the Federal Government of Nigeria were rejected by other contending parties. Because of this conflict in the interpretation of results by contending parties, many were confused and felt safer not immunizing their children. Sa’adiya Musa, a female Kano resident, expressed her confusion: “How can they say the vaccine is bad and then say it is good again? . . . I cannot be deceived” (“Rumors Cause Resistance,” 2006, para. 25). Many residents in Kano declared that the anxiety over the polio vaccine was warranted. A manager of a rural agricultural bank in Kano commented, “Of course, people are justified to refuse any medication if they are not fully aware of what it is for” (Yahya, 2007, p. 26).

Fear the polio vaccine could be contaminated with HIV. It is a common belief in Kano that the polio vaccine is contaminated with HIV. Therefore, parents resist information on polio immunization. For this reason some community leaders were apprehensive about the polio vaccine. One of the traditional rulers very close to Kano

City queried a team of WHO and UNICEF officials during an advocacy visit in his palace, “You have not told people everything about polio vaccine. ... You did not mention a word about the fact that the vaccine was manufactured in Green Monkey kidneys, which also harbour simian viruses that are lethal like HIV” (“We Will Not Submit,” 2003, para. 15). Another community leader in Kano observed, “We believe that modern-day Hitlers have deliberately adulterated the oral polio vaccines with antifertility drugs and contaminated it with certain viruses which are known to cause HIV and AIDS” (“Vaccine Boycott Spreads,” 2004, para 17).

Like community leaders, Kano parents also believe that the polio vaccine is contaminated with the HIV virus. A Kano health worker who goes door-to-door administering the polio vaccine attests that many parents resisted polio immunization because they believed the vaccine could infect children with HIV (Abubakar, 2004). A Kano mother confirms, “We will receive the other vaccines, but not the oral polio vaccine because they said it contains harmful substances” (“Muslim Suspicion of Polio,” 2004, para. 50).

Fear the polio vaccine could be contaminated with infertility drugs. Many residents harbored mistrust and suspicion of the polio vaccine because they believed the vaccine could sterilize their children. Because of the belief that the polio vaccine could render children sterile, some parents in Kano considered the polio vaccine “more curse than savior part of an evil conspiracy hatched in the West to sterilise Nigerian girls” (“Polio Vaccination Dismissed,” 2006, para. 1). Confirming the fear that the polio vaccine could be contaminated with infertility drugs, Zulaihatu Mahmud, a mother in

Kano, noted, “Nobody wants their child to be crippled by polio, and nobody wants her child to be sterile, either” (“Roots of Polio,” 2013, para. 13).

Category Four—distrust of Western health care system. These entries reflect narratives related to the distrust of orthodox health care delivery systems that encouraged resistance to information on polio immunization (11/339; 3.24%). A number of Kano residents do not trust Western health care services. Instead, they believe in traditional herbal medicine, or they believe in spirituality, or they do not believe in any form of medicine at all. This category explains the perception of the Kano community toward the treatment of illness, which encouraged information resistance on polio immunization. Two codes were used to divide this category: belief in spirituality/only Allah (God) provides immunity (6/339; 1.76%), distrust of orthodox Western medicines/belief in traditional herbal medicines and/or believe in witchcraft (4/339; 1.17%), and others (one instance/339; 0.29%). These are explained below.

Belief in spirituality—only God provides immunity. According to the data, many Kano residents believed that immunization did not provide immunity against diseases. They said that only Allah could provide such immunity. The belief that only Allah provides immunity is rooted in sacred health norms, which are focused on the spiritual world. Spiritual belief is one of the driving forces responsible for resistance to information on polio immunization. Those who subscribed to this idea considered polio vaccine irrelevant. The sacred belief of the Kano community (spirituality) contradicted the belief of promoters of the polio immunization program, representing secular culture, which understands the world as independent of the influence of the divine. For example, Dauda Abdullahi, a 42-year-old victim of polio in Kano, did not immunize his children

against polio, noting, “Only Allah can save us. I don’t trust medicine” (“Religion and Politics,” 2004, para. 1). Similarly, 32-year-old Aishatu Mohammed observed, “with or without the vaccine, Allah protects his own” (“Muslim Suspicion of Polio,” 2004, para. 50).

Distrust of orthodox Western medicines—belief in traditional herbal medicines and/or belief in witchcraft. Another reason for resisting information on polio immunization is the belief in traditional herbal medicines or witchcraft and spirits. Culturally, the Kano community associated polio with supernatural beings, believing it to be an ailment caused by spirits. This belief contrasted with the medical explanation of polio being caused by a virus. For some Kano residents, this distrust explained their resistance to information on polio immunization. A resident of Bebeji Kano remarked:

We the Hausa [Kano] people do not believe they have a simple cure for polio because we know how we have suffered trying to deal with it. All types of traditional healers go through lengthy forms of treatment. Then they bring medicine that comes in the form of drops saying that they can stop the spirit. We find this hard to believe (Yahya, 2007, p. 21).

Some Kano residents favored the use of traditional herbal medicines and spiritual health care services over orthodox medicine. Using the polio vaccine from orthodox medicine would contradict their standard ways and preferred methods of medical services. Thus, Kano residents considered the acceptance and use of polio vaccines as improper and undesirable. Traditional healers remain the primary source for some Kano residents’ health care. Responding to questions by reporters about the resistance to polio immunization in Kano, the state commissioner for health, Aisha Isyaku Kiru, said, “Many

people do not trust [Western] medicine” (Walker, 2007, pp. 18–26). Furthermore, a Kano resident said he and others distrusted the entire Western medical establishment (“Religion and Politics,” 2004, para. 11–12).

Category Five—Administration of Polio Immunizations. Related to the administration of polio immunizations, there are (31/339, 9.14%) units of data. This category explains the discontent of Kano community toward the procedures adopted by GPEI to administer the polio vaccines and was generated from three main sub-categories: Free door-to-door multiple doses of polio vaccine by untrained polio vaccinators (18/339; 2.94%), forcing parents to have their children immunized (7/339; 2.06%), the rush to administer the polio vaccine (5/339; 1.47%), and others (1/339; 0.29%).

Free door-to-door polio campaign by untrained polio vaccinators. The free door-to-door polio immunization campaign was a strategy adopted by the GPEI to ensure that no child was missed in the GPEI program. This strategy helped the GPEI to vaccinate millions of children in many countries, except in the Kano region of Nigeria. Kano residents were not happy with the door-to-door polio vaccine campaign. This is because (1) Kano locals usually travelled or had to wait for hours for medical appointments, and medications were either unavailable or are not free at hospitals, (2) residents do not have confidence in roaming polio vaccine workers, and (3) response to medical emergencies in Kano is either sluggish or non-existent.

In the light of the health services conditions in Kano, the free polio vaccines provided by the GPEI was considered by residents to be extraordinary and too good to be true. Many became suspicious. On his visit to Kano, Bill Gates discovered that, “because polio vaccine is free...some people think there must be something wrong with

it” (Gates, 2010, para. 5). In Nigeria, including Kano, it is normal for a routine visit to the hospital to take several hours or the entire day. Patients travel long distances, or wait for hours to see a doctor even for emergencies, and medications are not provided free in hospitals. Yahya (2007) interviewed a Kano mother who has walked for “two hours with her baby on her back to attend the weekly immunization session...only to find that the measles vaccine was unavailable (p. 23).” She was initially advised not to visit the clinic because, “very often, they have told me to come back another time” (p. 23).

In Nigeria, there are no free medicines. According to one American journalist, “From a Nigerian’s perspective, to be offered free medicine is about as unusual as a strangers going door to door in America and handing over \$100 bills” (Murphy, 2004, para. 52). In addition, residents resisted polio immunization information because response to medical emergencies in Kano is either sluggish or non-existent. A community leader observed that “a lot of seasonal diseases like measles and meningitis kill hundreds of thousands of people, but nobody (the government) is bothered about it” (Yahya, 2006, p. 28). This discernment created suspicion and distrust of information on polio vaccine, which led to resistance about polio immunization information.

Apart from the suspicions about a free polio vaccine, another reason for resisting polio immunization is that Kano residents do not trust the door-to-door roaming polio immunization volunteers. Parents were accustomed to interacting with medical professionals concerning issues related to vaccines either in hospitals or in pre-arranged official settings. It is customary for Kano parents to receive immunization services from health personnel, administered in a clinic, a town hall, a school, or the palace of a traditional ruler. Therefore, some residents did not trust the vaccines administered by

roaming volunteers who visited homes. Residents emphasized their trust in the former locations but not the latter.

A father in Kano noted “I will not allow my children to be given polio drops by people who go door-to-door” (“Roots of Polio Vaccine,” 2013, para. 10). Similarly, a middle-aged housewife in Gandarwawa, a village very close to Kano City stated “my husband would not allow roaming vaccinators to vaccinate our son but he gave me permission to do the polio vaccine in the antenatal clinic at the local government headquarters. At least there, we know everybody. Malama Rakiya has been there for many years so I know she would not give something that would hurt my baby” (Yahya, 2007 p. 19).

It is evident that receiving polio vaccines from untrained volunteers going door to door was difficult for parents to comprehend. On his visit to Kano, for a first-hand account of the polio immunization program, Gates reported that parents resisted polio immunization because it was “brought to people in their homes” (Gates, 2010, para. 5).

The apprehension over door-to-door polio immunization was attested to by the Kano State Health Commissioner, who noted that some volunteers trained and paid to provide polio immunization services would send untrained proxies as replacements. The substitute would end up dropping the liquid vaccine “in the child’s nose instead of the mouth” or, “instead of two drops, not even (one) drop or spray the whole thing” (Beaubien, 2012, para. 19).

Another reason for resisting polio immunization is the multiple doses of polio vaccine administered to children. Some parents who initially accepted polio immunization refused booster doses. Many Kano residents, including community

leaders, viewed polio vaccines with suspicion because of the multiple doses administered to children. In a heated debate with WHO officials, a community leader expressed concern over multiple doses administered to children:

You (WHO) said one child has what you describe as polio but you want to vaccinate all children again after you did that ten times before. You are insulting the intelligence of not only the peasant in the village but us too. So it is either of these two, either you are only out for Rotary International dollars, or the programme is a complete fraud. Why are you so desperate about this thing. You come yesterday (previously) you immunise our children, you come today and for ten times, and yet you say we still have to take the vaccine. Let me ask you a question doctor, do we have natural immunity to polio in our bodies? (“We Will Not Submit,” 2003, para. 29).

Similarly, the experience of a mother exemplifies how being offered multiple doses of the polio vaccine caused resistance to polio information: “I saw a poster in the health center which said children need to be vaccinated four times. My children have been vaccinated four times. Why do you people keep coming . . . month after month?” (Bomford, 2006, para. 29). It is critical to clarify that repeat polio immunization is necessary to achieve the desired immunity level in children; however, residents in Kano complained that multiple doses are too much, and resisted further attempt to immunize their children.

Forcing parents to have their children immunized. To get parents to have their children immunized, the government of Nigeria resorted to harassment and intimidation of those who expressed opinions against the polio immunization program. For many residents, the harassment made them suspicious of the polio immunization program. Two

examples illustrate government intimidation of people for their views on polio immunization. First, three journalists in Kano were arrested “after they said on their (talk) show on Wednesday that immunization against polio was anti-Islam and a Western conspiracy to cause infertility in women” (“Nigeria Arrests Journalists,” 2013, para. 4). They were charged in court “for alleged criminal conspiracy, abetting, inciting disturbance, obstruction of public officers from performing their duty, intentional insult, defamation of character and injurious falsehood” (“Wazobia FM Journalists Arraigned,” 2013, para 1). Second, the Nigerian State Security Service (SSS) interrogated Professor Kaita concerning his alleged 2004 findings that the polio vaccine contained contaminants. After the interrogation, Kaita stated:

No harassment can make me to change my stance on the polio vaccine being administered on our innocent children, because I have conducted several researches and found the vaccine to be harmful. Science does not require intimidation before somebody can be proved wrong or right. I have been asking them to come forward so that we can publically sit with the proponents of the vaccine. All thanks are to Allah, I am a professor of science and I am ready to face anyone that can discredit my research, period. . . . The commissioner of police or director of SSS may not be scientists, but they can bring their scientists so that we can sit with them. I think that would give them the opportunity to discredit my claims, but resorting to harassment shows that they have a hidden agenda. (Sa’idu, 2013, para. 2)

The rush to administer the polio vaccine. To stimulate the demand for the polio vaccine, the GPEI adopted an aggressive approach involving media campaigns, advocacy

visits, billboards, interpersonal communication, hand fliers, street announcements, and so on. The aggressive strategies worked well in many countries but not in Kano region of Nigeria. Response to disease even during health epidemics is sluggish in Nigeria. The extraordinary urgency to administer the polio vaccine in a country that is apathetic to the health of its citizens contributed to the resistance to information on polio immunization in Kano. Many Kano residents could not reconcile the rush to administer the polio vaccine with the effort they had to put forth to see a doctor. A community leader commented, “The whole desperation about injecting our children with this vaccine is what bothers people” (“We Will Not Submit,” 2003, para. 13). Thus, many residents were suspicious of the rush to immunize children against polio when they had to travel several kilometers to reach a functional clinic and wait for hours to see a doctor for the treatment of any other disease.

Category six--perceptions of promoters of polio immunization. The final category that explains the reasons for resistance to polio information in Kano relates to the perceptions of polio workers and the GPEI partners. It details the attitudes of the Kano community towards the GPEI officials and the supporters of the polio immunization program. The content of documents indicated that Kano residents labeled supporters of GPEI programs (traditional rulers, polio immunization volunteers, political leaders, and government officials) as collaborators and proxies of Western agencies, and therefore should not be trusted (Kazaure, 2003; “Muslim Suspicion of Polio,” 2004). A polio health worker in Kano observed that parents who refused polio immunization “were rude to me, calling me an American agent” (Abubakar, 2004, para. 1-12).

Similarly, those who resisted polio immunizations described supporters of the GPEI programs as “worst criminals on earth” (“Vaccine Boycott Spreads,” 2004). They anthropomorphized Western nations as “modern day Hitlers” (“Vaccine Boycott Spreads,” 2004), and the WHO as an institution with no credibility and integrity (Murphy, 2004).

This section presented the results of analysis of 72 published documents about polio immunization information resistance in Kano. Three hundred and thirty nine narratives that discussed the reasons for polio immunization information resistance were identified from the documents. Each narrative was coded; similar codes were placed into sub-categories, and then categories. The next section discussed summary of the findings, answered the research questions of the study in the light of the findings, and discussed implications of findings and recommendations.

CHAPTER 5

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

The purpose of this study was to determine reasons for resistance to polio immunization information in Kano, Nigeria, compare findings in Kano to those identified by Renne (2010) in Zaria, and to explain the reasons for resistance to polio immunization information in Kano using Chatman's TNB as a lens for gaining new understandings of polio immunization resistance. The researcher designed the study as a content analysis of documents published from 2002—13. To achieve these goals, the researcher studied 72 selected published documents based on the publications inclusion of voices of various stakeholders in six media types: newspaper, video, radio documentary, newsletters and reports, journals, and a weblog. The researcher selected the published documents because of their potential to address the identified research questions. The research included all publication during this time period using a pre-determined key term search during the 2002-13 time period.

Summary of the Findings

The resistance to polio immunization information in Kano State, Nigeria, arises from mistrust of Western nations; lack of trust in polio vaccines; polio considered a lower health priority; distrust of Western health care systems; dislike of the procedures used to administer the polio immunization; and the negative perceptions of promoters of polio immunization. Data in this study indicates that at the time of the government suspension of the polio vaccine in 2004, instances of suspicions of Western nations and suspicion of polio vaccine were at the highest frequency as a news-worthy issue during the 2002—13 period. This increase may be partially explained by the suspension of GPEI programs in

Kano. The increased frequency of suspicion of Western nations and suspicion of polio vaccine in 2013 may be somewhat related to the decisions of the WHO to meet the global deadline of polio eradication in 2013.

Published accounts of the reasons for resistance to polio vaccine were present with some variations throughout the 2002—13 period (Figure 5), with the exception of 2008 when the researcher was not able to locate any document that addressed the research questions. While the data (Figure 6) appears to indicate that the perception of GPEI workers improved after 2004, this improvement in perception did not avert the unfortunate killing of polio workers in 2013. Distrust of the Western health system appears in document before 2004, which is partially responsible for resistance to polio immunization. However, this distrust may have diminished because of the PolioPlus program of GPEI. The PolioPlus program provided mosquito nets to parent during the polio immunization program.

While the reasons found in this study are the same reasons for resistance to polio immunization as offered by Renne (2010) in Zaria, this researcher goes beyond Renne's contributions. This chapter elaborates on the reasons for resistance to polio immunization information, building on the basis of Chatman's (2000) theory of normative behavior in terms of social norms, worldview, social type, and information behavior. It answers the research questions by identifying reasons for resistance to polio immunization information in Kano State, Nigeria in comparison to reasons for resistance in the Zaria region as identified by Renne. This chapter concludes with implications for future polio information programs and other efforts to eradicate polio.

Research Question 1a: What are the reasons for resistance to polio immunization information in Kano State, Nigeria?

In Kano State, Nigeria, local residents convey mistrust of western people, agencies, and policies involved in providing polio immunization information. Kano residents considered the Global Polio Eradication Initiative (GPEI) mission a plot by Western nations to depopulate the developing world. They associate the GPEI programs with the unfortunate circumstances that have occurred with other Muslims living in the war-ridden Middle East wherein many children died. Residents in Kano view the GPEI programs as negative because the Western world, believed to be responsible for war in the Middle East, sponsored the immunization programs. Kano residents also link the mission of the GPEI to the 1996 alleged Pfizer clinical trial in which some Kano children lost their lives or suffered permanent health damage. Kano residents connect the mission of the GPEI to the Briton defeat of Kano in the early nineteen-century as well as the Briton introduction of cigarettes in the 1950s.

Constructivist/constructionism theory (Gergen, 1985; Berger & Luckmann 1966; Garfinkel, 1984) can interpret the Kano mistrust of polio immunization information. Inspired by the writings of Piaget (1954), Kelly (1963), and Gergen (1985, 2000), constructivism is a theory explaining the way people create meaning of the world through a series of individual constructs. In Kano, community leaders selected and focused on experiences, events, and histories as constructs, or lens, to make meaning of the new-to-Kano information about polio immunization. Consequently, they turned local residents against the GPEI programs. The GPEI program coordinators failed to recognize the experiential and historic focus of the local leaders and to take action to establish trust.

The residents of Kano continue to be suspicious of the Western world and the scientific benefits of the polio vaccinations.

Kano community members constructed their knowledge about the mission of the GPEI based on their previous interactions and shared meanings and beliefs attached to experiences with Western nations and agencies. Those who resisted polio immunization considered the West to be domineering and felt the West was not acting in the best interest of developing nations. Many Nigerians blame Western agencies such as the World Bank and International Monetary Fund for the lack of prosperity in Nigeria. They resent the imposition of stringent economic policies on the government of Nigeria.

Moreover, there is distrust between the Muslim world and the West. The Pew Global Attitudes Project (Wike & Grim 2007) set out to explore these tensions, examining how non-Muslims in the West and elsewhere view Muslims, as well as how Muslims think about people in Western nations. The Pew surveys reveal a disturbingly high level of negativity on both sides, with Muslims and non-Muslims associating a wide array of negative characteristics with one another.

In Kano State, Nigeria, local residents convey lack of trust in polio vaccines.

Resistance to polio immunization in Kano exists largely because of a deep fear by Kano residents that the polio vaccine is contaminated with infertility drugs and HIV. The Kano community based their fear of the HIV-polio vaccine thesis on their reading of the controversial book, *The River* (Hooper, 1999). The book traced the source of human AIDS to an experimental polio vaccine administered to hundreds of thousands of people in the 1950s in the Belgian Congo and concluded that the high number of cases of HIV in East Africa is because of the mass polio immunization conducted in the region.

It is not surprising that suspicion of the polio vaccine is one of the main reasons for resistance to polio immunization in Kano. Concerns about vaccines are widespread in most societies, including the United States and Europe. For example, Hepatitis B vaccines were suspended in France due to suspicion that the vaccine causes Autism and Leukemia (Parry, 2008). An anti-tetanus vaccine scare also occurred in Mexico, the Philippines, Tanzania, and Nicaragua after a faith-based organization, Human Life International, alleged that tetanus vaccines could cause sterilization (Tan, 1995). Fertility is a major social and cultural issue in Kano because the society tends to hold traditional values and prefers large families. Thus, parents are likely to fear anything that could increase sterility in their children. Distrust of polio vaccines raises the issue of vaccine safety. Parents and caregivers are genuinely concerned about the safety of their children.

In Kano State, Nigeria, local residents held negative feelings toward the procedure used to administer polio immunization. Findings from this study indicate Kano residents who resisted polio immunization information were not comfortable with the procedure adopted by the GPEI to administer the polio vaccines to their children. For example, parents in Kano considered the door-to-door polio immunization by untrained health volunteers in conflict with the health-care services to which they were accustomed. Parents were accustomed to interacting with medical officers concerning issues related to vaccines, in a clinic, a town hall, a school, or the palace of a traditional ruler. Many disliked the system of offering free multiple, door-to-door polio vaccines when the government does not provide other medicines for common sicknesses.

Furthermore, parents and caregivers disliked the strategy adopted by the government of harassing or forcing parents to accept the polio vaccines. They

questioned so much emphasis on polio vaccines. Similarly, parents were not comfortable with the rush to administer the polio vaccines in Kano when dreadful diseases such as malaria and measles were afflicting their children. Thus, they refused information on polio immunization.

Belief in spirituality and traditional medicines. Distrust of western health-care systems added to the resistance to polio immunization information in Kano State, Nigeria. Those who resisted polio immunization information did not trust the Western-based orthodox health-care delivery system. Instead, they believed in spirituality— only Allah (God) provides immunity against diseases, or they believed in traditional medicinal herbs. In both instances, those holding the belief considered Western health-care systems in conflict with their social and cultural health norms. Thus, they questioned the scientific explanation of polio as a viral infection vis-à-vis their social ontological understandings of polio as an act of God or a condition caused by a spirit. Kano residents attempted to make sense of the claim that polio vaccines provide immunity, which contradicted their deeply rooted social belief that Allah is the ultimate protector.

Consequently, Kano residents actively sought evidence that would support their social and cultural beliefs about polio. Instead, they received orthodox explanations that contradicted their deep-rooted understandings about polio and immunization. These are some issues that triggered resistance to information about polio immunization across the social spectrum in Kano. The sacred and the spiritual health beliefs of the Kano community contradicted the secular perspective of the GPEI. Basically, spiritual health belief was a driving force behind the resistance to information on polio immunization in Kano.

Polio not a health priority. The idea that fighting polio was of a low priority added to the resistance to polio immunization information in Kano. The WHO universal placement of polio at the top of the health-care agenda of communities in polio-endemic regions contributed to resistance to polio information. Kano residents did not consider polio to be at the top of their health-care agenda. Rather, they believed polio received too much attention at the expense of far worse killer diseases afflicting the Kano community. Parents in Kano wondered why large sums of money were spent by international donors on a disease not at the top of the local health agenda.

Consequently, parents in Kano constructed meaning from the priority the Global Polio Eradication Initiative gave to polio. Therefore, from a social constructionist viewpoint, resistance to polio information in Kano was an attempt by the community to question the universality of Global Polio Eradication Initiative's global health-care priority regarding polio. Kano is a marginalized community and those who resisted polio immunization information did so to challenge the government.

Negative attitudes towards GPEI supporters. Perceptions about promoters of polio immunization contributed to the resistance to polio immunization information in Kano State, Nigeria. Parents and caregivers who resisted polio immunization had negative attitudes toward the promoters of the polio vaccines (Western nations, polio health workers, Western agencies, and the federal government of Nigeria). They believed polio vaccine promoters were agents of Western-based agencies who were sterilizing children in Kano in an effort to depopulate developing countries.

Findings indicate that parents thought Western nations were domineering, particularly concerning the Middle East conflict, and considered the WHO an agency

with no credibility. They also considered the government of Nigeria corrupt and not to be trusted. Relations between parents and the promoters of the polio vaccine were generally bad, with parents holding negative stereotypes of the GPEI.

Research Question 1b. How are the reasons for the resistance to polio immunization similar to or different from those identified by Renne in Zaria, Kaduna state northern region Nigeria?

While there are many similarities between Renne's (2010) findings in Zaria and this researcher's findings in Kano, this study found that there are two profound differences between the two studies. First, compared to Zaria, Kano residents complained about the rush to administer polio vaccines by the GPEI. Second, Kano residents linked polio immunization information with the cigarette promotion in Kano by Britons in the 1950s. No such parallel existed in Zaria. There was also another difference between the two cases. Renne reported female vaccinators not wearing veils, which was viewed as disrespectful by the Zaria residents, and she cited this as a reason for resistance to polio immunization in Zaria. This was not found to be the case in Kano.

Nevertheless, both Zaria residents and Kano residents appeared to have similar perceptions, attitudes, and experiences concerning the GPEI program and polio immunization. Similar to Kano's findings, Renne's (2010) study described Zaria residents as: "dissatisfied by their government inability to provide water, electricity, and sanitation, along with primary health care, they are apathetic about or distrustful of such (polio) campaign" (p. 126).

Research Question 2. How does Chatman's theory of human information behavior and her perspective on social norms, world view, social type and information behavior explain resistance to polio immunization information in Kano State, Nigeria?

Chatman's (2000) theory of normative behavior suggests that social norms, worldview, and social type influences an individual's way of making sense and using information. This theory can explain the resistance to polio immunization information in Kano.

Social norms. According to Chatman (2000), social norms inform people about what is right and wrong and offer standards for proper behavior. In Kano, the health beliefs of local Kano residents appeared to influence strongly the social norms present at the time of this research. Such beliefs set standards of treating illnesses and accepting orthodox health care services. What follows is an overview of the conflicts arising between local standards of treatment and accepting orthodox health care services.

Standards of behaviors in health-care beliefs. Conflicts in treatment behaviors or beliefs about cure are partially responsible for the resistance to polio immunization information in Kano. The treatment beliefs and standards of Kano residents are rooted in the distrust of the Western health-care systems. Kano residents considered the Western health-care systems out of harmony with their spiritual health practices of offering prayers to Allah, using in traditional medicines and herbs, or appeasing the spirits. These spiritual practices constitute the standards with which those resistant to polio immunization information in Kano community comply to protect their children against diseases, including the polio virus.

Those resistant to polio immunization believed that God will protect against infection and that if infection occurs, then it is predestined to be, with or without immunization. They also believe in mysticism: spirits causes diseases and illnesses, and that diseases are best cured by appeasing the spirits. Still others believe in local traditional herbal medicines as remedies against disease. These beliefs conflicted with the Western orthodox medical view about polio vaccine as a source of immunity. Consequently, Kano residents resisted information on polio immunization.

Right and wrong procedures of accepting Western orthodox health care health-care services. Some local Kano residents believe in the polio vaccinations; however, they do not accept the procedure used to administer the polio vaccines by the GPEI (explained in Chapter 4). Several GPEI practices contradicted the health norms of the Kano community in seeking orthodox health services. The Kano community rarely receives orthodox western medicines free and patients often wait long hours or travel long distance to see a Western trained medical doctor. In addition, orthodox western health treatment comes sluggishly and rarely, even for epidemics or medical emergencies.

In contrast, the procedures adopted by the GPEI to administer the polio vaccines included prompt delivery of polio vaccines via door-to-door polio immunization services, provision of free multiple doses of polio vaccines when due, fast and efficient response to polio outbreaks, and so on. The GPEI procedures of administering health services appeared too good to be true for the Kano community. Those who resisted polio information in Kano were not expecting polio vaccines to be brought to their homes for free. They were not expecting polio vaccines to be administered by untrained health

workers, and they were not expecting someone (the government, and polio health workers) to indulge them concerning the health and well-being of their children. The local residents of Kano became suspicious and thoroughly disrupted by the procedures.

In sum, the procedures adopted by the GPEI to administer the polio vaccines in Kano conflicted with the health norms of those who resisted polio information, resulting in suspicion of the polio immunization programs and eventual resistance to polio information. Kano people continued to depend on the standards to which they were accustomed and retained their health-belief systems. They declined the fresh, new information the GPEI provided about polio immunization. These recalcitrant behavior choices are common. Chatman (1999) noted that information “means nothing at all if it is not part of a system of related ideas, expectations, standards, and values of a group” (p. 209).

Worldview. Worldview is a shared understanding of a group on specific issue. Worldview is influenced by meaning, symbols, and a context that shapes an individual’s outlook on specific issue. These factors hold worldview within temporal boundaries and provide an underlying philosophy and way of thinking that shapes an outlook for a social group. Two key ideas are relevant for explaining the resistance to information on polio immunization in Kano using the concept of worldview: (a) a perception held in common or common understanding and (b) the meaning attached to events and experiences that provide an outlook or point of view within temporal boundaries.

Collective perceptions and common understanding. Those resistant to polio immunization information in Kano community have a worldview rooted in the collective understandings that the GPEI programs is not relevant to their needs and that the polio

vaccine is capable of infecting children with HIV and/or making them sterile. The understandings of the Kano community on the GPEI programs inform their worldview and they considered information on polio immunization programs irrelevant. Chatman (1999) contended that members of a given social group would cross information boundaries only if “there is a collective expectation that the information is relevant” (p. 214).

Worldview as meaning in context. Kano residents’ understandings of the GPEI programs arose from the meanings they attached to such events as (a) the conflicts in the Middle East, (b) the free cigarette promotion in Kano by Britons in the 1950s, (c) neo-colonialism, and (d) the 1996 Pfizer clinical drug trial in Kano. These events provided those who resisted polio information in Kano with a sense of background and experiences for making sense about the GPEI programs, setting them apart from the broader world outside the boundaries of their own socially constructed reality. These four events illustrate Chatman’s (2000) use of worldview as meaning in context. The events bond those who resisted GPEI programs in Kano and it represents meaning in context about the GPEI programs.

Chatman (1999) noted that worldview unites members of small worlds and defines the scope of a small world, including the interpretation of information and how members of the small world group make sense of information, as well as the social reality of information. Kano residents’ constructions of the GPEI programs did not occur in isolation. Rather, they were grounded in their prior knowledge, frames of reference, experiences, and understandings. These were the lenses through which the Kano residents constructed reality about polio and the GPEI program. Doing so led to

apprehension about the Western nations and suspicion about the polio vaccines, explaining the resistance to information on polio immunization in Kano.

Social type. Social type is another concept from Chatman's (2000) theory of normative behavior that explains polio information resistance in Kano. It refers to the ways people are perceived and labeled in a social setting. This study found that residents in Kano labeled GPEI workers and thereby judged or anticipated the behaviors of GPEI workers and sponsors.

For instance, Kano locals (individuals, professionals, and community leaders) who supported the GPEI programs were labeled as agents of Western nations and, therefore, never to be trusted. In addition, locals labeled the polio vaccine as a fake drug. Those resistant to polio information in Kano anticipated the behaviors of individuals, agencies, and nations supporting the GPEI programs. They viewed the activities and the actions of polio health workers as synonymous to infusing HIV and birth control hormones on children and forecast a sterile community ravaged by AIDS.

It is therefore not surprising that critics anthropomorphized international donor agencies and countries that supported the GPEI programs as criminals and modern day Hitlers. Similarly, they branded the federal government of Nigeria as a partner in crime with Western-based agencies that supported the polio immunization programs. By labeling GPEI health workers and supporters criminals, those resistant to polio information anticipated and judged the actions of GPEI health workers and their supporters.

This development explains why Kano children ran away when they saw polio workers. It also explains why parents hid their children under beds when polio health

workers visited homes to administer the polio vaccines. Finally, it explains why apprehension about Western nations featured prominently as one of the concepts in the resistance to polio information in this study. In sum, the GPEI partners and their allies had acquired what Chatman (2000) referred to as “social typing” (p. 12) within the social sphere of the Kano community.

Research Question 3. What human information behaviors exist that are associated with resistance to polio immunization information in Kano State, Nigeria?

Information behaviors are the ways individuals use or do not use information in a group. Kano residents demonstrated information behavior in response to polio immunization information (Figure 7). The information behavior activities present at the time of the production of documents in this study included (a) rudeness and violence, (b) outright refusal, (c) deception, and (d) social discourse

Rudeness and violence. Impoliteness, rudeness, and violence were some of the behaviors exhibited by those resistant to polio information. Kano residents who resisted polio information demonstrated disrespect, rudeness, and violence toward the GPEI workers and supporters. For example, in the data there were instances of polio immunization workers and community leaders who supported the polio immunization programs being booed, chased, threatened, and assaulted. Some polio immunization community volunteers reported being stoned. Unfortunately, some Kano locals who were polio health volunteers lost their lives. Others reported dogs were turned out on them.

Rudeness and violence in response to polio immunization information in Kano illustrate Chatman’s concept of worldview as meaning in context and it is related to the

notion of uncertainty in information seeking. Uncertainty in information seeking (Kuhlthau, 2004) is a “cognitive state that causes affective symptoms of anxiety and lack of confidence”...“resulting in feelings of doubt, confusion, frustration and anxiety” (p. 103). It is triggered when an individual encounters conflicting information that seems inconsistent and incompatible with previously-held constructs.

People experiencing information uncertainty are in a state of confusion and “may find the situation discouraging and even threatening, causing a sense of personal inadequacy as well as frustration” (Kuhlthau, 2004, p. 103). According to Kuhlthau (, 2004), this is the stage in which relationship between the information seeker and information provider is awkward. This study makes clear that information anxiety and responses to it are likely to be escalated when an information situation leads to extreme threat or frustration. In the case of this study, such information uncertainty contributed to rudeness, violence, and the unfortunate loss of lives of local polio immunization volunteers.

Outright refusal. Kano residents rebuffed polio immunization health workers and considered information on polio immunization by the GPEI as irrelevant to their daily life. This turning away of polio health workers can be understood through the lens of Chatman’s (1999) theory and related propositions that members of small worlds “will not cross the boundaries of their world to seek information” unless “1) the information is perceived as critical, 2) there is a collective expectation that the information is relevant, and 3) a perception exists that the life lived in the round is no longer functioning.” (p. 214). Kano residents appeared to be unable or unwilling to recognize the urgency of

being immunized for the dreaded polio disease and the reality that the disease can and does end life as they know it.

Deception. At the time of the production of documents in this study, those who resisted polio information in Kano exhibited behaviors including dishonesty, deceit, and insincerity in their response to information on polio immunization. Some of the deceptive behaviors included acts devised to elude polio immunization. For example, some parents painted children's fingers with spurious ink to indicate they had already received the immunization. Others lied to immunization workers about not having children while yet others hid their children under beds. Health workers opposed to polio immunization demonstrated their resistance by destroying and throwing away doses of the vaccine and falsely claiming they had administered them to children.

Dishonesty and deceit demonstrated by those resistant to polio immunization information in Kano served as a protective mechanism to shield children from potential harm. This dishonesty and deceit can be explained using Chatman's (1996) propositions that "secrecy and deception are self-protecting mechanisms due to a sense of mistrust regarding the interest or ability of others to provide useful information." Kano residents, in their efforts to do what they thought to be best for their children, resorted to dishonest and deceitful acts as self-protecting mechanisms rather than making efforts to seek for extensive knowledge on the issue as stipulated by the Islamic tradition and learning from other Muslim countries such as Saudi Arabia and Indonesia.

Discourse. The GPEI program in Kano created an opportunity for those who resisted polio immunization to engage in discourse about GPEI programs and the benefits of being immunized against polio. Data from content in this study indicated that

discourse occurred among community leaders through information searching, information seeking, information giving, and information production. For example, community leaders in Kano who resisted the GPEI program undertook information-searching activities with the objectives of acquiring knowledge about the GPEI programs and the polio vaccines. These information-searching activities included looking for information on the Internet and in books. They also consulted documents on polio published by the WHO. Similarly, those resistant to polio immunization information generated information concerning polio immunization by commissioning scientific investigations to bolster the fear that the polio vaccines contained contaminants. This finding indicates that Kano leaders had the capacity and access to information that could support the actions of the GPEI. For example, they could cite the acceptance of polio immunization by Saudi Arabia, Indonesia, and other Muslim countries. They could also cite the resolution by the Organization of Islamic Countries (OIC) on polio immunization that urged OIC member states to accept polio immunization.

Information giving is another information behavior that characterizes those resistant to polio information in Kano. Content included in this study reveals instances in which community leaders and clerics in Kano and in most of northern Nigeria gave information through sermons, mass media, and mass production of audio cassettes, detailing the dangers of accepting the polio vaccines. Their use of audio cassettes to spread fear about polio immunization is an important finding because of the prevalence of audio cassettes and high use by local residents. In Kano, and in most of northern Nigeria, cassette tapes are still used and are a booming business. Information on polio immunization are recorded on audio cassettes and mass-produced for public sale.

Retailers of audio cassettes ride on bicycles around major streets and popular gathering places. One reason for the popularity of audio tapes is that Kano, as with the rest of northern Nigeria, is an oral society.

Implications and Recommendations

In the tradition of social constructionism (Gergen, 2009), social construction of reality (Berger & Luckmann, 1966), and Chatman's theory of normative behavior (2000), the researcher advances possible implications for the findings and recommendations for strategies to overcome the resistance to polio immunization information in a predominantly Muslim Kano population.

Findings of this study indicated that resistance to polio immunization information in Kano occurs within the Chatman (1999) notions of small world (SW) context. A small world group is a social group in which "mutual opinions and concerns are reflected by its members" (p. 213) and in which the interests and activities of individual members are largely determined by the normative influences of the small world as a whole (Chatman, 1999). This study posited that the controversies surrounding the GPEI programs in Kano involved two SW groups: (a) the GPEI partners and their supporters and (b) those resistant to the GPEI programs in Kano. The two groups had conflicting understandings, approaches, philosophies, and worldviews about polio and about polio immunization. Each group attributed different meanings to the GPEI mission, polio vaccines, and immunizations. These differences led to misunderstandings, distrust, and misinterpretation of actions.

For example, the GPEI and partners had the mission of seeing a polio-free world. In contrast, Kano residents viewed the GPEI programs as a plot by Western nations to

depopulate developing nations. Similarly, while the GPEI partners considered the polio vaccine to be a wonderful liquid with the capacity to reduce the risks associated with infection from the polio virus, the Kano community thought of the polio vaccine as a dangerous liquid capable of infecting children with HIV or rendering them infertile at a later stage in life. Finally, the GPEI partners had placed the eradication of polio at the top of the global health agenda; in contrast, the Kano community placed polio immunization at the bottom of their list of health priorities. This researcher posited that conflicts between the two different SW groups provoked the resistance to polio immunization information in Kano. Chatman (1996) noted that differences between small world groups are a source of misunderstandings and conflict in a social setting resulting in the non-use of information.

Revealing that the GPEI program consists of small world groups has implications for polio immunization information programs. This is because people make sense of information through inter-subjective activities. Therefore, policy makers and polio immunization information officers must understand the social and cultural dynamics of small world groups as a foundation for designing discursive activities on polio. Polio discourse (Figure 8) must focus on topics related to (a) the preferred health treatment standards, (b) preferred procedures of accepting the Western orthodox health care system, and (c) common perceptions on polio, polio immunization, and the GPEI programs. Similarly, polio information workers must facilitate organizing discourse, or discussions, on the preconceptions of GPEI workers and supporters, as well as on the biased expectations aimed at GPEI workers and supporters.

This research makes clear the powerful role of local individuals who act as insiders (Chatman, 1999), or opinion leaders (Rogers, 2006). Insiders “use their greater understanding of the social norms to enhance their own social roles. By doing so, they establish standards for everyone else” (Chatman, 1999, p. 212). Findings in this study indicated that local Kano community leaders (opinion leaders) who supported the GPEI program were labeled, and therefore stereotyped, as traders (commission brokers). Therefore, for future polio immunization information to be accepted in Kano, and the remaining infected regions of the world, the GPEI program officers must identify and involve credible local opinion leaders in discourse of polio information. They must devise realistic local strategies for educating the public about polio immunization.

In particular, investigating the factors that account for the local residents’ unfortunate stereotyping of community leaders is crucial to the understanding of polio information resistance. Polio information program officers must identify credible future opinion leaders on polio immunization in polio endemic regions.

Recommendation for Future Research

This study reveals the needs to uncover the role of affect in information seeking in everyday life contexts (e.g. polio immunization information seeking), especially in situations complicated by life or circumstances such as in resistance to polio immunization information. There is a need for future research that investigates Kuhlthau’s (2004) concept of information anxiety in contexts other than in the academic or professional setting where her research has been validated. In situations of polio information anxiety, this study suggests the participation of varied information professionals, in the design of polio information services who could be deliberately

involved in information packaging, information customization, polio program planning, and implementation.

In Kano and other predominately Muslim countries, a new understanding of polio immunization and polio immunization services is necessary to save lives and to eradicate polio. Future research should place more emphasis on developing better understandings of the importance of identifying the personal worldviews of individuals in shaping residents' appreciation for, or acceptance of, new advances in primary healthcare. This study has only begun to uncover a new picture of the personal (individual) worldviews of those who resisted polio immunization in relationship to the shared worldviews of the small world group as it relates to GPEI programs. In this sense, there is an urgent need to study the presence of misperceptions about GPEI programs, specifically, the notion of pluralistic ignorance. A situation in which the majority who engage in healthy behavior may incorrectly believe they are in the minority when they are actually in the majority (Miller & McFarland, 1987; Miller & McFarland, 1991). In pluralistic ignorance, people privately oppose an unhealthy norm but publicly support it. This may be the current situation in Kano.

From 2002–2013, polio incidences increased during four periods (Figure 3): 2003–2006, 2008, 2011, and 2012. Polio cases reached a peak level in 2006, with 1,122 cases, following the suspension of polio immunization programs in Kano in 2003–2004. Just as polio incidence rose at times, it also fell during three specific periods: 2007, 2009–2010, and 2013. The number of polio cases decreased to only 285 cases in 2007, down from 1,122 in 2006. This downward trend may partially be connected to the engagement of the local community in dispelling tenacious myths that polio

immunization is a Western plot to depopulate developing countries. This period also witnessed the engagement of numerous community and religious leaders in polio information activities. Moreover, in 2006, the PolioPlus strategy was introduced, which included the distribution of mosquito nets during door-to-door polio immunization exercises. This strategy linked polio education efforts to malaria prevention, which reduced resistance to door-to-door campaigns. However, while the GPEI had made progress in reducing polio cases, polio incidence rose again in 2008 to 798 cases. This rapid increase partly resulted from funding delays and limited availability of polio vaccines. In this context of behavioral attitudes, resistant to polio immunization information occurred. The attitudes of the Kano people have traditionally inhibited acceptance of polio, but GPEI workers have made some progress in reducing this resistance.

To move forward in the final eradication of polio in Nigeria and Kano, the GPEI intensified supplementary immunization activities (SIAs) in 2008. This strategy administered additional doses of polio vaccine to every child, regardless of prior vaccination history. This partially helped to reduce polio cases in subsequent years. However, this study posits that the PolioPlus strategy and the supplementary immunization activities aimed at stimulating the demand for polio vaccines in Kano do not address the underlying issues of polio immunization resistance. Most of the GPEI programs aimed at stimulating the demand for polio vaccines did not focus on understanding the reasons for resistance to polio immunization from social epistemological and social ontological perspectives. The need to understand the information behaviors of those resistant to polio immunization information is imperative

to achieving a sustained demand for polio vaccines over time. For a sustained demand for polio vaccines, more research on polio information behavior is needed. The research should seek to identify how polio immunization information is acquired, how polio immunization information is processed, how polio immunization information should be packaged and communicated, to mitigate the effects of social and cultural factors on polio immunization information acceptance and use.

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Table 1: Chatman’s Theory of Normative Behavior by Author and Example

Author	Social norm	Worldview	Social type	Information behaviors
✓ Burnett, Besant, and Chatman (2001)	✓ Opposing gender inequality --information not conforming to gender inequality are rejected.	✓ Gender inequality is a social evil	✓ Insider and outsider phenomena	✓ Information exchanges.
➤ Jaeger and Thompson (2004)	➤ E-government information has minimal value—leading to its non-use.	➤ E-government information is akin to information imperialism		
❖ Turner 2008	❖ Politeness –information is ignored if posted impolitely.	❖ Learning about technology for self-development	❖ Polite/impolite	❖ Information avoidance. ❖ Information seeking. ❖ Information giving. ❖ Information searching.
▪ Burnett, Jaeger, and Thompson (2008)	▪ Weeding out of books--limit access to information	▪ A person’s worldview-- limits information access. ▪ Differences in worldview cause conflict--which limit information exchange. ▪ What constitutes “proper” information --restrict information access.		

Table 2: Template for Collection of Narrative Data

Text Passage from Selected Content	Document source	Categories/Codes
“By the grace of God, my children are all healthy, so why do you want to administer medicines to them?” (PolioInfo 2012, para. 3).	PolioInfo (2012). Nigeria declares “war” against polio: Stories from the fieldNigeria. Retrieved December 12, 2012 from: http://polioinfo.org/index.php/stories-from-the-field/215-kano-state-northern-nigeria-where-more-than-one-third-of-all-children-still-remain-under-immunized-once-again-finds-itself-at-the-centre-of-the-countries-polio-outbreak-currently-with-62-cases	

Table 3: Selected Documents for Content Analysis

Document source	Media Type	Country of Origin	Citation
1. Journal of African Affairs	Journal	United Kingdom	<ul style="list-style-type: none"> Yahya, M. (2007). Polio vaccines—"no thank you!" barriers to polio eradication in northern Nigeria. <i>African Affairs</i>, 106 (423), 185–204.
2. Baltimore Sun	Newspaper	US	<ul style="list-style-type: none"> Murphy, J. (2004, January 4). Distrust of U.S. foils efforts to stop crippling disease. <i>Baltimore Sun</i>. Retrieved May 1, 2013 from http://www.baltimoresun.com/news/bal-polio0104,0,90357.story
3. BBC News	Newspaper	United Kingdom	<ul style="list-style-type: none"> Bomford, A. (2006, March 31). Nigeria's struggle to beat polio BBC, Nigeria. <i>BBC News</i>. Retrieved May 16, 2013 from http://news.bbc.co.uk/2/hi/africa/4862012.stm
	✓		<ul style="list-style-type: none"> Gordon, O. (2004, January 20). WHO moves to calm polio fears. <i>BBC News</i>. Retrieved March 18, 2013 from http://news.bbc.co.uk/2/hi/africa/3411729.stm
	✓		<ul style="list-style-type: none"> Last, A. (2007). Vaccine-linked polio hits Nigeria. <i>BBC News</i>. Retrieved May 16, 2013 from http://news.bbc.co.uk/2/hi/africa/7037462.stm
	✓		<ul style="list-style-type: none"> Nigeria Muslims Oppose (2002, June 27). Nigeria Muslims oppose polio vaccination. <i>BBC News</i>. Retrieved March 3 from http://news.bbc.co.uk/2/hi/2070634.stm
	✓		<ul style="list-style-type: none"> Polio in Nigeria (2003, October 27). Polio in Nigeria threatens region. <i>BBC News</i>. Retrieved from http://news.bbc.co.uk/2/hi/africa/3216329.stm
	✓		<ul style="list-style-type: none"> Q & A: Nigerian fears (2004, March 22). Q & A: Nigerian fears threaten polio drive. <i>BBC News</i>. Retrieved May 21, 2013 from http://news.bbc.co.uk/2/hi/africa/3513783.stm
	✓		<ul style="list-style-type: none"> UN launches key (2004, October 8). UN launches key anti-polio push. <i>BBC News</i>. Retrieved March 1, 2013 from http://news.bbc.co.uk/2/hi/africa/3725470.stm
	✓		<ul style="list-style-type: none"> Walker, A. (2007). Nigerians try to dampen polio fears. <i>BBC News</i>. Retrieved January 15 2013 from http://news.bbc.co.uk/2/hi/africa/7046680.stm869
4. Boston Globe	Newspaper	US	<ul style="list-style-type: none"> Donnell, J. (2004, January 11). Muslims' fears pose barrier to fighting polio in Nigeria. <i>Boston.com</i>. Retrieved January 29, 2013 from

			http://www.boston.com/news/world/articles/2004/01/11/muslims_fears_pos_e_barrier_to_fighting_polio_in_nigeria/
5. British Medical Journal	Newspaper	United Kingdom	<ul style="list-style-type: none"> • Raufu, A. (2004). Traditional rulers in northern Nigeria call for halt to polio. <i>British Medical Journal</i>, 328. • Raufu, A. (2003). Polio vaccine plans may run into problems in Nigeria. <i>British Medical Journal</i>, 327 (7410), 380.
6. CBS News	Online News (print)	US	<ul style="list-style-type: none"> • Polio Outbreak After (2009, February 11). Polio outbreak after vaccine ban. CBS News. Retrieved October 23, 2012 from http://www.cbsnews.com/2100-204_162-630608.html
7. CNN	Online News (print)	US	<ul style="list-style-type: none"> • Three Nigerian States (2003, October 27). Three Nigerian states halt polio vaccinations over AIDS fears. Retrieved October 23, 2012 from http://www.cnn.com/2003/WORLD/Africa/10/27/nigeria.polio.reut/
8. Daily Beast (Newsweek)	Newspaper	US	<ul style="list-style-type: none"> • Guterl, F. (2009, January 21). Polio's last stand. Newsweek. Retrieved October 27, 2012 from http://www.the-dailybeast.com/newsweek/2009/01/21/polio-s-last-stand.html
9. Daily Trust	Newspaper	Nigeria	<ul style="list-style-type: none"> • Adamu, L. D. (October 9, 2012). Nigeria: Gunmen Kill Two Policemen in Kano. <i>Daily Trust</i>. http://allafrica.com/stories/201210100288.html
	✓		<ul style="list-style-type: none"> • Adamu, L. D. (2013, April 15). Kano community protests appointment of ward head. <i>Daily Trust</i>. Retrieved May 02, 2013 from http://www.dailytrust.com.ng/daily/old/index.php/news-news/52183-kano-community-protests-appointment-of-ward-head
	✓		<ul style="list-style-type: none"> • Babatunde, A. (2013, February 14). Nigeria: Plotting With Polio. <i>Daily Trust</i>. Retrieved May 5, 2013 from http://allafrica.com/stories/201302140788.html
	✓		<ul style="list-style-type: none"> • Brutal Killing of Polio (2013, February 22). Brutal killing of polio immunization workers. <i>Daily Trust</i>. Retrieved May 8, 2013 from http://www.dailytrust.com.ng/index.php/editoria
	✓		<ul style="list-style-type: none"> • Jega, M. (2013, February 11). This story does not hold water. <i>Daily Trust</i>. Retrieved May 8, 2013 from http://www.dailytrust.com.ng/daily/old/index.php/columns/moday-columns/50296-this-story-does-not-hold-water
	✓		<ul style="list-style-type: none"> • Musa, H. (2012, October 16). Corruption spurs polio in Kano. <i>Daily Trust</i>. Retrieved from http://www.dailytrust.com.ng/index.php/news-news/607-

			corruption-spurs-polio-in-kano
	✓		<ul style="list-style-type: none"> • Musa, H. (2012, October 8). Kwankwaso fires polio officials over corruption. <i>Daily Trust</i>. Retrieved on January 2, 2013 from http://www.dailytrust.com.ng/index.php/top-stories/25497-kwankwaso-fires-polio-officials-over-corruption
	✓		<ul style="list-style-type: none"> • Okafor , J. L. (2013). Polio immunization goes on despite attacks. <i>Daily Trust</i>. Retrieved May 8, 2013 from http://allafrica.com/stories/201302220294.html?viewall=1
	✓		<ul style="list-style-type: none"> • Pindiga, H. I. (2003, December 30). Nigeria: Reps and the polio vaccine controversy. <i>Daily Trust</i>. Retrieved March 10, 2013 from http://allafrica.com/stories/200312300229.html
	✓		<ul style="list-style-type: none"> • Sa'idu, I. (2013, April 5). Nigeria: Anti-Polio vaccine professor alleges harassment. <i>Daily Trust</i>. Retrieved May 12, 2013 from http://allafrica.com/stories/201304050688.html
	✓		<ul style="list-style-type: none"> • Wazobia FM Journalists Arraigned (2013, February 12). Wazobia FM journalists arraigned for 'inciting' polio workers' killing. <i>Daily Trust</i>. Retrieved May 5, 2013 from http://www.dailytrust.com.ng/daily/old/index.php/news-news/50508-wazobia-fm-journalists-arranged-for-inciting-polio-workers-killing
	✓		<ul style="list-style-type: none"> • Okafor , J. L. (2013). Polio immunization goes on despite attacks. <i>Daily Trust</i>. Retrieved May 8, 2013 from http://allafrica.com/stories/201302220294.html?viewall=1
	✓		<ul style="list-style-type: none"> • Pindiga, H. I. (2003, December 30). Nigeria: Reps and the polio vaccine controversy. <i>Daily Trust</i>. Retrieved March 10, 2013 from http://allafrica.com/stories/200312300229.html
	✓		<ul style="list-style-type: none"> • Sa'idu, I. (2013, April 5). Nigeria: Anti-Polio vaccine professor alleges harassment. <i>Daily Trust</i>. Retrieved May 12, 2013 from http://allafrica.com/stories/201304050688.html
	✓		<ul style="list-style-type: none"> • Wazobia FM Journalists Arraigned (2013, February 12). Wazobia FM journalists arraigned for 'inciting' polio workers' killing. <i>Daily Trust</i>. Retrieved May 5, 2013 from http://www.dailytrust.com.ng/daily/old/index.php/news-news/50508-wazobia-fm-journalists-arranged-for-inciting-polio-workers-killing
10. Deutsche Welle Radio	Radio News Documentary	Germany	<ul style="list-style-type: none"> • Mack, B. (2012, October 26). Threat of polio re-emerges in Nigeria.

			Deutsche Welle. Retrieved January 2, 2013 from http://dw.de/p/16VKw
11. Bill & Melinda Gates Foundation	Weblog	US	<ul style="list-style-type: none"> Gates, B. (July 27, 2010). Nigeria Advances the Fight against Polio. Retrieved on March 11, 2013 from http://www.polioeradication.org/tabid/167/iid/56/Default.aspx
12. Global Polio Eradication Initiative Program	Report		<ul style="list-style-type: none"> Mohammed, A. J. (2009). Report on barriers to polio eradication in Nigeria independent evaluation team for Nigeria. Global Polio Eradication Initiative Program. Retrieved May 30, 2013 from http://www.polioeradication.org/Resourcelibrary/Evaluations.aspx
	Report		<ul style="list-style-type: none"> Global Polio Eradication Initiative (2012). Nigeria continues to intensify efforts against polio. Retrieved from http://polioeradication.org/tabid/461/iid/232/Default.aspx
	Report		<ul style="list-style-type: none"> Global Polio Eradication Initiative (2012). Understanding where and why children are missed. Retrieved on March 1, 2013 from polioinfo.org/mediacontent/spotlight/map_pullout.pdf
	Report		<ul style="list-style-type: none"> Laulajainen, T. M. (2011). Nigeria addressing communication challenges. Polio communication 2011 summary report. UNICEF Nigeria Country Office. Retrieved June 5 2013 from http://www.poliofreenigeria.com/publication/2011%20Polio%20Communication%20Summary%20Report.pdf
	Report		<ul style="list-style-type: none"> Traditional Leaders Prove (2009). Traditional leaders prove the catalyst for change. <i>Polio News</i>. 4th Quarter No °34. Retrieved June 28 from http://www.polioeradication.org/content/polionews/PolioNews34/PolioNews34-EN/PolioNews34-EN.pdf
13. Globe and the Mail	Newspaper	US	<ul style="list-style-type: none"> At the Risk of Polio (2004, January, 15). At the risk of polio. <i>The Globe and Mail</i>. Retrieved March 18, 2013 from http://www.theglobeandmail.com/commentary/at-the-risk-of-polio/article741149/ 375
	✓		<ul style="list-style-type: none"> WHO Targets Polio (2004, February 20). WHO targets polio in Africa despite local resistance. <i>The Globe and Mail</i>. Retrieved May 1, 2013 from http://www.theglobeandmail.com/news/world/who-targets-polio-in-africa-despite-local-resistance/article4087355/

	✓		<ul style="list-style-type: none"> Rumours and Vaccines (2004, March 5). Rumours and vaccines. <i>The Globe and Mail</i>. Retrieved May 1, 2013 from http://www.theglobeandmail.com/commentary/rumours-and-vaccines/article1332242/
14. Guardian	Newspaper	United Kingdom	<ul style="list-style-type: none"> Nigerian Police Charge (2013, February 12). Nigerian police charge journalists for inciting murders of polio workers. <i>The Guardian Newspaper</i>. Retrieved May 28, 2013 from http://www.guardian.co.uk/world/2013/feb/12/nigerian-police-journalists-boko-haram
15. Health Affairs	Journal	US	<ul style="list-style-type: none"> Kaufmann, J. R., & Feldbaum, H. (2009). Diplomacy and The Polio Immunization Boycott In Northern Nigeria. <i>Health Affairs</i>, 28 (4) 1091-1101 Frishman, A. (2009). Major Reason For Nigerian Boycott Of Polio Vaccine. <i>Health Affairs</i>, 28 (6), 1860-1861.
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			<p><i>Weekly Trust</i>. Retrieved April 11, 2013 from http://allafrica.com/stories/200401260017.html</p> <ul style="list-style-type: none"> • Our Polio Test (2004, March 6). Our polio test was conclusive. <i>Weekly Trust</i>. Retrieved on December 3, 2012 from http://allafrica.com/stories/200403080104.html • We Will Not Submit (2003, November 8). We will not submit our children for vaccination. <i>Weekly Trust</i>. Retrieved July 4 2013 from http://news.biafranigeria.com/archive/2003/nov/08/0102.html
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Table 4: Classification Sub-categories

Classification Categories

1. A ploy by the West
 2. Apprehension of polio vaccine
 3. Fear the polio vaccine could be contaminated with infertility drugs
 4. Killer disease need attention/ Too much emphasis on polio
 5. Promoters of polio immunization
 6. Fear the polio vaccine could be contaminated with HIV virus
 7. Free multiple door-to-door polio vaccine by untrained workers
 8. Deception
 9. Outright refusal
 10. Rudeness and violence
 11. Middle East conflict
 12. Forcing parents to immunize children
 13. Spirituality—Only God provide immunity
 14. Social amenities needed
 15. Pfizer drug test
 16. The rush to administer polio vaccine
 17. Social discourse
 18. Neo-colonialism
 19. Do not trust orthodox medicine
 20. Cigarette promotion
-

Table 5: Illustrative Quotes for Classification Sub-categories

Classification	Illustrative quotes
1. Polio vaccine programs is a ploy by the West	<ul style="list-style-type: none"> • “I think either this (polio) is an imaginary thing created in the west or it is a ploy to get us to submit to this evil agenda” (Bomford, 2006, para. 24-26). • "I am skeptical and apprehensive about the polio campaign given the desperation and the rush of the sponsors, who are all from the West.” (Nigeria Muslims oppose Polio, 2002, para. 8-11).
2. Apprehension of polio vaccine	<ul style="list-style-type: none"> • “Sule, spokesperson for the Kano state governor noted “people will never trust the (polio) vaccine, no matter what assurances they get” (Religion and Politics Threaten Polio, 2004, para. 23). • “Well, finally I had to define to them what a fake drug is, and concluded that the Oral Polio Vaccine is nothing but a fake drug too, and what do NAFDAC do to fake drugs, they burn them and prosecute those who import them into the country.” (Our Polio Test Was Conclusive, 2004, para. 1-8)”
3. Fear the polio vaccine Could be contaminated with infertility drugs	<ul style="list-style-type: none"> • Kano state Governor noted: “It is a lesser of two evils, to sacrifice two, three, four, five even 10 children (to polio) than allow hundreds or thousands or possibly millions of girl-children likely to be rendered infertile.’ (Ogundipe, 2004, February 27).
4. Worse killer diseases need attention/ too much emphasis on polio	<ul style="list-style-type: none"> • We don’t want our people to get diseases, but polio is not our priority, we have to set our priority just because someone has vaccines to discard, you push them to our people, no we won’t accept that “ (We Will Not Submit Our Children, 2003, para 18). • “To wipe out 109 cases in Nigeria how much is being spent on Nigeria? How many children (die) of measles, how many children die of malaria and 125 diarrhoea. Why are you not spending those monies to supply our hospital with drugs to fight malaria, typhoid, measles?” (We Will Not Submit Our Children, 2003, para 18).
5. Suspicious of promoter of polio vaccines	<ul style="list-style-type: none"> • “They are the worst criminals on Earth to sterilize children for life. Even Hitler was not as evil as

that,” said Ahmed, who has appeared on radio and television promoting his theory (Murphy, 2004 January 4, para. 45).

- What becomes increasingly apparent in these conversations is a lack of trust in government and the West, portrayed by many as ‘partners in crime’. ...A rural farmer recalls one of such incidents, stressing: “We cannot trust the white man or our federal government because many years ago they were in partnership when they brought medicine to poison our people. Our government does not have our interests at heart that is why these people can come in any time they want and do whatever they want. It is only God that is protecting us” (Yahya, 2007, p. 29).
6. Fear the polio vaccine could be contaminated with HIV virus
- “We believe that modern-day Hitler’s have deliberately adulterated the oral polio vaccines with ...viruses which are known to cause HIV and AIDS” (Vaccine Boycott Spreads Polio, 2004, January 4).
7. Multiple doses of free door-to-door polio vaccine by untrained vaccinators
- “...and come to think of it, your document here (waiving the WHO polio campaign manual) says that a child needs only “two drops” of the vaccine to get permanent I, but on the other hand you are saying “few drops,” and few drops can mean 4,5,6, or ten drops. But this document here by WHO says a child needs only two drops, yet you come every year, for five years now, you come ...from 2001 to 2005, you keep giving our children, when will it stop. These are the questions we want answers. (We Will Not Submit Our Children, 2003, November 8, para 16).
 - The health commissioner for Kano state, Dr. Abubakar Labaran Yusuf, says in the past, some people who were trained and paid to be vaccinators would send an untrained friend or relative as a replacement. "He will end up, instead of dropping in the mouth, he will drop it in the nose, which will not help. Instead of two drops, not even drop — or spray the whole thing," Yusuf says. (Beaubien, para. 19-20).
 - "How could I be so naive as to allow my children to be given polio drops by people who go door-to-door giving the vaccine free” (Roots of Polio vaccine suspicion 2013, para. 10-11).
8. Deception
- “Mothers try to fool health workers into believing their children have been vaccinated by painting

their children's fingers with nail polish, an attempt to imitate the ink marks used in vaccine campaigns to record that a child has been immunised" (Polio Vaccination Dismissed as Devil's 2006, para 17).

9. Outright refusal
 - "I worked on Saturday and Sunday but nobody I met would allow me to vaccinate his child. The first day I went to 16 houses and at each house I was rebuffed by the parents," said auxiliary health worker Shamsuddeen Falalu." (Abubakar, 2004, para.1-4).
10. Rudeness and violence
 - "In some of the houses I was told it was in my own interest never to come back and wherever I passed carrying the polio kit I was booed by children who followed me chanting derisive songs," the 18-year-old told AFP on Tuesday (Abubakar, 2004, para.1-4).
 - Muslim clerics preached the dangers of the vaccine during Friday prayers. Villagers chased, threatened and assaulted vaccinators. Frustrated, some vaccination teams dumped thousands of doses of the vaccine rather than face angry villagers, WHO officials say (Murphy, 2004, para. 14).
11. Middle East conflict
 - What is happening in the Middle East has aggravated the situation," says Ali Guda Takai, a WHO doctor who investigates all polio cases in Kano state. "If America is fighting people in the Middle East, the conclusion is that they are fighting Muslims." (Murphy, 2004, para 38).
12. Forcing parents to immunize children
 - In the past few years, religious leaders in this region have gone from opposing vaccination to requiring it. "We have to force you to do it, whether you like it or you don't like it," says Wada Mohamed Aliyu, the polio point man for the emir of Kano state, the region's top-ranking Muslim (Beaubien, 2012, October 16, para. 11).
13. Only God provide immunity
 - 32-year-old Aishatu Mohammed took a different line. "We will receive the other vaccines, but not the oral polio vaccine because they said it contains harmful substances," she said. "Besides with or without the vaccine, Allah protects his own." (Muslim Suspicion of Polio, February 19, para 50)
14. Social amenities needed
 - "Why is the polio vaccine given round after round when there is no health care nor clean water in our village? (Laulajainen, 2011, p. 6)

15. Pfizer drug test
- "The Pfizer drug test in 1996 is still on our minds. To a large extent, it shaped and strengthened my view on polio and other immunisation campaigns," (Nigeria Muslims oppose Polio, 2002, para. 8-11).
16. The rush to administer polio vaccine
- "How many children does polio kill. These are the questions you have not given satisfactory answers to, and you don't think people will just abandon their apprehension on these drugs without giving them a satisfactory answer. The whole desperation about injecting our children with this vaccine is what bothers people. I, as an educated person, I can look at you, study your body chemistry and perhaps be convinced you are telling the truth but the village man there who has ten, twenty children will rely on me to assure him that what is given to his children is not harmful. If I tell him there is no problem and later there is a problem..." (We Will Not Submit Our Children, 2003, November 8, para 13).
17. Social discourse
- The Minister of State for Health, Dr. Muhammad Ali Pate, Sunday appealed to Islamic clerics in the North who have been preaching against polio immunisation to desist forthwith in the interest of the health of the children in the region. ... "It is indeed sad that some individuals have continued to preach against polio immunisation without any facts in the North. These people have been spreading such messages through cassettes... In fact, these messages have impeded our efforts in the eradication of polio in the region. Thus, I am appealing to such preachers to strive to acquire facts about polio vaccines and desist from such misinformation. They should fear Allah and realise that they will account for their deeds in the hereafter," Pate advised (Aminu, 2013, para. 1-7).
18. Neo-colonialism
- "If reducing population will enhance the United States' interests, then America will go for it," says Samaila Buba. 35, a graduate student at Bayero University in Kano. "I cannot allow my child to take [the vaccine]." (Murphy, 2004, para. 47).
19. Do not trust Western Health system
- The state commissioner for health, Aisha Isyaku Kiru, said "many people are illiterate and do not trust medicine" (Walker, 2007, October 16, para. 18-26).

20. Cigarettes promotion in Kano

- Several people in the north referred to the introduction of cigarettes to Nigeria by the British 50 years ago. Kano tobacconist Habu Iro and several residents told IRIN that in the 1950s, when people bought cigarettes, they would find money in the packet. The amount included was gradually reduced as people became addicted. “We now know what [the] cigarette does to human health. The white man will never give anything for free. It is the same thing with [the] polio vaccine. They are hiding something,” 73-year-old Kano resident Dije Umar said (Roots of Polio Vaccine, 2013, para. 19-20)

Table 6 – Descriptions of Six Categories

Categories	Description
1. Suspicious of Western nations	<ul style="list-style-type: none">• Comments related to the rationale behind GPEI program
2. Polio less priority	<ul style="list-style-type: none">• Comments related to the importance attached to the polio disease
3. Suspicious of polio vaccines	<ul style="list-style-type: none">• Comments related to the collective perceptions and common approach to polio vaccine
4. Distrust of Western Health System	<ul style="list-style-type: none">• Comments related to the set of beliefs, and common approach to polio immunization
5. Administering polio immunization	<ul style="list-style-type: none">• Comments related to the perceptions, views, and opinions of Kano residents towards the procedure of administering polio vaccines
6. Distrust of polio immunization promoters	<ul style="list-style-type: none">• Comments related to labeling and classification of promoters of polio vaccines

Table 7– Categories and Sub-categories by Frequency and Percentage of Frequency

	Categories	Sub-categories	Frequency	Percentage
Resistance to polio information	1. Suspicious of Western nations	1.1 A ploy by the West to spread killer disease	56	16.5191
		1.2 Linked to Middle East conflict	9	2.6548
		1.3 Pfizer drug test	5	1.4749
		1.4 Neo-colonialism	4	1.1797
		1.5 Free cigarette promotion in Kano by Britons in the 1950's	1	0.2949
		1.6 Others	4	1.1799
		Group Total	79	23.30
2	Polio disease less priority	2.1 Worse killer disease need attention/ too much emphasis on polio	30	8.8495
		2.2 Social amenities needed	6	1.7699
		2.3 Others	1	0.2949
		Group Total	37	10.91
3	Suspicious of polio Vaccine	3.1 Apprehension of polio vaccine	54	15.9292
		3.2 Fear polio vaccine is contaminated with infertility drugs	41	12.0943
		3.3 Fear polio vaccine is contaminated with HIV virus	18	5.3097
		3.4 Others	2	0.5899
		Group Total	115	33.9233
4	Distrust of Western Health System	4.1 Belief in spirituality—only Allah provide immunity	6	1.7699
		4.2 Belief in traditional medicine	4	1.1799
		4.3 Others	1	0.2949
		Group Total	11	3.24%
5	Administering of polio immunization	5.1 Free multiple door-to-door polio campaign by untrained polio vaccinators	18	5.3097
		5.2 Forcing parents to immunize children	7	2.0648
		5.3 The rush to administer polio vaccine	5	1.4749
		5.4 Others	1	0.2949
		Group Total	31	9.1445

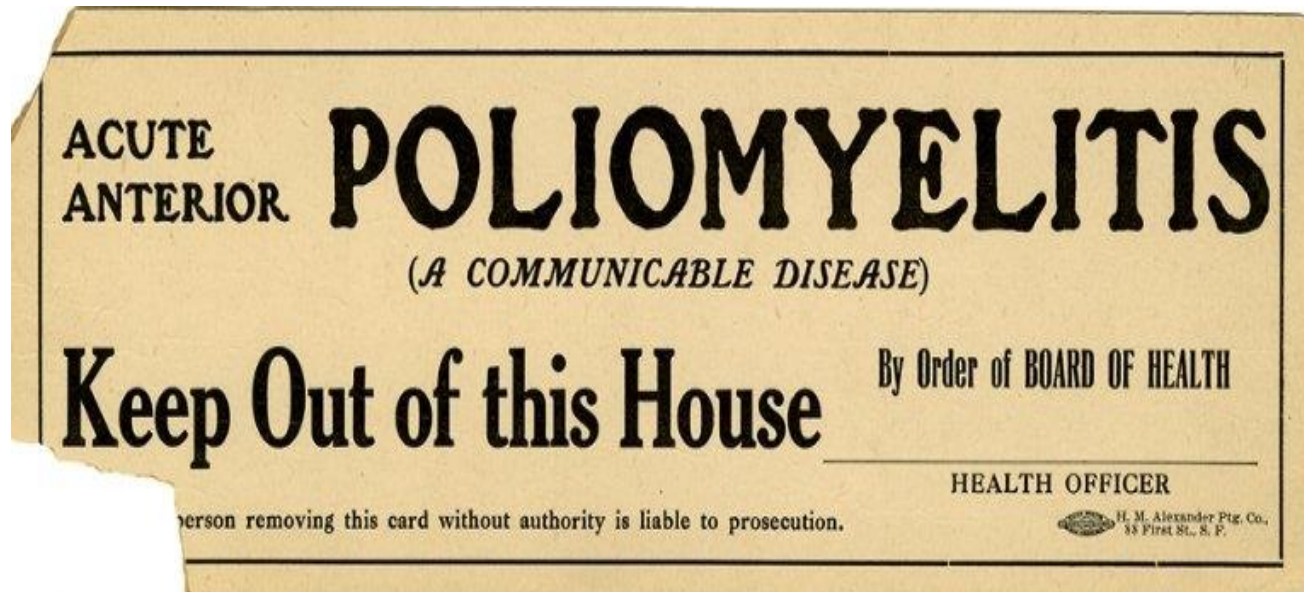
6	Perceptions of polio immunization promoters	6.1 Perceptions of polio immunization promoters	23	6.7846
		Group Total	23	6.7846
		Groups Total	296	87.3156%

Table 8– Data analysis Steps

Theme	Categories	Sub-categories	
• Resistance to polio information in Kano	• Social Norm	• Distrust of Western Health System	• Belief in spirituality—only Allah provide immunity
		• Administering of polio vaccine	• Belief in traditional medicine/witchery • Door to door free multiple doses of polio vaccine by untrained vaccinators • Forcing parents to immunize children • The rush to administer polio vaccine
	• Worldview	• Suspicious of Western nations	• A ploy by the West to spread killer disease • Middle East conflict • Neo-colonialism • Pfizer drug test • Cigarettes promotion in Kano
		• Polio disease a lesser priority	• Killer disease need attention • Social amenities needed
		• Suspicious of polio vaccine	• Apprehension of polio vaccine • Fear polio vaccine is contaminated with infertility drugs • Fear polio vaccine is contaminated with HIV virus
	• Social Type	• Suspicion of polio immunization promoters	• Suspicion of polio immunization promoters
	• Information Behavior	• Information Behavior	• Outright refusal • Social discourse • Rudeness and violence • Deception

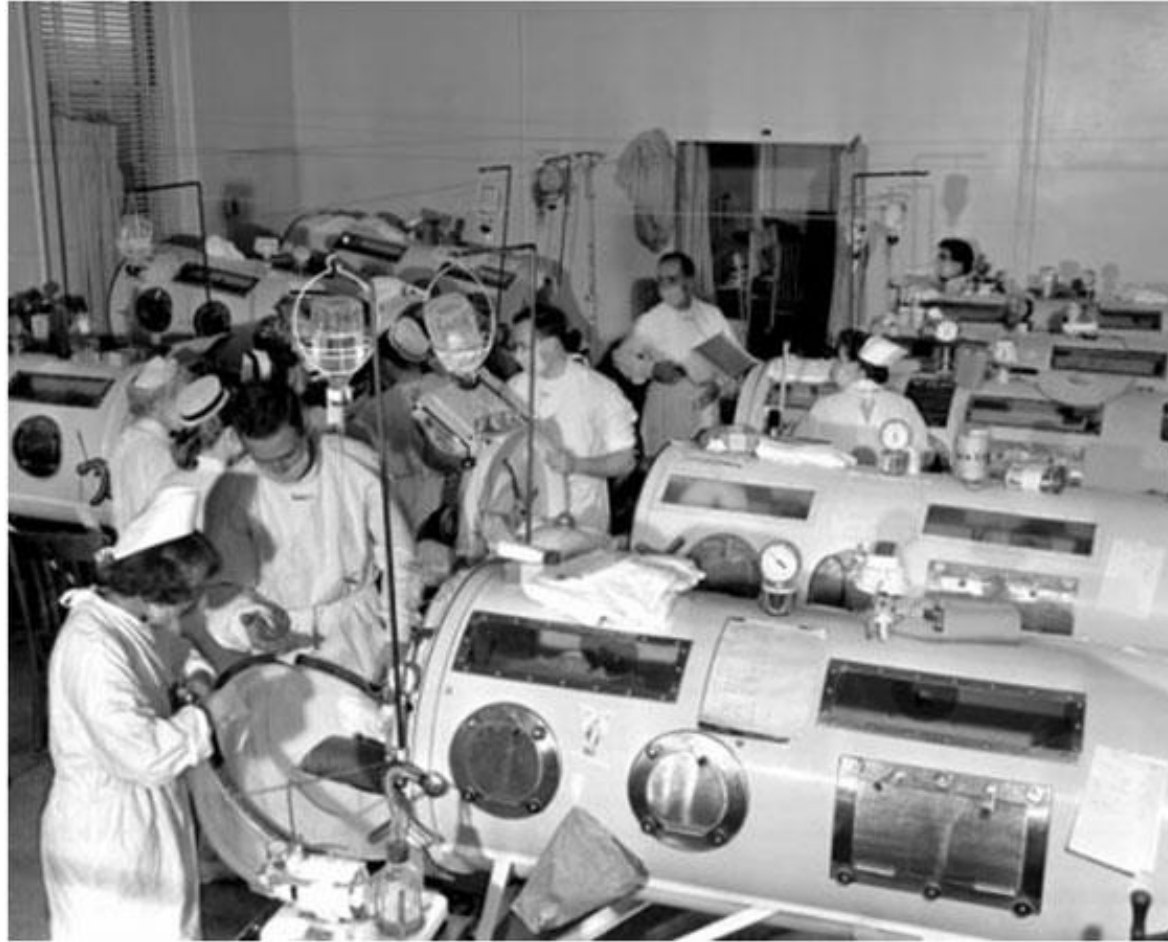
Table note

Figure 1 Polio Quarantine



Courtesy of the National Library of Medicine.

Figure 2: Cage Iron Lungs



Courtesy of Mental Floss Magazine

Figure 3: Nigeria WPV Incidences 2002-2013

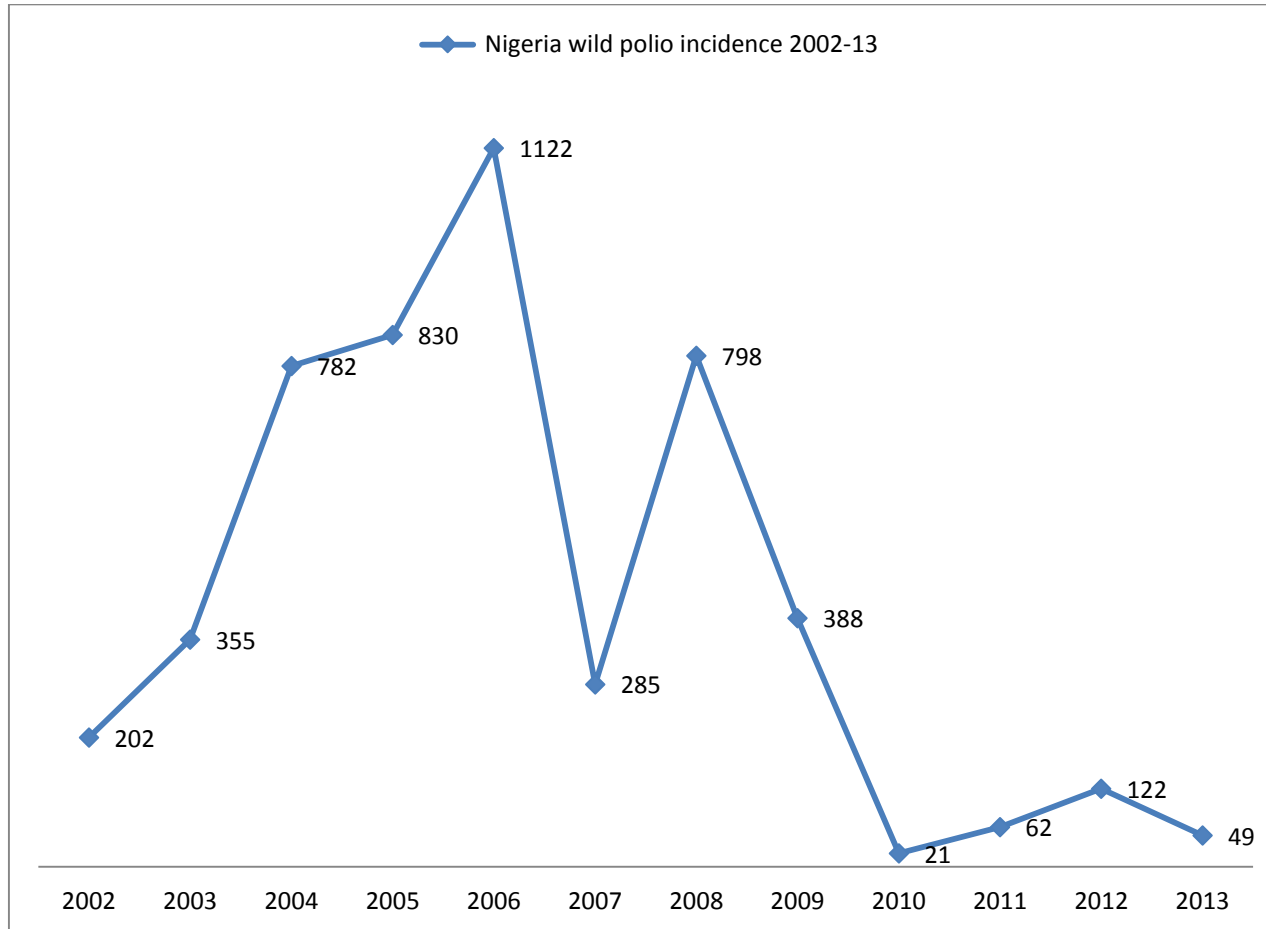


Figure 4: Data Analysis Steps

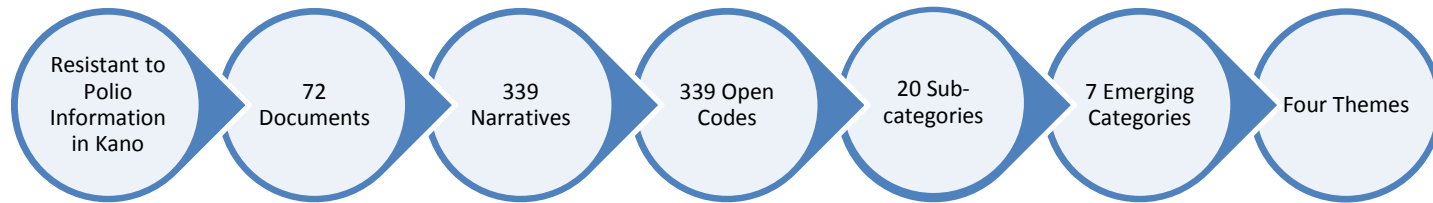


Figure 5: Narratives by Publication Year

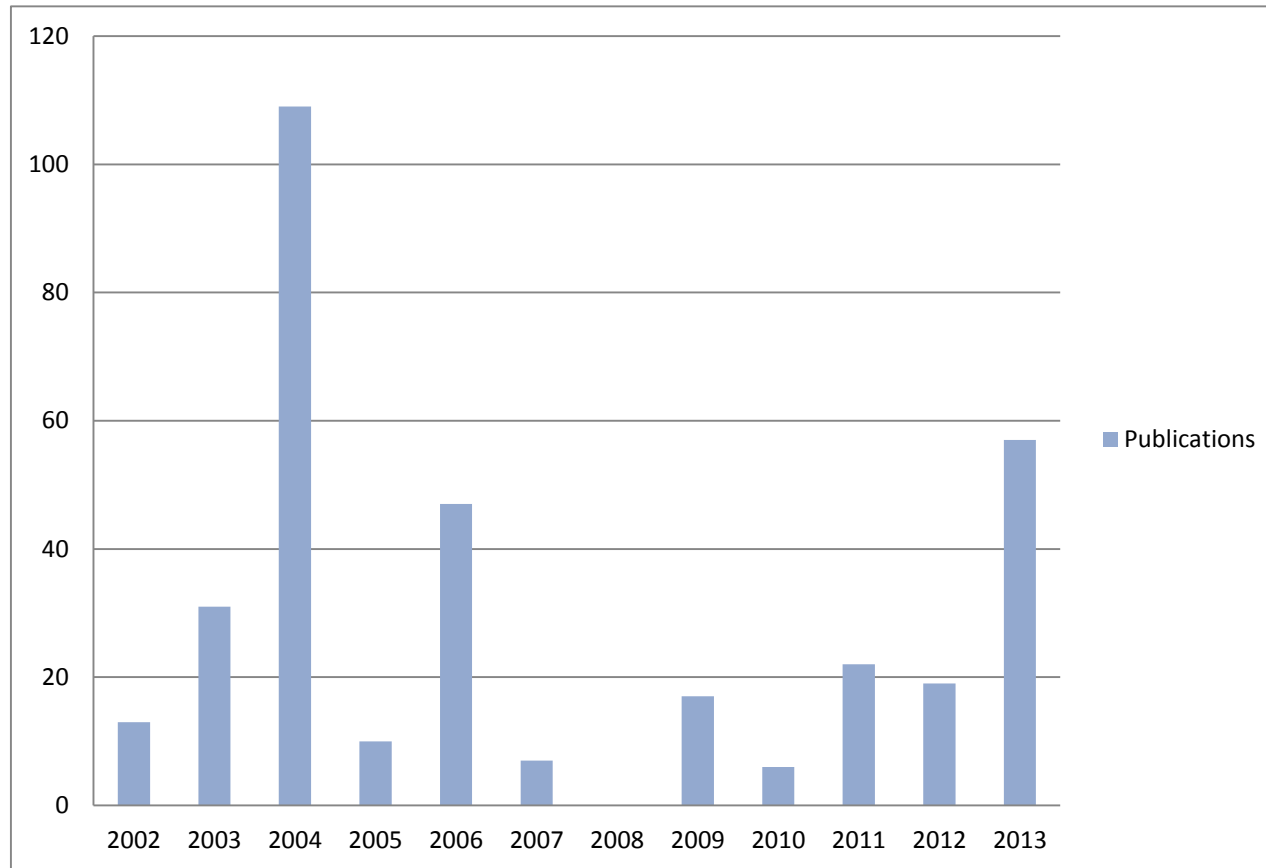


Figure 5: Narratives by Publications Year

Figure 6: Category by frequency and year

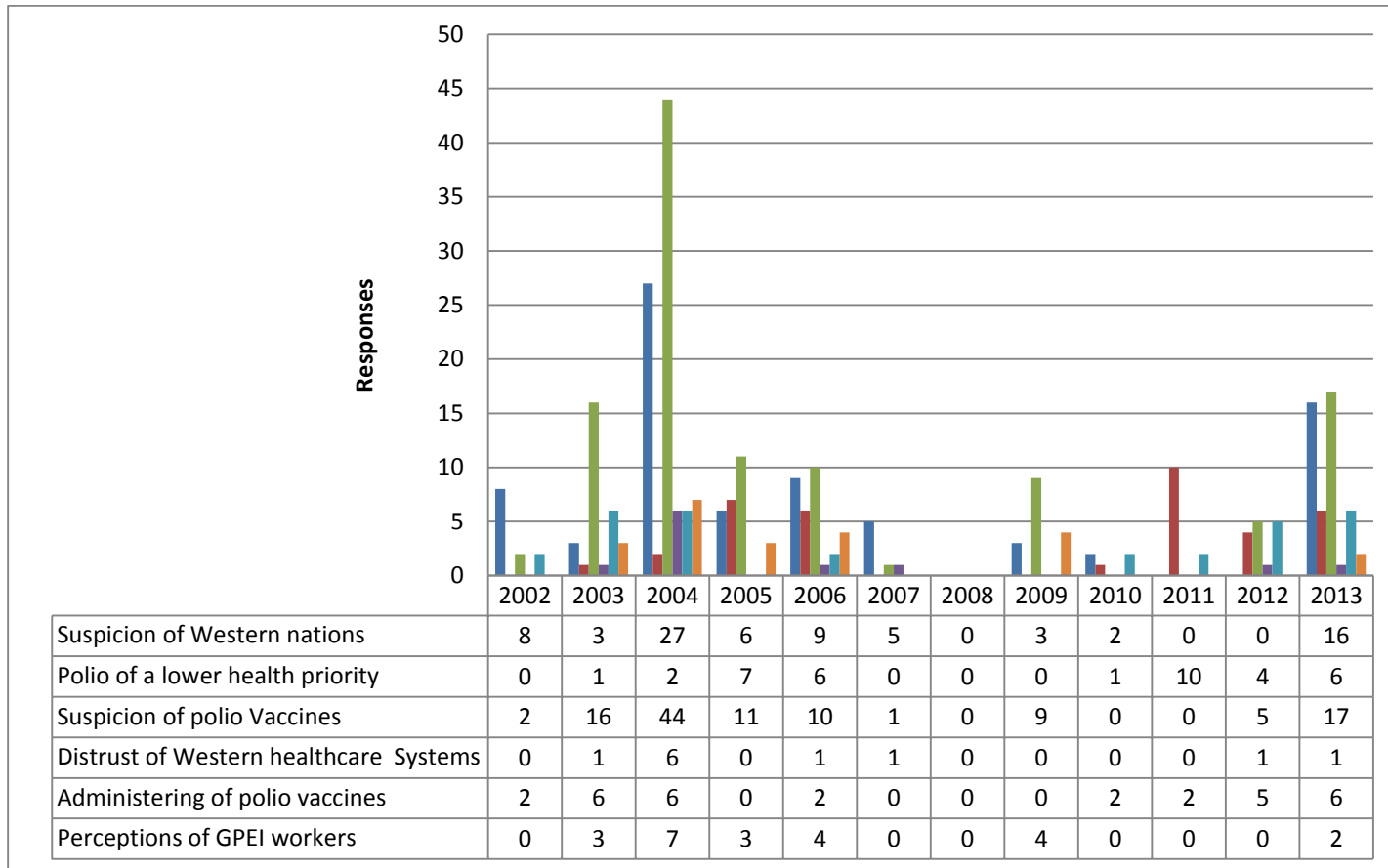


Figure 7: Polio Immunization Information Non-use Behavior in Muslim Countries

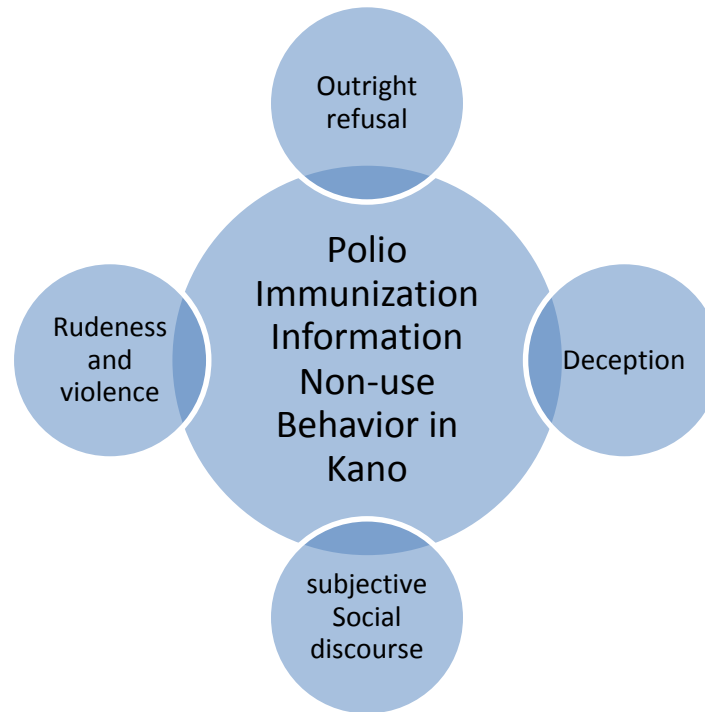


Figure 7. Polio Immunization Information Non-use Behavior in Muslim Countries

Figure 8. Examples of discourse topics for acceptance of polio immunization in Kano

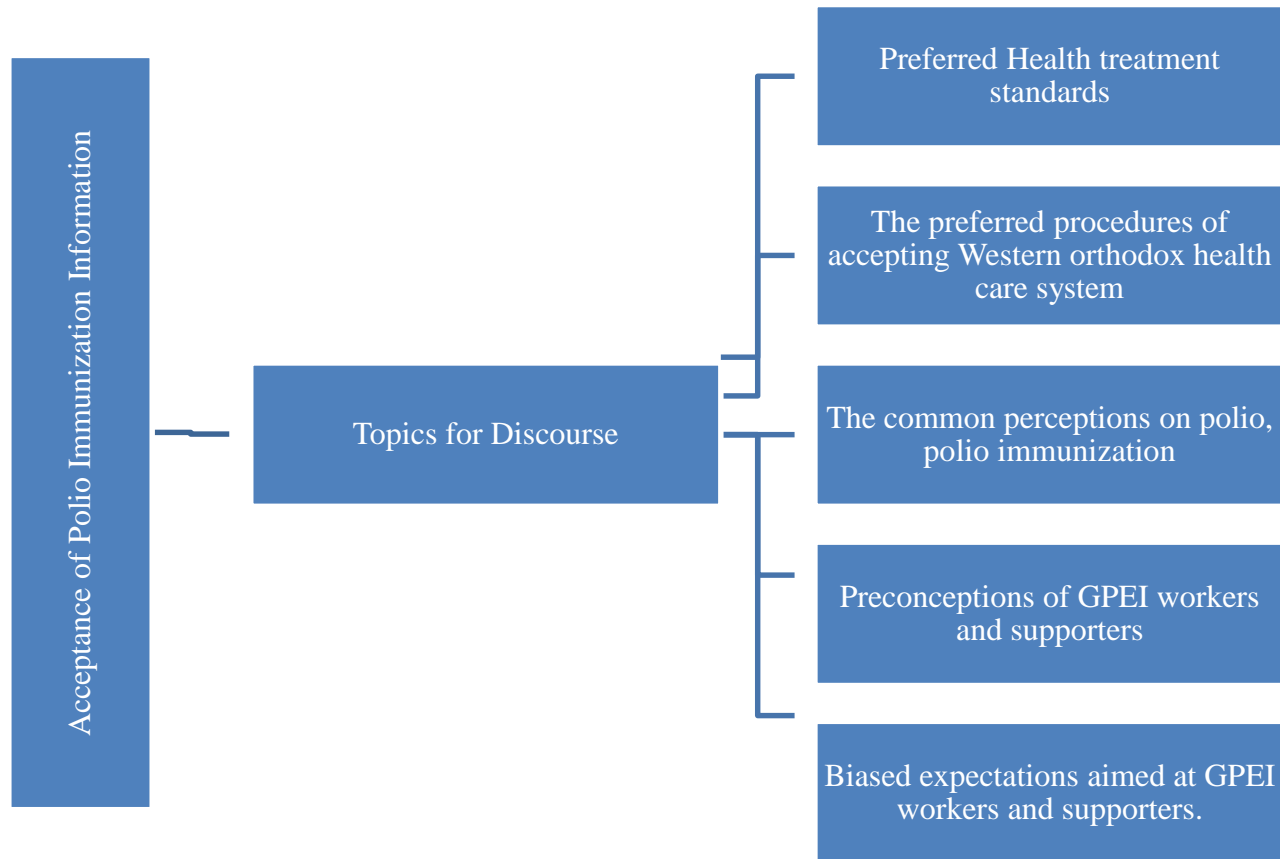


Figure 8. Examples of discourse topics for acceptance of polio immunization in Kano

