PREVALENCE, HEALTH LITERACY AND MANAGEMENT OF POST-POLIO SYNDROME AMONG POLIO SURVIVOURS IN IBADAN, OYO STATE

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Post-polio syndrome (PPS) are simply conditions associated with people who have a history of poliomyelitis and experience newneuromuscular symptoms that causes a decline in theirfunctional abilities. These symptomsinclude new or increased muscle weakness, fatigue, joint pain, muscle cramps, and cold intolerance(Tiffreau, Rapin, Serafi, et al., 2010).The current patho-physiologic hypothesis explains that PPS is caused by premature metabolic exhaustion of chronically overloaded motor neuronsprogressively increasing difficulties with physical functions such as; walking, standing, climbing stairs, and other mobility-related activities of daily life(Ivanyi, Ongerboer de Visser, et al, 1994; Stålberg & Grimby, 1995; McComas, Quartly, & Griggs, 1997; Rodriguez & Agre, 1991; Wiechers & Hubbell, 1981, Ivanyi, Nollet, Redekop, et al., 1999; Nollet, Beelen, Prins, et al., 1999).

The clinical features of the late-effects of poliomyelitishave been recognized since mid 1980s, and a number of different terms such as post-polio syndrome (PPS), post-polio muscular atrophy (PPMA) andpost-polio muscle dysfunction (PPMD)have been used to describe the condition(Halstead &Grimby,1995). Consequently,the term PPS is most commonly used and the accepted criteria to identify the symptomatic conditionsinclude a prior history of paralytic poliomyelitis; aperiod of neurologic recovery followed by an extendedinterval of neurological and functional stabilitypreceding the onset of new problems; a gradual orabrupt onset of new symptoms in previously affected and/or unaffected muscles, which may or may not beaccompanied by other health problems such asexcessive fatigue, muscle pain, joint pain, decreasedendurance, decreased function, and arthropathy; andexclusion of medical, orthopedic, and neurologicconditions that might cause the health problems listedabove(Gawne& Halstead, 1995).

The World Health Organization reports that only three countries i.e. Afghanistan, Nigeria, and Pakistan are still polio-endemic (WHO, 2013). Although, there are no newly recorded cases of poliomyelitis in the last two decades, due to the introduction of an effective vaccination programme, yet there are 20 million people at risk of developing poliomyelitis sequelaeand thus need rehabilitation interventions(Aylward, Hull, Cochi, et al., 2000; WHO, 2001). While an enormous amount of time and resources have been devoted to preventing polio, attention has been sparingly paid to the estimated 12 to 20 million individuals living with polio sequelae worldwide (Gonzalez et al., 2010). According to Farbu et al cited in Nollet, 2010), barely no knowledge exists with regards tothe precise cause of post-polio syndrome or the rate of progression in comparison with normal ageing, and evidence for the effectiveness of therapies is scarce.

However, Lin and Lim (2005) reports that post-polio syndrome (PPS) affects approximately 25% to 50% of all polio survivours and includes; those immediately disabled by the virusand those who recover with few or no symptoms from the initial infection but who after years of stability in functioning, begin to experience new or worsening disabling symptoms as they age.By regional estimate, the prevalence of PPS is often crude and fragmentary, particularly in developed countries. In the United States of America for instance, there are approximately 400,000 polio survivours with paralysis (Becker, 2006) and PPS is reported to be the most prevalent progressive neuromuscular disease in North America (Elrod et al., 2005). A further 700,000 polio survivours with paralysis reside in Europe (European Polio Union, 2012).

A Korean study by Bang et al. (2014) further found a prevalence of 60.1% among a sample of polio survivours. In Japan,Takemura, Saeki, Hachisuka and Aritome (2004) reported that polio survivours whose neuromuscular symptoms had been stable for many decades, have been complaining of new symptoms and functional decline. In Canada, the prevalence of PPS among polio survivourswas reported to be between 25% and 40% based on data from the Centers for Disease Control and Prevention (CDC) (CDC, n.d) in the United States of America. In Brazil, it was first reported by Oliveira and Maynard, who saw PPS symptoms in 68% of patients with prior history of poliomyelitis (Oliveira& Maynard, 2002). Subsequent studies like that of Quadroset al. (2012) also found that One hundred and twenty-nine patients presented PPS, corresponding to 77.2% of the studied population in a Brazilian Health Institution.

Asia, particularly the Indian subcontinent, has had high infection rates over the past two decades.India now certified as polio-free, faces particularly a high burden of polio survivours with paralysis. The country has regularly accounted for half to two-thirds of all reported cases, with annual cases reaching over 200,000 through the 1990s (Hull, 2001).

In sub-Sahara Africa, however, estimating the prevalence of polio survivours with paralysis is more challenging; based on an average annual incidence of 10-55 cases per 100,000 reported ina lameness surveys in the 1980s (Joseph et al., 1983; Ofosu-Amaah, 1984) at least a million survivours live on the continent.Evidently, retrospective and prospective studies have identified several risk factors of PPS especially from studies conducted in other climes. Older age at the time of acute illness, gender, greater severity of acute paralytic poliomyelitis, and permanent impairment after recovery from poliomyelitis, lower limb disability and older age at clinical presentation among others were factors identified. Also, weight gain, muscle and joint pain have been associated with a statistically significant risk of developing PPS ((Dalakas, Elder & Hallett, 1986; Klingman, Chu, Corgiat& Perry, 1998; Ramlow, Alexander, LaPorte, Kaufman &Kuller, 1992; Trojan, Cashman, Shapiro, Tansey & Esdaile, 1994, Trojan et al., 1994;Ragonese et al., 2005; Howard, 2005).

Previous studies also report that polio survivours have increased risk of associated medical concerns, with higher rates of respiratory, heart and musculoskeletal diseases and gastrointestinal disorders, which were associated with severity of residual impairment, degree of paralysis during acute illness and a young age of infection (Nielsen et al., 2004; Kang and Lin, 2011). Gender plays a significant effect also, as female polio survivours are more likely to suffer complications during pregnancy and delivery, and their infants have lower mean birth weights (Veiby et al., 2007). Consequently, women are impacted disproportionately, as are individuals from poorer households, minority communities especially the rural and urban slum areas (Tomas, 1991; Halder, 2008; Huang, 1999; Emmett &Alant, 2006; WHO/World Bank, 2011; Yeo, 2005). According to Rekand, at al., (2003), the youngest population of polio survivours lives in the developing countries; of which Nigeria is no exception. Thus, creates a significant epidemiological risk most especially for low- and middle-income countries (LIMCs) where poliomyelitis still exists or re-imported.

In addition, the risk of developing PPS is more common in survivours who sustained permanent impairment (Ramlow et al., 1992). Severity of the syndrome is said to be associated with the level of paralysis incurred during infection and the degree of functional recovery (NIH, 2012).However, there is paucity of research conducted to ascertain current situation among survivours. There is a need to document the prevalence, health literacy and management of post-polio syndrome among polio survivours. An inquiry is necessary to bridge the problem-gaps which have potential implication for health planners to improve management practices among survivours in Oyo State

1.2 Statement of the Problem

Although the World Health Organization (WHO) estimates suggest that over20 million people worldwide live with some degree of disability caused by poliomyelitis (Post-Polio Health International, n.d), global statistics on prevalence of PPS is unknown (Schmidt et al. 2017). Consequently, polio survivours with paralysis are numbered in millions with no exception to Nigeria where many are in their mid-adult age. However, the total population of survivours of polio is not accounted for, and cannot be ascertained due to less priority placed on data (Charlotte, 2003; Kaka, Ogwumike, Adeniyi, 2011). Little is known about the prevalence of PPS amongst this unascertained population, as the new symptomatic conditions are poorly understood and thus have not been adequately investigated due to lack of data.Thereis a dearth of documented information relating to polio survivours currently experiencing the late-onset of polio in Nigeria.

Although, several risk factors such as age at polio onset, age at onset of symptoms, extension and severity of polio, gender,age at presentation to clinic, severity of weakness at acute polio, muscle pain with exercise, obesity among many others have been identified by a number of studies on PPS (Bertolasi et al., 2012; Pastuszak et al., 2017; Diard, Ravaud, & Held, 1994;Ragonese et al., 2005), but none of these studies exist in Nigeria. Available studies on post-polio syndrome present clear-cut information on manifestations and epidemiological risk factors. However, it is still unclear whether there is adequate knowledge on the challenges encountered by polio survivours and the management practices of PPS among polio survivours especially in Nigeria.

Issues relating to the perspective of self-awareness and self-based management practices for coping with post-polio conditions have not been adequately explored. Previous studies reported that there is no specific management for PPS, as available facility-based management services tends to be expensive, limited in terms of scope and/or available only in urban medical centers or specialized facilities that can accommodate only small number of patients (Boyce, 2000; Halder, 2008; Parnes et al., 2009; Adulraheem, Saka, Saka 2011; Groce, et al., 2013). However, non among these studies have explored awareness of PPS among survivours and categorize the challenges affecting their active daily life (ADL), which may have physical, social, mental and emotional effects on their quality of life. Based on studies conducted on PPS, some identified physical pain, fatigue, physical depression and social impairment as part of the challenges experienced by polio survivours.

Of concern is that, these studies did not systematically categorize the challenges into a logical sequence, so as to provide more robust information that will help identify specific areas with the greatest problem. Also, there is plangent dearth of information on PPS particularly in Nigeria as only but scant research exit. Likewise, DunintjerTebbens et al (2010) reports that each case of paralytic polio results in the loss of 13-14 disability adjusted life years (DALYs) in low- and middle-income countries (DunintjerTebbens et al., 2010).Consequently, only but few studies have also found that disability from polio has profound economic and social consequences(Shaar& McCarthy, 1992; Zhang, 1996; Halder, 2008; Adegoke Oni, Gbiri, &Akosile, 2012). By implication, the number of disabled polio survivours in a country like Nigeria is likely to surpass the medical and rehabilitative services available; as access to the tertiary care facility is almost impossible. In fact, the limited options for education, employment, adequate nutrition and exercise are factors capable of leading to other health complications with more disabling effects on their quality of life. In addition, not much is known about challenges faced by individuals who survive polio without residual disability but who subsequently find themselves with PPS.

There are daunting challenges which are yet to be fully documentedor properly investigated in Nigeria; as focus is more on polio eradication thereby neglecting the millions of people initially affected by poliomyelitis and now experiencing PPS. Therefore, this study is designed to determine the prevalence, health literacy and management of PPS among polio survivours in Ibadan, Oyo State. The results of the study would be of interest to health planners for the designing of a subtle self-based management programme.

1.3 Justification for the Study

Several risk factors have been identified by a number of studies on PPS (Bertolasi et al., 2012; Pastuszak et al., 2017; Diard, Ravaud, & Held, 1994; Ragonese et al., 2005), but none of these studies exist in Nigeria. There are daunting challenges which are yet to be fully documented or properly investigated in Nigeria. Most importantly, providing sequential, logical and robust information about challenges encountered by polio survivours will help identify specific areas with the greatest problem where attention can be focused on for policy formulation. Hence, the results from this study will add to the body of knowledge, as not much research endeavor has been done in this area.

1.4 Research Questions

1. What isthe level of knowledgeof post-polio syndrome among respondents?
2. What is the prevalence rate of post-polio syndrome among respondents?
3. What are the factors that predispose respondent to post-polio syndrome?
4. What are the challenges affecting respondents who are experiencing post-polio syndrome?
5. What are the management practices of post-polio syndrome among respondents?

6. What are the available social supports for PPS management among respondents?

1.5 Broad Objectives

This study is designedto assess theprevalence, health literacy and management of PPS among polio survivours in Ibadan, Oyo State.

1.6 Specific Objectives are to:

1. Assess the level of knowledge of post-polio syndrome among respondents.
2. Determine the prevalence rate of post-polio syndrome among respondents.
3. Identify factors that predisposes respondents to post-polio syndrome.
4. Identify the challenges affecting respondents who are experiencing post-polio syndrome.
5. Identify the management practices of post-polio syndrome among respondents.
6. Identify the available social supports for PPS management among respondents.

1.7 Research Hypotheses

The following null hypotheses will be measured to strengthen the approach for this study.

- H_0 - There is no significant association between socio-demographic characteristics and knowledge of PPS.
- H_0 - There is no significantassociation between socio-demographic characteristics of respondents and PPS.
- H_0- There is no significant relationship factors that predispose respondents to PPS and management practices of PPS.
- H_0- There is no significant relationship between challenges affecting respondents and management practices.
- H_0 - There is no significant relationship between the available social supports and management practices of PPS.

CHAPTER TWO

LITERATURE REVIEW

2.1 Review of Theoretical Literature

2.1a Concept of Post-Polio Syndrome (PPS)

The term post-polio syndrome (PPS) was introduced by Halstead and Rossi in 1985 (Halstead& Rossi, 1985). PPSis defined as a neuromuscular disease (NMD) that occurs 25–40 years after acute polio (Bickerstaffe, 2016). It also refers to a late complication of the poliovirus infection where new health challenges or the exacerbation of existing symptoms occur (Atwal, Duncan, Queally & Cedar, 2017). Although research haveattempted to describe the occurrence of new symptoms in PPS patients, the disordered physiological processes of muscle weakness in PPS still remains an issue of debate (Daube, Sorenson & Windebank, 2009).Bickerstaffe(2016) notes that, in acute poliomyelitis, viral invasion of the central nervous system (CNS) leads to the destruction of motor neurons in the anterior horns of the bulbar and spinal cord regions. As a result, Bickerstaffe maintains that the entire motor unit (MU) which consist of the motor neuron and its corresponding axons, endplates and skeletal muscle fibers, becomes dysfunctional. The denervated muscle fibers are now obliterated resulting in muscle paresis or paralysis.

In the recovery phase damaged motor neurons can regain some of their function or alternatively neighbouring unaffected motor neurons can adopt the orphaned muscle fibers leading to full or partial recovery of muscle strength (Gawne& Halstead, 1995; Mueller, Wimmer& Cello, 2005; Wiechers& Hubbell, 1981).On the other hand, the muscle fibers which are not restored atrophy or are conditioned to fatty invasion, leading to a disruption of the muscle architecture (Beelenet al., 2003; Grimby, Stalberg, Sandberg &Stibrant-Sunnerhagen, 1998; Ivanyi, Redekop, de Jongh& de Visser, 1998; Maeda & Joko, 2007). Consequently, muscles of polio survivours function with a reduced number of MUs (Drost et al., 2004; Grimby, Einarsson, Hedberg &Aniansson, 1989; McComas, Quartly& Griggs, 1997), which can be enlarged up to more than 20 times those of healthy subjects (Drost et al., 2004;

Einarsson, Grimby&Stalberg, 1990;Grimby et al., 1998) and show structural abnormalities (Beelenet al., 2003; Grimbyet al., 1998; Ivanyi et al., 1998; Maeda & Joko, 2007).

The major clinical features of PPS include muscular weakness, muscle atrophy, muscle cramps, generalized pain, fatigue and sensitivity to cold occurring many years after acute poliomyelitis infection (Atwal et al., 2017; Jubelt, 2000; Melin, 2015). According to March of Dimes (as cited in Farbu et al., 2011, p. 311), before an individual is considered a PPS patient, she or he must have met the following universal criteria:

a) Prior paralytic poliomyelitis with evidence of motor neuron loss, as confirmed by history of the acute paralytic illness, signs of residual weakness, and atrophy of muscles on neurological examination, and signs of denervation on electromyography (EMG).
b) A period of partial or complete functional recovery after acute paralytic poliomyelitis, followed by an interval (usually 15 years of more) of stable neurologic function.
c) Gradual or sudden onset of progressive and persistent muscle weakness or abnormal muscle fatigability (decreased endurance), with or without generalized fatigue, muscle atrophy, or muscle and joint pain. (Sudden onset may follow a period of inactivity, or trauma, or surgery.) Less commonly, symptoms attributed to PPS include new problems with swallowing or breathing.
d) Symptoms persist for at least one year.
e) Exclusion of other neurologic, medical, and orthopedic problems as causes of symptoms.

2.1b Concept of Health Literacy

Health literacy lacks a universally accepted definition. As Baker (2006, p. 878) has noted that "as the field of health literacy has expanded in scope and depth, the term 'health literacy' itself has come to mean different things to various audiences and has become a source of confusion and debate." However, authors have attempted to provide broad and acceptable categorization of the concept. For instance, Berkman, Davisand McCormack (2010) classified the definitions of health literacy as follows:

(1) Individual statistic definitions, (2) an individual dynamic definition, (3) individual system definition and (4) public health definition. From the individual to the public health spectrum, health literacy expands how information gained at the individual and group levels can establish as well as improve the competence and knowledge of healthcare actors in the healthcare system. Further explanations made on the following definitions are:

First, the individual static definition (which is one of many definitions under the category) of health literacy refers to cognitive learning abilities and skills, which inform an individual about the nature of a disease or condition such aspost-polio syndrome (PPS) and basic ways of seeking care. The individual dynamic definition shares certain similarities with the individual static definition, except that the knowledge and skills acquired about disease and health seeking behaviour are expanded. At this level of information acquisition, individuals are equipped with knowledge to carry out a wide range of health seeking behaviour, which includes but not limited to comprehension, critical evaluation and use of health information.

At the individual system definition category, health information acquisition and use are understood in the context of all actors within the healthcare system. Here, what healthcare providers, caregivers, patients and other parts of the system know about a disease, illness or condition determines the course of action and eventual health outcomes. Finally, the public health definition extends the process of health information acquisition and use to the domain of the public. Under this category, what community members know about certain diseases, how they evaluate, understand and act upon what they know impact on eventual public community health. Irrespective of the categories identified by Berkman et al. (2010), the level of health information acquired often determines healthcare seeking behaviour and the eventual health outcomes. This is perhaps why studies have found an association between low health literacy and poor health outcomes (DeWalt, Berkman, Sheridan, Lohr&Pignone, 2004).

For the purpose of this present study, the individual dynamic definition by Zarcadoolas, Pleasant and Greer (2005)which includes but not limited to comprehension, critical evaluation and use of health information will be used as the hallmark for health literacy.

> *"The wide range of skills and competencies that people develop to seek out, comprehend, evaluate, and use health information and concepts to make informed choices, reduce health risks, and increase quality of life"*Zarcadoolas, Pleasant and Greer (2005).

2.1.2 Prevalence of Post-Polio Syndrome

Simply put, prevalence of post-polio syndrome (PPS) refers to the number of cases of PPS condition at a particular point in time. Although the World Health Organization (WHO) estimates suggest that are 20 million people worldwide with some degree of disability caused by poliomyelitis (Post-Polio Health International, n.d), global statistics on prevalence of PPS is unknown (Schmidt et al. 2017). While there are no nationally representative studies depicting PPS prevalence across countries, this section of the study x-rays the number of PPS researches indicating its prevalence from different countries around the world.

For example, it was reported that 250,000 patients with PPS were estimated in Europe and Ragonese et al (2005) found a 31.0% prevalence rate in an Italian cohort of people with prior poliomyelitis. Thesepolio survivours in the study conducted in the 1940s and 1950s experienced new muscle weakness, fatigue, pain and other symptoms, which were reported as progressive post-poliomyelitis muscular atrophy (2), post-poliomyelitis progressive muscular atrophy (3), the late effects of polio, post-polio syndrome (PPS) (4) or others (Takemura, Saeki, Hachisuka &Aritome, 2004). In a Korean study, Bang et al. (2014) found a prevalence of 60.1% among a sample of polio survivours. In Japan,Takemura, Saeki, Hachisuka and Aritome (2004) reported that polio survivours whose neuromuscular symptoms had been stable for many decades have been complaining of new symptoms and functional decline. In Canada, the prevalence of PPS among polio survivourswas reported to be between 25% and 40% according to the Centers for Disease Control and Prevention (CDC) (CDC, n.d) in the United States of America.

In Brazil, there are few studies on epidemiological features of PPS. It was first reported by Oliveira and Maynard, who saw PPS symptoms in 68% of patients with prior history of poliomyelitis (Oliveira& Maynard, 2002). Subsequent studies like that of Quadros et al.(2012) found that One hundred and twenty-nine patients presented PPS, corresponding to 77.2% of the studied population in a Brazilian health institution. The study further revealed that the main clinical PPS manifestations found were: new weakness in the previously affected limbs (69%) and in the apparently not affected limbs (31%); joint pain (79.8%); fatigue (77.5%); muscle pain (76%); and cold intolerance (69.8%).

In a study conducted in a health institution in Turkey, On and Sungur (2016) found that seventy-six of the patients (65.5%) met the criteria of PPS. In addition, Boukara et al. (2016) found a 46.31% prevalence of PPS among people with polio in Algeria.A population-based cohort of poliomyelitis patients from Allegheny County, Pennsylvania,was traced and surveyed by Ramlow et al. (1992) to estimate the prevalence and identify determinants of the post-polio syndrome. The study revealed that the prevalence of the post-polio syndrome was 28.5% of all paralytic cases (95% confidence interval 24.4- 32.6). The study also indicated that the risk of post-polio syndrome was significantly higher among patients who sustained substantial permanent impairment after polio and among females.

2.1.3 Challenges Affecting Polio Survivours with Post-polio Syndrome (PPS)

Physical

Fatigue, muscle weakness, and joint and muscle pain are the most common symptoms of PPS.Results from various studies have found that the prevalence of joint pain ranges from 42% to 80% (Ramlow, et al., 1992; Agre, et al., 1989) and the prevalence of muscle pain ranges from 38% to 86% (see Maynard& Gawne, 2004 for a review). In a sample of 150 polio survivours, 80% of those surveyedcomplained of pain (Gwane, Richards & Petroski, 2000). Similarly, pain was the most common complaint in a sample of 875 post-polio patients, occurring in 79% of those surveyed (Yarnell, 2000). With regard to pain intensity, personswith PPS have reported levels of pain severity significantly higher than national norms on thebodily pain subscale of the SF-36 (Abresch, et al., 2002). Other researchers have documented that women with PPS may experience more severe pain than men with PPS (Widar & Ahlstrom, 1998; Vasiliadis, et al., 2002).

Pain is not only common in persons with PPS, but it tends to be rated as moderate tosevere, tends to occur in many locations (average, 17.3 body areas), and is related to disruptionsin daily living (Lygre, et al., 2007; Thoren-Johnson &Grimby, 2001). Joint pain in persons with PPS tends to be caused by overuse and posturalchanges due to unbalanced muscle strength, whereas muscle cramps, fasciculation, andoveruse can lead to muscle pain (Bartel & Omura, 2005).

In respect to fatigue experiences by PPS, a North American study(San Francisco, USA) conducted on 86 polio survivours versus20 individuals in a control group and focusing mainly onfatigue, Berlly et al (1991)did not report a difference in generalfatigue characteristics, but however they noted wide differencesin physical fatigue (muscular heaviness, joint pain, muscle cramp and muscular atrophy). According to the most recent study of Ostlund et al (2008) conducted on 143 Norwegian polio survivours, the patient’s vitality (defined by the presence of energy and lack of fatigue) seems to essentially depend on physical factors and not on psychological fatigue.

Conversely, Schanke et al observed in 118 out of 266 polio survivours in Norway that when there is a generalized and intense fatigue. It is mainlylinked to psychological symptoms rather than physical ones,without however noting more depressive symptoms (Shanke, 1997; Shaanke, 2002). The study reported that the patients were especially affected by attention disorders, difficulties in concentrating and even recent memory and consciousness disorders, even if they did not report any changes in their cognitive abilities (Bruno et al. 1994; Bruno et al. 1993). These symptoms of mental fatigue did not seem to be related to the depressive symptoms. Nevertheless, in a contradictory manner, these memory and attention performances were not reported as being different by Hazendonk and Crowe (2000).Thus, according to the way Yelnik and Laffont (2010) looked at their study, they came to different conclusions that it is necessary toproceed with great caution, taking into account the greatcontradictions found in the literature and the doubtful quality ofthe methodology in the few studies that are available. Thediagnosis criteria for PPS are often poorly described, controlgroups are very small and by comparing studies from differentcountries, there is a risk of not comprehending cultural andsocial factors that are nevertheless essential.

Mental/Emotional

The prevalence of depressive symptoms in polio survivours varies greatly according to the studies. Conrady et al (1989) reported the highest percentage of somatic symptoms and depression. Their study included a cohort of 93 polio survivours in the USA (San Francisco), and compared 71 of them consulting for various psychological disorders to 22 others among a group of polio survivours receiving disability payments for polio sequelae but without any particular complaint. These authors did not find any difference in percentages of physical (mainly fatigue, muscular weakness and pain) or psychological complaints between both groups, but they reported a high percentage of depression, irritability and anxiety amounting to about 50% in both groups.

On the one hand, Hazendonk and Crowe inAustralia comparing a cohort of 23 patients with PPS to 20 patients without PPS and 22 patients in a control group noticed a higher percentage of depression and hypochondriac syndrome in the PPS group (Hazendonk &Crowe, 2000). On the other hand, Tate et al (1993) only reported 15.8% of patients showing symptoms of depression among a stratified sample group of 116 polio survivours in the USA (Michigan) among a population of 425 individuals who answered the study questionnaire. The depressed patients reported a more severe physical deterioration, more pain with a higher rate of somatic complaints, a lower coping behavior, a lesser quality of life and frequent loneliness (Tate et al., 1994). But these authors only showed the link between depression and the feeling of being sick, without being able to validate a causal relationship with poliomyelitis sequelae.

Finally, in a more recent study, Kemp et al (1997) recruited a cohort of 121 polio survivours in the USA (Rancho Los Amigos Medical Center, California), among beneficiaries of disability payments. Symptoms of depression were reported in 28.2%

of polio survivours versus 17.9% in the control group. The authors showed that the risk factors were obviously the physical changes linked to their polio sequelae, but even more so the quality of the support brought on by their family and loved ones as well as their own attitude towards their disability (Kemp et al., 1999). Overall, this percentage does not seem different than the one from the general population (Lepine et al., in Nachbaur et al., 2005) and when the patho-physiological characteristics of polio survivours suffering from PPS were studied, mainly their personality, these characteristics did not seem any different than the ones from the general population (Clark et al., 1994).

Social

According to Groce, Banks and Stein, (2014), individuals disabled through polio confront not only a range of physical disabilities but also significant social, financial and human rights barriers hindering integration and participation in families and communities. Consequently, these barriers, lead to chronic ill-health, social marginalization and limited access to education, employment and high rates of poverty. Likewise, the degree to which polio and residual disability have affected long-term outcomes such as education, employment, and life satisfaction in developed countries is inconclusive, but appears to be largely correlated with severity of disability, the medical and social conditions within the country of residence. In countries with the highest levels of development, with extensive supports and an accessible physical and social environment, the residual effects of polio appear to be less of an impediment to full participation in daily life activities (Groce et al (2014). Some evidence suggests that these country-level factors may be a greater predictor of employment status, income and independence than severity of disability (Rekand et al., 2003).

Consequently, numerous studies have shown positive correlations between PPS, depression and decreased life satisfaction (DLS) (Kemp et al., 1997; Schanke, 1997; Marincek, 2000; Farbu and Gilhus, 2002; Stuifbergen and Brillhart, 2005; On et al., 2006). Strong social support, especially from family, and low levels of physical and structural barriers mediate this effect (Kemp et al., 1997; Lund and Lexell, 2009). For example, it is important to bring up some characteristics of the lifeexperience of polio survivours who complained of greater deterioration of their physical and/orpsychological condition with a negative impact on their abilityto participate in social activities.

In Sweden, a study by Lund and Lexellshowed that 35% of the 165 polio survivours who filledout a questionnaire, felt they experienced one to six severeparticipation impairments, the highest ranked were access toleisure activities, work, their place and role within the familyand access to education (Lund and Lexell, 2008). In another study conducted in theNetherlands on a cohort of 233 polio survivours, 53% of themreported impairment in their social life (Ivanyi et al., 1999). In France, theGroupement de Liaison et d' Information sur la Poliomyelite(GLIP) (Liaison and Information Network on Poliomyelitis)conducted a study on their members for the first French-speakingcountries conference on poliomyelitis that was held inParis in 2006. This study clearly unveiled four major issues:

''The fear to see their spouse, able-bodied or disabled, facing a health problem and not being able to deal with it; the difficulty to cope with an aggravated loss of autonomy; the feeling of being treated like a child; the lack of comprehension and attention that can lead to depression''.

Furthermore, some evidence indicatesthat with proper education and rehabilitative services,mental status may stabilize or improve even with worsening physicalcondition (Stanghelle and Festvåg, 1997; Davidson et al., 2009).Compounding this is stigma and prejudice towards personswith disabilities in some societies where many members of thegeneral public view polio survivours as responsible for their own disability throughhaving sinned, engaged in incest or as victims of magic or witchcraft (WHO/World Bank, 2011; UNICEF, 2013; Yeo, 2005; Groce,2013). No less limiting is the common view of people with disabilitiesas objects of charity, rather than persons with the same entitlementto rights and equal access to resources (Groce et al., 2013).

Lack of access to needed facility/resources

The study conducted by Groce, et al (2014) further explained that health-related complications as a result of PPS might be worsened by problems found among poor population. Lack of access to rehabilitation or assistive devices such as wheelchairs, clutches, poor nutrition, strenuous work-related activities or exposure to diseases like malaria or HIV might further compromise the health of millions of polio survivours.

2.1.4 Management of Post-Polio Syndrome

In their review of PPS, Gonzalez, Olssonand Borg (2010) presented knowledge regarding the treatment of post-polio syndrome. The author emphasized that post-polio syndrome treatment is multidisciplinary, symptomatic, and that secondary conditions and ageing should be taken into account. Despite their thorough review, the inevitable conclusion is that much about PPS is still unknown. However, some studies have identified certain management measures and therapy with profound effects on PPS.

The post-polio syndrome (PPS) symptom complex often leadsto significant changes in functional ability affecting social and domestic life as well as work ability (Davidson et al., 2009). Because of thefar-reaching consequences of PPS symptoms on patients' function and the interplay between physical symptoms and psychosocial resources, Davidson et al. (2009)suggested that programme of rehabilitation should be holistic and multidisciplinary and include psychological aspects. However, in management processes, there is a major challenge, which is adapting to various coping skills and expectations at odds to what was taught during the original illness or acquired in the intervening years (e.g., Agre, Rodriquez& Tafel, 1991; Bruno& Frick, 1991; Young, 1991).

Initially, polio survivor patients have been taught that they either use their limbs or lose it (Kaufert & Locker, 1990). But in the case of PPS, patients were usually advised to conserve energy (Halstead & Rossi, 1985). Hence, it has been advised that fatigue should be managed with energy conservation techniques such as: Lifestyle changes, pacing or regular rest periods during the day (Davidson et al., 2009). Weakness on the other hand, should be managed through: appropriate exercise, avoidance of overuse, weight loss, orthoses, and assistive devices (Packer, Martins, Krefting& Brouwer, 1991; Jubelt & Agre, 2000; Trojan & Cashman, 2005; Trojan &Finch, 1997).

In current clinical practice, rehabilitation management is seen as the centerpiece of PPS treatment (Koopman, 2006). Rehabilitation is aimed at reaching a functional balance by improving capacities and reducing demands, and several different rehabilitation approaches may be used such as strength training, aerobic exercise therapy, assistive devices, orthoses, lifestyle changes, psychologicalsupport, respiratory muscle training,speech and swallowing therapy, and sometimes ventilator support (e.g., Farbu et al., 2011; Gonzales et al., 2010). In the case of exercise therapy (ET), it has been proven as an effective intervention for alleviating fatigue in healthy individuals and in various medical conditions (Puetz, O'Connor& Dishman, 2006).

Twist and Ma (1986) has also suggested the appropriate treatment for patients experiencing early symptoms of PPS, with the aim of preventing exercise-induced muscle weakness by promoting a plan of moderate exercise with frequent rest periods.The exercise protocol, which was employed in a study of a physical management therapy of a patient with PPS,was prescribed as follows: (I) Mobility. Passive muscle stretching was directed primarily to the hamstring and calf muscles. Active assistive exercises were directed to the trunk, upper extremities, and neck; (II) Trunk muscle strengthening. Active isotonic exercises were administered to the back extensor and abdominal muscles. Active resistive exercises were administered to the lower trunk rotator muscles; (III) Lower extremity muscle strengthening. Brief (10-second holding) isometric and isotonic exercises were performed by the patient daily; (IV) Resistive exercises. The physical therapist conducted resistive proprioceptive neuromuscular facilitation exercises three times a week; (V) Gait training. The purpose of gait training was to promote comfort and minimal energy expenditure; and (VI) Review and follow-up.

Lastly, changes in life styles have also been advocated for PPS patients. Some of the changes include but are not limited to the following: less walking, reduced social life or activities, more rest, reduced or stopped physical recreation, doing less housework, employing household help, using more aids,getting family to help more, planning more efficiently, relocating to a more convenient house or room, modified house, less exercising, less standing, changed diet, and other changes. Nevertheless in making life style changing moves, health practitioners working with post-polio cases have emphasized the need to proceed slowly when introducing life style modifications and aids (Westbrook, 1991).Based on these studies reviewed, the available treatments for PPS are facility-based management services which do not include self-based management techniques for coping with the late effect of polio.

2.1.5 Risk Factors for Post-polio Syndrome (PPS)

According to Farbu et al. (as cited in Nollet, 2010), barely no knowledge exists with regards to the precise cause of post-polio syndrome or the rate of progression in comparison with normal ageing, and evidence for the effectiveness of therapies is scarce. Despite the inability to establish causative factors of the disease, risk factors associated with the condition is gradually being investigated. Some of the risk factors that have been investigated include; sex, age at polio onset, age at onset of symptoms, extension and severity of polio, employment, age at presentation to clinic, severity of weakness at acute polio, muscle pain with exercise, obesity among many others.

Retrospective and prospective studies also have tentatively identified several risk factors of PPS. Some of the risk factors also include: an older age at the time of acute illness, greater severity of acute paralytic poliomyelitis, greater recovery after the acute episode, permanent impairment after recovery from poliomyelitis, lower disability and older age at clinical presentation, gender, longer interval since the acute illness and, possibly, increased physical activity (Dalakas, Elder &Hallett, 1986; Ramlow, Alexander, LaPorte, Kaufman &Kuller, 1992; Trojan, Cashman, Shapiro, Tansey &Esdaile, 1994; Klingman, Chu, Corgiat& Perry, 1998; Ragonese et al., 2005; Howard, 2005). Weight gain, muscle pain (especially during exercise) and joint pain have been associated with a statistically significant risk of developing PPS (Trojan et al., 1994).

However, in other studies, gender was a significant risk factor of PPS. According to Bertolasi et al. (2012), the female gender and the severity of respiratory impairment at acute infection appeared to be risk factors for PPS. In addition, the authors suggested that use of orthoses and aids during both the recovery and the stabilization phases represented valuable risk indicators for PPS development and that the risk of PPS was significantly higher among patients with significant impairment; these patients often had respiratory disturbance during the acute infection and, moreover, they needed aids and orthoses during the recovery and stabilization phase. Similarly, Bang et al. (2014) concluded that female gender, early age of onset of poliomyelitis, the use of orthoses or walking aids, and the history of medical treatment for paralysis, pain or gait disturbance were identified as the significant risk factors for PPS. While admitting that female sex has been suggested as a risk factor for developing post-polio in extant literature, in their study, Festvag et al. (2016) found that more women than men experienced new weakness in polio muscles.

Also, in a case report and review of literature, Pastuszak et al. (2017) reported that the most important risk factors of PPS are female sex and respiratory symptoms during acute polio infection. Overall, Jung, Broman, Stibrant-Sunnerhagen, Gonzalez and Borg (2014) found that male PPS patients had a significantly higher Quality of Life (QOL) than female patients for all sub-domains and also for mental compound score and physical compound score, and that PPS decreases health-related QOL in both sexes, more in female patients. Furthermore, Diard, Ravaud and Held(1994) suspect that a major factor in the development of PPS is age. Although the authors were not categorical about the relationship of age and PPS development, their study enhances the importance of clinical study of aging in poliomyelitis patients, which is a necessary prelude to the research for a biologic explanation. Diard et al. (1994) also found that weight gain was a major determinant of PPS development only in people who could and not in those who used wheelchair.

2.2 Empirical Review

In this segment of the study, the researcher considered relevant empirical studies that are related to the current one either in content or by design. Hence, the following studies were reviewed.

Stoelb et al. (2008) describe the frequency, intensity, and impact of pain in persons with post-poliomyelitis syndrome (PPS) in a retrospective cross-sectional study. Result revealed that a total of 91% (N57) of the study participants (N63) reported pain. Findings also showed that most frequently reported pain sites were the shoulders, lower back, legs, and hips. While it was revealed that participants reported pain intensity to be the greatest in the knees, legs, wrists, lower back, and head, pain interfered most with sleep and with activities requiring a high level of musculo-skeletal involvement. Respondents also reported pain problems that were more severe than those of the general population and than those of a sample of people with multiple sclerosis. Many treatments had been tried previously for pain, but continued use of treatments was reported by relatively few participants at the time the study carried out.

Westbrook (1991) examined medical histories, post-polio symptoms, effects of these symptoms on respondents' lives, and treatments found to be effective or ineffective. The study indicated that average respondent was experiencing increasing muscle weakness, pain and fatigue. These imposed major restrictions on daily living activities and resulted in fear and depression. The study also found that physiotherapists were the allied health professionals most likely to be consulted. Finally, physiotherapy was rated as providing considerable or some relief by a relatively high proportion (80 per cent) of clients but it also attracted criticism primarily due to vigorous exercise programme that increased fatigue and weakness.

Furthermore, Sheth et al (2014) in a cross-sectional survey of polio survivoursin Gujarat state, India, evaluated 72 subjects with PPS. The majority experienced increased or new symptoms and problems in active daily life (ADL), muscle pain, joint pain, fatigue, atrophy, and difficulties in walking. Muscle pain was reported by 39%; joint pain by 24%, and 37% had both muscle and joint pain. The most common sites ofmuscular pain were arm, leg and foot musculature, andpain was most in the knee, shoulder and hip joints andjoints of lower back and neck. Most of the poliosurvivours experienced pain since the past 3-5 years, andsome complained of pain in the last 7-10 years. Themaximum number had pain during work but got reliefby resting, while some had continuous pain. There is apositive correlation between interference in ADL due topain and intensity of pain. A previous study by sameauthors concluded that administration of a regularexercise programme can be beneficial to clients withpost-polio syndrome. It would be appropriate to givethose with distinct impairment in functional capacity anexercise programme along with lifestyle modification.Those who cannot follow an exercise programme canbe advised on lifestyle modification only (Sharma et al., 2014).

Also, Schanke (1997) sought knowledge of psychological and psychosocial aspects of coping with late effects of polio. In the study, sixty-three polio survivours, 43 women and 20 men (mean age 55.3 years) 3-5 years ago former inpatients at the Post-Polio Programme at Sunnaas Rehabilitation Hospital, participated. Result revealed that levels of working capacity did not correlate significantly with any psychological variables, and the subjects reporting improved psychological health over the last 3-5 years did not have higher levels of working capacity or less physical decrement. A significant correlation was found between self-reported fatigue, psychological variables and social support. Compared to previous studies, low psychological distress, normal type A scores, high adjustment and problem-focused coping characterized the respondents, pointing to the importance of timing in psychosocial research of post-polio.

However, Atwal, Giles, Spiliotopoulou, Plastowand Wilson (2012) explored the ways in which polio and PPS in the UK has affected the respondents' lives and ascertained their views about how the quality of life could be improved using a cross sectional survey. They found that the average age of the participants was 54 years. Their research found that polio survivours valued social occupations and participation in family life. Their research has also showed that healthcare professionals still do not understand polio and PPS and this lack of understanding influences their clients' quality of life and finances and accessibility of environments also influenced participation in chosen occupations.

In addition, Atwal et al. (2014) attempted to gain an in-depth understanding of the meaning of quality of life for polio survivours and to determine the type of strategies that are used by people with PPS and the support that they consider as important to facilitate participation in everyday life activities that have an impact on their quality of life. In the study, six focus groups were conducted with 51 participants from two regions in England. Result showed that polio survivours used terms which was used to describe quality of life and could be associated with that of happiness. The research identified resolvable factors that influenced quality of life namely; inaccessible environments, attitudes of health-care professionals and societal attitudes. Finally, the study revealed that polio survivours have tried alternative therapies, chiefly acupuncture and massage, and found them to be effective in enhancing their quality of life.

In the same vein, Duncan and Batliwalla (2018) also attempted to understand the quality-of-life implications for post-polio syndrome survivours. By means of three focus groups,result showed that participants defined quality of life as being able to engage in meaningful activities of daily living. The study also revealed that participant shared that they use personal support services to assist with personal care, housekeeping, and outdoor maintenance. Many equally shared that allowing others to perform housekeeping activities provided freedom to engage in other activities that lead to an increased quality of life. A few participants also expressed a desire for more services targeted at social programme. Specifically cited were an interest in organizations that host social outings, such as to a sporting event, or events, such as picnics or barbeques.

Jacob and Shapira (2010) equally evaluated the perceptions of health and quality of life among a group of polio survivours in Israel as well as identified potential activities for improving their quality of life. Using a survey method, result showed that participants had low physical scores and normative mental scores. It was also found that approximately 70% expressed the belief that exposure to up-to-date information about post-polio, as well as participation in social activities, might improve their quality of life. In a correlative study, in which a cohort of 61 patients was surveyed and a group of 40 healthy, age-matched individuals served as controls, Shiri, Wexler, Feintuch, Meiner and Schwartz (2011)determined the effect of future-oriented coping strategies on the quality of life (QOL) of individuals with post-polio syndrome (PPS). Result showed that PPS patients had lower total, physical and mental QOL indices compared to controls.Also, the study indicated that future-oriented coping strategies associated with hope were positively associated with physical and mental QOL in the PPS group, but not in the controls.

In conclusion, Yang et al. (2015) assessed health-related quality of life in polio survivours compared with that in the general population in Korea. The study found that the proportion of participants who reported problems in mobility, usual activity, and symptoms of anxiety/depression were higher in the PPS group compared with the HC (health controls) and AL (activity limitations) groups. The study also indicated that there was no significant difference in the self-care dimension across the groups. It was reported that those with post-poliomyelitis syndrome had greater problems in mobility, usual activity, and depression/anxiety. Polio survivours, especially those with more pain and fatigue symptoms, and those who did not have access to medical services had poorer health-related quality of life. These findings afford useful information for potential intervention improving quality of life in polio survivours.

2.3 Conceptual Framework

Precede Model

PRECEDEModel was developed by Green et al, 1980. The framework is one of the most famous and applicable meta-models useful in behavioural diagnosis and evaluation, to create opportunity for new interventions (Mollaoğlu&, Beyazit, 2009). The precede model is broadly defined to include epidemiological, social environment and economic indicators. The aim of the model according to the authors was to provide a comprehensive framework for assessing health and quality of life needs and for designing, implementing and evaluating health promotion and other public health programmes. As the name of the model implies, PRECEDE stands for Predisposing, Reinforcing, Enabling, and Constructs in Educational, Environment Diagnosis and Evaluation. Simply put, it represents the process that precedes or leads to an intervention. Also, its components comprise of the first three phases (predisposing, enabling and reinforcing factors) of the model. These components allow a researcher to work backward from the ultimate goal of the research to create a project to instruct the formation of an educational intervention.

Review of the literature has shown the efficacy of the “precede pattern” in predicting the life quality of various groups of people (Naderi, Borjali&Mansobifar, 2011). As a result, this study adopts this model to the understanding of the prevalence, health literacy and management of PPS. Based on its relevance to this study, a number of literatureswere reviewed alongside other phases in the framework. In the first phase, the social assessment which is the first sub-concept, aims to obtain insights into social circumstance of polio survivours and also to understand their general hopes, health needs and health beliefs (Green & Kreuter, 2005). This process unravels certain social indicators that that may compete with or contribute to the quality of life of survivours and which points to the needs, desires problem-solving, capacities, strengths and resources of community members. The second phase; which addresses the second sub-concept epidemiological assessments, focuses upon the quantifiable factors which can affect health and quality of life (Sharma & Romas, 208). The vital indicators of health are obtained from PPS patients. They range from disability, morbidity, discomfort, fertility, general fitness to physiological risk factors; which are explored in terms of their distribution, duration, functional effect, incidence, intensity and prevalence (Green & Kreuter, 2005). The aim of this phase is to determine the extent and nature of these health determinants of health and how they might subsequently affect the participants’ health and behavior. For example, inherited benign and malignant breast diseases are known risk factors in this context, particularly when they occur in an environment where screening for those at high risk is not readily available or not part of routine health behavior (Calderon-Margalit & Paltel 2004; Fernandez et al. 2005; Bertelsen et al, 2008).

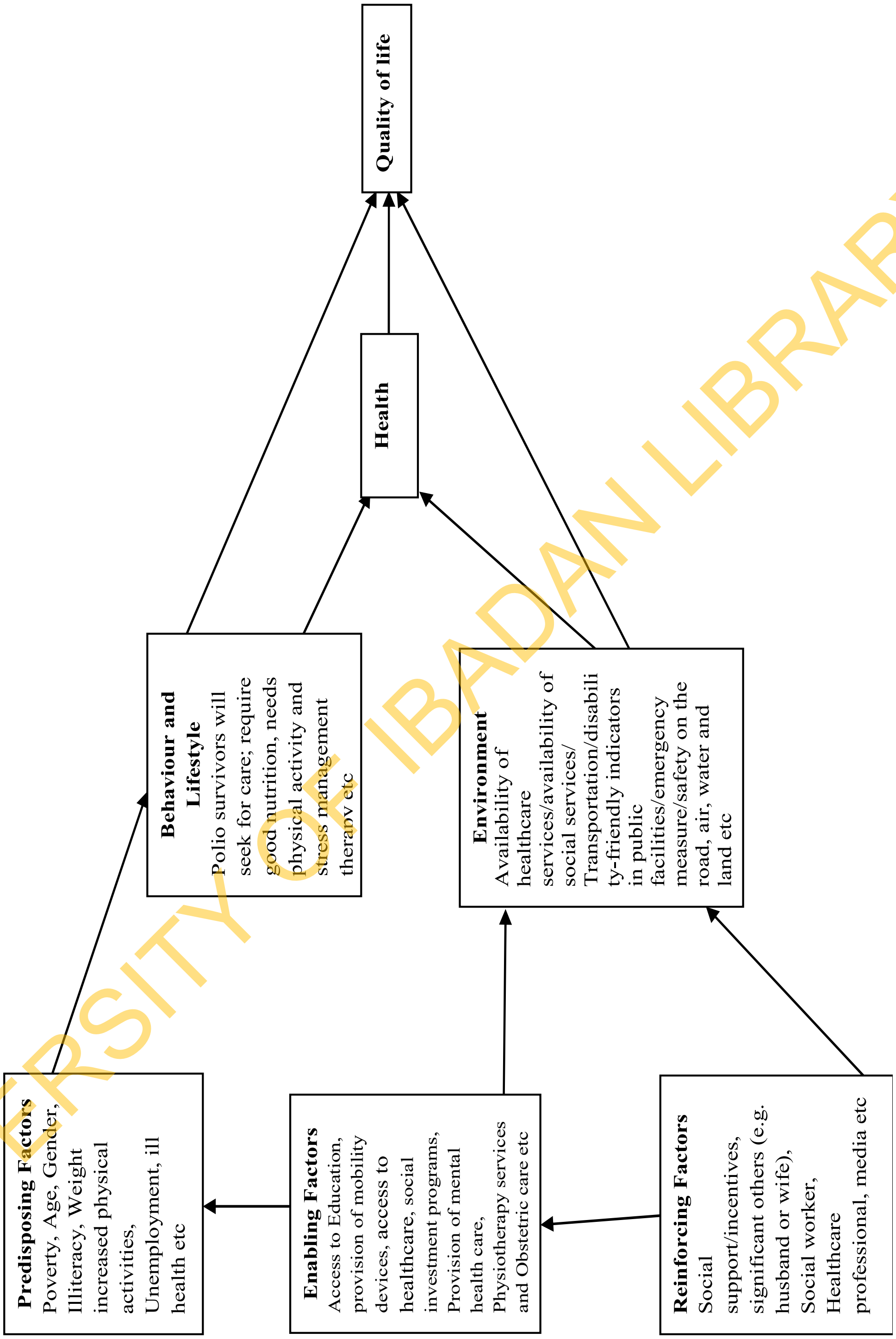
The third phase, educational and ecological assessment, mainly aims to identify the factors that contribute to the epidemiological profile identified already in phase 2. It draws on community, interpersonal and personal level theories. Precede model efficiently categorizes these components as predisposing, enabling and reinforcing factors. Thepredisposing factors (i.e.age at the time of acute illness, greater severity of acute paralytic poliomyelitis, greater recovery after the acute episode, permanent impairment after recovery from poliomyelitis, lower disability and older age at clinical presentation, employment status, hope, gender, weight gain, and longer interval since the acute illness) may not only impact on health outcomes, but also affect other aspects of life (i.e. behavior and lifestyle and environment) for among PPS patients (Dalakas, Elder &Hallett, 1986; Howard, 2005; Klingman, Chu,Corgiat& Perry, 1998; Ragonese et al., 2005; Ramlow, Alexander, LaPorte, Kaufman &Kuller, 1992; Shiri et al., 2011; Trojan, Cashman, Shapiro, Tansey &Esdaile, 1994; Trojan et al., 1994). For instance, hope and employment status predicted higher quality of life among those with PPS in a study (Shiri et al., 2011). In all, gender, weight gain and age were found to be major factor in determining PPS development and health seeking behaviour.

As shown in the figure below, it could be inferred that enabling factors such as access to education or health literacy on PPS, access to social and personal support services and other factors aiding significant life style changes could impact on the predisposing factors earlier mentioned. As an example, Westbrook (1991) found that an improvement in lifestyle of PPS patients such as finding and joining support groups, keeping positive attitude, informing people, asking and accepting help etc. could empower patients to overcome the challenges (availability of health clinics, services, transportation barriers, and distances concerns such as bad roads) associated with the environment to seek proper healthcare. The influence of the enabling factors could also help reverse and reduce the effect of predisposing factors on behavior and lifestyle and eventual health outcomes. As to the reinforcing factors such as access to institutions and other support services, there are indications that it could overcome the challenges situated in the patients' environment as well as improve behaviour such as adopting a new life style (e.g., exercising).

For example, Oncu et al. (2009) has found that treatment received at home and hospital can improve the quality of life in patients with PPS. According to the study, fatigue and quality of life were both improved in the home and hospital exercise groups. An increase was also found in the functional capacity in the hospital exercise group, showing that regular exercise programme is beneficial to patients with post-polio syndrome. The multiplex interplay between each of the phases in the model is instructive as it helps to define what policy development and intervention programmes can focus on to improve the health and quality of life of PPS patients.

Put differently, this model can provide invaluable resource for both informal and formal health literacy and education curriculum. This can be targeted towards PPS patients and other healthcare actors in the healthcare system. Earlier, a study by Sheth, Jadav and Vyas (2015) reported that medical practitioners were not very knowledgeable about PPS. Therefore, targeting such significant actor in PPS management could serve as an enabler as well as reinforcement to PPS patients. The diagram below provides a schematic representation of the conceptual framework for this study.

Figure 1: PRECEDE framework showing the interrelationships between factors influencing PPS and patients' behaviours, life style, environment, health status and quality of life


Quality of life
Health
Behaviour and Lifestyle
Polio survivors will seek for care; require good nutrition, needs physical activity and stress management therapy etc
Environment
Availability of healthcare services/availability of social services/ Transportation/disability-friendly indicators in public facilities/emergency measure/safety on the road, air, water and land etc
Predisposing Factors
Poverty, Age, Gender, Illiteracy, Weight increased physical activities, Unemployment, ill health etc
Enabling Factors
Access to Education, provision of mobility devices, access to healthcare, social investment programs, Provision of mental health care, Physiotherapy services and Obstetric care etc
Reinforcing Factors
Social support/incentives, significant others (e.g. husband or wife), Social worker, Healthcare professional, media etc

CHAPTER THREE

METHODOLOGY

3.1 Study Design

A descriptive cross-sectional survey method was used to draw forth viable data for the study. This method was ideally suited for collecting original data about a population that is too large to observe directly; and excellent for measuring behaviors, attitudes, and orientations in a large population (Babbie, 2013; Bhattacherjee, 2012; Haralambos & Holborn, 2013). Hence, this study seeks to describe as well as examinethe prevalence, health literacy and management of PPS among polio survivours in Ibadan, Oyo State.

3.2 Study Area

Ibadan, the capital city of Oyo State is the third of the largest metropolitan area in Nigeria (after Lagos and Kano) and occupies the largest metropolitan geographical areain the Southwest geo-political zone. It is located approximately on longitude $3^0$5' to $4^0$36' East of the Greenwich Meridian, and latitude $7^0$23' to $7^0$55' North of the Equator, at a distance of 145km^2 Northeast of Lagos and 120km^2 East of the border with the Republic of Benin, in the forest zone close to the boundary between the forest and the savanna. It is also bordered by neighboring states such as Osun, Ogun, Kwara, and Lagos respectively. The census 2006 report puts the total population of Ibadan at 1,343,147, with females given at 681,329and males given at 661,818, while the population density was 828 persons per km2 (NPC, 2006). However, there has been significant increase in the population as at 2016 which is estimated at over 3.5 million (World Population Review, 2019).

Ibadan city is comprised of eleven Local Governments Areas put together, with the metropolitan area consisting of five urban LGAs in the city and six semi-urban LGAs. The five urban Local Government Areas are; Northeast, North, Northwest, Southeast, and Southwest which are the urban cores (high density) and hinterlands characterized as Ibadan metropolis, while the six semi-urban areas are Akinyele, Oluyole, Egbeda, Ido, Lagelu, and Ona-Ara LGAs respectively. Being itself a largest city with a fast-increasing high population, it accommodates multi-ethnic nationalities and is predominantly occupied by the Yorubas including indigenes and settlers such as Igbo, Hausa, Edo, Urhobo, Ijaw, Itesekiri, Fulani and other foreigners from Europe, Asia, Senegal, Niger, Cameroun, Chad and Gambia etc. The people are predominantly farmers, traders, businessmen/women, civil servants etc. It has federal, state and private educational institutions, industries and private establishments including a federal health institution known as the University College Hospital and other private hospitals, maternity centers and dispensaries.

There are several care-homes and foundations in Oyo State specifically established to cater for the people with disabilities (PWDs) including the physically challenged (polio survivours). However, the Association of Persons Living with Disability (APLWD) is an extension of the Joint National Association of Persons with Disability (JONAPWD) in Oyo State and an independent organization with 6 disability clusters comprising of the blind, deaf, polio survivours, cerebral palsy, spinal-cord injury and leprosy. This association extends its membership down into communities in all LGAs, where they congregate fortnightly or once a month for their membership meetings (Atowoju, Adegoke & Babalola, 2015). According to a Key Informant, the major focus of the association is to serve as pressure group to the State Government, as well as integrate their members into the organization in order to deliberate on social welfare and available support opportunities and benefits at State and local authority levels. They also converge to share material donations provided for them by well-meaning and influential men and women in society. Most of the community cluster locations have close proximity to popular local markets and areas such as Oja-Agbo, Oke-Ado, Oke-Parde, Yemetu- Igansu, Sabo and Mapo. Hence, the study respondents were recruited from these 6 community clusters in the 5 LGAs in the capital city (Ibadan metropolis) of Oyo State.

3.3 Study Population

This study is targeted at all polio survivours (men and women) between 18 years of age and above, with a history of poliomyelitis, who resides not earlier than 6 months within the 6 selected community cluster locations in the 5 LGAs of Ibadan, Oyo State.

3.4 Sample Size Determination

The sample was determined based on the information gathered from the cluster leaders in the community which revealed that an average of 25 polio survivours comprising of men and women between 18 years of age and above attend the fourth nightly or once a month meeting. Hence, the respondents were purposively recruited using an all-inclusive sample selection technique to get the required total of 150 sample in the 6 community cluster locations as shown in the table below. Polio survivours who were eligible and willing to participate in the study were selected. The sample size was determined from the number of clusters and the average number of attendees.

Table 3.4.1:

Community Cluster Locations	Average No of Attendees
Oke-Parde	25
Mapo	25
Oja-Agbo	25
Oke-Ado	25
Sabo	25
Yemetu	25

Thus, a total of **150** samples will be recruited for the study.

3.5 Procedure for the selection of respondents

- **Stage I:** The researcher used a purposive sampling technique to select the 6 enlisted community cluster locations (i.e.Oja-Agbo, Oke-Ado, Oke-Parde,Yemetu- Igansu, Sabo and Mapo) mainly consisting of a clusters of persons with disability such as the visually impaired, polio survivours, deaf, spinal cord injury and cerebral or cognitive disability situated in the 5 LGAs which are the converging points where the target group can be easily accessed and studied.

- **Stage II:** Then, the researcher further recruited the respondents (polio survivours) eligible for the study from the existing clusters, using an all inclusive (Total) sample technique, took cognizance of the inclusion and exclusion criteria, until the actual targeted sample size was achieved. In the absence of a total sample list, this technique was used to ensure that all respondents are adequately covered.
- **Stage III:** Finally, the researcher applied the snowball sampling technique in reaching the respondents conveniently alongside the assistance of the cluster leaders serving as a key informant in each chosen community. This assured the possibility of reaching the target group easily without leaving anyone behind.

3.6 Inclusion Criterion

- All polio survivours (male and female) between 18 years of age and above, with a history of poliomyelitis
- Who resided not earlier than6 months within the 6 selected community cluster locations in the 5 LGAs (Urban core) of Ibadan, Oyo State

3.7 Exclusion Criterion

- Any polio survivor (male or female) below 18 years and above, without a history of poliomyelitis
- And has not residednot earlier than six months in the 6 selected community cluster locations will not be allowed to participate in this study.

3.8 Instruments for Data Collection

A. *Quantitative:Semi-structured questionnaire*

A semi-structured questionnaire was developed. The questionnaire segmented into sections A, B, C, D and E and parts 1 and 2. The sections contained information on the following; socio-demographic information of the respondents, prevalence of PPS among respondents, knowledge of PPS among respondents, challenges and management of PPS which included questions on coping mechanisms and availability of social support systemsby the respondents. Also included in the questionnaire was a self-report prevalence, knowledge and challenges scales respectively, which was used to elicit data and ascertain responses supplied by the respondents. In addition, respondents' random weight was measured with the aid of a digital adult weighing scale (Omron Healthcare Product HN-289-ESL).

B. *Qualitative: Key Informant Interview Guide*

On the other hand, qualitative data was elicited by the researcher. This was necessary to give some contextual uniformity to the quantitative findings in the study, as well as indemnify for the inadequacies of the questionnaire. Hence, 8 Key Informant Interviews (KIIs) was conducted to further elicit data bordering on; history of the association, challenges encountered in the association and coping mechanisms as well as other social support problems faced by polio survivours. The participants for the KIIs comprised ofpolio survivours who wererepresentatives of the Association of Persons with Disability representing each community cluster. They were purposively selected and same inclusion and exclusion criteria for the study was applied.The KIIs were conducted with the use of the Key Informant Interview guide.

3.9 Validity of Instruments

In order to determine the validity of instruments (measuring exactly what they are designed to measured), relevant literatures were reviewed based on the formulated objectives of the study and instruments were subjected to the judgment of experts' contributions from the field of physiology and physiotherapy. The supervisor's comments and corrections were also used to further enhance the content validity and quality of the instruments.

3.10 Reliability of Instruments

In order to determine the reliability (internal consistency) of the scale, a sample instrument for the data collection, written in simple use of English Language and translated into the indigenous local Yoruba Language was developed to ensure respondent's comprehension of the subject matter. Thus, a prêt-test study was conducted in Afijio Local Government Area of Oyo State, with same background characteristics in the less city of Ibadan. The representative study was carried out using 10% of the study population. The Cronbach's alpha (α) method was employed. Following the calculation, the Cronbach's alpha (α) on 0.7 (76 percent) and beyond was regarded to be reliable when pre-tested. Reliability coefficient of the questionnaire was determined using the Cronbach's Alpha correlation on the Statistical Package for Social Sciences (SPSS 23.0) and a reliability coefficient of **0.744** was obtained. This helped to ensure that the instrument was fit for the purpose of its development.

3.11 Data Collection Procedure/Recruitment

A5-pages of the semi-structured questionnaires were designed and prepared for the study.Then, 4 research assistants who were fluent in Yoruba and English languages were recruited and trained on the objectives and methods of the study as well as issues regarding how to obtain informed consent from the respondents and confidentiality of information was also obtained. A drafted schedule for data collection was also designed and data for the study was gathered in a space of 4 weeks (10/01/2019-10/25/2019). The flexible schedule was fixed from Monday to Saturday, between 10:00am – 5:00pm for data collection. During the field data collection, the trained RAs, principal investigator, along with the key informant were mobilized to the selected communities. An alternative arrangement was made to reach respondents who were absent during the initial visit and they were revisited. At the end of each day, each copy of the questionnaire was reviewed by the research assistants and the principal researcher for completion. For qualitative data collection, the principal investiator used same purposive technique to choose participants. The KIIs comprised of8 cluster leaders (one from each community), putting into perspective the eligibility criteria and gender balance.

3.12 Data Management and Analysis

Quantitative data were collected using a semi-structured (interviewer-administered) questionnaire which contained a 14-points knowledge scales, 5-points prevalence (self-report) scale and a 4-points scale on challenges of PPS, a close-ended question for management of PPS and a combination of close-ended and 4-points scale for social support questions. The questionnaires were reviewed for accuracy and completion in field. Serial numbers were written on the instruments for easy identification and recall. Coding guide was then developed to facilitate the entry of the responses into the computer. The coded responses were then entered into the SPSS (Version 23). After that, the data were cleaned and analyzed using the descriptive and inferential statistics. Summary tables were used to describe characteristics of data. In addition, a regression analysis was performed. Specifically, simple linear regression *(LR)* was used to test the strength and direction of the relationship between socio-demographic characteristics and prevalence of PPS. Specifically, multiple regression analysis was used to test if polio survivours' demographic characteristics significantly predicted response about the prevalence of PPS among the sample. While demographic characteristics served as independent/predictor variables or as a model, respondents' self-report about the prevalence of PPS was used as the outcome/dependent variable.

Both independent samples t test *(t)* and the analysis of variance (ANOVA) was used to ascertain significant differences between all levels of respondents' socio-demographic status in their information and knowledge of PPS. Furthermore, the Pearson's Product Moment Correlation *(r)* was used to test the strength and direction of the relationship between the influence of social support system and management of PPS. Finally, independence sample t test *(t)* was employed to test whether there is a significant difference between factors affecting polio survivours and the management of PPS. All analyses were carried out at .05 probability level. On the other hand, the researcher explored the thematic analysis to enumerate the theme, concepts and reoccurring ideas on the qualitative data using the Nvivo software for qualitative analysis.

3.13 Study Limitations

The study is limited to the six selected communities in the five LGAs (Ibadan North, Ibadan North-East, Ibadan South-East, Ibadan South-West, Ibadan North-West) out of eleven LGAs in Ibadan Metropolis. Hence, the result of this study can only be generalized within selected areas of the metropolis. The challenges encountered during the study include the fact that the Association of Persons with Disability in Ibadan is currently undergoing some internal, structural and leadership problems; hence reaching the respondents was a herculean task. Due to this challenge, the principal researcher and the key informant therefore made alternative arrangements and the respondents were reached through the following channels; homes, workplace, business/market premises including the sports centers where some athletes were contacted. Also, messages and phone calls were made to contact individuals and group of persons who were members of the association with help from the cluster leaders in each community. In addition, it was observed during the data collection activities, that there wasan existing fraction between some persons with disability who were non-members and do not participate in any programme activities performed by those with full membership. This basically served as a major setback. However, the sampling technique adopted for recruiting respondents in the study and the eligibility criteria ensured the proper representation of the sample population

3.14 Ethical Consideration

In compliance with the Helsinki Declaration, the ethical approval for this study was obtained from the Oyo State Ministry of Health Research Ethics Committee before embarking on the collection of data (See Appendix IV). Also, a written informed consent note was attached to the questionnaire and the KII guide. However, due confidentiality was adhered to protect the identity of respondents and participants during the study (See Appendix I). In addition, benefits and objectives of the study were duly communicated to the respondents and information gather were cleaned, scored and analyzed for proper reporting.

CHAPTER FOUR

RESULTS

4.1

This chapter presents result of data elicited for the study. A 100% response rate was recorded for the 150 copies of questionnaire item distributed during the study. Workable and realistic methods of data administration and retrieval contributed to the high return rate.

Socio-Demographic Information

Data presented below shows some socio-demographic information of respondents. In all, there were more respondents (33.3%) in Yemetu/Sabo- IBN than other areas that were studied. In addition, the result shows the distribution of respondents with regards to their ethnic groups. As to respondents' length of stay in their various communities, result reveal that 11/25 of the respondents (44.0%) admitted to have spent more than 5 years in their communities, while a third of the respondents (33.3%) said that they had been staying in their respective communities since birth. Also, Christians (65.3%) were more than Muslims (34.7%) in the sample.Data on the gender of respondents indicated that there were more males (50.7%) than females (49.3%) across the entire sample. Information on respondents' marital status showed that most polio survivours (70.0%) were married as at the time of the study. According to the information about polio survivours' family types, an overwhelming majority of the survivours (80.7%) live in nuclear family, regardless of the communities they belonged to.

Table 4.1a: Socio-Demographic Information of the respondents

Socio-demographic Characteristic	Frequency	Percentage (%)
Community/LGA		
Yemetu/Sabo – IBN	50	33.3
Oja-Agbo– IBNE	25	16.7
Mapo– IBSE	25	16.7
Oke Parde– IBNW	25	16.7
Oke-Ado – IBSW	25	16.7
Ethnic group		
Igbo	6	4.0
Yoruba	144	96.0
Respondent's Residency		
Exactly 6 months	3	2.0
Between 1-5 years	31	20.7
Since birth	50	33.3
5 years plus	66	44.0
Religion		
Christian	98	65.3
Islam	52	34.7
Gender		
Male	76	50.7
Female	74	49.3
Marital Status		
Single	34	22.7
Married	105	70.0
Cohabiting	2	1.3
Separated	5	3.3
Divorced	1	0.7
Widowed	3	2.0
Type of Family		
Nuclear	121	80.7
Extended	29	19.3

Data also indicates that close to two-third (65.3%) of the polio survivours in the study had one spouse, with about a quarter (24.0%) having no spouse. Only 9.3% and 1.3% had 2 and 3 spouses respectively. Furthermore, distribution on survivours' number of children shows that highest proportion of survivours (28.7%) had no child; meanwhile some 23.3% and 21.3% had only 2 and 3 children respectively. The remaining 10.0%, 9.3%, 4.7%, 2.0% and 0.7% of the survivours had 1, 4, 5, 6 and 7 children respectively. The study attempted to ascertain the number of people the respondents currently lived with. Result reveals that the highest proportion of survivours (40.7%) lived with 3 or less people. It also shows that an additional 40% lived with 3-7 people. While 3.3% and 1.3% lived with 8 and 9 persons respectively, the remaining 14.7% lived 11 people and more.

As to respondents' age category, the distribution shows that the highest proportion of survivours was between the ages of 29-38 years (47.3%). Some 36.0%, 7.3%, 2.0% and 7.3% of the entire survivours were between the ages of 39-40, 19-28, 49-58 and 59-69 years respectively. An average age of respondents was 38years and the result imply that more than half of the survivours were at their early adulthood. When asked what age they were when they had the poliomyelitis, survivours gave varying responses. While the highest proportion of survivours (29.3%) admitted contracting the disease when they were 2 years old, the lowest percentage of survivours said had the disease when they were 2 years and six months old. In addition, the age at first polio onset was spread between 8 days and 5 years, according to survivours. Survivours' mean age at first polio onset was 2.66, with a standard deviation of 1.28. This result is therefore a reflection of the reality of age at first polio onset. As a reminder, poliomyelitis is a highly contagious virus, which most commonly affects children under 5 years old.

Table 4.1b: Socio-Demographic Information of the respondents

Socio-demographic Characteristic	**Frequency**	**Percentage (%)**
Number of spouse (*Either a husband or a wife, considered in relation to their partner*)		
0	36	24.0
1	98	65.3
2	14	9.3
3	2	1.3
M=0.88, **SD**=0.612		
Number of children		
0	43	28.7
1	15	10.0
2	32	21.3
3	35	23.3
4	14	9.3
5	7	4.7
6	3	2.0
7	1	0.7
M=2.00, **SD**=1.67		
Number of people survivours live with		
≤3	61	40.7
4	26	17.3
5	24	16.0
6	7	4.7
7	3	2.0
8	5	3.3
9	2	1.3
≥11	22	14.7
M=3.25, **SD**=2.16		
Age		
19-28	11	7.3
29-38	71	47.3
39-48	54	36.0
49-58	11	7.3
59-69	3	2.0
M=38.11, **SD**=8.14		
Age at first polio onset		
<1 year	11	7.3
1 year	25	16.7
1 year 6 months	5	3.3
2 years 6 months	2	1.3
2 years	44	29.3
3 year	30	20.0
4 years	16	10.7
5 years	17	11.3

Further information shows the distribution of survivours' weight category. According to the table, the highest proportion of survivours (31.3%) weighed between 44-53 kg; while only one survivor weighed exactly 95kg. Survivours' mean weight was 54.52, with a standard deviation of 12.88. Depending on their heights (which was not accounted for during the field work), this result of the weight categories might have some implications on associated variables such as muscle weakness and aggravated mobility problems.

With regards to the educational attainment of polio survivours, data showed that the highest proportion of respondents (35.3%) alongside some 30.0% had secondary school and primary school education respectively. Although some 3.3% of the respondents had no formal education, some other 3.3% had a vocational education. A little over a quarter (28.0%) had attended a tertiary institution. This finding is an indication that there were more secondary school certificate holders than any other individual categories of survivours in the sample.

Data in the table reflects the level of survivours' association to a support group across each community/LGA under study. As can be seen in the table, a preponderance of survivours across all the communities under study did not belong to any support group. This result suggests that there is a huge gap in the area of providing other forms of support system such as peer support or counsel group for survivours in the study area. According to the result, the highest proportions of the survivours (36.7%) at the time of the study were self-employed. While a little over a quarter (27.3%) were petty traders and others (20.0%) were civil servants. Data also showed that the least in the sample were schooling, accountant, teachers, athlete, computer operator, a retiree and unemployed. In addition, information in the table indicates that the highest proportion of survivours (39.3%) earned between ≤ N5,000-N14,000 Naira. While close to a quarter of the survivours earned between N15,000 - N24,000, some 22.0% earned between N25,000 - N34,000. The remaining 6.7%, 6.7% and 2.0% earned between N35,000 – N44,000, ≥N55,000 and above and N45,000 – N54,000 respectively. Further analysis also reveals that an average monthly income of the survivours was N20,660.00. This low average income is a reflection of the economic realities faced by polio survivours in the study area. This section also presents of information on polio survivours' means of transportations. Data shows that more than half of the survivours (50.7%) move around with motorcycle. Some other 14.7%, 13.3%, 9.3%, 8.0%, 2.7% and 1.3% ensured mobility through the use of tricycle, bus, Taxi, private car, wheel chair and motor car respectively. While the motorcycle was the most efficient technology that aided movement of persons with polio, other forms of transportation made mobility possible.

Table 4.1c: Socio-Demographic Information of the respondents

Socio-demographic Characteristic	Frequency	Percentage (%)
Weight Category (KG)		
24-33	3	2.0
34-43	26	17.3
44-53	47	31.3
54-63	35	23.3
74-83	27	18.0
84-93	4	2.7
94-105	1	0.6
M=54.52, **SD**=12.88		
Education		
No formal education	5	3.3
Vocational education	5	3.3
Primary school	45	30.0
Secondary school	53	35.3
Diploma certificate (NCE/OND)	23	15.3
BSc/HND	18	12.0
Post graduate Diploma (PGD)	1	0.7
Do you belong to any support group		
Yes	10	6.7
No	140	93.3

Table 4.1d: Socio-Demographic Information of the respondents

Socio-demographic Characteristic	Frequency	Percentage (%)
Occupation		
Schooling	3	2.0
Self-employed	55	36.7
Unemployed	9	6.0
Petty trading	41	27.3
Teaching	3	2.0
Civil servant	30	20.0
Athlete	6	4.0
Retiree	1	0.7
Accountant	1	0.7
Computer operator	1	0.7
Monthly income (in Naira)		
≤ 5,000-14,000	59	39.3
15,000-24,000	35	23.3
25,000-34,000	33	22.0
35,000-44,000	10	6.7
45,000-54,000	3	2.0
≥55,000 and above	10	6.7
M=20660.00, **SD**=14874.79		
Means of Transportation		
Motorcycle	76	50.7
Tricycle	22	14.7
rivate car	12	8.0
Taxi	14	9.3
Bus	20	13.3
Motor car	2	1.3
Wheel chair	4	2.7

4.2: Respondent's Knowledge of PPS: What Polio Survivours know about PPS

This section presents data concerning the knowledge of respondents about poliomyelitis, its common manifestations, and knowledge of PPS, the causes of PPS, the manifestation of PPS and the group of people who are vulnerable to the disease. Most respondents did not have the basic knowledge of what poliomyelitis is. For example, close to two third of the respondents (64.0%) attributed the cause of polio to unrelated causes such as fever, measles, deafness, blindness and bad omen. On the other hand, some 35.3% of the respondents defined polio as a disease that leads to discrimination and other barriers that affect the victims. Although this response is not far from the truth, it does not suggest that the respondents have basic definition or description of the condition. A further look at the table indicates that only 1 respondent (0.7%) was able to define the disease by its common manifestations (e.g., paralysis/deformity, etc.). This result implies that knowledge of poliomyelitis is poor.

Over one third of the respondents (35.3%) in the study mentioned incorrect and unrelated manifestations of polio (i.e., deafness, blindness, accident and educational backwardness). On the other hand, some 38.0% of the respondents identified both paralytic and non-paralytic polio signs which were loss of strength, disability and loss of interests. Other polio signs such as fever, weakness of muscles, paralysis of the upper and the lower limbs were mentioned by almost a quarter of the respondents (24.0%). Survivours were further asked to state whether they have previously heard of post-polio syndrome (PPS). The result revealed that a preponderance of polio survivours (97.3%) have never heard of PPS. Only very few respondents (2.7%) have heard of the symptoms. The result is an indication that knowledge of PPS is low.

Respondents were then asked to define the syndrome. Result showed that a great majority of respondents (94.7%) did not have knowledge of PPS. While some 3.3% of the respondents did not respond to the question posed, the remaining 2.0% correctly mentioned that postpolio condition affects polio survivor years after recovery from an initial acute attack of the poliomyelitis virus. This finding also reflects the reality that knowledge of PPS is low.

Respondents attempted to identify the various manifestations of PPS. As shown in the table, a great majority of the respondents identified cough, fever and measles as the three-common manifestation of the condition. Some 1.3% also stated that pain, headache and tiredness are common manifestations of PPS. In addition, muscle/joint weakness, fatigue and low cold tolerance were mentioned as the three common manifestations of PPS.

Although, about a quarter of the respondents mentioned that anyone could be affected by the condition, just a few respondents (16.7%) correctly mentioned that polio survivours were the group of people that are affected by PPS.

Respondents did not know that people with PPS have difficulty in performing regular physical activities. For example, a great majority (92.0%) of the respondents did not know that PPS affects physical activities in survivours. Only very few respondents (8.0%) agreed with the fact that PPS victims could encounter difficulties in doing regular physical activities.

Rrespondents displayed their lack of knowledge with regards to whether respondents know that PPS is a progressive neuromuscular disease that shows slow worsening signs or symptoms. Majority of respondents (94.7%) did not know that PPS is a progressive neuromuscular condition. Only 5.3% of the respondents confirmed that PPS is a disease that impairs the functioning of the muscles.

4.3:Prevalence of PPS among Respondents (Self Report Scale)

This section presents the result of data analysis on the Prevalence of PPS among Polio Survivours. Responses were scaled using a self-report response format to ascertain how survivours felt or coped with their circumstance or condition.Many of the respondents tended to admit that they had 'not at all' experienced problems associated with household chores and hygiene activities. For example, 74.4% of the respondents noted that they did not find it difficult using the toilet when they are pressed. On the other hand, survivours admitted that they 'sometimes' or 'constantly' experienced mobility problems. For instance, 67.3% of the respondents mentioned that they found it difficult engaging in regular physical activity such as exercise, dancing or jogging. These findings suggest that although majority of the survivours had difficulty with mobility related activities like climbing stairs, etc., they were able to take care of themselves and their household.

Table4.3a:Prevalence of PPS among polio survivoursN= 150

Statements	*Not at all (%)*	*Often (%)*	*Sometimes (%)*	*Rarely (%)*	*Constantly (%)*
I have a history of poliomyelitis and suffer the effects of its late-onset	10(6.7)	15(10.0)	87(58.0)	4(2.7)	34(22.7)
I cannot walk long distance on my own due to my health condition	17(11.3)	14(9.3)	58(38.7)	3(2.0)	58(38.7)
I cannot conveniently climb a stair case on my own due to my health condition	32(21.3)	14(9.3)	45(30.0)	6(4.0)	53(35.3)
I find it difficult engaging in regular physical activity such as exercise, dancing or jogging	26(17.3)	10(6.7)	48(32.0)	13(8.7)	53(35.3)
I experience difficulty in breathing due to my health condition	119(79.3)	5(3.3)	17(11.3)	4(2.7)	5(3.3)
I find it difficult to dress up, when I want to step out due to my condition	115(76.7)	4(2.7)	15(10.0)	7(4.7)	9(6.0)
I easily feel weak and cold intolerant	50(33.3)	9(6.0)	67(44.7)	11(7.3)	13(8.7)
I fall down easily when the floor is wet or slippery	23(15.3)	8(5.3)	92(61.3)	11(7.3)	16(10.7)
I find it difficult taking my bath due to my health condition	112(74.7)	1(0.7)	22(14.7)	8(5.3)	7(4.7)
I find it difficult using the toilet when I am pressed	111(74.0)	3(2.0)	21(14.0	6(4.0)	9(6.0)
I find it difficult sleeping at night due to my health condition	104(69.3)	7(4.7	29(19.3)	7(4.7)	3(2.0)
I find it difficult cleaning the house due to my health condition	99(60.0)	6(4.0)	18(12.0)	14(9.3)	13(8.7)
I find it difficult cooking due to my health condition	109(72.7)	7(4.7)	14(9.3)	12(8.0)	8(5.3)
I find it difficult washing my clothes due to my health condition	109(72.7)	9(6.0)	19(12.7)	5(3.3)	8(5.3)

Many of the survivours did not find it difficult meeting their work and school demands. As an example, a majority (60.7%) did not find it difficult meeting their job demands despite being polio survivours. Similarly, a little over half of the respondents (51.3%) did not find it difficult meeting their business and trade despite their condition. Meanwhile, 68.0%, 66.7% and 66.7% respondents maintained that they sometimes experienced muscle pain, joint pain and increased fatigue respectively. Nearly two-third (65.3%) of the respondents admitted that they were unable to work for long hours due to the PPS condition.

Table 4.3b: Prevalence of PPS among respondents in relation to how they meet school and work demands as well as how often they experience fatigue and musclepain

Statements	*Not at all (%)*	*Often (%)*	*Sometimes (%)*	*Rarely (%)*	*Constantly (%)*
I find it difficult meeting my job demands due to my condition	91(60.7)	5(3.3)	38(25.3)	8(5.3)	8(5.3)
I find it difficult meeting my business/trade demands due to my condition	77(51.3)	8(5.3)	45(30.0)	8(5.3)	12(8.0)
I find it difficult meeting school demands due to my condition	108(72.0)	3(2.0)	23(15.3)	7(4.7)	9(6.0)
I experience increased fatigue due to my health condition	14(9.3)	7(4.0)	102(68.0)	6(4.0)	21(14.0)
I experience muscle pain due to my health condition	11(7.3)	9(6.7)	100(66.7)	10(6.7)	20(13.3)
I experience joint pain due to my health condition	9(6.0)	12(8.0)	100(66.7)	8(5.3)	21(14.0)
I experience Inability to work for long hours due to my health condition	12(8.0)	9(6.0)	98(65.3)	13(8.7)	18(12.0)
I experience Inability to meet daily demands due to my health condition	10(6.7)	11(7.3)	100(66.7)	12(8.0)	17(11.3)
I find it difficult meeting my job demands due to my condition	56(37.3)	8(5.3)	58(38.7)	18(12.0)	10(6.7)

N= 150

Respondents indicated that they ‘sometimes’ felt anxious and depressed as a result of the challenges that come with their health condition. For example, almost half of the respondents (46.7%) felt depressed due to their inability to work for long hours. Equally, some 41.3% of the respondents felt anxious due to increased fatigue. On the other hand, a number of respondents did not feel any form of anxiety or depression as a result of their health condition. For instance, a quarter of respondents (25.3%) have never felt depressed due to increased fatigue. Overall, the findings suggest that polio survivours reported an almost high prevalence of psychological disorders; although they were disorders, they claimed they sometimes experienced.

Table4.3c:Prevalence of PPS among respondents' in relation to their emotional state (i.eanxiety and depression) resulting from their experiences N= 150

Statements	*Not at all (%)*	*Often (%)*	*Sometimes (%)*	*Rarely (%)*	*Constantly (%)*
I vent emotions of anger due to my health condition	38(25.3)	12(8.0)	64(42.7)	19(12.7)	17(11.3)
I feel depressed due to increased fatigue	38(25.3)	10(6.7)	66(44.0)	19(12.7)	17(11.3)
I feel depressed due to muscle pain	39(26.0)	8(5.3)	66(44.0)	20(13.3)	17(11.3)
I feel depressed due to joint pain	36(24.0)	11(7.3)	65(43.3)	19(12.7)	19(12.7)
I feel depressed due to my inability to work for long hours	36(24.0)	10(6.7)	70(46.7)	16(10.7)	18(12.0)
I feel depressed due to my inability to meet daily demands	43(28.7)	10(6.7)	60(40.0)	23(15.3)	14(9.3)
I feel anxious due to increased fatigue	45(30.0)	6(4.0)	62(41.3)	22(14.7)	15(10.0)
I feel anxious due to muscle pain	44(29.3)	11(7.3)	60(40.0)	22(14.7)	13(8.7)
I feel anxious due to joint pain	41(27.3)	9(6.0)	61(40.7)	25(16.7)	14(9.3)
I feel anxious due to my inability to work for long hours	42(28.0)	9(6.0)	59(39.3)	26(17.3)	14(9.3)

Although respondents admitted feeling accepted by the people around them, they showed an appreciable level of independence despite their health condition. For instance, while about two third (64.0%) of the respondents admitted feeling accepted by the people around them. On the hand, more than half of the respondents (53.3%) did not depend on their friends to cater for all their needs. Also, over half of the respondents (57.3%) admitted that they never depended on friends to cater for their personal needs. Survivours acceptance mean score was 19.26, with standard deviation of 10.11. This result therefore implies that polio survivours surveyed had a sense of acceptance from their family, friends, neighbours and others, even though they were self-reliant and self-sufficient with regards to catering for their personal needs.

Table4.3d: Social Support System of Polio Survivours with PPS N= 150

Statements	*Not at all (%)*	*Often (%)*	*Sometimes (%)*	*Rarely (%)*	*Constantly (%)*
I feel accepted by people around me due to my health condition	10(6.7)	6(4.0)	27(18.0)	11(7.3)	96(64.0)
I depend on my family to cater for my every need due to my health condition	61(40.7)	4(2.7)	39(26.0)	11(7.3)	35(23.3)
I depend on my friends to cater for my every need due to my health condition	80(53.3)	8(5.3)	43(28.7)	7(4.7)	12(8.0)
I depend on my neighbours/assistant to cater for my every need due to my health condition	84(56.0)	5(3.3)	40(26.7)	8(5.3)	13(8.7)
I depend on my family to cater for my personal needs alone due to my health condition	67(44.7)	8(5.3)	40(26.7)	7(4.7)	28(18.7)
I depend on my friends to cater for my personal needs alone due to my health condition	86(57.3)	6(4.0)	45(30.0)	5(3.3)	8(5.3)
I depend on my neighbours/assistant to cater for my personal needs alone due to my health condition	85(56.7)	9(6.0)	37(24.7)	7(4.7)	12(8.0)

4.4: Challenges affecting respondents with PPS

This section presents the result of data analysis on the challenges affecting respondents with PPS with respect to specific body parts, sleeping, and self-perception when in public, anxiety, suicidal thoughts and social functioning.

Rrespondents have never experienced residual pain on their wrist, right ankle and left ankle. As an example, 50.0%, 59.3% and 56.0% of survivours had never felt residual pain on their wrist, right ankle and left ankle. Survivours mean score was 18.96, with standard deviation was 14.13. Meanwhile, few polio survivours (19.3%, 17.3%, 14.7% and 29.3%) reported frequently experiencing residual pains on their right legs, left legs, knees and waists respectively. However, 53.3% and 47.3% of survivours admitted that they occasionally felt residual pain on their shoulders and lower backs.

Table4.4a: Challenges affecting polio survivours with PPS in relation to pain on specific partsof their body N= 150

Statements	*Never* *(%)*	*Occasionally* *(%)*	*Rarely* *(%)*	*Frequently* *(%)*
I feel residual pain on my shoulder	26(17.3)	71(47.3)	13(8.7)	40(26.7)
I feel residual pain on my lower back	18(12.0)	80(53.3)	13(8.7)	39(26.0)
I feel residual pain on my right leg	46(30.7)	55(36.7)	20(13.3)	29(19.3)
I feel residual pain on my left leg	52(34.7)	49(32.7)	23(15.3)	26(17.3)
I feel residual pain on my knees	37(24.7)	71(47.3)	20(13.3)	22(14.7)
I feel residual pain on my waist	30(20.0)	62(41.3)	14(9.3)	44(29.3)
I feel residual pain on my wrist	75(50.0)	39(26.0)	23(15.3)	13(8.7)
I feel residual pain on my right ankle	89(59.3)	37(24.7)	15(10.0)	9(6.0)
I feel residual pain on my left ankle	84(56.0)	38(25.3)	20(13.3)	8(5.3)
I feel residual pain on my hip	38(25.3)	60(40.0)	14(9.3)	38(25.3)

Overall, findings indicate that respondents never had challenges sleeping at night even when they experienced increased joint pain, fatigue of muscle cramp. For example, more than two third of the respondents (68.0%) suggested that they never had difficulty sleeping at night as a result of increased joint pain. Respondents also maintained having a feeling of acceptance by family members, friends, spouse, community members, etc. For instance, a great majority of the respondents (70.0%) admitted not feeling neglected by their community as a result of their condition. The mean score was 21.82, with standard deviation at 8.62. This result suggests that polio survivours interviewed did not allow their experiences to affect their sleep cycle.Resultalso indicated that respondents portrayed the feeling that they were part of their respective communities.

Table4.4b:Challenges affecting respondents with PPS in relation to sleeping and Self-perception when in public N= 150

Statements	***Never (%)***	***Occasionally (%)***	***Rarely (%)***	***Frequently (%)***
I have difficulty sleeping at night as a result of increased joint pain	102(68.0)	30(20.0)	13(8.7)	5(3.3)
I have difficulty sleeping at night as a result of fatigue	100(66.7)	31(20.7)	15(10.0)	4(2.7)
I have difficulty sleeping at night as a result of muscle cramp	101(67.3)	33(22.0)	12(8.0)	4(2.7)
I feel neglected by my family as a result of your condition	114(76.0)	12(8.0)	17(11.3)	7(4.7)
I feel neglected by my friends as a result of your condition	104(69.3)	13(8.7)	25(16.7)	8(5.3)
I feel neglected by my community as a result of your condition	105(70.0)	16(10.7)	19(12.7)	10(6.7)
I feel differently about myself when in public with my spouse	93(62.0)	24(16.0)	23(15.3)	10(6.7)
I feel differently about myself when in public with my friend	68(45.3)	43(28.7)	24(16.0)	15(10.0)
I feel differently about myself when in public with my family	87(58.0)	24(16.0)	25(16.7)	14(9.3)

A little more or less of a third of respondents admitted that they had never felt anxious as a result of fatigue, muscle pain, joint pain, long hours of work and inability to meet daily demands. For example, a third (33.3%) and nearly a third (32.0%) of respondents admitted never feeling anxious as a result of increased fatigue and muscle pain respectively. The mean score was 32.96, with standard deviation at 7.61. A further look into the table indicated that a number of respondents occasionally felt anxious as a result of fatigue, muscle pain, joint pain, long hours of work and inability to meet daily demands. Results showed that a little over one third of the respondents felt anxious every now and then as a result of fatigue, muscle pain, joint pain, long hours of work and inability to meet daily demands. For instance, 37.3% of the respondents felt anxious due to muscle pain. Very few respondents felt anxiety as a result of their condition. Result reveals that the experience is mainly felt by those who occasionally felt anxious as a result of the symptoms associated with their condition.

Table4.4c:Challenges affecting respondents with PPS in relation to anxiety N= 150

Statements	***Never (%)***	***Occasionally (%)***	***Rarely (%)***	***Frequently (%)***
I feel anxious as a result of increased fatigue	50(33.3)	53(35.3)	40(26.7)	7(4.7)
I feel anxious as a result of muscle pain	48(32.0)	56(37.3)	38(25.3)	8(5.3)
I feel anxious as a result of joint pain	47(31.3)	56(37.3)	38(25.3)	9(6.0)
I feel anxious as a result of inability to work for long hours	46(30.7)	57(38.0)	37(24.7)	10(6.7)
I feel anxious as a result of Inability to meet daily demands	46(30.7)	52(34.7)	42(28.0)	10(6.7)

Respondents never had thoughts of suicide despite being polio survivours, and despite having increased fatigue, muscle pain, joint pain, long hours of work and meeting daily demands. As an example, a great majority of respondents (88.7%) have never felt suicidal as a result of increased fatigue. Although many of the respondents admitted to have never felt suicidal, a few of them occasionally, rarely and frequently thought about taking their lives. Survivors mean score on suicide was 25.90, with standard deviation of 12.13. The results are an indication that there were yet some polio survivours who show depressive symptoms as they deal with some of the general symptoms of PPS.

Table4.4d:Challenges affecting respondents with PPS in relation to suicidal thoughts N= 150

Statements	*Never (%)*	*Occasionally (%)*	*Rarely (%)*	*Frequently (%)*
I feel like taking my own life due to increased fatigue	133(88.7)	6(4.0)	9(6.0)	2(1.3)
I feel like taking my own life due to muscle pain	133(88.7)	7(4.7)	9(6.0)	1(0.7)
I feel like taking my own life due to joint pain	132(88.0)	7(4.7)	10(6.7)	1(0.7)
I feel like taking my own life due to inability to work for long hours	132(88.0)	5(3.3)	12(8.0)	1(0.7)
I feel like taking my own life due to inability to meet daily demands	130(86.7)	9(6.0)	10(6.7)	1(0.7)

According to the data, respondents admitted that they occasionally, rarely and frequently participate in social functions. For example, more than half of the respondents (54.7%, 54.7% and 51.3%) mentioned participating in funeral ceremonies, family meetings and birthday parties respectively. Also, more than a quarter of respondents (27.3%, 25.3% and 30.7%) admitted participating in birthdays, funerals and religious camp meetings respectively. Respondents mean score on participating in social function was 19.07, with standard deviation of 13.31. The findings are an indication that the polio survivours interviewed were socially active regardless of their disability.

Table4.4e: Challenges affecting respondents with PPS in relation to their social functioning N= 150

Statements	***Never*** ***(%)***	***Occasionally*** ***(%)***	***Rarely*** ***(%)***	***Frequently*** ***(%)***
I participate in birthday party	7(4.7)	77(51.3)	25(16.7)	41(27.3)
I participate in naming ceremony	4(2.7)	74(49.3)	25(16.7)	47(31.3)
I participate in religious camp meetings	7(4.7)	76(50.7)	21(14.0)	46(30.7)
I participate in funeral ceremony	7(4.7)	82(54.7)	23(15.3)	38(25.3)
I participate in family meetings	7(4.7)	82(54.7)	24(16.0)	37(24.7)
I participate in community functions	17(11.3)	75(50.0)	21(14.0)	37(24.7)

4.5: Management Practices by Respondents

Part 1: Coping with the Late-Effects of PPS

This section presents results about respondents' experience as to how they manage the late effects of PPS especially with regards to the following: on whether they receive any medication in coping with the symptoms of PPS, physiotherapy activities and the habits used as coping mechanism.

Data shows that respondents received medications when they felt joint pain. A look at the table indicates that more than two third of the respondents (68.0%) admitted receiving some types of medication to help them cope with the effects of PPS. Meanwhile the figure showing that close to a third of the respondents (32.0%) did not receive any type of medication to help them cope with the symptoms of PPS is an indication of the fact that polio survivours experiencing PPS symptoms and who did not have access to medications still exists.

Similarly, respondents said that they received medications when they felt fatigue. More than two-third of the respondents (67.3%) stated that they received medications to help them cope with the late effects of PPS. On the other hand, the remaining 32.7% of the respondents mentioned not receiving any type of medication when they felt fatigue. The result indicating that nearly a third of the respondents did not receive any type of medication suggests that inability to access medications to help manage fatigue is still an issue that calls for concern.

Findings equally revealed that an overwhelming majority of the respondents (80.7%, 80.0% and 82.7%) did not engage in any form of physiotherapy sessions for managing increasing fatigue, muscle pain and joint pain respectively. The results highlight the problem at hand; as it indicates that many of the respondents did not have access to physiotherapy, which plays an important role in rehabilitating polio survivours.Moreover, a great majority of the respondents (98.0%, 99.3% and 99.3%) did not engage in smoking to deal with increased fatigue, muscle pain and joint pain respectively.Furthermore, majority of the respondents (88.7%, 88.7% and 87.3%) did not take alcohol to suppress increased fatigue, muscle pain and joint pain respectively. Alcohol dependency was not seen as option in coping or adapting with some of the known symptoms of PPS, according to majority of the respondents.

Result showed that many of the respondents did not withdraw from people around them when they experienced some of the common symptoms of PPS. For example, two-third of the respondents (66.0%) admitted not withdrawing from people around them when they experienced fatigue. The same goes for responses on pain (64.7%) and cold intolerance (66.7%).

On whether respondents have an assistant or aider who constantly helped with their physical demands (e.g., work, shopping and errands), affirmative result in was obtained in respect of work (83.3%), shopping (84.7%) and errands (84.7%).

Close to two-third of the respondents (62.7%) reported taking pain relief drugs. Some 13.3%, 6.0%, 4.7%, 3.3% and 1.3% of the respondents also maintained that they drank herbal medicine, used balm to massage their body, saw their doctor, took out time to get quality rest and took beverage drinks respectively. On the other hand, while 4.0% of the respondents said they did nothing about the pains, some 4.7% admitted feeling no pain. Overall, the findings suggest that pain relief medications were mostly used by respondents to cope with the general symptoms of PPS.

Table 4.5a: On ways through which Respondents cope when they experience pain

	Frequency	*Percent*
I take pain relief drugs	94	62.7
I use balm to massage my body	9	6.0
I drink herbal medicine	20	13.3
I see my doctor	7	4.7
I take beverage drinks	2	1.3
I take time quality to get quality rest	5	3.3
I do nothing	6	4.0
I don't feel pain	7	4.6
Total	**150**	**99.9**

More than half of the respondents (58.0%) mentioned that they relaxed and rested. In addition, almost one third of the respondents (32.7%) admitted getting quality sleep in coping with the symptom. Only a few of the respondents (9.3%) did nothing to cope with fatigue. According to the information in the table, relaxation and rest appeared to be a working coping mechanism for fatigue.On whether respondents were in denial of PPS symptoms (e.g., fatigue, joint pain, muscle pain and cold intolerance), it was observed that majority of the respondents did not pretend experiencing the symptoms listed in the table. For example, 77.3%, 77.3%, 77.3% and 78.0% of the respondents did not pretend having fatigue, joint pain, muscle cramp and cold intolerance respectively.

Result indicates that many respondents sought some kind of spiritual support during their experience of the listed symptoms of PPS. As an example, over half of the respondents (60.0%) stated that they sought spiritual help when they felt joint pain. This same goes for increased fatigue (59.0%), muscle pain (60.7%) and cold intolerance (56.7%). The findings from the sample under study are an indication that spiritual transcendence can help polio survivours to cope with the physical and physiological challenges of PPS.

When asked to state whether they restrained themselves from certain kinds of activities when they experienced pain, fatigue, joint or muscle cramp and cold intolerance, respondents admitted putting a stop to such activities. Across all the types of symptoms mentioned in the table, many of the respondents (81.3%, 82.0%, 82.0% and 82.0%) stated that they restrained themselves from certain kinds of activities.According to data elicited, household chores was mentioned by more than two third of the respondents (68.7%). Other work-related activities were also mentioned by 13.3% as the kind of activities they stopped when they felt pain, fatigue, joint or muscle cramp and cold intolerance. Meanwhile, some 18.0% of the respondents did not respond to the question of the kind of activities they restrained themselves from. Overall, household chores were a major type of activity that polio survivours avoided doing when experiencing pain, fatigue, joint or muscle cramp and cold intolerance.

Part 2: Availability of Social Support

The second part of the result presents information about support services received by polio survivours especially from State Government, Local Government, NGOs and Philanthropists.

Data show that the State Government, Local Government, NGOs and philanthropists did not provide support services to many respondents interviewed in the study. For example, 78.7%, 97.3%, 94.7% and 95.3% of respondents admitted that they did not receive any support services from State Government, Local Government, NGOs and philanthropists respectively.

Furthermore, result showed that State Government, Local Government, NGOs and philanthropists did not provide transportation means to aid mobility for the polio survivours interviewed in the study. As an example, an overwhelming majority of the respondents (98.7%) reported that the state government did not provide any means of transportation that could aid their mobility. The same also goes for the local government (98.7%), NGOs (94.7%) and philanthropists (98.7%). Majority of the respondents have not been receiving any forms of financial incentives from the State Government, Local Government, NGOs and philanthropists. Majority of the respondents affirmed that they (83.3%, 98.0%, 97.3% and 99.3%) have not received any forms of financial assistance from the State Government, Local Government, NGOs and philanthropists respectively.

Data reveals that State Government, Local Government, NGOs and philanthropists have not initiated any health activity or programmes to improve polio survivours' overall health while very few (2.0% and 0.7%) admitted that NGOs and philanthropists have initiated some type of health activities aimed at improving survivours' health.

4.6: Hypotheses Testing

Hypothesis 1

H_0 - There is no significant association between socio-demographic characteristics and knowledge of PPS.

H_1 - There is a significant association between socio-demographic characteristics and knowledge of PPS.

Multivariable logistic regression was employed to conduct analysis on key items from the data relating to respondents' socio demographic status and their prediction of their knowledge of PPS. As shown, gender, marital status, educational level, income level, age, family type, occupation, age at first polio onset predicted respondents' knowledge of PPS. For example, males compared to females were 0.34 (95% CI: 0.217, 0.956)times more likely to know about PPS than not knowing about the condition. Also, respondents who were never married compared to other patients in the remaining marital category were 5.3 (95% CI: 1.569, 11.961) times more likely to know about PPS than not knowing about. Similarly, married respondents were 3.3 (95% CI: 1.370, 8.027) times more likely to know about PPS compared to the rest of the categories (cohabiting, separated, divorced and widowed).

Moreover, respondents who are from a nuclear family have a higher likelihood (aOR = 2.32, 95% CI = 1.312, 3.211) than those who are from the extended family of knowing about PPS. Christians were also more likely than their Muslim counterparts to know about PPS (aOR = 3.54, 95% CI = 2.193, 3.618), according to the data in the sample. Respondents who earn (in Nigerian Naira) between 45,000-54,000 and 55,000 and above (aOR = 2.13, 95% CI = 3.20, 5.312; aOR = 5.12, 95% CI = 1.538, 3.175) were more likely than those who earned between 5,000 and 44,000 to know about PPS. The likelihood of knowing about PPS was highest among those whose occupation were students, teachers, civil servants, and athletes (aOR =3.17, 95% CI = 1.362, 5.321; 3.33, 95% CI = 1.479, 3.194; 4.13 95% CI =0.598, 2.775; 5.21 95% CI = 2.351, 7.372) compared to those who belong to the other categories.

A further observation revealed that there was a significant relationship in the knowledge of PPS across all specific socioeconomic variables of polio survivours in the study. Consequently, the hypothesis stating that: "There is no significant association between socio-demographic status and knowledge of PPS" was rejected and the alternative accepted.

Table 4.6a: Multivariable (Demographic characteristics of the poliosurvivours) logistic regression models predicting respondents' knowledge of PPS

Variables	Odds Ratio	p-value	OR (95% Confidence Interval)
Gender			
Male	0.341	0.030	0.217-0.956
Female	Ref		
Marital status			
Single	5.332	0.010	1.569- 11.961
Married	3.312	0.043	1.370-8.027
Cohabiting	2.158	0.741	0.765-6.093
Separated	1.210	0.923	0.312-3.262
Divorced	0.123	1.324	0.070-1.023
Widowed	Ref		
Age in years			
19-28	Ref		
29-38	1.89	0.236	0.924-3.850
39-48	3.25	0.013	2.718-4.282
49-58	3.95	0.025	5.116-9.312
59-69	3.23	0.033	2.145-3.752
Educational level			
No formal education	Ref		
Vocational education	2.10	0.021	0.793-4.965
Primary school	0.38	0.762	0.397-1.503
Secondary school	3.62	0.002	1.441-9.098
Diploma certificate (NCE/OND)	2.10	0.001	0.892-4.955
BSc/HND	3.12	0.012	1.298-4.321
Post graduate Diploma	2.81	0.442	2.397-5.518
Income level			
≤ 5,000-14,000	Ref		
15,000-24,000	0.11	0.012	2.250-3.212
25,000-34,000	0.29	0.781	0.598-2.775
35,000-44,000	3.28	1.321	2.331-3.521
45,000-54,000	2.13	0.043	3.201-5.312
≥55,000 and above	5.12	0.001	1.538-3.175
Respondents' family type			
Nuclear	Ref		
Extended	2.32	0.005	1.312-3.211
Respondents' religion			
Christianity	3.54	0.001	2.193-3.618
Islam	Ref		

Table 4.6b: Multivariable (Demographic characteristics of the poliosurvivours) logistic regression models predicting respondents' knowledge of PPS

Variables	Odd Ratio	p-value	OR (95% Confidence Interval)
Occupation			
Schooling	3.17	0.002	1.362-5.321
Self-employed	0.33	0.103	1.479-1.479
Unemployed	0.29	0.093	0.598-2.775
Petty trading	0.23	0.945	1.021-2.444
Teaching	3.33	0.003	1.479-3.194
Civil servant	4.13	0.042	0.598-2.775
Athlete	5.21	0.007	2.351-7.372
Retiree	0.61	0.102	1.479-2.362
Accountant	0.72	1.457	0.193-1.712
Computer operator	Ref		
Respondent's age at first polio onset			
8 days-11 months	Ref		
1 year- 2years 6 months	2.53	0.001	1.252-6.591

Hypothesis 2

H_0 - There is no significant association between socio-demographic charcteristics of respondents and PPS.

H_1 - There is a significant association between socio-demographic characteristics of respondents and PPS.

The result of regression indicated that the model explained 76.3% of the respondents' scores on the prevalence of PPS (F(16,134)=152.311,p<.000). For example, marital status (p=.014), gender (p=.001) age (p=.012), family type (p=.000), educational qualification (p=.037), number of respondents' child (p=.000), occupation (p=.000) and number of respondent's spouse (p=.046), income (p=.000) of respondents significantly contributed uniquely to the prediction in the equation. On the other hand, there was no unique contribution of religion (p=.411), respondents' residency (p=.780), number of persons respondents live with and eat together from same pot (.081), respondents' weight (p=.083), whether respondents belong to any other support group (p=.735) in the equation. Furthermore, of all the variables that contributed to the variation in the outcome, only respondents' marital status (*b*=-22.41), Number of respondents' spouse (*b*=-11.082) and their educational levels (*b*=-2.744) negatively predicted outcome on scores concerning the prevalence of PPS among the sample. On the whole, the model presented significantly influencedrespondents' self-report scores about the prevalence of PPS among the sample. As a result, the null hypothesis stating that 'There is no significant association between socio-demographic characteristics of respondents and PPS' was rejected and the alternative accepted.

Table 4.6c: Multiple Regression result on predictors of respondents' self-report about theprevalence of PPS (N=150)

	Unstandardized Coefficients		*Standardized Coefficients*			*Co-linearity Statistics*	
	B	*Std. Error*	*Beta*	*T*	*Sig.*	*Tolerance*	*VIF*
(Constant)	73.908	16.247		4.549	.000		
Respondent's residency	-.466	11.663	-.024	-.280	.780	.928	1.078
Respondent's religion	-2.508	13.039	-.074	-.825	.411	.845	1.183
Respondent's gender	11.342	22.947	.011	.116	.001	.815	1.227
Respondent's marital status	-22.409	11.851	-.129	1.302	.014	.688	1.455
Respondent's Family Type	17.578	3.877	.038	.407	.000	.754	1.326
No. of respondent's spouse	-11.082	2.676	-.003	-.031	.046	.664	1.507
No. of respondent's children	18.849	1.027	.087	.826	.010	.607	1.647
No. of persons respondents live with and eat together from same pot	-1.193	.679	-.158	-1.757	.081	.829	1.206
Respondent's weight	-5.031	.111	-.024	-.276	.083	.865	1.156
Respondent's educational attainment	-2.744	1.306	-.202	-2.101	.037	.728	1.373
Whether respondents belong to any other support group	6.941	5.644	.107	1.230	.221	.892	1.121
Occupational status	7.294	.867	.033	.339	.735	.701	1.426
Respondent's age	11.983	9.8234	0.45	17.93	.012	.980	1.152
Respondent's age at first polio onset	5.1113	12.113	-0.94	18.33	.034	.912	1.034
Respondents' level of income	2.1131	9.1263	.013	12.56	.000	.712	1.023

Hypothesis 3

H_0- There is no significant relationship in the factors that predispose respondents to PPS and management practices of PPS.

H_1- There is a significant relationship in the factors that predispose respondents to PPS and management practices of PPS.

To test the third hypothesis that: There is no significant relationship in the factors that predispose respondents to PPS and management practices of PPS, a Pearson's Product Moment Correlation (PPMR) was conducted. As in the previous hypothesis, preliminary analyses were performed to ensure no violation of the assumption of normality, linearity, and homoscedasticity. Information indicates that there was a strongly positive (uphill) correlation between the two variables (r=.751, n=150, $p<.05$), with high levels of factors that predisposes respondents to PPS associated with higher levels of management practices and vice versa. As a result, the hypothesis stating: "There is no significant relationship in the factors that predispose respondents to PPS and management practices of PPS", was rejected while the alternative hypothesis was accepted.

Table 4.6d: Showing the Pearson-Moment Correlations between factors that predispose Respondents to PPS and management practices of PPS

Correlations

		Factors that predispose respondents to PPS	Management practices of PPS
Factors that predispose respondents to PPS	Pearson Correlation	1	.751
	Sig. (2-tailed)		.000
	N	150	150
Management practices of PPS	Pearson Correlation	.751	1
	Sig. (2-tailed)	.000	
	N	150	150

Hypothesis 4

H_0- There is no significant relationship between challenges affecting respondents and management practices.

H_1- There is a significant relationship between challenges affecting respondents and management practices.

In testing the fourth hypothesis that: There is no significant difference between challenges affecting respondents and management practices, a Pearson's Product Moment Correlation (PPMR) was conducted. In doing this the relationship between challenges of PPS and management practices of PPS was investigated using Pearson's Product Moment Correlation Coefficient. Preliminary analyses were performed to ensure no violation of the assumption of normality, linearity, and homoscedasticity. There was a weak downhill, negative correlation between the two variables (r=-.255, n=150, $p<.05$), with high levels of challenges of PPS associated with lower levels of management practices and vice versa. Based on the foregoing, the researcher rejected the hypothesis stating: "There is no significant relationship between challenges affecting respondents and management practices", while the alternative hypothesis was accepted.

Table 4.6e: Showing the Pearson-Moment Correlations between Challenges of PPS andmanagement practices of PPS

Correlations

		Challenges of PPS	Management practices of PPS
Challenges of PPS	Pearson Correlation	1	-.255
	Sig. (2-tailed)		.038
	N	150	150
Management practices of PPS	Pearson Correlation	-.255	1
	Sig. (2-tailed)	.038	
	N	150	150

Hypothesis 5

H_0 - There is no significant relationship between the available social supports and management spractices of PPS.

H_1 - There is a significant relationship between the available social supports and management practices of PPS.

The researcher performed a Pearson's Product Moment Correlation (PPMC) to test the fourth hypothesis that: There is no significant relationship in the available social supports to PPS and management practices of PPS. As in the previous hypothesis, preliminary analyses were performed to ensure no violation of the assumption of normality, linearity, and homoscedasticity. Analyzed datashows that there was a strongly positive (uphill) correlation between the two variables (r=.557, n=150, $p<.05$), with high levels of the available social supports to PPS associated with higher levels of management practices and vice versa. As a result, the hypothesis stating: "There is no significant relationship between the available social supports and management practices of PPS", was rejected while the alternative hypothesis was accepted.

Table 4.6f: Showing the Pearson-Moment Correlations between available social supports and management practices of PPS

Correlations

		Available social supports	Management practices of PPS
Available social supports	Pearson Correlation	1	.557
	Sig. (2-tailed)		.003
	N	150	150
Management practices of PPS	Pearson Correlation	.557	1
	Sig. (2-tailed)	.003	
	N	150	150

Qualitative Aspect of the Study

KIIs' Knowledge of Poliomyelitis

In order to expand our knowledge of the subject matter in the study, qualitative data elicited from 8 Key Informant Interviews (KIIs) were analyzed. The purpose was to broaden knowledge on possible history, challenges encountered and coping mechanisms as well as other social support problems faced by polio survivours. The research also attempted to investigate KII's knowledge of poliomyelitis. Virtually all the informants demonstrated their knowledge of poliomyelitis. As an example, one KII stated that:

> *"According to my knowledge of the condition, [it] is [a] disease caused by one infection called poliomyelitis which when an individual is infected, would make the human muscle ineffective and the joints as*

> *well as the bone will not be able to grow as it is supposed to"*(**Cluster Leader, Yemetu/Sabo Community, IBN)**.
>
> Another KII described poliomyelitis as *"as a virus that affects someone at a childhood stage and affects the upper and the lower limbs"* **(Cluster Leader, Oja-Agbo, IBNE)**.

Despite the knowledge of poliomyelitis that was displayed by majority of the KIIs, some of the respondents associated the development of the condition to wrong causes. For instance, KII who is a cluster leader in one of the communities attributed the disease to measles. According to him,

> *"Measles is the major cause of poliomyelitis and one cannot be infected by the disease except it was caused by measles" (***Cluster Leader for Mapo Community, IBSE)**.

General signs and symptoms of poliomyelitis identified by KIIs in the study ranged from paralysis of the upper and the lower limbs, fever, weakness of the body, body ache, loss of strength and general inability to walk. Of all the symptoms which were mentioned, paralysis of the upper limb and the lower limb as well as fever was most frequent. As an example, one KII who shared his personal experience about the symptoms remarked that:

> *When I became infected [with the virus], I realized I fell sick and my sickness was accompanied with high temperature [fever], all of my body was hot to the extent that my limbs started becoming weak after which they were completely paralyzed***(IBN LGA Coordinator)**.

- **Knowledge of Post Polio Syndrome (PPS)**

Corroborating the quantitative aspect of the study on PPS prevalence and knowledge, many of the KIIs did not have knowledge of PPS. However, because they were key informants that we expected would assist the research team in identifying polio survivours in the study area; we had to explain what the condition is to them. During further interviews one KII said,

> *"Before now, I have not heard of it… not until the interviewer explained the signs and symptoms that are experienced by those living with poliomyelitis"* **(Cluster Leader, Oke-parde, IBNW)**

Although few KIIs spoke about PSS, their knowledge of the condition was considered inadequate during analysis. For example, a KII noted that PPS

> *"May be a sickness or virus that happens to a polio survivor who has economic depression… because we don't have much money… we don't have much strength to look for a daily job, we don't have money to carter for our needs and if that thing is happening, anything can happen to our health"* ***(Cluster member, Oke-Ado, IBSW)****.*

The perception of the above KII about PPS is an indication that participants did not have basic knowledge of the condition. Although lack of money as well mobility could be seen as factors that exacerbate PPS experience among survivours, they are not accepted as causes of PPS. Another KII described the condition as *"a virus the person that survives a polio case may have"*. The respondent maintained that PPS is a condition that is caused 'by being a polio survivor.' However, respondents identified correctly that PPS can be diagnosed when survivours present: body ache, back ache and depression. Another KII who by implication identified some of the common manifestations of PPS using his personal experience confirmed that he experiences joint pain, fatigue, muscle pain, cold intolerance and decreased endurance and that these manifestations happen with time. In his words:

> *"It is every time [I experience pain and ache in the areas mentioned]; as I am getting old, I went to a doctor complaining that: 'what would I do so that I would not have pain? But the doctor said to me: 'look here, you cannot do without pain, the only thing is that you will manage that pain because pain is what define human"* **(IBN, LGA Coordinator)**.

Furthermore, a KII who identified as the cluster leader of Ibadan North East described the common manifestations of the disease from a point of a view of a victim. According to him,

> *… PPS can manifest in the form of an ache and pain over specific parts of the body. For instance, I might begin to feel pain on my spinal cord or the upper limbs [since I limp and rest on my left hand while moving]. Some other times, I feel muscle pain and or general body pain* **(Cluster Leader, Oja-Agbo, IBNE)**

So far, data has revealed that many KIIs experience the manifestations of PPS. Although they appeared to have great awareness of the new kinds of difficulties they face with their bodies especially as they age, they did not know that the pains and aches they experience after many years of being paralyzed with the infection is a new form of condition that is being referred to as post-polio syndrome (PPS).

- **Origin of Association of People Living with Disabilities in Oyo State in Nigeria**

KIIs who were interviewed mentioned different dates of establishment of the Association of People Living with Disabilities (APLWD) in Ibadan, Oyo State. While for instance, some reported that the association was established in the 1990s, others said that the organization was put together about 15 years ago (i.e., 2004 – as at the time of the field work) and yet one KII claimed the organization was established in 1982. Although a few KIIs were not sure whether the group was duly registered by the government, many of the KIIs claimed that the organization has been duly registered but could not confirm the exact period they became member of the organizations. However, their motivation for joining was to identify with people who are in the same predicaments like them. Others also thought that the association served as a pressure group which motivated their membership as it also raises the plights of the disabled to the knowledge of the government as well as improving their welfare and dignity. Overall, data analyzed revealed that a major criterion which qualifies individuals as members of the association is just identifying as persons living with disabilities.

Furthermore, KIIs suggested that one of the aims of the organization was to provide support for its members. Another common aim of the organization was to serve as an influential force/group or an umbrella body that can advance the cause of every member. As one coordinator puts it,

> *"One of the aims for establishing the organization was that the then government under the administration of General Ibrahim Badamosi Babangida; he didn't want individuals to come to him directly, and seeking for financial assistance. But instead, he wanted an umbrella organization where he could interact and politically influence persons with disability, which comprises of six clusters of the people with disabilities, which include the physically challenged people, the blind,*

> *the deaf, the albinos, people with spinal cord issues and the lepers"* **(IBN LGA Coordinator)**

Other aims and objectives include seeing to the welfare of the disabled people, giving people with disability a sense of belonging, advocating for equity and fairness with other members of the society, fighting for the rights, privileges and entitlement of its members, educating its members and awareness creation. Programme commonly identified by most of the participants ranged from holding seminars, participating in the yearly International Day of Disabled Persons (December 3rd), providing and distributing mobility devices for members who need them, providing food item and other relief materials, encouraging members to engage in games and other sporting activities (e.g., weight lifting, table tennis, para-soccer, etc), etc. The objective of the various seminars which have been held has been to equip members with adequate knowledge about their conditions and how they could live life effectively. As an example, one KII reminded us of a recent activity of which they participated as a member of the association:

> *"...sometimes around the previous month [September, 2019] one of our members who is a lawyer came to enlighten and teach us on the laws and acts that empower us as people living with disabilities to live life effectively" (***PRO, JONAPWD, Oyo State Chapter)**.

The participants were further asked to state whether there is any gender difference in the membership of the organization. Result revealed that there were more women than men in the organization. Only one KII stated that there were more males than females in the group. An interesting reason given by the KII was because women felt embarrassed to be seen as members of the organization. As one KII put it, "*to my understanding, women are always shy to come out. So, if we are to look at it numerically there are more men"***(IBN LGA Coordinator)**. As to what the association offers its members, KIIs mentioned that the organization protects the interests of their members as well as ensure that members are adequately empowered. According to the KIIs, some of the empowerment initiatives embarked upon includes distribution of working equipment capable of helping the members create some sources of income. Certain needs of the members have also been taken care of as a result of the efforts put in by the executives of the organization.

- **Challenges Affecting the Organization**

KIIs spoke about some challenges that stare the organizations in the face as they endeavour to meet the set objectives of the organization. The most commonly mentioned challenge was lack of funding or issues of finance. One KII described this as about the only challenge the organization has had to face in recent memory. According to him,

> *"We used to have challenges in funding some of the programmes we have. I can recall 2011-2018 during the time of the past administration; we used to get some monthly stipends, which we used in financing some of the programmes that benefits our members. However, since his demise, we have not had such an opportunity to fund some of the activities that we undertake in the organization".*
> ***(*Former Chairman, JONAPWD, Oyo State)**

Lack of institutional inclusion of persons with disability was also identified by some KIIs. This was how one of the KIIs remarked concerning the absence of institutional provision that accommodates people living with disabilities when they come in contact with the various structures and institutions of the society:

> *"Inclusion and segregation are issues we have been talking on… because all the institutions we have in our society today have not shown any sign of inclusion of people with disabilities. For instance, lecture rooms are not comfortable for people with disabilities. If you also go to state secretariat and other government agencies as well as private facilities, you will realize that they do not factor in mobility channels for people with disabilities and this I think is very worrisome… in fact, if you look at it closely, it starts from the primary school level"* **(Former Chairman, JONAPWD, Oyo State)**

Corruption and the insensitivity of the government officials to the plight of persons living with disabilities were also identified by one of the KIIs. The chairman who initially praised the efforts of the past administration, also noted that those who served as 'middlemen' between the state government and the association. In his words:

> *"Although the previous government/administration which ran from 2007-2011 was to an appreciable extent supportive of our organization, the problem we encountered was that the people he appointed to see to our plights were not effective and therefore did not deliver to our expectation. As an example, there was a time I wrote*

> *names of 28 members of our organization who needed desperate assistance; unfortunately, only five names were considered for assistance. And the surprising thing was that the five persons selected were rendered assistance that was not beneficial to them. For instance, an individual who was trained as a hair dresser was given a grinding machine and another individual who was trained as a cobbler was given a dryer… you can imagine?!* **(Former Chairman, JONAPWD, Oyo State)**

Furthermore, to address these problems, KIIs stated that they report issues and concerns to the government and other appropriate authorities. They also mentioned that they had taken to awareness creation (letting the government and the appropriate authorities know about the concerns of the association). The aim of creating such awareness is to let the public and other persons who are willing to help the association know about its challenges. This they said was capable of 'touching' the hearts of those who are willing to provide assistance and support for the association.

As to the challenges being faced by individual members of the association, many of the KIIs mentioned that economic hardship was a common experience of the members. The KIIs also argued that there is an association between disability and low economic status. One of the KIIs further attributed the economic hardship being felt by the association's members to the policies of government. According to him:

> *"Economic hardship and policies which the government put out affects people with disabilities a lot of time. If the government puts any policy out now about some economic or structural changes, it affects the people with disabilities most"* **(IBN LGA Coordinator)**

Another challenge that was mentioned bordered on discrimination experienced by many of the association's members. One of the KIIs however believes that:

> *"The association has been able to push forward the discrimination act which was approved by the government last year [2018] …" (***Cluster Leader, Oja-Agbo, IBNE)**

With respect to how the organization funds its activities and programme, KIIs stated that the association received subventions and other forms of financial assistance. While some KIIs posited that they had had issues with subventions in time past, they stated that good spirited Nigerians and philanthropists have always being financially supportive. For example, one KII who faulted the last administration with regards to the subventions they get from the government mentioned that individuals were always willing to provide funding. According to the KII respondent:

> *"Before we used to get subvention from the State Government during the past administration of 2007-2011, however the last regime (the immediate past administration) have not given any subventions. Nonetheless, we get assistance from good spirited individuals; donations from philanthropists".* **(IBN LGA Coordinator)**

On the other hand, another KII who held a contrary opinion about government's subventions hailed the previous administration for always meeting the needs of the association as well as its members. This was what the KII had to say:

> *The previous government has been very helpful in seeing to the needs of the association and its members. For instance, the immediate past administration then organized a programme like get-together, which affords the members the opportunity to meet with State Government. The governor meets with them and tries to solve some of the immediate needs of both the association and its members* **(Cluster Leader, Mapo, IBSE)**.

KIIs were asked to comment on the availability of support services especially the sources through which the association gets its resources. In response to this, KIIs mentioned that the government, philanthropists, Non-governmental organizations (NGOs), and other individuals. KIIs further mentioned that the association and its members have been a recipient of certain support services in the areas of health care, mobility aids, medical checkup programme, awareness raising and general health education that could help people with disabilities. As an example, one KII spoke about the contributions of various philanthropists who have provided some form of health care services or assistance for the members of the organization. The KII further made a particular reference to a time when some Philanthropists from the USA organized checkup exercises to diagnose various health issues that members have:

> *There was a time some philanthropists from the United States of America put up some kinds of health care programme for us, where many of us were diagnosed. Our sugar or glucose level, blood pressure, eye check up were all*

> *conducted after which they recommended drugs for those people who have high blood pressure or high sugar level and so on* **(IBN, LGA Coordinator)**.

Regardless of the list of healthcare assistance enjoyed by the members of the association, KIIs were still of the opinion that members still suffer some forms of discriminations in relation to accessing quality healthcare. One KII spoke about how members have in time past been denied of healthcare services in hospitals and clinics. As one KII commented using a previous experience,

> *There was a day that we picked a disabled person who had an accident, we went to the UCH and they refused to take the accident victim from us; that there is no provision and they asked whether we were going to pay his medical bills. Can you imagine that?! We were trying to help an accident victim covered in his own blood and we did not know who he was or his parents. Because they said there is no provision for him, we had to leave that place [UCH] and we went to a private hospital. He was attended to at the private clinic; we then called on philanthropists via the radio, who later came to help the poor and disabled accident victim* **(IBN, LGA Coordinator)**.

Going by the responses taken from the KIIs sample in the study, there is an obvious theme of negligence from the government and an undertaking of a corporate social responsibility from philanthropists and individuals in and out of the study area as far as healthcare accessibility by polio survivours and other disables are concerned. KIIs also admitted that there are no existing structures that can help polio survivours in maintaining good health status. “Whatever we gain is from our individual efforts”, said one KII during the time of the interview.

In addition, many KIIs claimed that there is no special transportation arrangement or programme by the government, which have been made to easy the mobility challenges of polio survivours or even persons living with disabilities. As on KII narrated:

> *I must tell you that even the public buses owned by the government, I have taken (boarded) it several times and no special attention was given to me. All the times I took them, they collected money. This is unlike what I heard they do in Lagos. Another problem is that the buses are not accessible for us. For instance, the connecting points to*

> *where the buses are stationed to pick people up are difficult to ply for many of us* **(IBN, LGA Coordinator)**

In support of the above view, another KII affirmed that there have never been any forms of transportation programme designed or implemented to assist persons living with disability in the state. The KII said:

> *"I have never heard of such [special transportation arrangement for the disabled] in the state of Oyo"* **(Cluster Leader, Oke-parde, IBNW)**

The affirmation from many of the KIIs in the sample is an indication that the issue of mobility is a major concern faced by persons living disabilities daily. KIIs also added that members at the moment do not have access to soft credits and information that could help them live life effectively from the local and State government authorities. KIIs believed that the fact that many polio survivours are unemployed makes it extremely difficult for them to provide collateral for credit facilities. This reality raises a lot of concerns as many of the KIIs indicated that the lack of access to credit facilities have continued to hinder their members from moving out of the currently low socio-economic status to a higher one.

KIIs finally called on government and other stakeholders on the issues of persons living with disabilities in Oyo state to provide an enabling environment for survivours in order to ensure better quality of life. The essential components of the environment to be created should look into the following: improving access to healthcare (i.e., access to healthcare can be improved when healthcare services are made free for the families of polio survivours), ensuring economic empowerment (through soft loans, etc.), providing health education and awareness programme for polio survivours and persons living with disabilities, providing mobility aids, paying monthly stipends to polio survivours who are not educated and who do not have any form of handwork.

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Discussions

5.1.1 The knowledge of Post-Polio Syndrome among respondents

In respect of respondents' knowledge of post-polio syndrome, results revealed that most respondents (94.7%) did not have the basic knowledge of what poliomyelitis is. Although they identified polio as paralysis of the limbs, with weakening of muscles and bone conditions, they couldn't define what polio basically is. The lack of knowledge on the part of the survivours could be due to poor health information and education as well as individuals' low educational status. This prospectively has profound political, economic and social implications for local, national and international policy-making, according to Groce et al. (2014). In accordance with the study objectives, it was found that respondents and KIs did not have basic knowledge of the condition the called PPS.

Similarly, married respondents were 3.3 (95% CI: 1.370, 8.027) times more likely to know about PPS compared to the rest of the categories (separated, divorced and widowed). Plausible reasons for these outcomes may be that people who are not in the categories of being single or married may be suffering from physical and psychological impacts of separation, divorce and or widowhood, which therefore affects their basic knowledge of the PPS. In other words, polio survivours in these categories mentioned may not have seen the need to know more about their complications of their conditions since they have already been confronted with the guilt, anxiety and stress of being separated, divorced or widowed.Altogether, the findings of the study emphasize the crucial and the undeniable influence of polio survivours' demographic characteristics on their knowledge of PPS.

However, a few respondents were able to identify some of the common manifestations of the condition, which were mentioned as general body weakness, fatigue, and cold intolerance among others. What is mostly obvious in the pattern of responses is that respondents and KIs did not know that they were experiencing the late onset effects of poliomyelitis; as they could not identify that they were already battling with a condition that comes with being polio survivours. For example, respondents admitted that they experienced general body pains or ache, joint pain, muscle weakness even as they found it difficult to perform or fulfill certain physical activities, such as bathing, climbing steps, running errands and many other activities.

5.1.2 The prevalence of Post-Polio Syndrome among respondents

In this study, the prevalence of PSS was high (60.1%) similar to a prevalence of 60.1% recorded among a sample of polio survivours in a Korean study [Bang et al. (2014)]. This is much higher than the 31.0 % prevalence rate found in an Italian cohort of people with prior poliomyelitis [Ragonese et al (2005)], Canada, 25% and the United States of America 40% (according to the Centers for Disease Control and Prevention (CDC) (CDC, n.d)) and Algeria 46.31% [Boukara et al. (2016)]. However, the rate from this study less compared with 77.2% recoded in Brazil, [Quadros et al. (2012)] and 65.5% in Turkey [Sungur (2016).

While it is a fact that the general prevalenceof post-polio syndrome is yet unknown (Amole &Khouzam-Skelton, 2017) and that there is no nationally representative statistic about the rate of PPS in Nigeria, the findings from this study is an indication that the rate of PPS is likely to be high even though many of the sample respondents did not have an idea that what they are currently experiencing is conceptualized as a post-polio condition. Nevertheless, the findings are consistent with a few studies (e.g., Amole &Khouzam-Skelton, 2017; Duncan &Batliwalla, 2018), which have shown that the PPS is prevalent among polio survivours in small-scale correlational studies are high, with elderly survivours suffering from various manifestations of the disease. The present study therefore adds to extisting studies as it looks at the prevalence and experiences of PPS among survivours regardless of age categories.

5.1.3 The challenges affecting respondents who are experiencing (PPS)

In addition to the above, the present study attempted to identify the challenges affecting respondents who are experiencing PPS in the study sample. Following analysis of data, it was found that majority of respondents never had challenges sleeping at night even when they had experienced increased joint pain and fatigue as well as muscle cramp. The study outcome contradicts previous studies like that of eSilva, Moreira, Quadros, Pradella-Hallinan, Tufik and Oliveira (2010) which found sleep disturbances among PPS patients in a study conducted in sixty patients (mean age 46.8±11.3 years) at the Federal University of São Paulo (UNIFESP/EPM) complaining of sleep disturbances. Plausible reasons for the finding of the present study may have been in the self-report methods with which respondents were made to provide subjective answers on their sleeping pattern even when they manifested some common PPS.

Another possible explanation to the outcome may have stemmed from polio survivours feeling of acceptance by members of their communities. As many respondents have also portrayed the feeling that they were part of their respective communities. In addition, study showed a little over one third of the respondents felt anxious every now and then as a result of fatigue, muscle pain, joint pain, long hours of work and inability to meet daily demands. In other words, majority of the respondents did not feel anxiety, suicidal or socially inactive even when they had some of the common manifestations of PPS. Even though the explanations for the outcome are not the focus of the study, this result is an indication that respondents experiencing PPS had psychological resilience. Corroborating the above result is the result of Pierini and Stuifbergen (2010), which found 53% of the 630 adults who were 65 years or older and had indicated they had been diagnosed by a physician as having PPShad good or excellent self-rated health. However, result of the present study revealed that the experience is mainly felt by those who occasionally felt anxious as a result of the symptoms associated with their condition.

As previous studies such as that of Hirsh, Kupper, CarterandJensen (2010) have noted in their cross-sectional survey that social support was associated with both psychological functioning and pain interference. Such outcome may have explained why respondents in the present study did not have difficulty sleeping, as well as feeling anxiety or having some suicidal thoughts. It is nevertheless difficult to contextualize the current results, given the lack of attention this topic has received in the PPS literature. Nonetheless, other challenges that stare polio survivours in the face were identified as lack of access to credit facilities, problems with organization and support service efforts, funding, mobility problems, low socioeconomic status, the problem of institutional inclusion and corruption and the insensitivity of the government officials to the plight of persons living with disabilities, etc. These problems put into focus, why PPS patients sampled in the area of study has not been able to lead their lives effectively. Hence, this outcome could also inform decision makers on areas to be considered for improvement of their quality of life.

5.1.4 The management practices of (PPS) among respondents

As to how respondents managed the condition, findings have revealed that many of them (68.0%) used some type of medication ranging from; Analgesics such as Panadol-extra, Ibucap, Felvin, Diclofenac, Predinisolone, Isuparaplete, Feel-fine, After-5, Novagin, Calcium and Paracetamol and so onto help them cope with the effects of PPS. Nevertheless, results indicated that many of the respondents did not have access to physiotherapy, which plays an important role in provision of rehabilitative care-service for polio survivours. Respondents did not also engage in unhealthy lifestyle habits such as smoking and alcohol taking; and they largely relied on social and individual support to engage in physical activities. Some of the respondents also maintained that they drank herbal mixtures such as herbal liquid for malaria, fatigue and pain, and also used balm to massage their body, saw their doctor, and took beverage and energy drinks, while the rest admitted to taking out time to get quality rest.

These findings may be explained by the conscious problem-solving instincts which enables post polio syndrome patients to make important lifestyle changes and seek for group or community support to help them cope effectively with the conditions. These conscious problems solving instinct was observed in the study of Hansson and Ahlström (1999). In the study, the authors found that polio survivours developed a problem-focused effort to seek practical solutions; some of which are principally tangible support from the person's spouse, friends and neighbours. According to the authors, PPS patients received emotional support provided by others, mainly spouse and children. Also, since respondents reported seeing doctors regarding the PPS condition, they might have gotten information to adopt healthy lifestyles from their doctors and seek the support of family members and those living in the community. Such self-care and management practices may have perhaps been related with many respondents' ability to live a fairly healthy life (which has been indicated in the previous paragraphs).

Meanwhile figure also showed that close to a third of the respondents (32.0%) did not receive any type of medication to help them cope with the symptoms of PPS. This is an indication of the fact that polio survivours experiencing PPS symptoms; and who did not have access to medications still exists. Results also showed that an overwhelming majority of the respondents (80.7%, 80.0% and 82.7%) did not engage in any form of physiotherapy sessions for managing increasing fatigue, muscle pain and joint pain respectively. The results highlight the problem at hand; as it indicates that many of the respondents did not have access to physiotherapy, which plays an important role in rehabilitation for polio survivours. Majority of the respondents admitted that they do not smoke, drink alcohol, did not withdraw from people and did not use aiders or assistants in order to cope with the late effects of PPS. However, pain relief medications were mostly used by respondents (62.7%) to cope with the general symptoms of PPS.

Relaxation and rest appeared to be a working coping mechanism for fatigue for majority of the respondents (58.0%). Finally, the findings from the sample under study are an indication that spiritual transcendence can help polio survivours to cope with the physical and physiological challenges of PPS.

5.1.5 Available social supports for PPS management among respondents

In terms of available social support for managing PPS among respondents, findings showed that the State Government, Local Government, NGOs and philanthropists provided little or no support services to many respondents interviewed in the study. Result also indicated that a great majority still has challenges with mobility and that assistance or programmes that could ease mobility for polio survivours are not in existence. Majority of the respondents affirmed that they (83.3%, 98.0%, 97.3% and 99.3%) have not received any form of financial assistance from the State Government, Local Government, NGOs and philanthropists respectively. Aside very few respondents (2.0% and 0.7%) who admitted that NGOs and philanthropists have initiated some type of health activities aimed at improving survivours' health, none of the respondents confirmed that the State Government, Local Government, NGOs and philanthropists have initiated any health activity or programmes aimed at improving their overall health. Plausible reasons for the findings may be connected to the general attitude of the Nigerian government (both at the State and Local Government levels) towards people living with disabilities. Similar findings were observed in the study of Haruna (2015) who found that many of the disabled persons in Nigeria did not receive the right amount of support from government and agencies saddled with the responsibility of improving the lives of the disabled.Haruna therefore argued that the absence of effective laws for the protection and promotion of their rights hamper proper and adequate funding of disabled organizations and the provision of a comprehensive welfare service to them, in particular, free health care services, among others.

5.2 Conclusion

Following the findings of the study, the researcher concludes that there is a dearth of knowledge on the part of the survivours about PPS. Although respondents presented the usual signs and symptoms of the condition, they did not know that they were probably battling with PPS. This could have profound political, economic and social implications for local, national and international policy-making, according to Groce et al. (2014). The study equally concludes that there is a high rate of PPS (although unknown to many of the respondents and KIIs that they were probably suffering from PPS). Even though respondents were able to cope (i.e., by being independent as well as receiving assistance and a feeling of acceptance from people around them) with the challenges (sleep disturbance, etc) associated with PPS, there were still deep rooted problems of lack of finance, lack of mobility services for people living with disabilities, lack of access to credit facilities, lack of access to affordable and quality healthcare services, etc. The researcher also concludes that respondents' demographic characteristics (e.g., gender, age, age at first polio onset, etc) could impact their perception and experiences of PPS. The researcher finally concludes that a psychosocial support system which includes support from family members, friends and community and other dimensions (e.g., spirituality, etc) could impact on management practices of PPS.

5.2.1 Policy Implication of the Study

There is the need to have a policy that will ensure that all PPS patients as well as all persons with all forms of disabilities visit the nearest health care facility, so as to make early diagnosis and selection of referral to appropriate hospital in order to assess comprehensive care. Also, the psychosocial supports of the PPS patients should point towards solution for individual challenges in interacting with the management of the condition and the outcome. Policies in PPS care practice should be periodically reviewed and be the standard of care right from when diagnosis is made, throughout the period of management irrespective of prognosis. Through this, psychological well-being of patients and family caregivers would be at equilibrium. Besides, in-service education on palliative care practice should be for all health workers in health institutions so that they would have an in-depth knowledge and function effectively in health centers for the effectiveness of the palliative care programme.

5.2.2 Implication for Health Promotion andEducation

This study has two broad implications for health promotion and education. PPS is s progressive condition that affects polio survivours many of whom might still be ignorant of the disabling sequelae. When polio survivours get older(i.e starting from about 15 to 40 years after imitial infection) they are vulnerable to PPS and this may have a negative influence on their quality of life. Therefore, this study has addressed a gap in a specific progressive disorder such as PPS by providing empirical insights into issues surrounding the knowledge, challenges and management practices among polio survivours in Oyo State.Also, this study has provided the blue print for the management of PPS and how it can be achieved through health promotion and education programmes. In other words, health educators and planners can design programmes specifically targeted at PPS patientsthst might be influenced by some key findings about the prevalence, knowledge level and the challenges of PPS affecting poliosurvivours which will lead to better management of the condition.

5.2.3 Suggestion for further studies

Further research could be carried out in other states where the population of polio survivours is perceived to be high, and also, a comparative study can be carried out on challenges of PPS, social support system and management practices of patients with PPS in Oyo and other key states of the federation. Future researchers should most importantly go through the registered body of the Joint National Association of Persons with Disability (JONAPWD), in order to have access to quality information.

5.3 Recommendations

Premised on the findings, this study, therefore recommends that;

I. All health centers (Hospitals) at the Federal, State and Local Government levels in Ibadan, Oyo State should give priority attention to psychological factors in determining palliative care for PPS patients (polio survivours presenting the manifestations of PPS).

II. Healthcare services which include medicines, aids and investigations should largely be subsidized for the PPS patients, especially if government and other stakeholders cannot make healthcare services free for them.

III. Social factors such as companionship, spirituality, rehabilitative supports and regular access to healthcare services are key factors for enhancing the capacity of those living with late onset PPS. Efforts should be made to encourage these factors by all the care-givers and others points in the healthcare pathways.

IV. For effective management for the PPS victims as it relates to access to healthcare services, the State Government (Oyo) for instance, should provide an emergency relieve service wherehome-based care can be rendered, those needing hospital admissions can be taken to healthcare facilities with emergency vehicles provided.This would improve their psychological well-being.

V. Government and other stakeholders (NGOs and philanthropists) especially in Oyo State should come to the aid of PPS patients by providing mobility support such as special transportation arrangement that could ease mobility challenges. In a similar manner, assistive technologies that could aid mobility should be provided. Educational programmes should become a consistent experience as this could help survivours of polio to know more about their condition, and manage their health, to live a quality life in the event of developing PPS.

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APPENDIX I
INFORMED CONSENT FORM

QUESTIONNAIRE ON PREVALLENCE, HEALTH LITERACY AND MANAGEMENT OF PPS AMONG POLIO SURVIVOURS IN IBADAN, OYO STATE

Department of Health Promotion and Education,
Faculty of Public Health,
College of Medicine,
University of Ibadan

Dear Respondent,

I am a Master student in the Department of Health Promotion and Education, Faculty of Public Health, University of Ibadan. I am conducting a study on **Prevalence, Health Literacy and Management of Post Polio Syndrome among Polio Survivours in Ibadan, Oyo State**as part of the requirement for the award of Master of Public Health (MPH) Degree. The purpose of this study is to document the prevalence, health literacy and management of the post polio syndrome among polio survivours. The findings from this study will serve as baseline information to help improve the conditions of the late onset of polio among survivours.

Persons selected for this study are men and women of ages 18 years and above, who have a history of poliomyelitis and are currently residing within Ibadan Metropolis not earlier than six months. Your participation in this study is voluntary and *your responses are strictly for academic purposes and would be treated with utmost confidence*.I will appreciate if you oblige me with your answer to my questions. ***Please be assured that this exercise will last between 15-20 minutes and you are free to stop or not answer any question that you do not want to respond to.***

With your permission to start the discussion, are you willing to participate? Yes ☐ No ☐

Thanks for your cooperation

______________________________ ______________________________

Signature of interviewer & date Signature/Thumbprint of therespondent & date

Yours sincerely,

Roseline N. Ezenagu
Matric No: 211288

Serial no: ☐
Interviewer Code: ☐

Name of Community: ______________________________

Area: (i) Urban ☐ (ii) Semi-urban ☐ (iii) Rural ☐

SECTION A: Socio-Demographic Information

Instructions:*Please carefully go through the questions and alternative options provided for each questions and circle* [©] *the appropriate box (es).* All Questions are t*o be Completed by the Interviewer with response from the respondents*. ***(Circle the appropriate options and fill the***

To begin, I would like to ask you some questions about yourself, please feel free as the questions will not do you any harm.

1. What ethnic group do you come from?

   [1] Igbo [2] Hausa [3] Yoruba [4] Other specify______________________

2. How long have you been living in this area or location?

   [1] Exactly 6 months [2] Between 1-5 years [3] Since birth [4] 5 years plus [5] Not sure

3. What religion do you practice? [1] Christianity [2] Islam [3] African Traditional Religion [4] Atheist [5] Other specify _______________

4. Sex ? [1] Male [2] Female [3] Other specify_______________________

5. What is your marital status? [1] Single [2] Married [3] Cohabiting [4] Separated [5] Divorced [6] Other specify____________________

6. Family Type? [1] Nuclear [2] Extended

7. How many wives or husbands do you have? **If Single,skip to Q9**

   Please specify in number _____________

8. How many children do you have presently?

   Please specify in number _____________

9. How many people do you live with and eat together from same pot presently?

   Please specify in number _____________

10. How old are you now? (***Record as at last birthday***)

    Specify age in Years ____________

11. What was your age when you first had the poliomyelitis?

    Please specify age in Years ____________

12. What is your current weight? ***(Record the actual weight after check-up at the end of the interview)***

    Please specify weight in Kilogram __________

13. What highest level of education have you attained?

    [1] No formal education

    [2] Vocational education

    [3] Primary School

    [4] Secondary School

    [5] Diploma Certificate (NCE/OND)

    [6] BSc/HND

    [7] Other Specify ______________________

14. Do you belong to any other support group? [1] Yes [2] No

    If yes, please specify _________________________

15. What is your current occupation? [1] Schooling [2] Self-employed [3] Unemployed [4] Petty trading [5] Other specify______________________

16. Could you please tell me, how much do you make for a living on a monthly basis?

Please specify in figure ___________________________

17. What means of transportation do you use regularly? [1] Motorcycle [2] Tricycle [3] Private car[4] Taxi [5] Bus [6] Other specify____________________________

SECTION B: Respondent's Knowledge of PPS: What do you know about PPS?

Instruction: *Please kindly provide your responses to the following questions below.* ***Fill in the blank space and circle the appropriate numeric option***

18. What is poliomyelitis?

____

19. Can you tell me three common manifestations of poliomyelitis? (i) _______________________________, (ii) _________________________________, (iii) ____

20. Have you heard of post-polio syndrome (PPS)? [1] Yes [2] No **if No, Skip to Q27**

21. What is post-polio syndrome (PPS)?

____

22. What is the major cause of post-polio conditions?

____

23. Can you tell me three common manifestations of post-polio conditions? (i) ____,

(ii)_________________________________(iii)__________________________________

24. Who are the people affected by post-polio syndrome?

____

25. Do you know that people with PPS have difficulty in regular physical activity?

[1] Yes [2] No

26. Do you know that PPS is a progressive neuromuscular disease that shows slow worsening signs or symptoms? [1] Yes [2] No

SECTION C: Prevalence of PPS among Respondents (Self Report Scale)

__Instruction:__* **To know the prevalence of PPS,** *kindly provide your responses to the following questions below.* ***__Circle the appropriate numeric option for each question.__

S/N	Questions	*Response Format* **Not at all = 1, Often = 2, Sometimes = 3, Rarely = 4, Constantly= 5**				
27.	I have a history of poliomyelitis and suffer the effects of its late-onset	1	2	3	4	5
28.	I cannot walk a long distance on my own due to my health condition	1	2	3	4	5
29.	I cannot conveniently climb a staircase on my own due to my health condition	1	2	3	4	5
30.	I find it difficult engaging in regular physical activity such as exercise, dancing or jogging	1	2	3	4	5
31.	I experience difficulty in breathing due to my health condition	1	2	3	4	5
32.	I find it difficult dressing up, when I want to step out due to my condition	1	2	3	4	5
33.	I easily feel weak and cold intolerant	1	2	3	4	5
34.	I fall down easily when the floor is wet or slippery	1	2	3	4	5
35.	I find it difficult taking my bath due to my health condition	1	2	3	4	5
36.	I find it difficult using the toilet when I am pressed	1	2	3	4	5
37.	I find it difficult sleeping at night due to my health condition	1	2	3	4	5
38a.	I find it difficult cleaning the house due to my health condition	1	2	3	4	5
b.	I find it difficult cooking due to my health condition	1	2	3	4	5
c.	I find it difficult washing my clothes due to my health condition	1	2	3	4	5
39.	Mobility is my major challenge	1	2	3	4	5
40.	I find it difficult meeting the following physical demands due to my health condition.					
a.	Job	1	2	3	4	5
b.	business/Trade	1	2	3	4	5
c.	schooling	1	2	3	4	5

41.	I experience the following due to my health condition.					
a.	increased fatigue	1	2	3	4	5
b.	muscle pain	1	2	3	4	5
c.	joint pain	1	2	3	4	5
d.	Inability to work for long hours	1	2	3	4	5
e.	Inability to meet daily demands	1	2	3	4	5
42.	I vent emotions of anger due to my health condition.	1	2	3	4	5
43.	I feel depressed due to the following:					
a.	increased fatigue	1	2	3	4	5
b.	muscle pain	1	2	3	4	5
c.	joint pain	1	2	3	4	5
d.	Inability to work for long hours	1	2	3	4	5
e.	Inability to meet daily demands	1	2	3	4	5
44.	I feel anxious due to the following:					
a.	increased fatigue	1	2	3	4	5
b.	muscle pain	1	2	3	4	5
c.	joint pain	1	2	3	4	5
d.	Inability to work for long hours	1	2	3	4	5
e.	Inability to meet daily demands	1	2	3	4	5
45.	I feel accepted by people around me due to my health condition?	1	2	3	4	5
46.	I depend on the following to cater to all my need due to my health condition.					
a.	Family	1	2	3	4	5
b.	Friends	1	2	3	4	5
C	Neighbor/assistant	1	2	3	4	5
47.	I depend on the following to cater to my personal needs alone due to my health condition.					
a.	Family	1	2	3	4	5
b.	Friend	1	2	3	4	5
c.	Neighbor/assistant	1	2	3	4	5

SECTION D: Challenges affecting respondents with PPS

Instruction: *Please kindly provide your responses to the following questions below.* ***Circle the appropriate numeric option for each question.***

S/N	Questions	Response Format			
		Never = 1, Occasionally = 2, Rarely= 3, Frequently = 4			
48.	Do you feel residual pain on the following parts of the body?				
a.	Shoulder	1	2	3	4
b.	lower back	1	2	3	4
c.	Right leg	1	2	3	4
d.	Left leg	1	2	3	4
e.	Knees	1	2	3	4
f.	Waist	1	2	3	4
g.	Wrist	1	2	3	4
h.	Right ankle	1	2	3	4
i.	Left ankle	1	2	3	4
j.	Hip	1	2	3	4
49.	Do you have difficulty sleeping at night as a result of the following?				
a.	increased joint pain	1	2	3	4
b.	Fatigue	1	2	3	4
c.	muscle cramp	1	2	3	4
50.	Do you feel neglected by the following as a result of your health condition?				
a.	Family	1	2	3	4
b.	Friends	1	2	3	4
c.	Community	1	2	3	4
51.	Do you feel differently about yourself when in public with the following?				
a.	Spouse	1	2	3	4
b.	Friend	1	2	3	4
c.	Family	1	2	3	4
52.	Do you feel anxious as a result of the following?				
a.	increased fatigue	1	2	3	4
b.	muscle pain	1	2	3	4

c.	joint pain	1	2	3	4
d.	Inability to work for long hours	1	2	3	4
e.	Inability to meet daily demands	1	2	3	4
53.	Do you feel like taking your own life as a result of the following?				
a.	increased fatigue	1	2	3	4
b.	muscle pain	1	2	3	4
c.	joint pain	1	2	3	4
d.	Inability to work for long hours	1	2	3	4
e.	Inability to meet daily demands	1	2	3	4
54.	Do you participate in the following social events?				
a.	birthday party	1	2	3	4
b.	naming ceremony	1	2	3	4
c.	religious camp meetings	1	2	3	4
d.	funeral ceremony	1	2	3	4
e.	family meetings	1	2	3	4
f.	community functions	1	2	3	4

SECTION E: Management Practices by Respondents

Part 1: Coping with the Late-Effects of PPS

Instruction: *Please kindly provide your responses to the following questions below.* ***Check [√] the appropriate option for each question and fill in the blank space provided***

S/N	Questions	Response Format	
		1= Yes	2= No
55.	Do you receive any medication when you feel joint pain?		
56.	Do you receive any medication when you feel fatigue?		
57.	Do you engage in any physiotherapy activities when you feel the following?		
a.	increased fatigue		
b.	muscle pain		
c.	joint pain		
58.	Do you smoke to suppress the following?		
a.	increased joint pain		
b.	muscle cramp		

c.	Fatigue		
59.	Do you take alcohol to suppress the following?		
a.	increased joint pain		
b.	muscle cramp		
c.	Fatigue		
60.	Are you always withdrawn from people around when you experience the following?		
a.	Pain		
b.	Fatigue		
c.	cold intolerance		
61.	Do you have an assistant or aider who constantly helps with your physical demands such as		
a.	Work		
b.	Shopping		
c.	Errands		
62a. b. c.	When you experience pain, how do you cope? Please specify____ When you experience fatigue how do you cope? Please specify____ When you cannot meet up with daily demands, how do you cope? Please specify____		
63.	Sometimes, do you pretend that the following does notexist?		
a.	Fatigue		
b.	joint pain		
c.	muscle cramp		
d.	cold intolerance		
64.	Do you seek spiritual support for the following?		
a.	increased fatigue		
b.	muscle pain		
c.	joint pain		
d.	cold intolerance		
d.	Inability to work for long hours		
e.	Inability to meet daily demands		

65.	Do you restrain from certain kind of activities when experiencing the following?		
a.	Pain		
b.	Fatigue		
c.	joint or muscle cramp		
d.	cold intolerance		
66.	What are these activities? Please specify____		

Part 2: Availability of Social Support

S/N	Questions	Response Format 1 = Yes/ 2 = NO		Types/When Please specify	**How Often?** [1] Very often [2] Regularly[3] Rarely [4] Not at all
67.	Are there any support services that you receive from the following?				
a.	State Government authority				
b.	Local Government authority				
c.	NGO				
d.	Philanthropists				
68.	Are there any means of transportation provided by the following to aid mobility for you?				
a.	State Government authority				
b.	Local Government authority				
c.	NGO				
d.	Philanthropists				
69.	Is there any form of financial incentives provided by the following to support you?				
a.	State Government authority				
b.	Local Government authority				
c.	NGO				

d.	Philanthropists				
70.	Is there any health activity initiated by the following to help improve your health?				
a.	State Government authority				
b.	Local Government authority				
c.	NGO				
d.	Philanthropists				

THANK YOU VERY MUCH FOR YOUR TIME

APPENDIX II

KEY INFORMANT INTERVIEW (KII) GUIDE

Name of Community	
Number of Participants	
Area/Location	
Date	

Introductory Remarks

Good day, my name is………. (Moderator), my colleague is ……… (Note taker). We are conducting a study on Prevalence, Health Literacy and Management of Post Polio Syndrome (PPS) among Polio Survivours in Ibadan Metropolis. The information we are collecting will help in meeting the requirement for a Master of Public Health (MPH) Degree in Health Promotion and Education. You have been selected to participate in a Key Informant Interview (KII) because we feel your opinion will help to beam light on issues affecting polio survivours in Ibadan Metropolis. We therefore, kindly request you to share your experiences/opinions on this topic. Our discussion will only last for25-30 minutes during which everyone has the liberty to orderly share their views. With your permission the discussions will be tape-recorded to help us remember the points made.

1. KNOWLEDGE OF POST POLIO SYNDROME

a. What do you know about poliomyelitis? ***(probe for their knowledge in relation to other diseases in the community)***

b. Have you heard of post-polio syndrome and where did you receive information about PPS? **(*probe for their knowledge of PPS)***

c. When do you think post-polio syndrome manifest?

d. What do you think could be cause of PPS conditions?

e. What are the common manifestations associated with PPS?

f. Who are the people most affected by post-polio syndrome and why do you think so?

g. Do you know that people with PPS have difficulty in performing any type of physical activities and why do you think so?

h. As a polio survivor, how often do you experience joint pain, fatigue, cold intolerance, muscle cramp and decreased endurance? ***(probe for frequency of occurrence)***

i. What is the pattern of muscle pain, fatigue, joint weakness and difficulty that you encounter on a daily basis?

2. ORIGIN OF ASSOCIATION

a. What informed the establishmentof Association for Persons with Disabilities? ***(probe for reasons)***

b. Is the association registered and when? ***(probe for registration date)***

c. When did you join the organization and why? ***(probe for motivation)***

d. Do you pay any fee for your membership in this organization?

e. What are the aims of the organization?
f. What are the activities performed by the organization?
g. In terms of gender, who obtains membership among the male and female survivours?
h. What does the association offer its members?

3. **CHALLENGES AFFECTING THE ORGANIZATION**

a. What are the major challenges faced by the organization?
b. How has the association been addressing these problems? ***(probe support from Local, State and NGOs)***
c. What are the major challenges faced by the members of the organization? ***(probe for common problems)***
d. Which of the challenges have the association been able to meet and how?
e. What is been done currently about the unmet needs of the association or members?
f. How does the organization finance its activities or programmes?

4. **AVAILABILITY OF SOCIAL SUPPORT**

a. Where does the organization obtain resources to fund the organization?
b. What are the support services that you receive from organizations and government authorities?
c. Do members have access to soft credits, information, assistive devices from the local and State government authorities?
d. Are there any means of transportation provided by the community, Local or State authorities to aid mobility for polio survivours? ***(probe for availability of social supports)***
e. Are there any form of financial incentives provided by the community, Local or State authorities to support polio survivours?
f. Are there any health activity or programmes initiated by the association, NGOs, Local or State authorities to help improve the health of polio survivours?
g. Are there other existing structures that can help polio survivours in maintaining good health status?
h. How can you rate these levels of social support services?
i. What is the needed support to strengthen the association and its members?

THANK YOU VERY MUCH FOR YOUR TIME

APPENDIX III

IWE IBEERE LORI ITANKALE, IMOWE ILERA ATI ISAKOSO AWON IPA ARUN ROMOLAPA ROMO LESE LAARIN AWON ALAAYE NI ILU IBADAN, NI IPINLE OYO

Eka ti igbega ilera ati ẹkọ,
Oluko ti ilera gbogbogbo,
Kọlẹji ti oogun,
Yunifasiti ti Ibadan

Oludahun mi ọwọn,

Orukọ mi ni __________________________________. Omo ile iwe ni mi ni eka ti igbega ilera ati ẹkọ, oluko ti ilera gbogbogbo, kọlẹji ti oogun, yunifasiti ti Ibadan. Mo n ṣe ikẹkọ lori **Itankale, Imowe Ilera ati Isakoso awon Ipa Arun Romolapa Romolẹsẹ Larin Awon Alaaye ni Ilu Ibadan,ni ipinle Oyo, gẹgẹ bi ara fun ọwọn amulo ẹbun ti gbogbogbo ni Ilera Awujọ iyi. Idi iwadi yii ni lati ṣe iwe akosile ati Itankale, Imowe Ilera ati Isakoso**

awon Ipa Arun romolapa romolẹṣẹ Larin Awon Alaaye. Awọn awari lati inu iwadi yii yoo ṣiṣẹ bi ipilẹ alaye lati ṣe iranlọwọ ilọsiwaju awọn ipo arun romolapa romolẹṣẹ laarin awon alaaye.

Awọn eniyan ti a yan fun iwadii yii jẹ awọn ọkunrin ati obirin ti ọjọ ori won je meji-din-logun odun ati jụ bẹẹ lọ, ti o ni itan arun romolapa romolẹṣẹ ati pe o n gbe ni agbegbe Ibadan ti kọ sẹyin ju oṣu mẹfa lo. Ikopa rẹ ninu iwadi yi gbudọ jẹ atinu wa ati awọn idahun rẹ ti o muna fun awọn idiile-ẹkọ ati pe yoo ṣe itọju pẹlu igboiya nla. Emi yoo ṣe idupe ti o ba fi ẹro mu mi ni imorun awọn idahun rẹ si awọn ibeere mi. Jọwọ ni idaju pe adaṣe yii yoo ṣiṣe laarin iṣeju arun-din-logun si ogun iṣeju ati pe o ni ominira lati da duro idahun tabi ko maa dahun awọn ibeere ti o fẹ lati dahun si.

Pelu igbanilaaye rẹ, lati bẹrẹ ijiroro, ṣe o fẹ lati kopa? Beeni ☐ Bẹkọ ☐

____________________ __________________________

ibuwọluwẹ/iteka oniroyin ati ọjọ ibuwọluwẹ/itekaoludahun ati ọjọ

Emi ni ti rẹ ni otun
Roseline N, Ezenagu
Martic No: 211288

Serial no: ☐
Interviewer Code: ☐

Oruko Agbo ile: ____

Agbegbe: (i) Agbegbe ilu ☐ (ii) Ologbelegbe ilu ☐ (iii) Igberiko ☐

<u>IPELE AKOKO:</u> Imo ni pa ni awujo

<u>Itọsọna:</u> Jọwọ farabalẹ lọ nipasẹ awọn ibeere ati awọn aṣayan O O miiran ti a pese fun o ni ọkankan ki o si yipo eyi ti oyẹ. <u>Gbogbo awon ibeere ni lati pari nipase oniroyin pelu idahun lati odo awon oluko.</u>**(Yika awọn aṣayan ti o yẹ ki o si kun aye ti haa pese).**

Lati bẹrẹ, maa fẹ lati beere diẹ ninu awon ibeere nipa ara rẹ, jọwọ ma fara yaa bi awọn ibeere kii yoo ṣe ọ ni ibi.

1. Eya wo ni o ti wa?
   [1] Igbo [2] Yoruba [3] Hausa [4] O O miiran ṣalaye________________________
2. Ati igba wo ni o ti ngbe ni agbegbe yi?
   [1] Gangan osu kẹfa [2] Laarin ọdun kan si kaarin [3] igba ibi mi [4] ko daju
3. Esin wo ni o sẹ?
   [1] Kristeni [2] Musulumi [3] Esin abalaye [4] Mo sẹ esin kankan [5]O O miiran ṣalaye________________________

4. Ibalopọ yin? [1] Akọ [2] Abọ [3] O O miiran ṣalaye________________________

5. Kini ipo igbeyawo rẹ? [1] Mi o ti sẹ igbeyawo [2] Moti se igbeyawo [3] Alabaṣepọ [4] Afirawasile [5] Ati ko ra wa sile [6] O miiran ṣalaye________________________

6. Iru idile wo ni ile yin jẹ? [1] Ile oni iyawo kan [2] ile oni iyawo meji tabi pupọ

7. Melo ni awọn iyawo tabi ọkọ ti o ni? **If Single, skip to Q9**

   Jọwọ salaye ni nọmba _________________

8. Melo ni awọn omo ti o ni?

   Jọwọ salaye ni nọmba _________________

9. Eniyan melo ni o baa ngbe ati on baa jẹun papọ? Jọwọ salaye ni nọmba

   ____

10. Omo odun melo ni yin sin? ***(Sẹ akosile ọjọ ibi ikehin)***

    Salaye ọjọ ori ni odun ________________________

11. Omo odun ni o wa nigba ti o kọkọ ni arun roparosẹ?

    Salaye ọjọ ori ni odun________________________

12. Kini iwuwo rẹ lọwọlọwọ?***(Ṣe akosile iwuwo gangan lẹhin ayẹwo ni ipari ijomitoro)***

    Salaye iwuwo ni kilo _________________________

13. Kini ipele ti eko to ga ju ti o ni?

    [1] E mi ko ka iwe Bẹkọ

    [2] E mi lo kosẹ

    [3] ile-ẹkọ iwe kekere

    [4] ile-ẹkọ Sẹkọndiri

    [5] iwe-ẹri diploma

    [6] ile-ẹkọ giga

    [7] O O miiran ṣalaye________________________

14. Kini ipo iṣẹ oojọ rẹ? [1] Mon kawe lowolowo [2] osise fun ara ẹni [3] alainiṣẹ [4] Oni isowo

    [5] O O miiran ṣalaye________________________

15. Nje o ni awọn ajo omiran ti iwo ba ṣe papo? [1] Beeni [2] Beko

    Bi beeni, Jọwọ salaye ni nọmba _________________

16. Jowo se o le so fun mi, elo ni o paa ni oṣooṣu?

Jowo ṣalaye ni eeya________________________

17. Iru ẹẹrena wo ni iwo lo nigbagbogbo? [1] okada [2] ẹla [3] oko ti eni [4] takisi [5] bosi

[6] O O miiranṣalaye________________________

IPELE EKEJI: Imo onidahun nipa isẹ arunromolapa romolẹsẹ

Itosona: Jọwọ fi inu irele pese awọn idahun rẹ si awọn ibeere wọnyi ti o wani isalẹ. Fowọsi aaye to ṣofo ati yika awọn aṣayan nomba ti o ye fun awọn ibeere kankan.

18. Kini ni arun romolapa romolẹsẹje

____

19. Njẹ o le sọ fun mi awọn afihan mẹta ti o wọpọ ti arun romolapa romolẹsẹ? (i) _________________ (ii) ________________________________, (iii) ______________________________

20. Nje o gbo ti o ti pẹ nipa awọn ipa ti arun romolapa romolẹsẹ? [1] Beeni [2] Bẹkọ **if No, Skip to Q27**

21. Kini ipa ti arun romolapa romolẹsẹ?

____

22. Kini ohun akọkọ ti o fa awọn ipa aipẹ ti romolapa romolẹsẹ?

____

23. Nje o le so fun mi awọn afihan mẹta ti o wọpọ ti pe ibere arun romolapa romolẹsẹ? (i) ____________, (ii) ________________________________, (iii) _________________________________

24. Tani awọn eniyan ti ipa aipe ti arun romolapa romolẹsẹ kan?

____

25. Nje o mọn pe awọn eniyan ti won ni ipa aipe arun romolapa romolẹsẹwon ni iṣoro lati sisẹ aninin lara?

[1] Beeni [2] Bẹkọ

26. Nje o mon pe ipa aipe ti arun romolapa romolẹsẹjẹ arun aifọkanbalẹ iṣan ti o ṣe afihan awọn aami aisan?

[1] Beeni [2] Bẹkọ

<u>IPELE EEKETA:</u> Itankalẹ oludahun ti ipa awọn arun romolapa romolẹṣẹ s(ọrọ ara eni)

<u>Itosọna:</u> Jọwọ fi inu irele pese awọn idahun rẹ si awọn ibeere wọnyi ti o wani isalẹ. **<u>Yika awọn aṣayan nọmba ti o ye fun awọn ibeere kankan.</u>**

S/N	Awọn ibere	**1 = Bẹkọ, 2= Emi ko mọ, 3= Nekankan, 4 = Ṣọwọn, 5= Nigbagbogbo**				
27.	Emi ni itan arun romolapa romolẹṣẹati pe mọn jiya awọn ipa rẹ	1	2	3	4	5
28.	Emi o le rin ji na nitori ipo ilera mi	1	2	3	4	5
29.	Emi o le gun ibusun pẹtẹẹsi kan ni irọrun fun ra mi nitori ipo ilera mi	1	2	3	4	5
30.	O nira fun mi lati ko pa ninu awọn ise t'orukọ ti o gba lilọ apa ati ẹsẹ lọpọlọpọ bi akpẹrẹ ìjọ, ẹrẹ idara ya ati beebee ọ	1	2	3	4	5
31.	Emi ni iriri iṣoro mimi nitọri ipo ilera mi	1	2	3	4	5
32.	O nira fun mi lati sẹ imura nigba ti mo baa fẹ lati jade	1	2	3	4	5
33.	O ma tẹtẹ re mi ati pe otutu ma tẹtẹ n wọ mi lara	1	2	3	4	5
34.	Mo maa n tẹtẹ ṣuubu nigbati ilẹ baa ti tutu tabi yiyo	1	2	3	4	5
35.	O nira fun mi lati lo baluwẹ nitori ilera mi	1	2	3	4	5
36.	O nira fun mi lati lo ile-igbọnsẹ nigba ti mo baa fẹ ya igbẹ	1	2	3	4	5
37.	O nira fun mi lati sun ni alẹ nitori ipo ilera mi	1	2	3	4	5
38a.	O nira fun mi lati tọju ile nitori ipo ilera mi	1	2	3	4	5
b.	O nira fun mi lati fọṣọ mi nitori ipo ilera mi	1	2	3	4	5
c.	O nira fun mi lati le sẹ ounje nitori ipo ilera mi	1	2	3	4	5
39..	Isipopada jẹ ipenija nla fun mi	1	2	3	4	5
40.	O nira fun mi lati dóju kọ awon ise sise yii ni ojojumọ nitori ipo ilera mi					
a.	sisẹ	1	2	3	4	5
b.	Lo ile eko	1	2	3	4	5
c.	iṣowo	1	2	3	4	5
41.	Mo ni iriri awon nkan wonyi nitori ilera mi					

a.	rirẹ lemọ lemọ	1	2	3	4	5
b.	Irora iṣan	1	2	3	4	5
c.	irora rikiki ara	1	2	3	4	5
d.	idinku ìfaradá	1	2	3	4	5
e.	Idinku iṣẹ	1	2	3	4	5
42.	Mo maa nkanra lọpọlọpọ nitori ipo ilera mi	1	2	3	4	5
43.	Awon nkan wonyi maa n fa ironu fun mi lọpọlọpọ					
a.	rirẹ lemọ lemọ	1	2	3	4	5
b.	Irora iṣan	1	2	3	4	5
c.	irora rikiki ara	1	2	3	4	5
d.	idinku ìfaradá	1	2	3	4	5
e.	Idinku iṣẹ	1	2	3	4	5
a.	rirẹ lemọ lemọ	1	2	3	4	5
44.	Mo ni aibalẹ okan nitori awọn nkan wonyi					
a.	rirẹ lemọ lemọ	1	2	3	4	5
b.	irora iṣan	1	2	3	4	5
c.	irora rikiki ara	1	2	3	4	5
d.	idinku ìfaradá	1	2	3	4	5
e.	Idinku iṣẹ	1	2	3	4	5
45.	Mo se aikiẹẹsi pe awon eniyan la yika mi gba mi mo ara nitori ipo ilera mi	1	2	3	4	5
46.	Mo gbarale wonyi lati gbo bukata fun gbogbo aini mi nitori ilera mi					
a.	Idile/ebi	1	2	3	4	5
b.	Ore timotimo	1	2	3	4	5
47.	Mo gbarale awon wonyi fun awọn aini ti ara eni nikan nitori ilera mi					
a.	Idile/ebi	1	2	3	4	5
b.	Ore timotimo	1	2	3	4	5

IPELE EEKERIN: Awọn italara oludahun ti o n ba awọn eniyan ti o ni awọn ipa arun romolapa romolẹṣẹ

Itọsọna: Jọwọ fi inu irele pese awọn idahun rẹ si awọn ibeere wọnyi ti o wani isalẹ. **Yika awọn aṣayan nọmba ti o ye fun awọn ibeere kankan.**

		Ọna esi

S/N	Awon ibeere	**[1] = Rara [2] = Leralera [3] = Sọwon [4] = Lekankan**			
48.	Se o maa ni irora le kankan ni awọn eyara wonyi?	1	2	3	4
a.	Ejika	1	2	3	4
b.	isalẹ ẹhin	1	2	3	4
c.	ẹsẹ ọtún	1	2	3	4
d.	ẹsẹ osi	1	2	3	4
e.	Orokun	1	2	3	4
f.	ẹgbẹ-ikun	1	2	3	4
g.	Orún ọwọ	1	2	3	4
h.	Otun-orun ẹsẹ	1	2	3	4
i.	Osi-orun ẹsẹ	1	2	3	4
j.	Ibadi	1	2	3	4
49.	Se oni iṣoro aile sun oorun ni alẹ nitori awọn nkan wonyi?				
a.	pipọ si irora	1	2	3	4
b.	rirẹ	1	2	3	4
c.	Isan ririro	1	2	3	4
50.	Nje awon wonyi ma a n kpaeti nitori aisun re?				
a.	Idile/ebi	1	2	3	4
b.	Ore timitimo	1	2	3	4
c.	Ara adugbo	1	2	3	4
51.	Nje o ri ara re gege bi alabọ ara nigbati o baa wa ni gbangba pẹle awọn wonyi?				
a.	Oko tabi iyawọ	1	2	3	4
b.	Ore	1	2	3	4
c.	Ebi	1	2	3	4
52.	Se o ni aifọkanbalẹ nitori awọn atẹle yii?				
a.	rirẹ lemọ lemọ	1	2	3	4
b.	Irora iṣan	1	2	3	4
c.	irora rikiki ara	1	2	3	4
d.	idinku ìfaradá	1	2	3	4
e.	Idinku iṣẹ	1	2	3	4
53.	Se o lero lati gbemi ara re nitori awọn nkan wonyi?				

a.	rirẹ lemọ lemọ	1	2	3	4
b.	Irora iṣan	1	2	3	4
c.	irora rikiki ara	1	2	3	4
d.	idinku ìfaradá	1	2	3	4
e.	Idinku iṣẹ	1	2	3	4
54.	Se o maa n kopa ninu awọn iṣẹlẹ awujọ wonyi?				
a.	Ajodun ojo ibi	1	2	3	4
b.	Ayeye isomo loruko	1	2	3	4
c.	Ipade ibudó esin	1	2	3	4
d.	ayẹyẹ isinku	1	2	3	4
e.	Ipade idiile/ebi	1	2	3	4
F	iṣẹ agbegbe	1	2	3	4

<u>IPELE EKARUN</u>: Awọn iṣe iṣakoso nipaṣe awọn oludahun
APA KAN: ifarada pẹlu awọn ipa arun romolapa romolẹṣẹ

<u>Itọsọna: </u>Jọwọ fi inu irele pese awọn idahun rẹ si awọn ibeere wọnyi ti o wani isalẹ. **<u>Ṣayewo awọn aṣayan ti o yẹ fun awọn ibeere Kankan ki o kun aaye ti o ṣofo ti a pese</u>**

S/N	Awọn ibeere	Ọna esi	
		1 = Beeni	2 = Bẹkọ
55.	Se o gba oogun tabi itọju ailera kankan nigbati o ba ni irora rikiki ara		
56.	Se o gba oogun tabi itojụ ailera kankan nigbati o ba n re lẹmọ lẹmọ		
57.	Se o n ṣe awọn itọju atunse fisiki nigbati o ba ni awọn nkan wonyi?		
a.	rirẹ lemọ lemọ		
b.	Irora iṣan		
c.	irora rikiki ara		
d.	idinku ìfaradá		
e.	Idinku iṣẹ		
58.	Se o n mu siga lati dinku awọn nkan wonyi?		

a.	pipọ si irora		
b.	rirẹ		
c.	Isan ririro		
59.	Se o mu oti lati dinku awọn nkan wonyi?		
a.	pipọ si irora		
b.	rirẹ		
c.	Isan ririro		
60.	Nje o maa n fati kurọ larin awọn eyan ti o wa nitosi nigbati ti o ba ni awọn nkan wonyi?		
a.	pipọ si irora		
b.	rirẹ		
c.	Otutu airiri		
61.	Se o ni oluranlọwọ kan ti o ṣe iranlọwọ fun ọ nigbagbogbo pelu awọn ini ti ara wonyi?		
a.	iṣe		
b.	Ojaa		
c.	Iji ṣe		
62a. b. c.	Nigba ti o ba ni irora, kini o maa n se? Jọwọslaye____ Nigba ti o ba ree, kini o maa se? Jọwọslaye____ Nigba ti o ba ni idinku iṣẹ, kini o maa n se? Jọwọslaye______________________________________		
63.	Nigbamiran, ṣe o dibo pẹ awọn nkan wonyi kosi ṣele		
a.	pipọ si irora		
b.	rirẹ		
c.	Isan ririro		
d.	Otutu aile gbasara		
64.	Nje o maa n wa atilẹyin ti ẹmi fun awọn nkan wonyi		
a.	rirẹ lemọ lemọ		

b.	Irora iṣan		
c.	irora rikiki ara		
d.	idinku ìfaradá		
e.	Idinku iṣẹ		
65.	Nje o maa yera fun awọn iṣẹ kan nigbati o ba ni iriri awọn nkan wonyi bii?		
a.	Irora		
b.	Rire		
c.	irora rikiki ara ati irora iṣan		
d.	Otutu aile gbasara		
66.	Kini awọn iṣe yii? jọwọn salaye ____		

APA KEJI: Wiwa ti atilẹyin awujọ

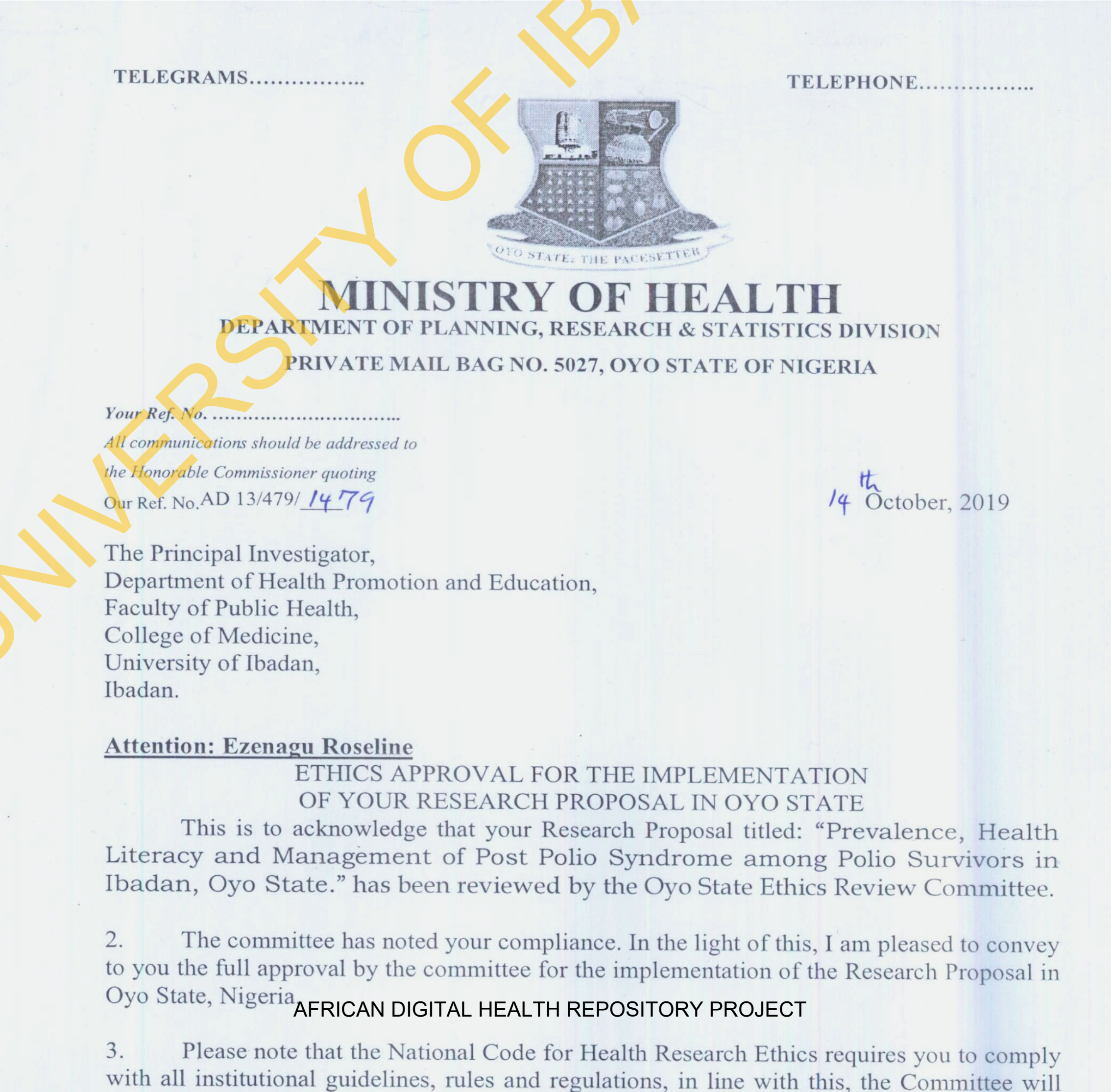
Itọsọna: Jọwọ fi inu irele pese awọn idahun rẹ si awọn ibeere wọnyi ti o wani isalẹ. **Ṣayẹwo awon aṣayan ti o yẹ fun awọn ibeere Kankan ki o kun aaye ti o ṣofo ti a pese**

S/N	Awon ibeere	Ọna esi 1 = Beeni / 2 = Bẹkọ		oriṣi/nigbawo Jọwọ salaye	Bawo ni o ṣe n waye si [1] leraleara [2] Sọwon [3] lekankan [4] Rara
67.	Nje o ni awọn atilẹyin kankan ti o n gba awon wonyi?				
a.	Ijoba ipinle				
b.	Ijoba ibile				
c.	Egbe alailere				
d.	Eleyinjuanu				
68.	Nje o ni iranlọwọ kankan fun iṣipopada re ni ọdọ awon wonyi??				
a.	Ijoba ipinle				
b.	Ijoba ibile				
c.	Egbe alailere				
d.	Eleyinjuanu				

69.	Nje o ri iranlowo owo kankan gba fun atilẹyin re lati owo awon wonyi?				
a.	Ijoba ipinle				
b.	Ijoba ibile				
c.	Egbe alailere				
d.	Eleyinjuanu				
70.	Nje o ni iṣẹ ilera kankan nipaṣe egbe alailere pẹsẹ lati ṣe iranlọwọ lati mu ilera rẹ pọ si?				
a.	Ijoba ipinle				
b.	Ijoba ibile				
c.	Egbe alailere				
d.	Eleyinjuanu				

O ṣeun pupọ

APPENDIX IV



TELEGRAMS................. TELEPHONE.................

MINISTRY OF HEALTH

DEPARTMENT OF PLANNING, RESEARCH & STATISTICS DIVISION

PRIVATE MAIL BAG NO. 5027, OYO STATE OF NIGERIA

Your Ref. No. ....

All communications should be addressed to
the Honorable Commissioner quoting
Our Ref. No.AD 13/479/ 1479

14th October, 2019

The Principal Investigator,
Department of Health Promotion and Education,
Faculty of Public Health,
College of Medicine,
University of Ibadan,
Ibadan.

Attention: Ezenagu Roseline

ETHICS APPROVAL FOR THE IMPLEMENTATION
OF YOUR RESEARCH PROPOSAL IN OYO STATE

This is to acknowledge that your Research Proposal titled: "Prevalence, Health Literacy and Management of Post Polio Syndrome among Polio Survivors in Ibadan, Oyo State." has been reviewed by the Oyo State Ethics Review Committee.

2. The committee has noted your compliance. In the light of this, I am pleased to convey to you the full approval by the committee for the implementation of the Research Proposal in Oyo State, Nigeria

3. Please note that the National Code for Health Research Ethics requires you to comply with all institutional guidelines, rules and regulations, in line with this, the Committee will

APPENDIX V

PHOTOGRAPHS TAKEN WITH RESPONDENTS AND PARTICIPANTS DURING DATA COLLECTION ACTIVITIES

Photo 1:

A cross-section of respondents (polio survivours) and the principal investigator (right) in Oja-Agbo, Ibadan North-East

Photo 2: Principal investigator and a respondent in Ibadan North LGA

Photo 3& 4

[redacted]

[redacted]

A key informant interview with a cluster coordinator and a respondent in Ibadan North and Ibadan North-East L.G.A respectively

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

*Photo 5:*A cross-section of respondents (polio survivours) and principal investigator in Yemetu/Sabo communities respectively

Photo 6& 7:

[redacted]

A photo of principal investigator with a respondent in Oke-parde, Ibadan North-West L.G.A

Photo 8

[redacted]

A photo of principal investigator, respondent and key informant in Yemetu-Igansu Community, Ibadan North

Photo 9 & 10:
Principal investigator with respondents from Oke-Ado Ibadan South-West LGA

Photo 11 & 12
Principal investigator with respondents from Mapo community, Ibadan South-East LGA