

**UNIVERSITY OF KWAZULU-NATAL**  
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**SCHOOL OF NURSING**

Exploring nurses' knowledge on the antipsychotic medication management in inpatient  
Psychiatric settings in Rwanda.

(A Dissertation Submitted in partial fulfilment of the requirements for the Coursework Masters  
in Nursing Management)

By

Marie Claire Gasanganwa

Student number: 209510755

Supervisor: Mrs Nondumiso Shangase

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## **List of abbreviations**

**CATIE:** Clinical Antipsychotic Trial for Intervention Effectiveness

**CINAHL:** Cumulative Index to Nursing and Allied Health Literature

**DSM IV:** Diagnostic and Statistical Manual of Mental Disorders

**ECG:** Electrocardiography

**Md:** Median

**MEDLINE:** Medical Literature Analysis and Retrieval system

**MSH:** Management of Sciences for Health

**PTSD:** Post Traumatic Stress Disorder

**SANC:** South African Nursing Counsel

**USAID:** United States Agency for International Development

**WHO:** World Health Organization

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## **Declaration**

I, GASANGANWA Marie Claire, declare that this dissertation titled “Exploring nurses’ knowledge on the antipsychotic medication management in inpatient psychiatric settings in Rwanda.” is my original work. It has never been submitted for any other purpose, or at any other University. I also declare that sources of information utilized in this work have been acknowledged in the reference list.

Mrs GASANGANWA Marie Claire  
(209510755)

Date

Mrs NONDUMISO Shangase  
(Research Supervisor)

Date

## **Dedication**

This dissertation is dedicated to my lovely husband Edmond DUFATANYE, to my lovely daughters Ellyn Melinda GANZA and Louna Meganne GASARO for all their love, support and encouragement.

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## **Abstract**

The antipsychotic medications are recognized to be a crucial treatment for mental illnesses and frequently used in psychiatric settings. They are also recognized to produce a number of adverse effects that compromise a patient's compliance and may lead to longer stay or re-admission. Nurses are in the best position to ensure medication management as they spend 24 hours at the bedside, administer and ensure patient surveillance. This role requires knowledge on psychopharmacology especially of the medication frequently used. However, literature highlights the lack of knowledge on psychopharmacology of nurses.

This study therefore, aimed to assess nurses' level of knowledge on antipsychotic medication, to determine nurses' knowledge on antipsychotics' health education and to determine characteristics associated to nurses' knowledge on medication for nurses working in inpatient psychiatric hospital in Rwanda. Nursing management of drug therapy (Aschenbrenner and Venable, 2009:2) was used as theoretical framework.

A non-experimental exploratory quantitative cross sectional survey design that is descriptive in nature was used to describe, firstly participants' score and level of knowledge and secondly associations of demographic data and knowledge score. A convenient sample of 73 nurses was given an anonymous questionnaire. The population included nurses working in inpatient psychiatric hospital in Rwanda

The mean score knowledge on therapeutic effects was  $72.85 \pm 14.99$ ;  $81.91 \pm 16.88$  mean score knowledge on antipsychotic name;  $38.61 \pm 12.38$  mean score knowledge adverse effects;  $83.75 \pm 22.75$  mean score knowledge on patient compliance monitoring and  $74.54 \pm 32.52$  mean score knowledge on patient and family education practices. The overall mean score knowledge was  $68.04 \% \pm 11.53$  and the majority of participants falls between 50- 74% (65.8%, n=48). There was no association of knowledge and experience, training and age. However, the association with qualification yield statistically significance (P-value=0.010).

The results for this study suggest that nurses have medium knowledge on antipsychotic medication management. This study sustains the need for additional depth and breadth

pharmacological education for nurses in clinical settings focusing on commonly used medications.

# **1. Chapter one: Introduction**

## **1.1 Introduction and Background to the study**

Mental disorders continue to be a major public health problem worldwide. World Health Organisation (WHO, 2009:4) estimated that 450 million people worldwide were suffering from a mental health disorder, about 10% of adults were experiencing a mental health disorder and 25% was estimated to develop one at some point of time during their period of life. In all countries, developed and developing, all population, men and women at all stage of development, mental health problems can be found. In 2009 Mental health disorders were estimated to be 13% of global burden disease and projected to 15% by 2030 (WHO, 2009:2).

It is reported that in low and middle-income countries approximately four out of five people are in need of mental health service but do not receive them. If offered, they are often not of high quality and interventions are not evidence based (WHO, 2010: 4). Schaal and Elbert (2006: 103) denoted that a large proportion of the Rwandan population is likely to experience durable mental health problems as a consequence of the Genocide. Schizophrenia and other psychotic disorders constitute the second cause of consultation (31.75%) after neurological disorders (38.5%) at Ndera hospital (Ministry of health, ((MOH), 2010: 143). Munyandamutsa and Mahoro (2009) found that the prevalence of Post-Traumatic Stress Disorder in general, Rwandan population was estimated to be 28.54%. Literature highlights the presence of psychotic symptoms in people experiencing PTSD (Morrison et al., 2003: 335, Gaudiano and Zimmerman, 2010, Mueser et al., 2010).

In United States psychiatric illnesses have been found to be the cause of a large percentage of national in patient hospitalization. It is estimated that more than a quarter of all admission in hospitals are for psychiatric hospitalization (Rothschild et al., 2007: 160). Literature stresses that hospitalization in psychiatric hospital is linked to the nature of illness and the treatment received. The exploration of the relationship between duration of the first hospital admission and rate of readmission in psychiatric hospitals revealed that with long stay, patients have near total remission of symptoms, better insight into his illness, better follow up in treatment and

adequately performed psycho education (Vasudeva et al., 2009: 283). It was therefore indicative that long stay at the first admission would reduce readmission rate.

In the treatment of inpatients with schizophrenia and other psychotic disorders, the antipsychotic drugs are globally recognized as a crucial component of treatment and it is mainly the nurses' responsibility to administer those medications (Duxbury et al., 2010: 53). The effectiveness of antipsychotic drugs is irrefutable in reducing symptoms of psychotic diseases (Huang et al., 2009:401). However, all groups of antipsychotic medication have shown to give moderate improvement in psychosocial functioning (Swart et al., 2007: 433) and require adjunction of psychosocial rehabilitative interventions (Swart et al., 2007:434, Uys and Middleton, 2004). Moreover, the side effects can also be hampering that they lead to poor adherence and setback and contributing to stigma and discrimination (Jones and Jones, 2008:50).

Nowadays, the psychiatric treatment in term of pharmacology has improved with the development of new drugs which have shown to be extremely effective in managing many acute and chronic mental illnesses (Rothschild et al., 2007: 156).The meta-analysis study on new antipsychotics versus first generation has shown that many of new drugs are more efficacious than the first generation drugs in the main domains (Leucht et al., 2009: 36). However, the literature underlined the effectiveness and cost effectiveness of some first generation drugs (perphenazine) over the new ones (Stroup and Liberman, 2010:57).

In clinical practice antipsychotic drug choice depends mostly on adverse effect profile. The first generation antipsychotic has been associated with the lack of compliance due to extra pyramidal adverse effects (Jones et al., 2006 :26). However, it is stressed that the new generation of antipsychotics present life threatening metabolic side effects that may also hinder patient adherence to medication (Hodge and Jespersen, 2008:2). It is urged to regularly monitor effectiveness and safety issues related to adverse effects of antipsychotic medication in order to evaluate patient's tolerability to medication and to promote patients' compliance (Davies et al., 2010:105).

It is proved in literature that nurses are the cornerstone in medication administration not simply giving medication but more than procedural practice. People suffering from psychotic disorders do require interventions to help them take medication and nurses need the skills to communicate

with patients, observe and monitor the adverse effects in order to promote medication adaptation to their patients states. De Koning, Bloemen, Van Amelsvoort, Becker, Nieman, Van der Graag and Linszen (2006:440) recommend strategies to improve adherence such as social support, psycho-education, family intervention and cognitive behavioural therapy. Medication management and concordance therapy is very relevant for patients in hospital, although the realities of implementation are sadly lacking to the detriment of patient care (Jones, 2006:4). Nurses are called to manipulate medication in their daily activities. This process is composed of many stages from storage, prescription, drug administration and drug monitoring and implies the accuracy and safety to patient.

In many countries especially in Europe medication prescribing is included as a nursing role. In 2003, nurse prescriber was accepted in United Kingdom and the curriculum was adapted to ensure that nurses have required competence (Skingsley et al., 2005: 990). In low income countries the nurse prescribing role is linked to shortage of medical staff and huge curative and preventive health care needs. The nurses in Botswana independently practice in primary health care and South Africa has regularized the nurse prescribing role with recommendation to additional training (Miles et al., 2006:293). The guidelines and regulations are stated in Nursing Act 33 section 56 (South African Nursing Council, 2005:39). In Rwanda nurses prescribe medication in primary health care but also in hospitals where there is a shortage of medical staff (Shumbusho et al., 2009: 2). Even though, nurses prescribe in low income countries, this is still considered as an exceptional situation to be implemented if doctors are not available (Miles et al., 2006:292). At Ndera Neuro-Psychiatric hospital, registered nurses are allowed to work in consultation and therefore prescribe in the absence of the doctor (Iyamuremye, 2011). However, they do not prescribe in the ward.

In developed countries nurse prescribing role is coupled with innovation of new advanced nursing role (Miles et al., 2006: 291). According to Hughes (2010: 20) the mental health nurse prescribing role is a positive experience to nurses and patients and has shown its effectiveness in improvement of care. However, the qualitative study conducted by Jones (2006:9) exploring the relationship between nurses and psychiatrists in hospital psychiatric wards in regard to prescribing role revealed that the nurse prescribing role was considered as an exposure to negative outcomes as nurses were seen as lacking knowledge and competence to prescribe for

different disorders. Nakanishi, Koyama, Ito, Kurita and Higuchi, (2006: 202) underlined the collaboration between nurses and doctors about nurses' involvement in medication management to improve patients' compliance. This collaboration helps to overcome the medication errors and side effects of those medications which continue to be a significant problem in managing people suffering from psychiatric disorders.

A study conducted in the USA to evaluate medication safety in psychiatric hospitals, reported a high number of adverse effects associated with some errors which were preventable. Those errors occurred during ordering (68%) transcription (20%) and administration stage (10%) (Rothschild et al., 2007:160). Bademli and Buldukoglu (2009:360) explored oral medication management in Turkey and found out that nurses were not monitoring medication; 26.1% of nurses do not feel the need to collect data on previous medication and others do not consider checking if patient has swallowed the tablets as an important part of medication management.

It is known everywhere that psychiatric patients may refuse to take medication, refuse injection, hide the pills, reject or vomit swallowed pills and that may be challenging to a nurse who must give those medications. The medical errors in psychiatric hospitals in regard to pharmacotherapy may be associated with psychiatric patients; antipsychotic drugs and the psychiatric setting in that sense some patient may refuse to take their medications as well as lower ratios of nursing staff to patient and monitoring issues (Rothschild et al., 2007:161).

While the nature of psychiatric illness is not easy to manage, the vulnerability of patients may add to that burden. A study conducted in Denmark of child and adolescent psychiatric use of antipsychotic medication showed that akathisia, tiredness, weight gain and Parkinsonism were adverse effects manifested in children and adolescents who receive the drugs (Deurell et al., 2008:467). Sivaprasad, Hassan and Handy (2006:166) underlined that the new antipsychotic drugs cause more adverse effects to children and adolescent than in adults and those effects may be sedation, weight gain and liver function abnormalities. During pregnancy, antipsychotic medication may be associated with embryos or infant toxicity like cardiac, facial malformation, low birth weight babies and gestation impediments such as diabetes, polyhydramnios and others (Galbally et al., 2010:99). Literature highlights the complications associated with antipsychotic medications in elderly peoples. Antipsychotic drugs increases risk of falls associated with injuries undermines physical and psychological welfare which can hamper

rehabilitative process and can advance cognitive impairment for people with dementia (Hughes, 2008:34). The randomized controlled trial study about antipsychotic medication and associated death in elderly Veterans revealed that antipsychotic medication especially Haloperidol was associated with stroke, arrhythmias, thrombosis, aspiration pneumonia and thus increased mortality rate (Hollis et al., 2006:985).

It is known that medication compliance is an essential component in management of mental health problems. The literature reviewed by Fernandez, Evans, Griffiths and Mostacchi (2006:77) underlined that patient do not comply with medication when they lack knowledge, awareness and understanding of adverse effects. The non-adherence to antipsychotic medication delays the recovery process and hampers the management of mental illness as it is associated with multiple hospitalizations (Byrne et al., 2010:114). A study conducted in Nigeria exploring patient attitudes towards antipsychotic medication highlighted the association of side effects (extra pyramidal side effects) and negative attitudes such as poor compliance to medication as patients experiencing those adverse effects found drugs unpleasant and would like to stop medication especially those who are employed (Adewuya et al., 2006:210). Nevertheless, literature stresses that sometimes nurses do not perceive ensuring compliance and monitoring adverse events as an imperative part in their role (Bademli and Buldukoglu, 2009:360).

Researchers have found medication administration time as an essential occasion for engaging with patient in therapeutic relationship as a good opportunity to listen and give information related to medication to patients. Thus the quality of relationship will determine patient attitudes and adherence to the treatment (Day, 2005, Duxbury et al., 2010) . Nurses' skills in establishing interpersonal relationships, patient education and problem solving are essential to convince patients who refuse to take medication and to help them to adhere to the treatment plan (Fernandez et al. 2006;Bademli and Buldukoglu, 2009:360). According to Byrne et al. (2010:118) patients' outcome is conditioned essential by professionals' attitudes towards psychiatric medication .

The role played by mental health nurses in supporting and advising patients to adherence strategies, comprises education to patient about medication benefits and adverse effects, self-management with recognition of side effects (Fernandez et al., 2006:71). According to Kendall, Deacon-Crouch and Raymond (2007:173), one of the key functions of nurses is health education

and of the individual patient or a group of patient in order to promote and to maintain health. Health education is therefore a moral, legal and professional duty. Allowing patients to make informed choices and to feel respected is crucial regarding medication as it may permit adherence to medication and consciousness of the lifestyle changes that are necessary when taking antipsychotic drugs(Jones and Jones, 2008:50).

A study conducted in Turkey, evaluating oral medication management found that nurses were lacking specific education on psychiatric nursing and that have a huge impact on patient care (Bademli & Buldukoglu,2009; Davis et al. 2010;Schellack, 2010:203). It is recommended that nurses should collaborate with other health care professionals in identifying high risk and inefficient work processes in order to ensure efficiency and safety of medications as outcomes of better management(Bennet et al., 2006:35).

## **1.2 Problem statement**

Although medication management is sensibly well documented in developed and high income countries, there are limited studies about medication use in Rwanda. However, medicine management assessment has shown the mismanagement and lack of knowledge in the greater part of health professionals. USAID through his project called Management of Sciences for Health (MSH) assessed five general hospitals in Rwanda in regard to drugs management in order to establish a training module for health professionals. The assessment results highlighted excessive use of antibiotics, abuse of injections, inconsistency in prescription and non-existence of a national plan to rationalize use of medicines (USAID, 2006:13).

Nevertheless, the assessed hospital does not include Ndera Neuro Psychiatric hospital as the only psychiatric hospital managing the majority of antipsychotic medication in the country. Thus, there is little known knowledge about management of antipsychotic medication. Even though, the admission, treatment and hospital discharge have been objects of criticism, hospital care continues to be the keystone of psychiatric services. The medication of psychiatric illnesses can be prescribed for a long period and sometimes for the rest of a person's life and that requires knowledge and experience, foundation of the development of health professionals' skills to medication matters (Harris et al., 2009:113).

Nurses play a key role in medication management as they interact with patients administer, monitor their medication record information used to evaluate and improve patient outcomes (Byrne et al., 2010:115). However, literature highlights the low level of autonomy for nurses and thus waiting for the doctors for decision making, for example, giving sedative injection in a critical case (Koukia et al., 2009:331). It is argued that adverse effects of antipsychotics are challenging for nurse managers due to diverse pressures on the services. Jordan, Jones and Sergeant (2009:182) stressed that nurses managers encounter various service demands and the monitoring of physical health for people with mental disorders may not be given the consideration it deserves.

At Ndera Neuro-Psychiatric hospital, especially in acute wards , the side effects are present and patients are hospitalized within a short period after discharge (Ndera Neuro-Psychiatric hospital, 2011:4). Literature reviewed in regard to the management of medication process as opposed to outcomes noted the relationship between professional lack of training in medication use and patient ‘manifestation of medication side effects (Maidment et al., 2006:412). As mentioned above, it seems there is lack of research conducted in Africa particularly in Rwanda to assess medication use particular antipsychotic medication.

This study therefore focuses on nurses’ knowledge on psychotropic medication use, specifically antipsychotic medication, at Ndera Neuro psychiatric hospital to determine factors associated with nurses ‘knowledge.

### **1.3 Purpose of study**

To explore nurses’ knowledge of medication management specific to antipsychotic medication and factors associated with knowledge.

### **1.4 Research objectives**

1. Assess nurses’ level of knowledge on antipsychotic medication.
2. Determine nurses’ knowledge on antipsychotics’ health education.

3. Determine characteristics associated to nurses' knowledge on medication.

## **1.5 Research questions**

1.1. What is nurses' knowledge of antipsychotic medication therapeutic effects?

1.2. What is nurses' knowledge of typical and atypical antipsychotic medication risk and benefits?

1.3. What is nurses' knowledge of the benchmarked monitoring practices of a patient taking antipsychotic medication?

1.4. Which characteristics associated with nurses' knowledge on psychotic medications?

## **1.6 Significance of the study**

Mental health and neurological disorders constitute 14% of global diseases burden and nearly three quarters of this burden take place in low and middle-income countries and the existing resources are scarce leading to treatment gaps of more than 75 % (WHO, 2010). In Rwanda the burden is suggested to be greater due to the Genocide and thus knowledge of psychotropic medication that reflects recommends best practice as essential to quality care.

The findings of this study would add to the limited body of knowledge about the medication management in psychiatric patients in Rwanda. Since little is known about medication management in Rwanda, this study might serve as a basis for future pharmacological and nursing research in the area, thus increasing the comprehension of the issue and facilitating the development of treatment protocols. This will contribute to WHO initiative to improve quality of care rendered to individuals and families suffering from mental disorders.

In Rwanda nurses are expanding their role to include medication prescription and management. Thus findings of this study might be used to assist nurses working in this setting to be aware of the knowledge gaps and identify training needs. The results of this study may also be used by the

nursing school to evaluate the knowledge gaps of their graduates and adapt a curriculum accordingly.

The findings of this study may also help nurse managers at Ndera Neuro- Psychiatric hospital in planning training and management of antipsychotic medications. The findings of this study may be used by the school of nursing to adjust and design the nursing curricula in regard to medication.

The findings of this study might impact positively on clinical practice by increasing awareness of adverse events and strategies to monitor them. The promotion of best practices for patient safety may be results of this study.

It is therefore anticipated that the study findings will help in influencing the development of appropriate policies, standards, plans and intervention programmes for the management and treatment of psychiatric illnesses settings. This in turn, might improve the quality of care for people suffering from mental health disorders.

## **1.7 Definition of concepts.**

### **1.7.1 Nurse:**

A nurse is a person who is especially prepared in the scientific basis of nursing and who meets certain prescribed standards of education and clinical competence to provide services that are essential to promote, to maintain and restore health and wellbeing (Dolrland, 2007). In this study the nurse will be every person who works at Ndera hospital, with nursing education recognized by the Rwandan nursing and midwives council.

### **1.7.2 Knowledge:**

It is an understanding of information about a subject which a person get by experience or study and which is either in a person's mind or through general knowledge (Cambridge University, 2008). In this study knowledge means nurses' understanding of antipsychotic medication and their use.

### **1.7.3 Antipsychotic medication:**

Medication used to treat the diagnoses of psychosis and severe behavioural problems (Dorland, 2007:110). In this study the antipsychotic medication means all the medication used at Ndera hospital which meet international classification as antipsychotic medication. These medications are also called Neuroleptic medications or anti schizophrenic drugs (Schellack, 2010:102).

#### **1.7.3.1 Classical or typical antipsychotic:**

Typical antipsychotics (sometimes referred to as first generation antipsychotics) are the older medication used to treat psychotic symptoms(Purse, 2009). For this study, the classical antipsychotics used at Ndera Neuro-Psychiatric hospitals were explored.

#### **1.7.3.2 Atypical antipsychotic:**

Atypical (referred to as second generation) conveys simplistically the sense of antipsychotic that are different in some advantageous manner from conventional or typical agents (Grunder et al., 2009:199). The object of this study explored knowledge of this group.

### **1.7.5 Adverse effect:**

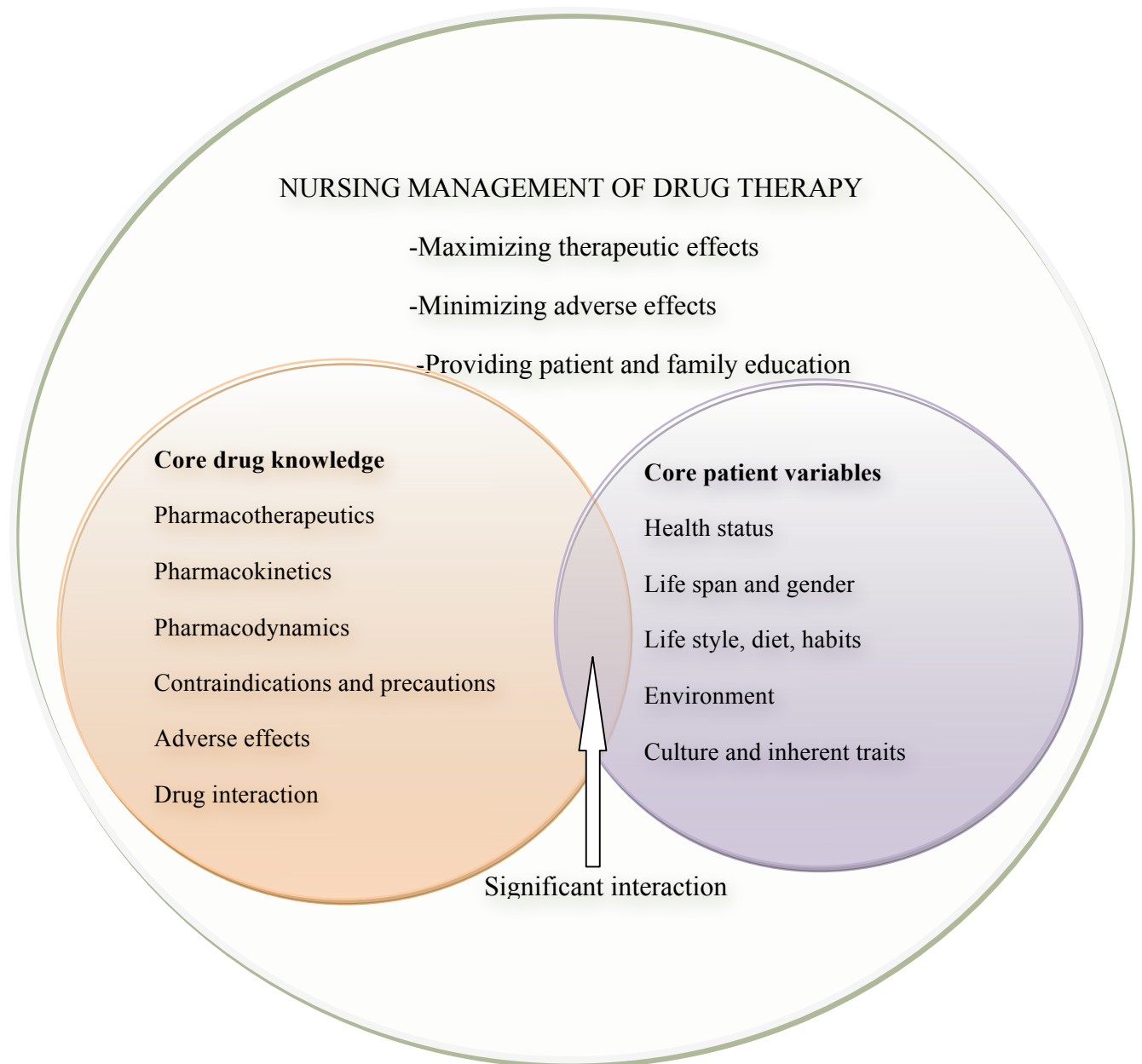
Adverse effect is defined as a harmful or abnormal result of medication. An adverse effect may be caused by administration of a medication or by exposure to a chemical and be indicated by an untoward result such as illness or death (McCreary and Jones, 2010:517). In this study adverse effect is related to extra pyramidal, metabolic, endocrinal, cardiac adverse events and other adverse events manifested by patients after administration of antipsychotic medication.

### **1.7.6 Medication process:**

Medication process is defined as medication ordering transcription, dispensing, administration and discharge summaries (Lisby et al., 2005:16, Hertzum, 2010:648). For this study medication process means the nurses' interventions in medication management including prescribing, administration, responding to and reporting adverse effects and therapeutic effects – psycho education and recording.

## 1.8 Conceptual framework

The knowledge on medication framework by Aschenbrenner and Venable,(2009:2) shaped and influenced this study.



**Figure1.1 Conceptual framework**  
(Aschenbrenner and Venable, 2009:3).

The management of medication for people with mental illness, mental health nurses have a fundamental role. According to Duxbury et al., (2010:675) the nurse who administers medication must ensure the correct identity of a patient, correct medication, assess client conditions, effectiveness of medication and ensure patient surveillance. This assignment demand nurses to be knowledgeable about drug and patient status in order to maximize therapeutic effect of medication and to minimize the adverse effect with provision of education to family and patient (Aschenbrenner and Venable, 2009:2).

Nurses use a specific body of drug knowledge in planning, implementing and evaluation of patients care. According to Aschenbrenner and Venable (2009:2) to ensure quality management of medication nurses must possess essential knowledge about medication and about patient personal history.

## **1.8.1 The core drug knowledge**

### **1.8.1.1 Pharmacotherapeutics**

Pharmacotherapeutics mean the desired, therapeutic effect of medication. Awareness of wanted therapeutic effect enables nurses to describe the effect of drug in patients and that help to determine the effectiveness of medication (Gutierrez and Queener, 2003:15). Therefore, the nurses must have cognitive understanding of the purpose of prescription or indication of medication given (Aschenbrenner and Venable, 2009:52). In this study, the nurses' knowledge about different classification and indication of antipsychotic medication were explored.

### **1.8.1.2 Pharmacokinetics**

Pharmacokinetics refers to the change that occur to the drug while it is inside the body Aschenbrenner and Venable(2009:41). The presence of medication in the body fluids or tissues in free or available form, determine its effectiveness but the medication have different abilities to produce an effect and to penetrate the site of action (Gutierrez and Queener, 2003:6). The concept of pharmacokinetics was addressed in different ways to administer the antipsychotic medication.

### **1.8.1.3 Pharmacodynamics**

Pharmacodynamics is defined as the study of physiological and biochemical interaction of drug molecules with the target tissue that is responsible for ultimate drug effects (Meyer and Quenzer, 2005:21). According to Miyamoto, Duncan and Lieberman (2005:82), one antipsychotic medication may have multiple sites of action such as dopamine receptors, serotonin receptors, or others receptors with increased effectiveness on different symptoms or increased adverse effects. Aschenbrenner and Venable, (2009:41) urged that nurses must possess knowledge on how medication administered act on the patient' body. The knowledge on the physiological, psychological and biochemical effect of medication were assessed in this study.

### **1.8.1.4 Contraindications and precautions**

The management of medication requires being aware of conditions under which a given medication should not be given or must be administered with careful monitoring. Healey (2009:26) stressed on immense usefulness of antipsychotics medication. However, he urged for proper use considering their limitations in certain circumstances such as old age, and pregnancy.

### **1.8.1.5 Adverse effects**

According to Clarke (2008:346), the detection and minimization of medication' adverse effects will depend on mental health nurse ability to assess and give information on patients' risk and development of adverse effects. The medication side effects may result in allergy or idiosyncratic response or organ toxicity. The introduction of medication into the body may on one hand cause the immune system response and that reaction engages the discharge of histamine with the allergic symptoms and on the other hand cause the strange effect opposing the intended one (Aschenbrenner and Venable, (2009:55). This study explored nurses' knowledge on identification and monitoring of adverse effects of antipsychotic medications.

### **1.8.1.6 Drug interaction**

Antipsychotic medication may increase the action of other medications and vice versa, on the other hand the effectiveness of medication may be reduced in concomitance with other

medication (Gutierrez and Queener, 2003: 295). Thus medication interaction may be positive in that sense medication X increase therapeutic effect of medication Y or when it decreases the adverse effects. However, the interaction becomes negative when one medication decreases the effectiveness of others or potentiates the adverse effects (Aschenbrenner and Venable, (2009:58).

### **1.8.2 Knowledge on patient variables**

The prescription and administration of medication imply the acquaintance of the person who will take this medication. This cognizance must go beyond patient identification with depth understanding on what brought him to seek care and what his/her historical background is. The awareness of history of present disease, health history and life span, cultural and social considerations is very crucial in medication initiation. The physical examination must be done in order to detect the untold medical problems (Gutierrez and Queener, 2003: 295, Aschenbrenner and Venable, 2009:52).

## **1.9 Conclusion**

The aim of this chapter was to highlight the background to the problem of antipsychotic medication management in psychiatric hospitals. It was noted that antipsychotic medication are essential therapy in management of mental illnesses. However, their adverse effects may compromise the patients' compliance. The nurses are in a better position to manage those medication issues and promote patients' wellness and demand for knowledgeable and skilled enough in medication administration. The aim, objectives, research questions and conceptual framework have been presented and discussed. The conceptual framework highlighted that management of medication aim to reduce symptoms with maximization of therapeutic effects of drug, minimizing adverse effect and providing education to patients and their families. However that requires knowledge on how medication work and patients' state. This next section explores literature review on antipsychotic medication and nursing role in medication management.

## **2. Chapter two: Literature review**

### **2.1 Introduction**

Antipsychotic medications have been a subject of study for different researchers. It is essential to review and compare the prior findings in order to explore gaps that need further research. This section reviews some of the current literature with respect to medication management in psychiatric nursing and its impact on medication outcomes. To search for the literature different on-line data base were used including MEDLINE-Ebscohost, MEDLINE-PubMed, CINAHL, Cochrane library, BioMED Central, Science direct, Africa wide info , LWW Journal @ OVID full text and the following search terms were used “antipsychotic medication and nurses”, “antipsychotic management in psychiatric hospital”, “nurses knowledge and antipsychotic medication”, “antipsychotic medication outcomes”.

### **2.2 Nurse’s pharmacological knowledge**

In their daily activities nurses manipulate the medication. They are thus required to possess the necessary knowledge and skills in pharmacology. It is evident that in drug therapy nurses are the backbone in the implementation and evaluation of outcomes, contributing to quality medication management (Bullock and Manias, 2002:14). Nevertheless, literature highlights nurses’ lack of knowledge in medication(Simonsen et al., 2011:9) such as prescribing (Sodha et al., 2002:313), administration (Lexshimi et al., 2009:21).

#### **2.2.1 Nurses educational preparation to their role.**

According to Trnobraski (1993 in King (2004:393) nursing profession strongly emphasize on caring rather than curing thus giving little importance on the medical model which only stresses on disease. In regard to medication management, the nurses’ uncertainty of their scope has been observed, even questioning if monitoring of adverse effects is within their role (Dilles et al., 2010:1076). Pharmacology is considered as biological science and it is revealed that in academic

processes, the biological sciences are branded as complicated by students and therefore are escaped or neglected (King, 2004:393).

In a study by King (King, 2004:395), students reported low levels of pharmacology knowledge attributed to low level of teaching. They highlighted little time, lack of course structure and insufficient content. Manias & Bullock (2002:15) stressed the difficulties experienced by nursing students to transfer pharmacology knowledge into practice. The lack of emphasis on the accountability connected to medication administration has been a subject of criticism in nursing (King, 2004:396).

Pharmacology knowledge is crucial in the performance of nursing role such as patient medication education. In their study Dilles et al (2010:1077) found that nurses with high levels of education were more likely to recognize adverse effect of medication. However, there were no difference in providing information and observation of non-adherence between different levels of education. A study by Blegen, Vaughn & Goode (2001:36) found that the nurses' educational background did not influence their ability to detect medication errors and patient falls. This is inconsistent with the results by Ndosi & Newell (2008:577) who found the difference in knowledge score according to education level with high score to nurses with postgraduate level. Literature highlights that continuous education is crucial to increase nurses' knowledge of medication management (Carithers, 2011:38) and emphasized on the need to review nursing curriculum to increase basic knowledge of pharmacology (Bullock and Manias, 2002:13).

### **2.2.2 Nurses knowledge of medication management**

Medication administration is a core nursing role and demands knowledge of drugs and the process (Lexshimi et al., 2009:18). The authors further explored nurses' knowledge of medication administration and found that nurses were knowledgeable of some elements of medication administration but were also lacked knowledge in other for example drug action and different routes (Lexshimi et al., 2009:21). In a study by Ndosi & Newell (2007:576), nurses answered satisfactorily on medication dosage but inadequately on the mechanisms of action and drug interactions. According to Modic & Schoessler (2008:296) medication administration requires competencies that enable nurses to administer, monitor therapeutic and non-therapeutic

effects of medication and that it entails knowledge of indication, mechanisms of action, adverse effects and drug interactions.

The findings of a study by King (2004:397), demonstrated that nurses were lacking in pharmacology understanding when they failed to give definition of familiar medications. However, they underlined medication administration, prescribing and patient education as their core role which requires pharmacology knowledge. In regard to antipsychotic medication, it was found that poor knowledge is coupled negatively with beliefs and attitudes with involvedness in promotion of patient adherence to the treatment (Byrne et al., 2005:517).

In the UK, Fretwell & Felce (2007:584), explored community nurses' knowledge of antipsychotic adverse effects and on half participants were aware of rational numbers of adverse effects while the other half were able to identify only three or less. Armstrong-Esther, Hagen, Smith & Snelgrove (2008:32) found that a number of nurses were not able to recognize adverse effects, 25% to 34.1% did not know if the drug they manipulated was antipsychotic. However, the majority were able to recognize the importance of adjustment of dosage for old people.

Nowadays, nursing role is expanding and Hughes (2010:19) argued for improved pharmacology education and continuous professional development in order to gain depth and breadth knowledge on how medication work inside the body and how adverse effect are produced. Therefore, the process of medication management requires nurses to be equipped with professional judgment, critical thinking skills underpinned by pharmacological skills (Brady et al., 2009:692). Clarke (2008:347) argues that antipsychotic medication management entails knowledge of mechanism of action and adverse effects.

### **2.3 Antipsychotic medication**

Antipsychotic medications are the pillars in managing schizophrenia and other psychotic disorders. The antipsychotic medications have shown their effectiveness in the improvement of positive symptoms of schizophrenia. Taylor et al. (2005 in Clarke, 2008:334) stressed that the therapeutic effect is observed in 80% of people living with schizophrenia with prescription of antipsychotic medication. However, those medications may give a little improvement;

deteriorating patient state or cause a wide range of treatment related adverse events (Nyhuis et al., 2010:1). Even though, classical antipsychotics treat the positive symptoms decreasing hyper dopaminergic state, its occupation on striatal D<sup>2</sup> receptors is responsible of extra pyramidal adverse events (McCreary and Jones, 2010:516). Atypical antipsychotics are known to have a great action on psychotic symptoms as they treat also negative symptoms of schizophrenia (Davies et al., 2010:98) underlined that second generation of antipsychotic has interaction with different neurotransmitters and has shown its effectiveness in the management of acute and long-term schizophrenia and mood disorders. Nevertheless, some patients experience adverse events and for others there is no full response to their state. The management of antipsychotic medication therefore demand active surveillance and appropriate choice of medication in regard to patient attribute and response.

Adewuya et al. (2006:210) conducted a cohort study exploring attitude of people living with schizophrenia towards antipsychotic medication and found out that extra pyramidal side effects were strongly associated with negative attitudes. A study exploring the prevalence of Clozapine side effects has found that 100% of respondents experienced adverse events, 74% reported a drooling mouth at night, 41% weight gain and others reported urinary problems, sedation and constipation. The prescription of antipsychotic medication must take into account the vulnerability of individual patient. According to Laroche, Charmes, Nouaille, Fourrier and Merle (2006:57) the prescription of medication to elderly people oblige a cautious therapeutic choice regarding their weaknesses. Other studies emphasized on a thorough utilization of antipsychotic medication in children, and pregnant women (McCauley-Elsom and Kulkarni, 2007:290, Gilbert, 2009, Galbally et al., 2010). Considering the risk and benefits associated with antipsychotic medication, the strategies minimizing risk must be carefully implemented.

### **2.3.1 Antipsychotic classification**

In 1952, chlorpromazine as a first antipsychotic was discovered; the discovery stimulated scientific effort with the development of other complex antipsychotic medications (Jindal and Keshavan, 2008:1048). Today, there are two classes of medication for psychosis: Typical antipsychotics or first generation, atypical antipsychotics or second generation (White and Hardy, 2010:394). Literature emphasizes on first and second generation comparing their actions and

effectiveness. McEvoy, Zigman and Margolese (2010:146) weighted the effectiveness of two classes, and stressed that there is no clear-cut differentiation; one must examine effectiveness in regard to clinical effects and cost effectiveness. Consequently, nurses' involved in medication management should be aware of the different classes as well as their action in order to offer suitable nursing care.

According to Leucht et al. (2009:35) first and second generation antipsychotics are subject of controversy in regard to attributed merits; their meta-analyses did not reveal an efficiency, compliance or health related quality of life significantly different in two groups. McEvoy, Zigman and Margolese (2010:145) detailed that first generation of antipsychotic act in blocking the receptors D2 with limited therapeutic effect in management of acute illness and prevention of relapse while the second generation act in blocking the receptor D2 and 5-HT2 reduce the risk of extra-pyramidal side effects. Adewuya et al. (2006:210) highlighted the lack of second generation in African countries where the first generation is still the first choice. At Ndera hospital the second generation is rarely available and not everyone can afford it.

The table 1.1 Classification antipsychotic medications

<b>Types of medication: 1.Classical antipsychotics:</b>	<b>Oral medication</b>	<b>Intramuscular injections with long action</b>
Classes	Chlorpromazine/Largactil Pipotiazine/Piportil Thioproperazine/Majeptil Thioridazine/Mellaril Levopromazine/Nozinan Pericyazine fluphenazine, trifluoperazine	Pipotiazinepalmatate          Fluphenazinedecanoate
Phenothiazine		

Classes	prochlorperazine	
Phenothiazine		
Butyrophenones	Haloperidol/Haldol Droperidol	Haloperidol decanoate
Thioxanthenes	Zuclopenthixol Flupenthixol	Zuclopentixoldecanoate Flupenthixoldecanoate
Diphenylbutylpiperidines	Pimozide	
Benzamide	Sulpiride	
<b>Atypical antipsychotics</b>		<b>Intramuscular injections with long action.</b>
Amisulpiride		Risperidone
Clozapine		
Olanzapine		Olanzapine pamoate monohydrate
Paliperidone		
Quetiapine		
Sertindole		
Risperidone		
Zotepine		
Arpiprazole		

(White and Hardy, 2010, Pandya, 2009, WHO, 2009).

### **2.3.2. Mechanism of action of antipsychotic medications**

Antipsychotic medications focus on chemical disturbances and act by influencing the process of neurotransmitters. They may interfere by blocking receptor site or activating receptor by attaching to a receptor site (Pandya, 2009:23). The excessive dopamine in synapses between brain cells in limbic zone is responsible of positive symptoms of psychosis while slight dopamine between synapses in cerebral cortex is theorized to be responsible for cognitive and negative symptoms of psychoses. The levels of noradrenalin and serotonin may be disturbed by dopamine deregulation resulting in affective and mood symptoms (White and Hardy, 2010:393). The mesolimbic area is responsible of positive feelings and pleasure as it is the emotional centre of the brain and the cerebral cortex that facilitates thinking, planning ahead as well as to acquire knowledge and behaviour (Jones and Jones, 2008:51).

The classical and atypical antipsychotic medications block dopamine receptor in the brain and periphery. Horacek et al. (2006:390) urged that many of classical antipsychotics medication act essentially according to the affinities with specific receptors. Pandya (2009:24) showed the different receptor of Dopamine blocked by different antipsychotic medications including receptor D<sup>1</sup>, D<sup>2</sup>, D<sup>3</sup> and D<sup>4</sup>. The binding of these medications tighter than dopamine to the D<sub>2</sub> receptors are responsible for extra pyramidal side effects such as acute dystonia, akathisia, Parkinsonism and tardive dyskinesia.

The pharmacological action of atypical antipsychotics is exercised in inhibiting serotonin receptors 5-HT predominantly 5-HT<sup>2A</sup>. The blockage of 5-HT receptors is efficacy in reducing the negatives symptoms of schizophrenia. The action on different receptors including 5-HT<sup>1A</sup>, 5-HT<sup>2A</sup>, 5-HT<sup>2C</sup>, 5-HT<sub>6</sub> and 5-HT<sup>7</sup> is estimated to express particular benefits effect to either the adverse effect profile or treatment of symptoms (McCreary and Jones, 2010:518). The atypical antipsychotics are reported to have affinity with a wide range of other neurotransmitters including adrenergic (alpha 1 and alpha 2), histaminergic (H<sup>1</sup> and H<sup>2</sup>) and muscarinic (M<sup>1</sup>, M<sup>2</sup> and M<sup>3</sup>), this action is called “magic shotgun” (Davies et al., 2010:98). The new generation of antipsychotic medications seem to be tolerated than old generation because of their few extra pyramidal symptoms.

All antipsychotic medications can reduce the hallucination and delusions associated with psychosis (positive symptoms) by blockage of dopamine receptors in mesolimbic area of the brain. The negative symptoms are alleviated mainly by action of atypical antipsychotics on serotonin receptors. However all of those medications are responsible of adverse events due to their actions on different neurotransmitters (Davies et al. 2010:99). It is important to know how medication work and the wanted and unwanted effects in order to ensure proper management.

The effect of medication inside the body is a process which is composed of different phases including absorption, distribution, metabolism and excretion. It was made clear that medication molecules move throughout the body during the different phases by passage into membranes, through membranes or liposolubility (Aschenbrenner and Venable, 2009:52).

### **2.3.3 Antipsychotics adverse effects**

Evidence has proved effectiveness of antipsychotic medications in alleviating psychotic symptoms. Unfortunately, their occupation on the receptors is conveyed with neurological adverse effects. With classical antipsychotics motor side effects such as dystonia, tardive dyskinesia, akathisia and Parkinsonism tend to take place when about 80% of striatal D<sup>2</sup> receptor sites are occupied. The action of atypical antipsychotics on multi-receptors is responsible of other side effect such as weight gains, dyslipidaemia, arrhythmia and increased blood pressure (McCreary and Jones, 2010:516). Administering and monitoring medication are the core nursing role. However, in regard to antipsychotic use, nurses are challenged by management of that double edge sword problem of medications. Jones and Jones (2008:48) highlighted the dilemma faced by nurses who encounter stabilized patients but who report unpleasant side effects associated with medication. Hodge and Jespersen (2008:6) conducted a study comparing patients and clinicians views of clozapine's side effects which revealed that the clinicians overestimated the prevalence of severity of clozapine' side effects with inaccurate attribution of extra pyramidal adverse effects to clozapine. Many of these unwanted effects impact on patient compliance and affect the course of illness. Meyer and Quenzer (2005:453) report that non hospitalized patients stop taking medication because they are disturbed by the adverse effects with relapse of symptoms and rehospitalisation as a consequence.

### **2.3.3.1 Dopamine system adverse effects.**

The extra pyramidal side effects are mainly coupled with classical antipsychotics but can be observed with a higher dose of atypical antipsychotics (Pandya, 2009:24). The blockade of D<sup>2</sup> receptors in the nigrostriatal area is responsible of motor side effects such as tremors, restlessness, distorted postures and involuntary movements (Meyer and Quenzer, 2005:453). It is stressed that extra pyramidal symptoms are a source of discomfort; social stigma and therefore poor compliance (Muench and Hamer, 2010:618). These extra pyramidal side effects are classified in subtypes below:

#### **2.3.3.1.1 Parkinsonism**

The Parkinsonism is most upsetting side effect of classical antipsychotics. The manifestation of it is mainly related to movement; including tremor, rigidity, bradykinesia and postural disturbances. They may also experience impairment of memory, abstract thinking and language as cognitive dysfunction (Meyer and Quenzer, 2005:126). These cognitive dysfunctions may be confusing in regard to diagnosis. The poverty of thoughts, akinesia, flattening affect, the loss of sense of pleasure, inability to pay attention associated with Parkinsonism may be confused with negative symptoms of schizophrenia or depression (Muench and Hamer, 2010:619) and that may make difficult the medication monitoring and patient follow up. The naturalistic study exploring the relationships between dosage and prescription of anti-parkinsonism revealed that the Parkinsonism symptoms were associated with important dosage of antipsychotics (Acquaviva et al., 2007:4). The reduction of dosage and oral anticholinergic drugs are used to treat Parkinsonism symptoms (Muench and Hamer, 2010:619, Pandya, 2009:24). The knowledge and understanding of Parkinson adverse effect will help nurse to educate patient on the risk benefit of medication as well as to effective prevention, control and management of different forms of that syndrome (Bulat et al., 2008:189).

#### **2.3.3.1.2 Dystonia**

The muscles' spastic contractions are frequent with the antipsychotic treatment. They include torticollis, trismus, laryngospasm, oculogyric crisis, neck twisting and laboured breathing and facial distortion (Muench and Hamer, 2010:619, Pandya, 2009:25). The risk factors of dystonia

were highlighted in the literature, and took into account the male gender, young age less than 30 years and the use of high potency antipsychotic medications. It is urged to treat those manifestations as they may cause discomfort as they can be life threatening

#### **2.3.3.1.3 Tardive dyskinesia**

The involuntary movements particularly of the face and jaw, purposeless, quick and uncontrolled movement of the arms and legs or slow squirming movement of the trunk, limbs and neck are the characteristics of tardive dyskinesia (Meyer and Quenzer, 2005:454). The abnormal movements can include myoclonic jerks, tics, chorea, dystonia which occur with long term antipsychotic treatment and may be irreversible even if medication is stopped (Muench and Hamer, 2010:620). The estimated incidence of tardive dyskinesia with overall antipsychotic is 10 to 20% and the incidence is increased to 50% in patients older than 60 years and exceeds 70% in geriatric patients (Meyer and Quenzer, 2005:454). However, not only the old age, but in cases where there is presence of affective disorders, female gender, the neuroleptic exposure of more than 6 months, history of Parkinson side effects, diabetes and high dosage of atypical agents are the risk factors of developing tardive dyskinesia (Khan et al., 2007:614). Tardive dyskinesia is treated by reducing antipsychotic dose to the minimum, substitution of old drugs by new ones and by reducing and discontinuing anticholinergic drugs (drugs used to lessen motor effect of antipsychotics) as they may exacerbate the symptoms of dyskinesia (Pandya, 2009:25).

#### **2.3.3.1.4 Akathisia**

The akathisia is manifested as an unpleasant feeling of inner restlessness demonstrated by a need to move and inability to sit still for any length of time. Akathisia occurs frequently in the first two weeks of the treatment and may be confused with anxiety and agitation. It can be controlled by reducing dose, using drugs with lower liability for akathisia or administering low dose of beta blocker (Pandya, 2009:25, Muench and Hamer, 2010:619).

#### **2.3.3.1.5 Hyperprolactinemia.**

The blockade of D2 receptors on pituitary gland stop the inhibition of prolactin discharge and therefore increase the plasmatic concentration of prolactin. The prolactin elevation above 600 ml

U/L is named hyperprolactinemia and the normal prolactin varies between 30-600 ml U/L. This elevation is the cause of many adverse effects including galactorrhoea, amenorrhoea, sexual dysfunction, gynecomastia and osteoporosis (Jones and Jones, 2008: 52). Literature highlights that all antipsychotic may be responsible of hyperprolactinemia and among others is the five medications which give more elevation, namely, sulpiride, risperidone, haloperidol, olanzapine and clozapine (Jindal and Keshavan, 2008:1050).

Patients' characteristics such as age and sex may exacerbate the increase of prolactin. It is highlighted in literature that women suffer more from prolactinemia than men due to the capacity of estrogens to augment serum prolactin level (Veselinovic et al., 2011:214). According to Jones and Jones (2008:23), the awareness to minor or high rises of prolactin by nurses is crucial in medication management as it enable nurses to inform patients about side effects associated with this elevation and that lead to medication adherence.

#### **2.3.3.2 Non dopamine adverse effects.**

The clinical antipsychotic trials of intervention effectiveness (CATIE) study was conducted in USA and found that metabolic disorder was more prevalent in people suffering from schizophrenia than in the general population and female were more vulnerable to obesity (McEvoy et al., 2005:29). Patients experience weight gain, insulin resistance and elevation of non-HDL cholesterol and inflammatory markers when they are under Olanzapine, quetiapine and to a low degree risperidone with risk of diabetes mellitus and cardiovascular disease (McEvoy et al., 2010:145).

##### **2.3.3.2.1 Weight gain**

In psychiatric patients, weight gain is a common adverse effect and the average weight of adult people with mental illness has been found to be expressively superior than that of people without mental illness (Correll and Carlson, 2006:777). Literature underlined the complexities of mechanisms weight gain of second generation antipsychotics. It is stressed that the sedation may reduce level of physical activities; augmentation of appetite is maybe related to the interaction of antipsychotics with dopamine, serotonin and histamine receptors (Werneke et al., 2002:145). Newcomer and Haupt (2006:464) reviewed literature related to metabolic adverse effect of

antipsychotics and found that the variability of weight gain according to the type of medication received and the duration of the treatment. Therefore the magnitude of weight gain was associated with long term treatment and some gained kilos ranged from 1kg to over 10kg per year. Many researchers highlighted other risk factors are associated with medication in generating weight for people living with mental illness. They stressed on poor diet, sedentary lifestyle and lack of access to medical care (Beebe, 2008:25, Kerna et al., 2009:21). Other studies have been conducted to explore the control and reduction of metabolic adverse effect and found that it was possible to minimize the antipsychotic medication induced weight gain. Chen, Chen & Huang(2009:21)conducted a one year follow up study for obese patients with schizophrenia and found a significant reduction of weight in the first ten week of weight control programme. This is confirmed by Poulin, Chaput, Simard, Vincent, Bernier, Gauthier, et al. (2007:985) who maintain that promotion of physical activity among people with severe mental illness has shown effectiveness in weight reduction and was most effective when associated with social support.

#### **2.3.3.2.2 Diabetes mellitus**

The new generation of antipsychotics are associated with the occurrence of diabetes mellitus in people treated with antipsychotic medications. The case control study showed that the risk of diabetes mellitus to people who received clozapine was 1.37 greater than people who has received conventional antipsychotics and 7.44 greater than people with no antipsychotic medications(Newcomer and Haupt, 2006:465). The review of twenty seven papers in regard to risk of diabetes with severe mental illness has been used to select nine studies used by Osborn, Wright, Levy, King, Deo and Nazareth (2008:5)in meta-analysis of diabetes and found that risk ratio ranged from 1.21 to 2.27 and in regard to glucose levels there was a significant increase of standardized mean difference in the group of people with severe mental illnesses. A study by Van Winkel, De Hert, Van Eyck, Hanssens, Wampers, Scheen and Peuskens (2008:346) which assessed the prevalence of diabetes in people with bipolar disorder, found that the prevalence of diabetes were twice higher than in general population. However the risks were lower compared to the prevalence of diabetes in people with schizophrenia.

#### **2.3.3.2.3 Hyperlipidemia**

Literature highlights the association of Hyperlipidaemia with new generation of antipsychotic medications. Lambert, Chang, Tafesse and Carson (2005:15) conducted a case control study to examine the risk of hyperlipidaemia with antipsychotics. The cases were people who had been diagnosed with schizophrenia and have received one of antipsychotic 12 weeks before being diagnosed with hyperlipidaemia. The exposure to olanzapine was compared with exposure to old antipsychotic and odds ratio 1.20 and 95% CI 1.08-1.33 while clozapine versus old antipsychotics OR=1.16, 95% CI 0.99-1.37. However their study did not look at other factors that may be associated with hyperlipidaemia such as history of obesity in the family, smoking behaviour or dietary patterns. The results from many researches are consistent in regard to the association of hyperlipidaemia with clozapine and olanzapine. Clinicians especially the prescribers and nurses involved in drug monitoring must be aware of that risk and examine the efficacy, tolerability, and associated cost and safety concerns (Lambert et al., 2005:17).

#### **2.3.3.2.4 Cardiovascular effects**

The augmentation of the lipid levels are correlated to cardiovascular morbidity and mortality in people taking antipsychotic medications particularly new generation of antipsychotics. That adds to the risk associated with the life style of those people (Lambert et al., 2005:17). According to Kaponen, Alaraisanen, Saari, Pelkonen, Huikuri, Savolainen and Isohanni (2008:343), the polymorphic ventricular tachycardia is one of major cause of sudden death. They claimed that the antipsychotic medications are able to obstruct the rapid part of the rectifier potassium and cause long QT interval which is the alternative to polymorphic ventricular tachycardia. The new antipsychotics especially clozapine may cause an inflammation of the heart muscle that can be lethal and that emerge in the first few weeks of the treatment; cardiomyopathy may also be observed after months or years of treatment (Healey, 2009:40). Electrocardiography (ECG) is necessary to detect changes and may be associated with monitoring of vital signs.

#### **2.3.3.2.5 Anti-cholinergic effects.**

According to Healy (2009:38), certain antipsychotic medications such as olanzapine and chlorpromazine cause important anti-cholinergic effects. The patient under antipsychotic medication may present a dry mouth, nasal drying and blurred vision. Gallagher and Naidoo (2009:164) emphasized on the effects of medication on physiology of swallowing. They listed the side effects of psychiatric drugs impacting on swallowing including dry mouth or increased salivation which may lead to indigestion. A case reported by Suzuki, Ushida, Watanabe and Kasima (2007:525) showed that antipsychotic medications administered with anti-cholinergic medications may lead to severe constipation and paralytic ileus especially for old people. It is known that antipsychotic medications are prescribed to diminish agitation, inhibit delusion and hallucination. Nevertheless, anti-cholinergic effect of chlorpromazine may lead to agitation, confusion and hallucinations especially for old patients. According to Morrison, Meehan, Gaskill, Lunney and Collings (2000:815), the adverse effects reduction depends upon the ability of the case manager to assess and manage medication effects. The authors also highlighted the importance of sufficient training on psychopharmacology and up to date assessment practice as well as assessment and management of side effects.

#### **2.3.3.2.6 Sedation and arousal**

According to Sadock and Sadock, (2007:490), sedation and postural hypotension may be important adverse effects for patients who are receiving some medication such as perphenazine, and the severity of these symptoms may be observed with initial dose of medications. Taylor (2009: s16) reviewed post long acting injection adverse effects and observed the post injection syndrome which consist of sedation, confusion, dizziness, altered speech, somnolence and unconsciousness. Healy (2009:39) stated that the sedation effect may vary from individual to individual and from medication to medication. Thus, the same dosage for different individuals may give different results with sleeplessness for one and sedation for another. Townsend(2003:305) urged that nurses should discuss with the physician on the modality of treatment and instruct the client not to drive while experiencing sedation. Unwanted somnolence is managed by adjusting dosage or time for administration or gives another medication (Sadock and Sadock, 2007:982).

#### **2.3.3.2.7 Skin effects**

Skin rashes may be caused by antipsychotic medications, all medication may engender those allergic reactions and lead to pronounced reactions necessitating to stop medication (Healey, 2009:39). Skin reaction may be serious with the lacerations above the neck and may be accompanied by hyperthermia and lymphadenopathy necessitating the emergency treatment. With the classical antipsychotics a patient may experience an urticarial, maculopapular, petechial occurring early in treatment (Sadock and Sadock, 2007:983).

The photosensitivity is also observed with antipsychotic medications and that individuals suffering from it may be burned when exposed to sunlight for a given time (Healy, 2009; 39). The chlorpromazine is associated with blue-grey discoloration of skin if administered for a long period while thioridazine is associated with retinal pigmentation with the high dosage (Sadock and Sadock, 2007:1049). The presence of the adverse effects implies the adjustment of dosage or discontinuation of medication. It is urged that patients should wear sunglasses and not avoid exposure to sunlight for a long period (Sadock and Sadock, 2007:1049, Townsend, 2003:306).

#### **2.3.3.2.8 Others adverse effects**

Agranulocytosis is recognized as a critical adverse effect caused by clozapine which is characterised by the decrease of white blood cells at a low level. It is recommended that the blood level of the individual on clozapine be monitored weekly and that the treatment must be discontinued if white blood cells are below  $1500 \text{ mm}^3$  (Townsend, 2003:307). Other hematologic adverse effects such as thrombocytopenic, haemolytic anaemia, pancytopenia may be observed (Sadock and Sadock, 2007:1048).

The most occurring adverse effect is orthostatic hypotension especially with chlorpromazine, thioridazine and chlorprothixene. The orthostatic hypotension may cause falls and injuries. The management of hypotension demands to regularly monitor patient's blood pressure and to advise the patient to lie down, feet higher than head (Sadock and Sadock, 2007:1048).

### **2.3.3.3 Syndrome malignant of antipsychotics**

Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) cited by Neuhut, Lindenmayer&Silva (2009:415) describe neuroleptic malignant syndrome as a life threatening adverse effect of antipsychotic medication characterised by severe muscle rigidity, hyperthermia accompanied by two or more of the subsequent symptoms: diaphoresis, dysphagia, tremor, incontinence, tachycardia, alteration of blood pressure, alteration of consciousness from confusion, coma and mutism and leucocytosis. The sympatho-adrenal hyperactivity and defect of calcium explain the signs and symptoms on peripheral skeletal muscle system. Researchers have highlighted the necessity of a thorough differential diagnosis (Neuhut et al., 2009:415, Strauw et al., 2007:871, Berman, 2011:43). The authors stressed that special attention should be paid to the assessment of cerebro-neuronal system infections such as viral encephalitis, meningeal signs and other disorders such as heart stroke.

The prognosis of Neuroleptic malignant syndrome has improved from 30% of mortality rates and closer to 10%. The recognition and treatment of symptoms at early stage offer a complete recovery in 2 to 14 days. The complications such as residual catatonia, Parkinson, renal and cardiopulmonary morbidity has been observed with delayed diagnosis (Berman, 2011:45). Seitz and Gill (2009:13) urged the discontinuation of medication, adequate care aimed to maintain hydration, renal functioning and temperature regulation. They underlined the role of medication management in prevention of that syndrome and remind clinicians to be aware of the risk associated with neuroleptic malignant syndrome and to monitor for this adverse effect.

The nursing knowledge and understanding of client medical conditions, the medication effectiveness and adverse effects is essential to improve clients 'physical and/or mental health. The adverse events of antipsychotic medication if not well managed may compromise the patient's life. Correll (2008:196) underlined that, nurses and other professionals must have sufficient knowledge on antipsychotic management in order to ensure physical and psychological well being of the client and to promote clients' adherence to medication.

### **2.3.5 Contraindications, precautions**

The antipsychotic medications should not be given to patients with known hyper-sensitivity, Parkinson disease, liver, renal or cardiac insufficiency. They are also contraindicated in patients with central nervous system depression (Townsend, 2003:304). The clinicians must carefully use the antipsychotic medications during pregnancy due to their effects to an unborn baby. The mothers on antipsychotic medications are advised to avoid breastfeeding in order to prevent infant absorption of antipsychotics and thus adverse effects (Healey, 2009:25). In the elderly people, diabetic clients, and the severely ill and in respiratory insufficient patients it is recommended that caution should be given when administering the antipsychotic medication.

#### 2.4. Antipsychotic management for special conditions

### **2.4.1 Antipsychotic medication and pregnancy**

The management of psychiatric illness has double challenges, on one hand the antipsychotic medications may be toxic and teratogen with long term neurobehavioral problems, while on the other hand the untreated illness may result in self-harm, suicide and neglecting of pre and post-natal care (Menon, 2008:2). Therefore, the antipsychotic medications must be prescribed with regard to safety of managing them upon foetal growth and maternal health (Sit et al., 2006:362).

The exposure to atypical antipsychotics for pregnant women is responsible for low birth weight and the baby born may experience foetal distress (Sit et al., 2006:363, McCauley-Elsom and Kulkarni, 2007, Galbally et al., 2010). The results of a retrospective cohort study from January, 1993 to December, 2007 exploring all obstetrical deliveries showed that with atypical antipsychotic, the gestational age was shortened resulting to prematurity, heart murmurs and feeding difficulties (Wichman, 2009:53). A study by Sit, Rothschild and Wisner (2006:364) highlighted that the prescription of olanzapine during pregnancy may cause stillbirth at 37 weeks, premature ruptured membranes, gestational diabetes and thrombocytopenia. The preeclampsia, elevated liver transaminases and hypothyroidism have been observed in women medicated with Olanzapine for all three semesters. Galbally et al. (2010:105) urged that medication monitoring during pregnancy must include the need to increase foetal growth, glucose test in order to detect the diabetes that may be associated with medication.

In patients with schizophrenia, the increased risk of cardiovascular congenital anomalies, low birth weight, may be associated with multiple risk factors such as nutritional status, smoking, alcohol use, physical and other pregnancy-related influences (McCauley-Elsom and Kulkarni, 2007:291). The foetal effects of antipsychotic medication are explained by the capability of those medications to go by the placenta and entry into foetal brain and immature metabolic system to excrete the medication (Kulkarni et al., 2008:40) and the infant risk is due to the passage of antipsychotic medications by maternal milk (McCauley-Elsom et al., 2010:101, Einarson, 2010:35).

To take care of neonatal complication women should be advised to deliver in adequate health centres with neonatal resuscitation services. The baby born may experience the extra-pyramidal adverse effects that need a thorough surveillance (Galbally et al., 2010:106). The health professionals must ensure that care is provided to the patients and their families and that the risk factors for mothers and children are identified and reduced. There is a need to balance the risk to baby and risk of relapse for the woman during pregnancy and post-partum and that create problems and concerns about use of medication (McCauley-Elsom and Kulkarni, 2007:290).

The experience of mental illness for women is accompanied by limited relationships, loss of jobs and separation of parents from their children. There is the high occurrence of unwanted pregnancies that are difficult to manage for women as well as for health workers (McCauley-Elsom and Kulkarni, 2007:291). The post-partum period is accompanied by exacerbation of symptoms such as suicidal, infanticide ideas and hospitalization resulting in the new born being cared for by others (Gilbert, 2009:20). It is urged that the post-partum period must have an obvious management plan with regular assessment of mental status, treatment and social support. The support from husband and family is of great value in planning discharge as it underpins the mother-infant and family relationships (Galbally et al., 2010:106).

#### **2.4.2 Antipsychotic medication in elderly people**

The choice of appropriate medications to elderly people is complex and challenged by a number of characteristics related to age. Spinewine (2007:173) reports that increased disability, illnesses, and unpredictability of health status of the elderly people complicate decision making with regards to medications. Panula, Puustinen, Jaatinen, Vahlberg, Aarnio and Kivela (2009:968)

highlighted that the elderly peoples' blood-brain barrier has an increased permeability which make easy the entrance of antipsychotic medications into the brain.

To that vulnerability, the adverse effects of antipsychotic medications become challenging in managing the psychiatric disorders for people with advanced age. Knol, Van Marum, Jansen, Souverin, Schobben, and Egberts (2008:664) stressed that swallowing disorders are the cause of aspiration which is important in pathogenic mechanism of pneumonia. Consequently, the risk to acquire pneumonia is increased in elderly people on antipsychotic medications. They also indicated that the agranulocytosis caused by antipsychotic increases the risk of infection. Nevertheless those medications should not be regarded as potential risk of pneumonia because of the monitoring of the adverse effects such as swallowing problems, sedation may prevent the pneumonia. That is why clinicians must pay attention and carefully monitor the medications' adverse effects.

Schneeweiss, Setoguchi, Brookhart and Wang (2007:631) conducted a cohort study to explore risk of death associated with the antipsychotic medications in elderly people and found that the risk of death was associated with both conventional (14.1%) and atypical (9.6%) antipsychotic medications. The cohort study by Setoguchi, Wang, Brookhart, Canning, Kaci and Schneeweiss (2008:1648) from 1996 to 2004 showed that with old antipsychotics the risk of death is highly associated with respiratory problems. However, the out hospital deaths are mainly due to cardiovascular diseases caused by old antipsychotics such as arrhythmia, cardiac arrest and sudden death. The reviewed literature on risk of falls in the elderly people taking antipsychotic medication by Bulat, Castle, Rutledge and Quigley (2008:186) found that the falls were associated with antipsychotic medication and the odds ratio from 49 reviewed studies were 1.51 for antipsychotic medication and the risk was greater if the patient was prescribed more than one medication.

According to Atalay, Turhan and Aki (2007:833) the antipsychotic medications must be cautiously monitored after prescription, so that critical adverse effects are not unnoticed. Bulat et al. (2008:187) urged that to use antipsychotic medications with caution in elderly people because they may exacerbate the decreased gastrointestinal motility, urinary retention, prostate hypertrophy and visual problems by their anticholinergic adverse effects.

### **2.4.3 Antipsychotic medication in children**

The initiation of antipsychotic medications in children may consider that the children are more likely to develop the severe adverse effects. According to Fritz (2006:8) children may suffer from certain adverse effects (weight gain, diabetes) of antipsychotic medications for a long time even in adulthood. These endocrinal adverse effects may have mostly harmful effects as they increase the risk of morbidity and mortality in children (Rani et al., 2009:331). It is recommended to measure glucose and lipid levels three months after treatment initiation and every six months afterwards and health style changes as well as diet must be taught to family in order to manage metabolic effects (Correll et al., 2009:1772).

The sedation is the most frequently observed adverse effect of antipsychotic medications. Chavez, Chavez-Brown, Sopko and Rey (2007:264) warned nurses to monitor and inform patients about the side effects because hyper-sedation leads to poor performance of school and impacts on other forms of therapy. The medication therapy in children require knowledge of most prescribed drugs, consideration of why they are prescribed and how it may improve child's quality of life and for the family. The cautious use of antipsychotic medications, guarantee that the proper equilibrium between symptoms and adverse effects is preserved and the quality of life for child is improved (Self et al., 2010:373).

### **2.4.4 Interactions**

The antipsychotic medications when administered with antihistamines, antidepressant and antiparkinsonian drugs may lead to anticholinergic effects and hypotension may be observed when associated with beta adrenergic blocking such as propranolol or metoprolol (Townsend, 2003:304). The association of antipsychotic medications and immunologic drugs increase the severity of bone marrow suppression (Ford and Roach, 2009:449). The effectiveness of antipsychotics is decreased with antacids and barbiturates (Townsend, 2003:304). The depression of central nervous system may occur when antipsychotics are administered with antihistamines, antidepressants, sedatives hypnotics and anxiolytic and the alcohol (Townsend, 2003:305, Healey, 2009:24). Clozapine must not be associated with carbamazepine and phenytoin due to increased risk of agranulocytosis; never with lithium due to risk of seizures, confusion and

malignant syndrome (Ford and Roach, 2009:449, Sadock and Sadock, 2007:1096). The administration of antipsychotic medication with oral contraceptive can increase the risk of extra pyramidal adverse effects (Healey, 2009:24). Ford and Roach (2009:449) urged that nursing process must pay attention to drug interaction to prevent the side effects or/and ensure effectiveness of the medication.

## **2.5 Nursing role in medication management**

It is highlighted in the literature that mental health nurses are the corner stone in the management of antipsychotic medication. This role requires them to view the effectiveness of the medication as the patient's subjective satisfaction with treatment rather than the elimination of positive symptoms. The patient' subjective satisfaction with different available medication must be a focus of medication planning and care framework. However, nurses must collaborate with patients and their care givers as they are in best position to describe the problem about medication, elaborate problem solving strategies and to elucidate the areas in which they would like to be helped (Clarke, 2008:435).

### **2.5.1 Nursing assessment**

The poor physical health in people living with mental illnesses as a consequence to antipsychotic medication use has been highlighted in the literature (Clarke, 2008:435). As above mentioned, the antipsychotic medication may be harmful to physical health when they affect metabolic, neurologic and hormonal system. Diabetes mellitus, obesity, cardiac problems, amenorrhea are some examples of common physical problems. According to Gutierrez and Queener (2003:297), the assessment of present illness history, health history and physical examination must be done prior to initiation of treatment as well as considerations of life span and socio-cultural context.

According to (Sadock and Sadock, 2007:227), a complete and sequential picture of the events principal to the present moment in the patient's life are provided by the history of the present illness and the understanding of that history enables clinicians to make a diagnosis. Gutierrez and Queener(2003:295)state that the first assessment is imperative as it determine the patient functioning and mental status and determine antipsychotic drug therapy. Initial assessment,

allows patients to talk freely as nurses identify the symptoms such as thoughts disturbances and strange behaviours.

The physical examination allows the nurses to determine patients' health parameters, to identify the underlying medical problems and to monitor the evolution of these illnesses as well as sensitivity of antipsychotic medication (Gutierrez and Quenner, 2003:297). The physical examination is done to determine if a medical condition is not the cause of psychiatric disorder or if the medical condition is not a contraindication of antipsychotic drugs. It can be done also to assess the effect of mental disorders and medications on physical health (Sadock and Sadock, 2007:249).

Personal history helps to understand a patient's past in relation to the present state in order to identify previous disorders. Thus nursing assessment aims to identify the predominant emotions associated with different stages of a patient's development and give detailed information which is necessary for effective therapy (Gutierrez and Quenner, 2003:297, Sadock and Sadock, 2007:229). This assessment must take into consideration the individual lifespan such as pregnancy, adolescent which may be associated to stressors that lead to mental disorders. A patients' beliefs have shown to be on the basis of mental problems and may play a role in the patient's adherence to medication (Gutierrez and Quenner, 2003:296).

Schellack (2010:207) stated that medication management is one of the challenging task that nurses face daily. Medication management entails multiple activities including assessment and analysis of prescriptions, performance and management of prescribed treatment regimens, ordering storing and monitoring patients for wanted effects as well as adverse effects of the medications.

### **2.5.2 Medication administration**

In many cases the prescription of medication is done by the doctors. Even though the prescription is done by the doctors, there is a shared responsibility with regard to medication administered to patient. However the administration of an incorrect dosage is the responsibility of the nurses even if the medication was incorrectly prescribed (Schellack, 2010:213). The management of medication requires nurses to be knowledgeable with good understanding of

medication prescribed to a patient in order to apply accurate evaluation and analysis of prescriptions.

It is highlighted in the literature that medication must be accurately administered. Nurses reported that medication administration is stressful tasks in that sense it requires to be carefully administered in the midst of distractions and chaotic nature of a ward. The volume of work demand speed and that is directly conflicting with meticulous concentration and detail required to medication administration. Assessment of and correct identity of a patient as well as medication, patient' condition and effects of medication at the same time sustain clear and correct records add to the pressure associated with this multifaceted procedure (Duxbury et al., 2010:58). Schellack (2010:215) emphasized on the correct dosage and correct route of administration. A careful count of tablets required, calculation of the volume is essential in medication administration as well as verification of patient's capacity of swallowing of oral route and ensure that correct diluents are used for injection.

The researchers stressed on the nurses' need of documentation and up to date information in order to administer the medication is needed and to monitor patients (Usher et al., 2001:388, Baker et al., 2007:167). The authors recommend the availability and utilisation of documentation, a thorough nursing assessment prior and after medication administration as the medication administration is one of the most autonomous nursing roles in inpatient settings (Usher et al., 2001:389)

### **2.5.3 Treatment monitoring**

To detect the occurrence of adverse effect of medication, mental health nurses need to be knowledgeable about pharmacology and to understand the different predisposition to adverse effects that antipsychotics create. The information exchange with people using antipsychotic medication is source of empowerment for users to minimize the unpleasant effects associated with their medications (Clarke, 2008:346).

Patient follow up must be scheduled and appointments for that process should include patients and their families. The medication monitoring process comprises of periodic assessment of

symptoms, adverse effects and patient satisfaction to determine the efficacy of antipsychotic medications.

#### **2.5.3.1 Clinical effectiveness monitoring**

The clinical effectiveness is demonstrated by the improvement of the symptoms and of global functioning. A mental health nurse plays a crucial role in assessing and reporting the observed improvement supported by both subjective and objective measures.

The antipsychotic medications have shown effectiveness in calming agitated and excited patients and to alleviate social withdrawal thus improving communication. It is estimated in the literature, that one third of the patients demonstrate a brilliant symptom decrease and patients may not be re-hospitalized even when they stop medication and may return to normal life such as employment, and marriage (Meyer and Quenzer, 2005:450). Others may present important improvement of symptoms but could experience setbacks that necessitate hospitalization from period to period. Patient self-report, report of caregivers must be supported by clinical interviews and rating scales in order to obtain pertinent information to symptom shapes and functioning (Davies et al., 2010:100).

#### **2.5.3.2 Adverse effect monitoring**

It is urged that nurses must continuously stay observant in order to see and record the effects of medication therapy as the medication taken is associated with risk of serious problems such as malignant syndrome of neuroleptics (Valfre, 2009:75, Strauw et al., 2007:871, Neuhut et al., 2009:415, Haddad and Dursun, 2008:20, Berman, 2011:43). However, it was found that medication monitoring may be hampered by nurses' level of understanding and work conditions.

It is reported that nurses were reluctant to ask the patient about medication when they were distributing medication in order to protect patient confidentiality (Duxbury et al., 2010:54). The nurses' underestimation of problems associated with adverse effects will lead to aggravation of risks and therefore hamper patient 'compliance. It is crucial to be knowledgeable about patient' attitudes, feelings and beliefs about medication as that influence patient adherence. Lambert et al. (2005:17), Correll (2008:200) and Chen et al.(2009:21); underlined the need of weight

monitoring with life style adjustment, blood glucose and lipid level, blood pressure monitoring in order to detect early medications' adverse effects. In order to manage the neurologic adverse effects, the literature highlighted the use of anticholinergic drugs, stopping medication that cause the effect and choose another with low effects (Meyer and Quenzer, 2005:293, Haddad and Dursun, 2008:18).

The malignant neuroleptic syndrome is managed by stopping all medications, rehydration, monitoring creatinine phosphate kinase level, administration of dopamine agonists such as bromocriptine and muscle relaxant such as dantrolen (Haddad and Dursun, 2008:20) monitoring of vital signs and electrocardiographic changes and administration of antipyretics (Gutierrez and Quenner, 2003:293). Nursing assessment of therapeutic and non-therapeutic effect of medication is non-negotiable role and different tools are available to assist nurses in this process (Duxbury et al., 2010:59).

#### **2.5.4 Patient and Family Education**

Davies et al.(2010:106) urged that patient, family members and caregivers must be educated about pharmacological evidence and that will permit them to be aware of the dose modification, discontinuation, switching and combination of medication that may experience their relatives. The explanation to medication action and individual's genetic constitution which may affect the response to medication must be in simple language that may be understood by non-medical people. A study by Lan, Shiau and Lin (2003:372) which evaluated knowledge, beliefs and attitude of Taiwanese patients revealed that patient knowledge of adverse effects was associated with negative attitudes to medication. They urged that careful attention must be paid by clinicians when they teach about adverse effects to patients as they may feel worried and be uncertain to take medication.

It is challenging to mental health nurses to simplify the complexities of adverse effects particularly some troublesome effects such as weight gain and hormonal effects. Therefore they must inform patient and family members that antipsychotic medications are associated with unpleasant effect and that will help them to report and monitors those effects (Davies et al., 2010:105). Hamann, Kruse, Schmitz, Kissling and Pajonk (2010:63) stressed that patients have the right to fully discuss medication management and not to be simply informed. The fully

participation demands that a patient is informed about different treatment alternatives and then they are allowed to make choices according to their preferences.

According to Lan, Shiau and Lin (2003:372), the mental health workers must assess a patient's awareness and feelings about medication adverse effects and the team members must be consistent with information that is given to patients. The misinterpretation, uncertainties, confusion, level of knowledge and patient's wishes, if assessed help to complete patients' information and enforce patient education. The importance of medication must be underlined and clarified that the occurrence of adverse effects is not absolute. To that patient, family must be integrated into medication therapy and be responsible for reactions, adverse effects and observation. Patients must be taught to manage their symptoms and adverse effects and that will help them to feel more responsible and decrease worries and anxiety (Lan et al., 2003:373).

The discrepancy of opinions to the relative benefits of informing the patient about adverse effect is depicted in the literature. The enormous education support as an approach to enhance client knowledge and adherence is available. However, some health care workers argued that information to medication may increase anxiety and decrease adherence.

In spite of the controversy, the key aspect in successful management of patient and their medication is empowering them. According to Uys and Middleton (2004:224) increased understanding of illness, treatment and the collaboration with health care providers allows patients and their families to have power over the illness as they gain self-confidence and release from guilt and anxiety. Patients become more active participants in the management of their illnesses when they feel empowered and the motivation to adhere to medication increase. Psycho education and problem-solving strategies provided by mental health providers can contribute to the empowerment of patient and fostering a collaborative alliance that is the basis of quality care (Fernandez et al., 2006:76).

### **2.5.5 Medication adherence**

The antipsychotics clinical efficacy is evident when a patient observes their prescribed medication. Mental health nurses have the responsibility to discuss with the patient with regard

to their attitudes toward medication, review and update medication plan in each session and to explain the patient's responsibilities.

The patient has a responsibility to take medication as prescribed, report adverse effects and to reveal the thoughts of non-compliance. However, that might not be possible in the absence of a trusted relationship and open communication and collaborative decision. Mental health nurses must be available and to listen to patients' concerns about medication, discuss ideas about medication change or adjustment and to monitor adverse effects. This demands that mental health nurse should have knowledge about pharmacology and be skilled enough in therapeutic communication.

The risk factors associated with non-adherence to antipsychotic medications using self-report scale was examined by McCann, Boardman, Clark and Lu (2008:624) and awareness of illness, stigma related and importance of treatment was reported by over 80% of their respondents. However, it was not easy for those patients to adhere to treatment due to different factors described; 70% experienced unpleasant adverse events, and 10% abused the drugs. Rummel-Kluge, Schuster, Peters and Kissling (2008:384) highlighted other contributing factors such as lack of understanding of need of prophylaxis, denial of illness and living conditions.

Researchers have underlined the living conditions that predict the patient compliance such as accommodation (McCann et al., 2009:540) access to care (McCann et al., 2008:625) and supportive environment (Janssen et al., 2006:234). The factors that predict the non-compliance such as adverse effects, age, inaccessibility of care, alcohol abuse (McCann et al., 2008:625), patient state, negative judgement from clinicians (Janssen et al., 2006:234) have been revealed.

It is advised to include a supportive person in the medication planning if needed to improve patient compliance (Davies et al., 2010:103). A study by Rummel-Kluge, Schuster, Peters and Kissling(2008:384) revealed the need of patients to be reminded by others to take their medications. Wilk, West, Marcus, Countis, Regier and Olfoson (2008:379) evaluated the role of family in patient adherence to medication and urged that mental health workers multifaceted interventions must intensity family contact. The low level of family contact was associated with low medication monitoring, low patient involvement and thus low adherence.

McCann, Clark & Lu (2009:537) explored the role of significant others in medication adherence and found out that they intervene in supervising medication taking, encouraging patients to respect appointment and providing accommodation, maintaining trusting and supportive relationship. The role of mental health nurses and other clinicians in promotion of patient adherence to medication is indisputable. According to Drymalskin and Campbell (2009:12) the motivational interviews are essential instruments for nurses to help patients to be compliant with medication. Patel, Ni, Clarton, Lam and Park (2010:273) emphasized on cognitive-behavioural therapy associated with psychosocial interventions. Janssen et al. (2006:234) urged that nurses must adjust their treatment model to individual patients, prevent and monitor adverse effects, establish good relationships with patients, to promote therapeutic alliance. According to Rummel-Kluge et al., (2008:386), to gain patient' adherence, nurses must rationalise the antipsychotic medication regimens, provide telephone a support, apply psychosocial interventions and promote supportive environment.

## **2.6 Conclusion**

This section highlighted the literature on antipsychotic medications' action, effectiveness, adverse effects and the management related issues. It was noted that the antipsychotic medications are crucial in the management of psychosis and other mental disorders. However, their actions in the brain produce both positive and a number of unwanted adverse effects. These unwanted effects may be life threatening or alter a patient's physical health (McCreary and Jones, 2010:516). The common adverse effects were extra pyramidal adverse effects, cardiovascular adverse effects, weight gain and anticholinergic adverse effects. The antipsychotic medications had also many interactions with other drugs and may be administered with caution to some groups such as pregnant women, elderly people and children. Finally, the effectiveness and adverse effects of monitoring have been found to be crucial in the management of mental disorders and promotion of a patient's quality of life. It was highlighted that nurses are at the centre of medication management through patient assessment (Gutierrez and Queener, 2003:297), monitoring of administered treatment, patient education and promotion of adherence strategies (Meyer and Quenzer, 2005:453, Rummel-Kluge et al., 2008:386, Lan et al., 2003:372).The following section describes the methodology that was used for this study.

### **3. Chapter three: Research methodology**

#### **3.1 Introduction**

Corbin and Strauss (2008:1) define research methodology as “A way of thinking about and studying social phenomena”. In this process, there is use of different techniques and procedures to gather and analyse the data.

This section describes the research approach, setting and design. The sampling procedure, tools used to collect data, how data was managed and analysed, ethical issues that arose during the course of study and precautions that were taken to manage these.

#### **3.2 Research paradigm and approach**

A positivist understanding of how the social and physical world can be known and studied shapes and influences a research study (Polit and Beck, 2008:15). The positivism paradigm argues that there is a possibility to understand and describe the reality of specific phenomena through direct observation and measurement of its discrete aspects (O’Leary, 2004:5). A positivism paradigm refers to the traditional paradigm underling the scientific approach, which assumes that there is a fixed, orderly reality that can be objectively studied; often associated with quantitative research (Polit and Beck, 2008:15). Burns and Grove (2005:22) stressed that the data resulting from the observation and measurement is therefore numerical represented, is shown to be true beyond doubt and has applicability beyond the sample of a wider population.

#### **3.3 Research design**

A non-experimental exploratory quantitative cross sectional survey design that is descriptive in nature informed this study. The importance of a health condition or a phenomenon is usually measured in terms of the extent to which that phenomenon is present in a population at risk/or the incidence of new case at single point in time (Polit and Beck, 2008:20). Thus, the objectives of a descriptive design are observation, description and documentation of a situation as it naturally happens (Polit and Beck, 2008:274). For this study the descriptive design was chosen to enable the researcher to identify the knowledge gaps, justify and making judgement on

medication management. Therefore, in this study the nurse's knowledge on antipsychotic medications was explored, described and categorised in order to give the frequency distribution and mean score.

### **3.4 Research setting**

This study was conducted at Ndera Neuro-Psychiatric hospital, in Rwanda. Rwanda is a low income country situated in East Central Africa with an area of 26,336 square kilometres; its population is estimated to be 10, 412,826 within four provinces and Kigali city (National Institute of Statistics of Rwanda, 2011:2). The official languages are Kinyarwanda, French and English. This study was conducted at Ndera Neuro-Psychiatric hospital the only one psychiatric hospital in the country.

Ndera Neuro-Psychiatric Hospital is located in Gasabo district in Kigali city, and is a government assisted facility headed by the Brothers of Charity and is one of four referral hospitals in the country and with two branches: Icyizere Psychotherapeutic located in Kicukiro district in Kigali city and CARAES Butare situated in Southern Province, Huye district.

Ndera Neuro-Psychiatric hospital activities include preventive, promotive, curative and rehabilitative specialised mental health and neurological care and as referral hospital in mental health, Ndera Neuro-Psychiatric hospital provides training and support to district hospitals. Its human resources (2010) is composed of 82 nurses (1 registered nurse with honours degree in mental health, 55 registered nurses in mental health and 4 registered general nurses, 20 enrolled nurses, 2 nurse auxiliary ), 2 neurologists, 1 psychiatrist, 6 medical doctors, 11 social workers, 4 psychologists and 2 public health officers and 1 pharmacist.

The hospital has 321 beds for all branches, including 250 beds in the main hospital, 63 beds at CARAES Butare centre and 8 beds at Icyizere psychotherapeutic centre. The main hospital is divided into 6 wards including male and female acute, male and female rehabilitation, the children and adolescent ward and the home care ward. The hospital also has an outpatient department which provides services on trauma counselling and psychotherapy, consultation rooms, occupational therapy service, neurology unit and social work service. It has neurology laboratory, general laboratory and the pharmacy. CARAES Butare centre has 2 wards, one for

women and one for men, consultation rooms and pharmacy and Icyizere psychotherapeutic centre has 3 consultation rooms and 3 hospitalization rooms.

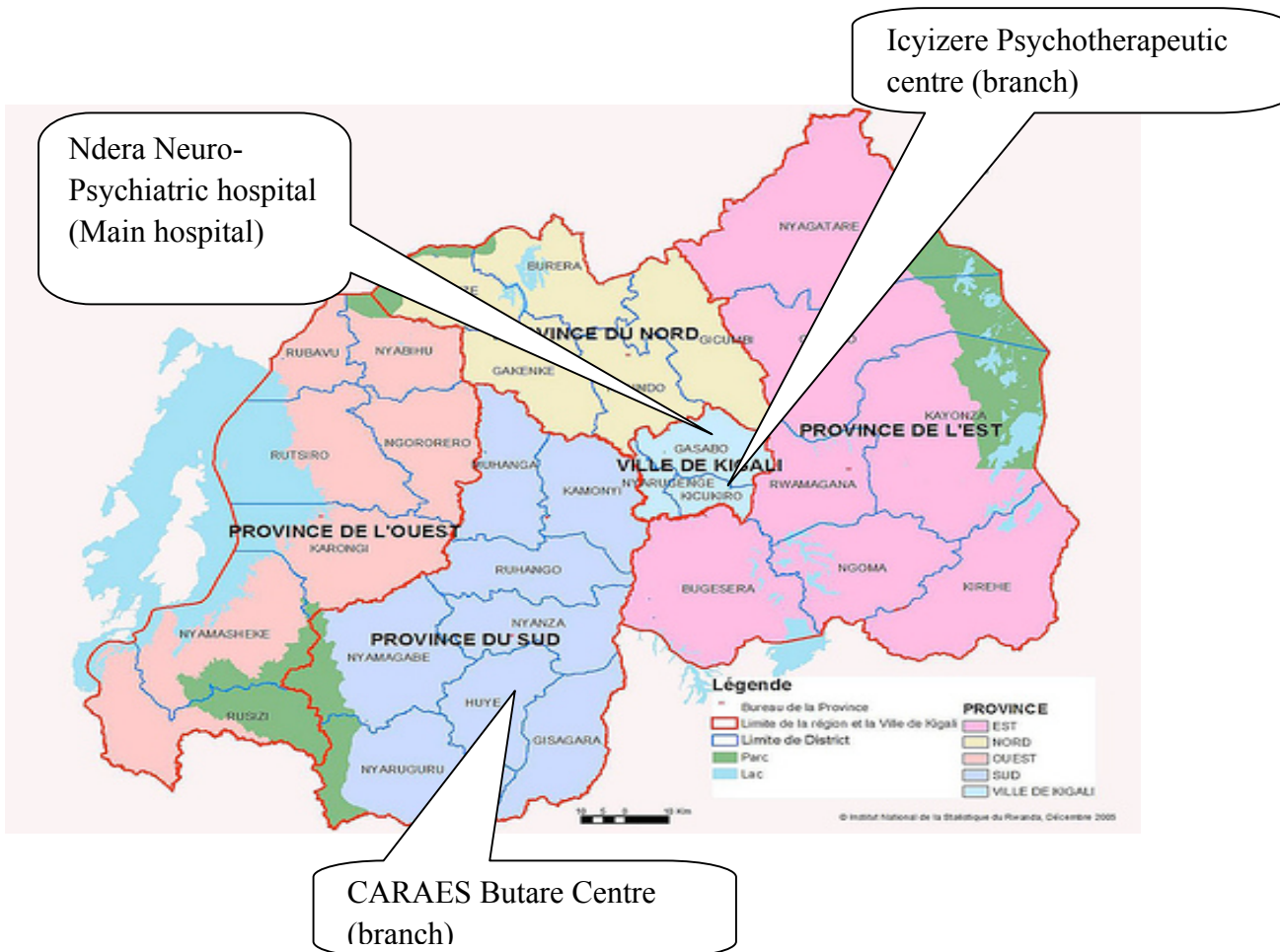


Figure 3.1: Rwanda map

<http://www.guideforafrica.com/rwanda/rwanda-map.html>

At Ndera hospital psychiatric nurses are allowed to prescribe medication in outpatient service for the main hospital and for in and out patient for Icyizere psychotherapeutic centre and CARAES Butare branches (Iyamuremye, 2011).

### **3.5 Population**

Burns and Grove (2005:344) defined study population as the entire set of individuals or elements that meet the researcher's set criteria of selection. For this study the target population is composed of all nurses (N=82) working at Ndera Neuro-Psychiatric hospital, the main hospital and its branches.

### **3.6 Sample and sampling**

The individuals who accurately reflect the population studied in relation to variables under investigation and consideration of others variables that may impact on the study was assessed (Polit and Beck, 2008:291). For this study the researcher adopted a non-probability sampling technique using a convenient and purposive approach. The study aimed to implement a census and thus all nurses, who were working at Ndera Neuro-Psychiatric hospital during data collection period who met the inclusion criteria, are subjects of this study. All nurses (nurse auxiliary, enrolled nurses, registered nurses) working at Ndera Neuropsychiatric hospital who were involved in any or all aspects of medication management (prescription, ordering, transcribing, storage, administration and monitoring) at work during the data collection period. Two nurses who were involved only in administrative duties were excluded from this study as they were only involved in billing and filing.

### **3.7 Data collection instrument**

A self-report questionnaire was used in this study consisting of three sections. Section A was for demographic data that is sex, age, experience, qualification of participant and training in pharmacology. Section B had data pertaining to nurses' knowledge of antipsychotic medication and Section C focused on nurses' practice by collecting data related to nursing management of antipsychotic medication (Appendix 1, 2). The researcher modified two instruments which were initially developed by Byrne et al. (2005:520) and Armstrong-Esther et al. (2008). The instrument by Byrne et al. (2005:520) was developed to explore nurses' knowledge, beliefs and difficulties in implementing the adherence strategies, based on medication used in their context and the adherence strategies interventions. For this study, beliefs items were not used as the study only

explored nurses' knowledge of antipsychotic medication. Amstrong-Esther et al. (2008) developed their instrument to demonstrate nurses' knowledge of antipsychotic and their use in older persons based on voluntary guidelines for drugs and dementia (Levenson, 1998). Some statements were modified to suit this study and the Likert Scale (strongly agree, agree, neutral, disagree, strongly disagree) was used to rate the nurses' knowledge.

### **3.8 Validity and reliability**

Validity is defined by Burns and Grove (2009:380) as a determination of the extent to which the tool reflects the abstract constructs being examined. The content validity is ensured by checking items in data collection tool against the study objectives and concepts in conceptual framework and the extent to which these items are reflective of current research results. The data collection tool is adopted from the previous researcher, so it was reviewed by a panel of experts in research and mental health nursing and management (mental health officer in Ministry of health with PHD in mental health nursing, Three academicians (two with masters in mental health nursing and one with masters in nursing management). The panel members made an individual judgement and rating on each item and then compared their rating score for each item so that the items which were rated as inappropriate were removed. The table below shows the content validity which highlights items of measurement corresponding to the study objectives and conceptual framework

Table 3.1: Content validity

Objectives	Conceptual framework	Questionnaire	Research studies
1. Assess nurses' level of knowledge on antipsychotic medication.	Core drug knowledge	Section B, Question 7 (Item 1-25) Question 8 (Item 1-10) Question 9 (Item 1-16)	Byrne et al. (2005) Amstrong-Esther et al. (2008) Uys and Middleton (2004) Muanch and Hamer (2010) Jones and Jones (2008)
2. Determine nurses' knowledge on antipsychotics' health education.	Core patient variable	Section C Question 10 (Item 1-14) Question 11 (Item 1-12)	Byrne et al. (2005) Amstrong-Esther et al. (2008) Uys and Middleton (2004) Correll (2008)
3. Determine characteristics associated to nurses' knowledge on medication.	Core drug knowledge  Core patient variable	Section A (Question 1,2,3,4,5,6) and Section B (Question, 7,8,9)  Section A (Question 3,4,5,6) and Section C (Question, 10, 11)	Byrne et al. (2005) Schellack, (2010) Skingsley, Bradley and Nolan (2005)

Reliability means the degree of consistency with which an instrument measures the attribute it is designed to measure (Polit and Beck, 2008). The questionnaires used previously by Byrne et al. (2005) and Armstrong-Esther et al. (2008) have proven valid and reliable (Cronbach's alpha 0.60). However, the instruments have never been used in Rwanda and other questions have been added. The test reliability was therefore done according to section B7 measuring understanding (27 items) was reliable (Cronbach's alpha 0.77), Section B8 (10 items) measuring knowledge of antipsychotic medication' names (Cronbach's alpha 0.67), Section C10 (14 items) measuring

knowledge about medication compliance (Cronbach's alpha 0.92) and section C11 (12 items) measuring knowledge on medication education was reliable at (Cronbach's alpha 0.89). The instrument was translated from French to produce terms equivalent to an English version and facilitate French speaker nurses to complete it. The translated version was reviewed by mental health experts from Kigali health Institute to ensure that the translated instrument had appropriate meaning.

### **3.8 Pilot study**

Pilot testing is an important element of study design and may be used for different reasons. In this study it was used to assess whether the research instrument is realistic and practical. It was used to examine whether there are any ambiguous questions, misspelt words or whether the vocabulary was clear and appropriate for the respondents. Five nurses were asked to participate in the pilot study to evaluate the instruments in terms of comprehensiveness, user friendliness as well as time taken to complete in order to predict the problems a researcher may encounter during the study. Based on results of the pilot study, some changes were considered to increase the practicality and clarity of instruments.

### **3.9 Data collection procedure**

The research proposal was submitted to the University of Kwa-Zulu Natal authorities for review and ethical approval and permission to conduct the research was sought from Ndera Neuro-Psychiatric authorities.

Before commencing data collection, an introductory and informative session was held with the nurses and nurse managers of Ndera Neuro-Psychiatric hospital to explain the purpose of the investigation, to request them to participate in the study and negotiate the convenient time to collect data and the written information document was furnished to them.

Appointments were made with the nurses when they were available. The researcher informed participants of their rights and explained issues of anonymity and confidentiality in relation to the study. The participants were requested to sign an informed consent once they agreed to participate in the study.

The participant was seen individually and the questionnaire was delivered by hand to each participant by the researcher who self assisted them and returned to the researcher by placing them in a box which was located in the unit manager's office. A covering letter, detailing the information about the study and the consent was included as well as clear and concise instructions for completing questionnaire (Appendix 3, 4). To maximize the number of participants and to include all categories of nurses, as with the hospital planning all nurses had to be available within 5 working days, the researcher spent a week collecting data and during the night shift to see the nurses who were not available within five days.

### **3.10 Data analysis**

Data was entered into the Statistical Package for Social Sciences (SPSS), version 19. Descriptive statistics was used to describe and synthesize data. Categorical variables were summarized using frequency distribution and presented in tables, bar and pie charts. The numerical variables (knowledge scores) was summarized by the measures of central tendency (mean, minimum and maximum) and measures of variability (standard deviation). Non parametric tests (Mann-Whitney U test was used to test difference between sex across the score, Kruskal-Wallis test to test difference in more than two groups); Chi-Square test was used to test groups' differences with regard to the level of knowledge.

### **3.11 Ethical considerations**

Ethical considerations are vital to any study because of the influence the researcher has to acquire and retain respondents (Polit and Hungler, 1999:132).

The research proposal was presented to the School of Nursing and then submitted to the Ethics Committees at the University of Kwa-Zulu Natal and Kigali Health Institute for approval. The approvals and ethical clearance number are provided in Appendix (10, 11) and the permission to conduct the research has been obtained from Ndera Neuro-Psychiatric hospital (See Appendix 9)

The rights of participants were respected. Those rights were underlined by Burns and Groves (2009:611) and include right to self-determination, right to privacy, right to anonymity and confidentiality, right to fair treatment and right to protection from harm or discomfort.

Informed consent was obtained from the participants after explaining the purpose of the study (See Appendix 5, 6). The researcher provided information on a sheet as well as verbally to the participants in order to ensure their right to additional information about the study. The participants voluntarily participated in the study and had the right to withdraw from the study without any prejudice; all information will remain confidential and will be kept by the researcher, in a locked cupboard and then destroyed after five years of analysis and report the findings.

To ensure scientific honesty, the researcher acknowledged the ideas or Works from others that were used in this study.

### **3.12 Dissemination of the findings**

The findings of this study will be presented to the University of KwaZulu-Natal in hard copies and soft copy. A hard copy of the study will be made available to the Kigali Health Institute library and to Ndera Neuro-Psychiatric hospital. The findings will also be presented to the Taskforce of pharmacy in the Ministry of health. The researcher and supervisor will publish the findings in an accredited scientific Nursing Journal.

### **3.13 Conclusion**

This section outlined the research methodology which was followed in this study. It also highlighted the procedure that was used to collect the data as well as the measures taken to ensure ethical considerations.

## **Chapter four: Data analysis and presentation of findings**

### **4.1 Introduction**

This chapter presents the finding of this study. The main aim was to explore nurses' knowledge of antipsychotic medication, its management and factors associated with their knowledge. Data collection was done using a self-administered questionnaire with was composed by three sections: section one focused on participant demographic data, section two evaluated knowledge on antipsychotic (therapeutic effects, antipsychotic name and its adverse effects) and section three evaluated nurses' knowledge on monitoring practices of a patients under antipsychotic medication.

Analysis was done using the Statistical Package for the Social Sciences (SPSS) for Windows, version 19. For the analysis of the study, negative responses "strongly disagree, disagree and neutral" was grouped together and rated as "0" and the positive responses "agree and strongly agree" were grouped together and rated as one. The mean score of each section was calculated as well as the total score knowledge and the participants were categorized according their level of knowledge (low, medium and high). The level of knowledge was determined by a team of experts in mental health after examining the questionnaires items. Respondents with score < 50% were considered as having low knowledge, score from 50% to < 75% was considered as having medium knowledge while those with score  $\geq 75\%$  were considered as having high knowledge.

The non-parametric tests were used for analysis of associations as the data were skewed. According to Polit and Beck (2009:591), the non-parametric tests are mainly practical when data is not normally distributed. Therefore Mann-Whitney U test was used to test difference between sex across the score, Kruskal-Wallis test to test difference in more than two groups and Chi-Square test was used to test groups differences in regard to the level of knowledge. Data are presented with the aid of frequency tables, bar graphs, percentage and scores as deemed appropriate.

The presentation of the results is in accordance with the objectives of the study. The demographic characteristics of respondents were described followed by presentation of score and

level of knowledge of therapeutics effects, identification and adverse effects of antipsychotic medication; knowledge and level of antipsychotic medication management, and the association between demographic characteristics of respondents and their knowledge scores.

## 4.2 Demographic characteristics of the sample

The demographic variables for this study include gender, age, and years of experience as a nurse, experience at Ndera Neuro-Psychiatric hospital, qualification and training in psychopharmacology. These variables were selected on the basis of previous studies which were found to play a role in gaining knowledge on medication management (Simonsen et al 2011:11, Dilles et al, 2010).

### 4.2.1 Gender and age

The findings of this study show that over one half (n= 40 of 73 or 54.8%) of the sample were female and (n=33, 45.2%) were male. The largest portion of participants (n=45; 61.6%) were found in the 26-35 age group. The second largest portion of participants (n=20; 27.4%) were found in the 36-45 age group. The early (25 years and fewer) and the later age group (46 years and more) were found at equal percentage (n=4, 5.5%). These findings are summarized in table 4.1

Table 4.1 Gender and age

<b>Socio-demographic variables</b>	<b>Attributes</b>	<b>Frequency (%)</b>
<b>Gender</b>	Female	40 (54.8%)
	Male	33 (45.2%)
<b>Age</b>	25 years and lesser	4 (5.5%)
	26-35 years	45 (61.6%)
	36-45 years	20 (27.4%)
	46 years and more	4 (5.5%)

#### 4.2.2 Respondents nursing experience and experience in psychiatric setting

For the purpose of this study, respondents were asked to state their experience in category of years and most participants are young in nursing profession (n=34; 46.6%) having not had more than 5 years of experience. This was followed by participants (n=20; 27.4%) with 6-10 years of experience. The majority (n=46; 63%) have worked at HPN-Ndera hospital for 0- 5 years, pursued by participants (n=20; 27.4%) who have had 6-10 years of experience at the same hospital. There is one (1.4 %) respondent who has more than 20 years as a nurse and has worked at Ndera hospital for more than 20 years.

Table 4.2 Nursing experience and experience in psychiatric setting

<b>Socio-demographic variables</b>	<b>Attributes</b>	<b>Frequency (%)</b>
<b>Experience as a nurse</b>	0-5 years	34 (46.6%)
	6-10 years	25 (34.2%)
	11-20 years	13 (17.8%)
	More than 20 years	1 (1.4%)
<b>Experience at Ndera hospital</b>	0-5 years	46 (63%)
	6-10 years	20 (27.4%)
	11-20 years	6 (8.2%)
	More than 20 years	1(1.4%)

### 4.2.3 Qualification of respondents

The majority of nurses in the sample (n=45; 61.6%) have an advanced diploma in mental health nursing equivalent to three years of education in higher learning institution in Rwanda. The predominance of advanced mental health nurses may be explained by the fact that the HNP-Ndera hospital is a potential recruiter as it is the only psychiatric hospital in the country. The advanced diploma is referred to A1 level in French system. Enrolled nurses (A2), occupy second place with (23.3%, n= 17). Only 3 nurses (4.1%) had a postgraduate level, respectively (n=2; 2.7%) with honours -degree and (n=1; 1.4%) with a master's degree. George, Henneman&Tasota(2010:s142) stressed that high levels of education is crucial in gaining understanding of high risk medication management.

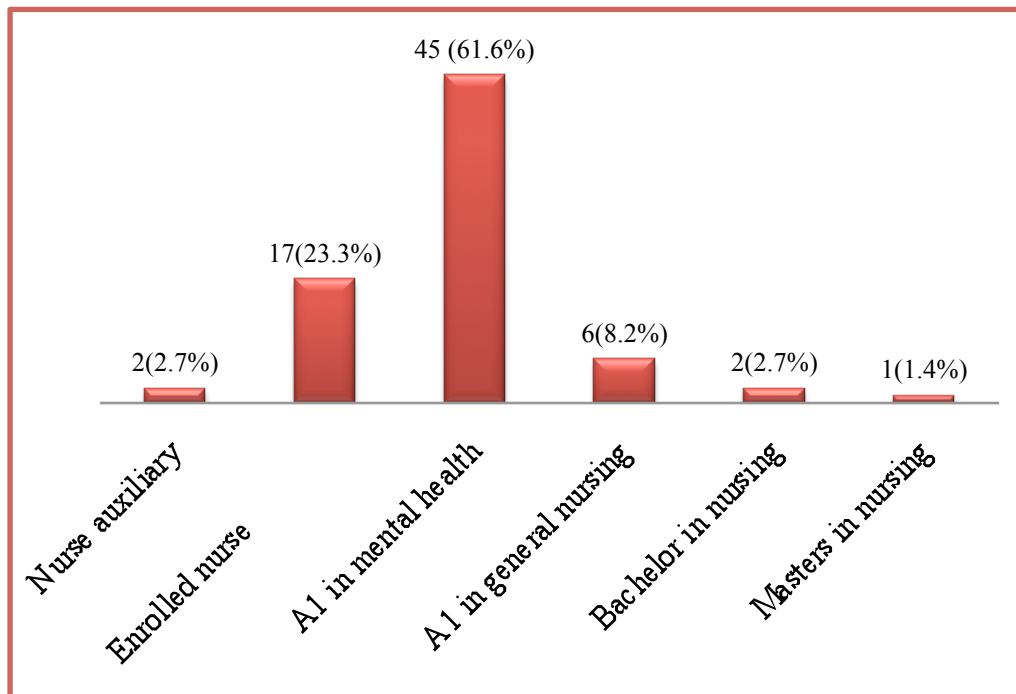


Figure 4.1 Qualification of respondents

#### 4.2.4 Training in psychopharmacology

The highest portion of participant (n=59, 80.8%) had an academic training in psychopharmacology. This may be explained by the fact that the majority of participants had undergone study at higher learning institutions. In service training is the second method of training (n=8; 11%). Workshops (n=3; 4.1%) as well as peer education (n=3; 4.1%) were also used to train the participants in this study.

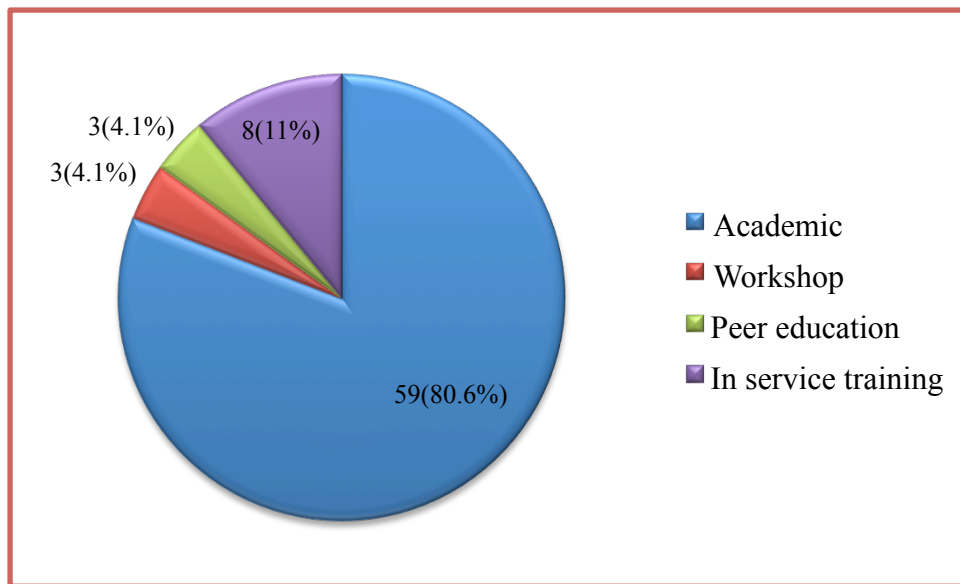


Figure 4.2 Participants training in psychopharmacology

### 4.3 Participants' knowledge on antipsychotic medication

To explore knowledge of participants 53 items questionnaires were asked ( 27 items regarding therapeutic effects, 10 items regarding knowledge on medications names and 16 items related to adverse effects) which give a score of 53 (100%). The mean score was 64.22% with a standard deviation 9.83%. The lowest score was 41.51% and the highest score was 86.79%. The majority of respondents had medium knowledge (n=55, 75.3%) and n=9 (12.3%) with low knowlegde and only n=9(12.3%) had a high knowledge.

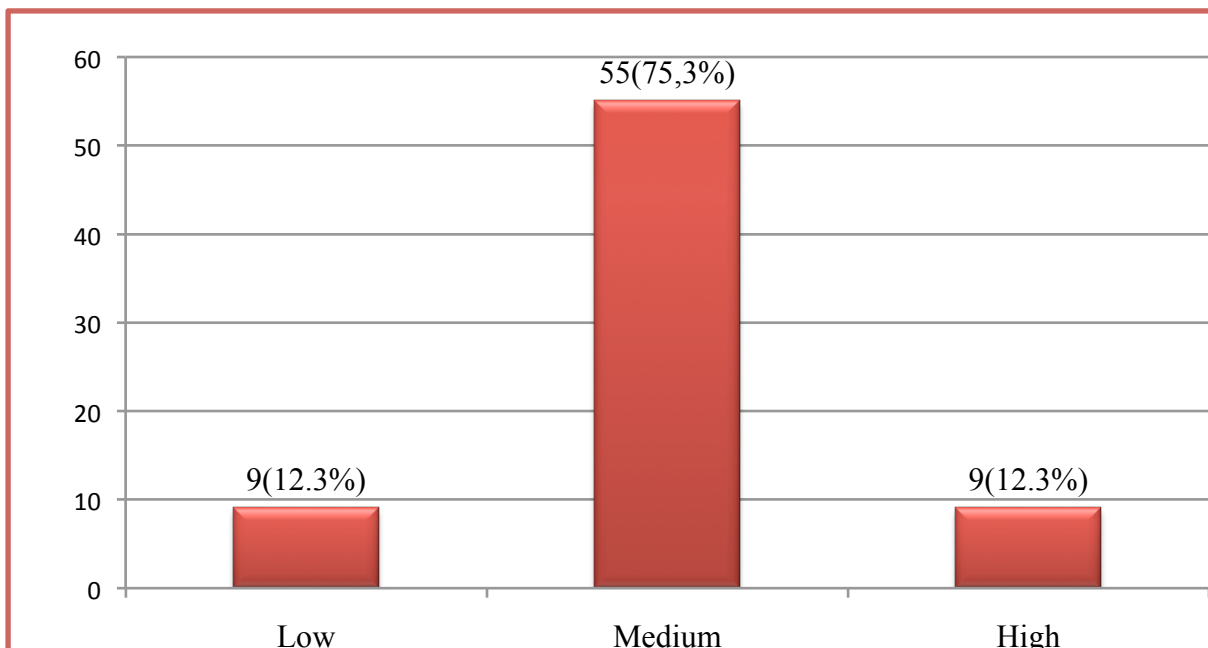


Figure 4.3 Level of knowledge on antipsychotic medications

### 4.3.1. Participants' knowledge on therapeutic effects of antipsychotic medication

In order to establish the level of knowledge regarding the therapeutic effects of antipsychotic medication 27 questions were asked. The summed correct responses to these questions could give a possible score of 27 (100%). The mean score was 72.85% with 14.99% as standard deviation from the mean. The lowest score was 18.52% and the highest was 100%. The level of knowledge on different therapeutic effects of antipsychotic medication was slightly different between highly knowledgeable (n=33, 45.2%) and medium knowledgeable (n=32, 43.8%); (n=8, 11%) of respondents with low levels of knowledge.

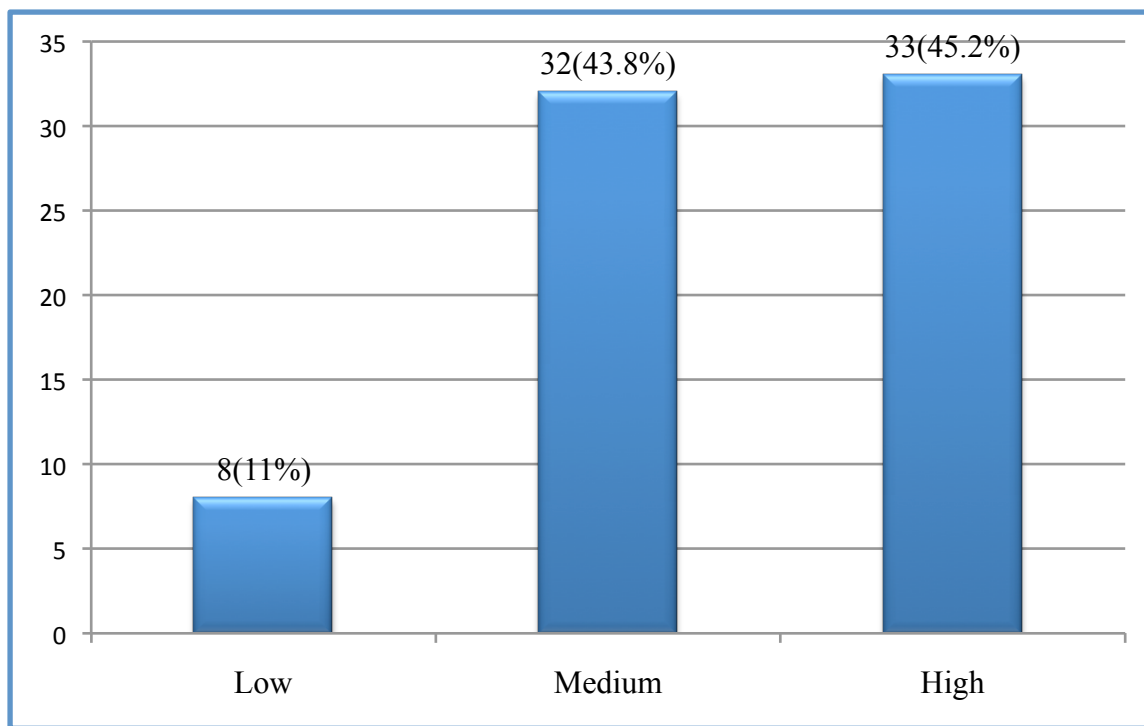


Figure 4.4 Level of knowledge on antipsychotic medication therapeutic effects

### 4.3.2 Knowledge of antipsychotic medication name

The respondents were asked to identify if the actual medication is antipsychotic medication. The score were calculated based on the respondents' responses 'no' and 'don't know' were considered as 'negative' while 'yes' was 'positive'. The total score for correct responses was 10 (100%). The mean score was 81.91% with 16.88% deviation from the mean. The lowest score

was 30% and the highest was 100%. The respondents showed high knowledge levels as evidenced by (n=50, 68.5%) who are very knowledgeable and (n=21, 28.8%) of participants who are knowledgeable. A small number has shown to be not knowledgeable (n=2, 2.7%).

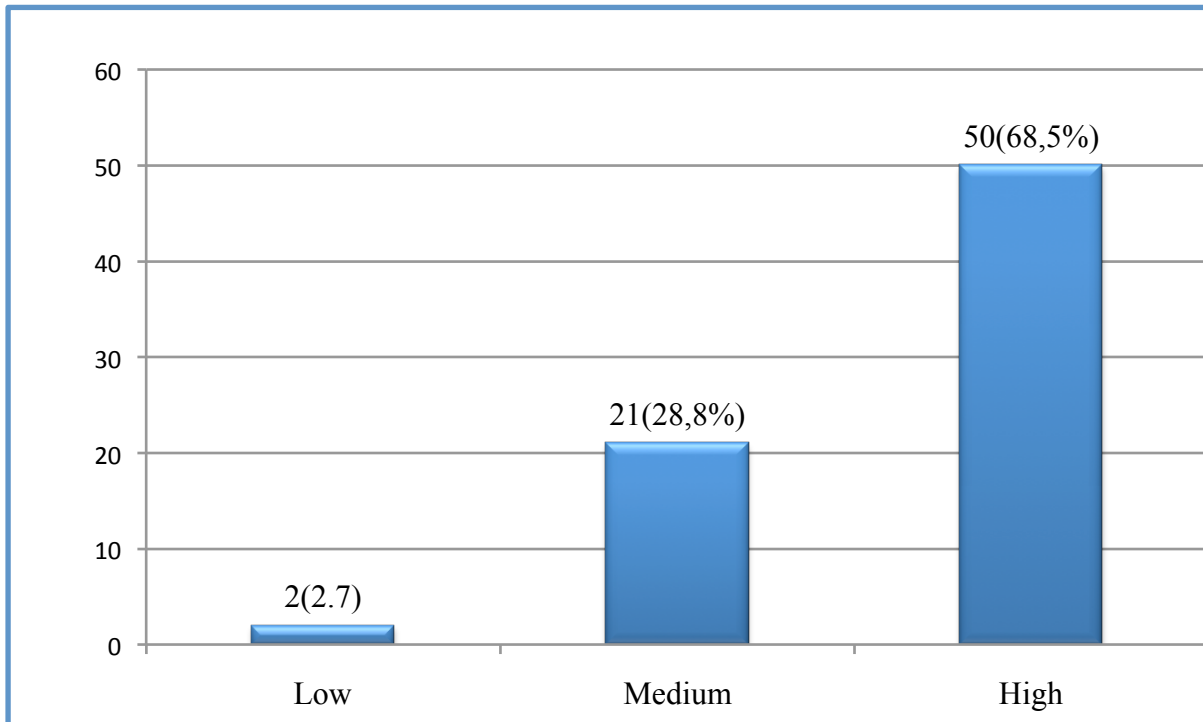


Figure 4.5 Level of knowledge on antipsychotic medication name

### 4.3.3 Knowledge on adverse effects of antipsychotic medications

In this section, the participants were asked to identify which adverse effect of antipsychotic medication is caused by the old or new generation antipsychotic or if it was caused by both. The number of items was 16 and correct responses were 16(100%). The mean score was 38.61% with 12.38% deviation from the mean. The highest score were 62.50% and the lowest score were 6.25%. The participants were categorized according their score and predefined criteria. Low levels of knowledge were found among the participants with regards to differentiating the adverse effects in regard to underlying antipsychotic class as evidenced by n=49(67.1%) and only 24 (32.9%) who had medium knowledge and no one was very knowledgeable.

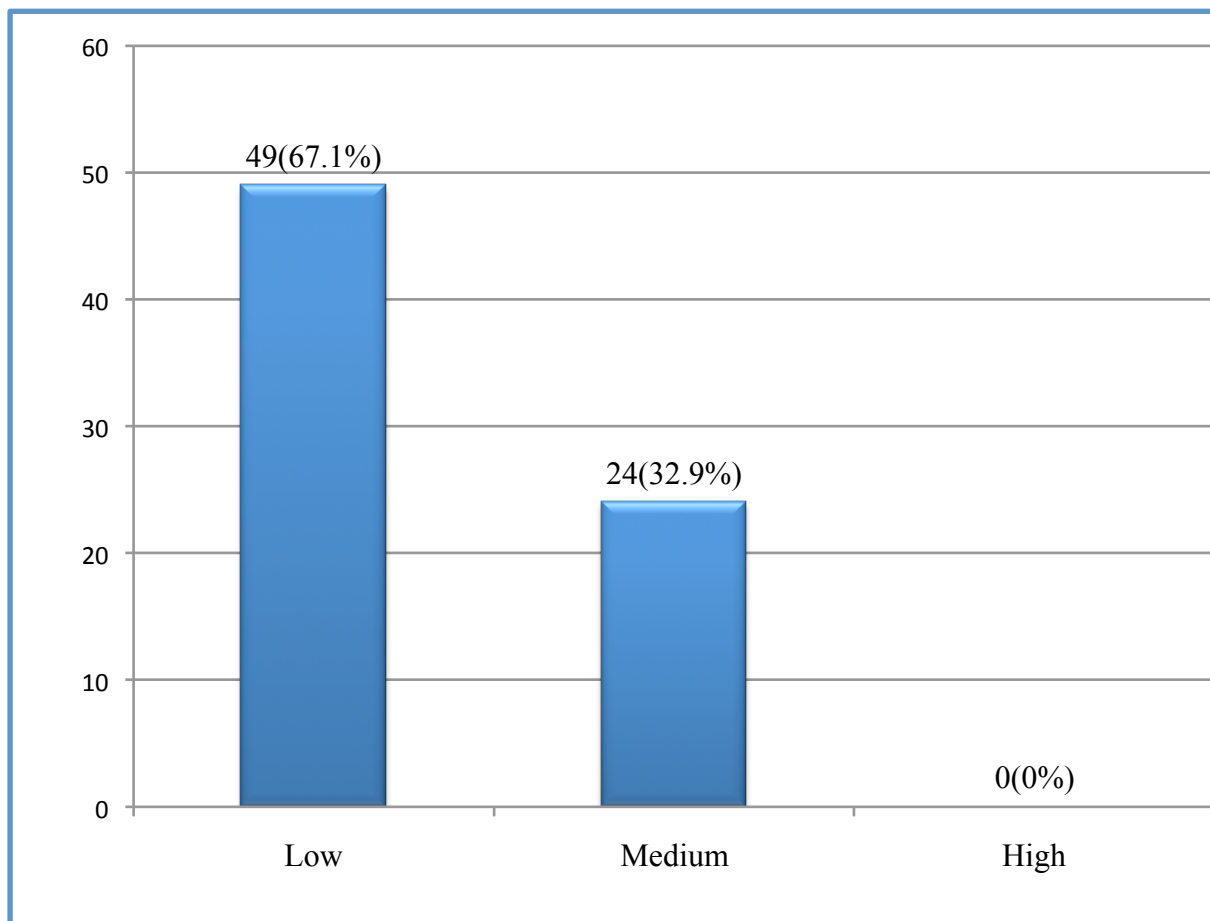


Figure 4.6 Participants level of knowledge of antipsychotic adverse effects

#### 4.4 Knowledge on the benchmarked monitoring practice of patient taking antipsychotic medication

To establish participants' knowledge on monitoring practice of patient taking antipsychotic medication, the score of two questions in the questionnaire were summed as sub score of total knowledge ( 14 items on monitoring patients 'compliance to antipsychotic medications and 12 items on patient and family education about antipsychotic medication). The total score was 26 (100%). The mean score was 79.50% with a standard deviation of 20.20%. The minimum score was 0% and the maximum was 100%. The majority of participants were very knowledgeable (n=48, 65.8%), n=20 (27.4%) scored knowledgeable and n=5(6.8%) scored not knowledgeable. The results showed a big difference between participants as the score ranged from 0 to 100%.

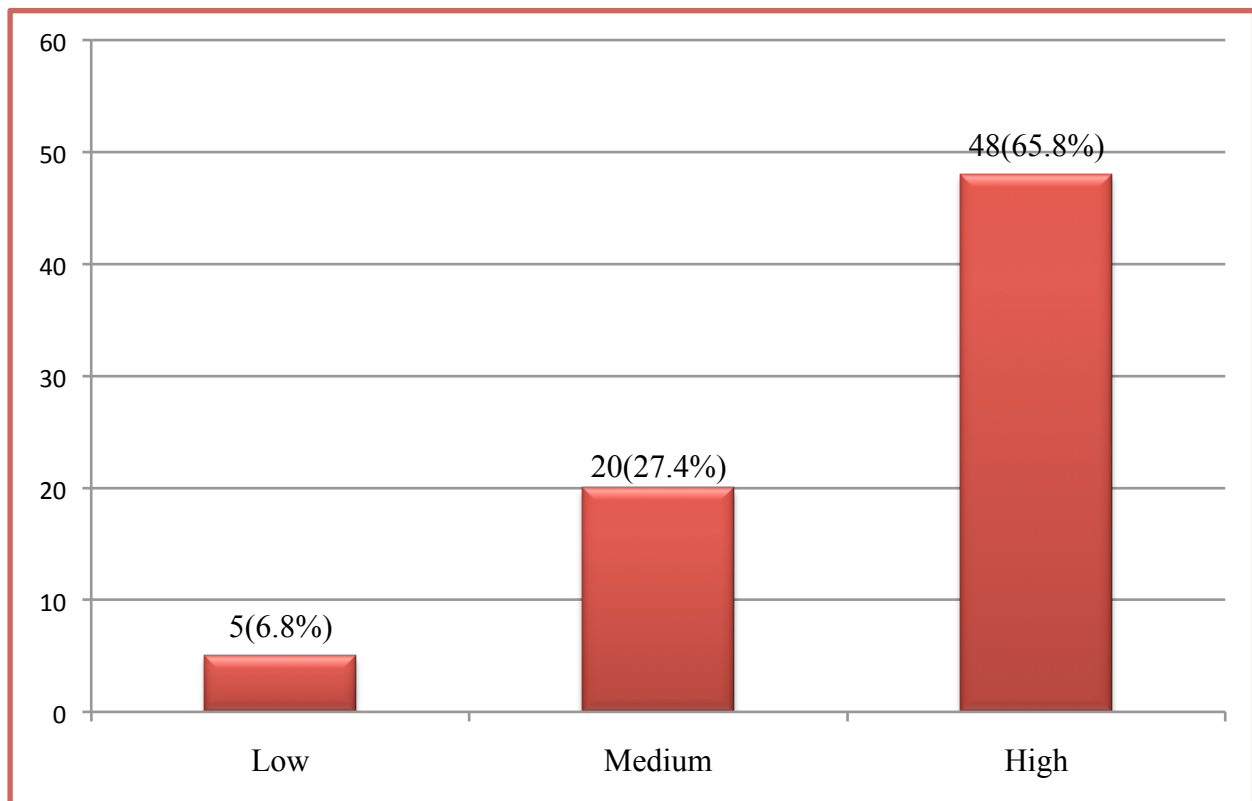


Figure 4.7 Knowledge about benchmarking monitoring practice of patients under antipsychotic medication

#### 4.4.1 Knowledge of monitoring of patient compliance to antipsychotic medication

The question that addressed monitoring of patient compliance to antipsychotic medication was composed of 14 items considered as important nursing practice to promote compliance. Each correct question was rated as “1” and the total score were 14(100%). The mean score was 83.75% and deviation from the mean was 22.75%). The highest score was 100% and the lowest was 0%. The participants showed a high level of knowledge as evidenced by (n=55, 75.3%) of those who were very knowledgeable (n=13, 17.8%) of those who had medium knowledge and only (n=5, 6.8 %) who had low levels of knowledge.

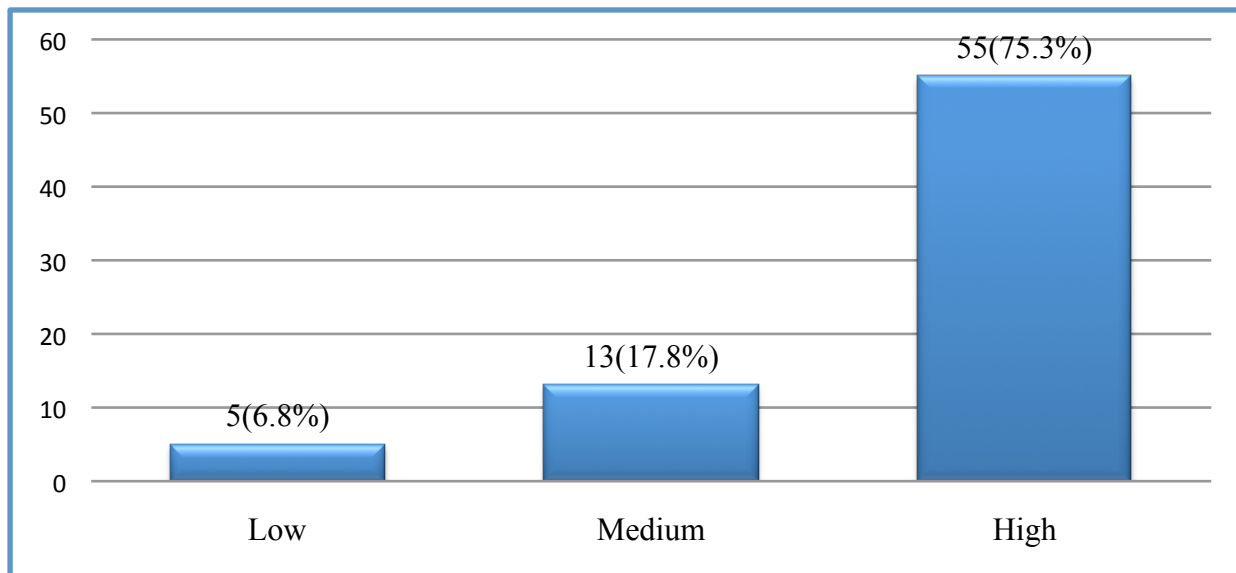


Figure 4.8 Knowledge of monitoring patient’s compliance to antipsychotic medication

#### 4.4.2. Knowledge of patient and family education practices

In order to determine participants' knowledge on patient and family education 12 item questions were asked. The possible score was 12 (100%) was summed up by positive responses. The mean score was 74.54% with a deviation from the mean of 23.54%. The highest score was 100% and the lowest was 0%. The majority of participant were very knowledgeable (n=45, 61.6%) followed by knowledgeable participants (n=19, 26%) and 9 (12.3%) participants with low knowledge levels.

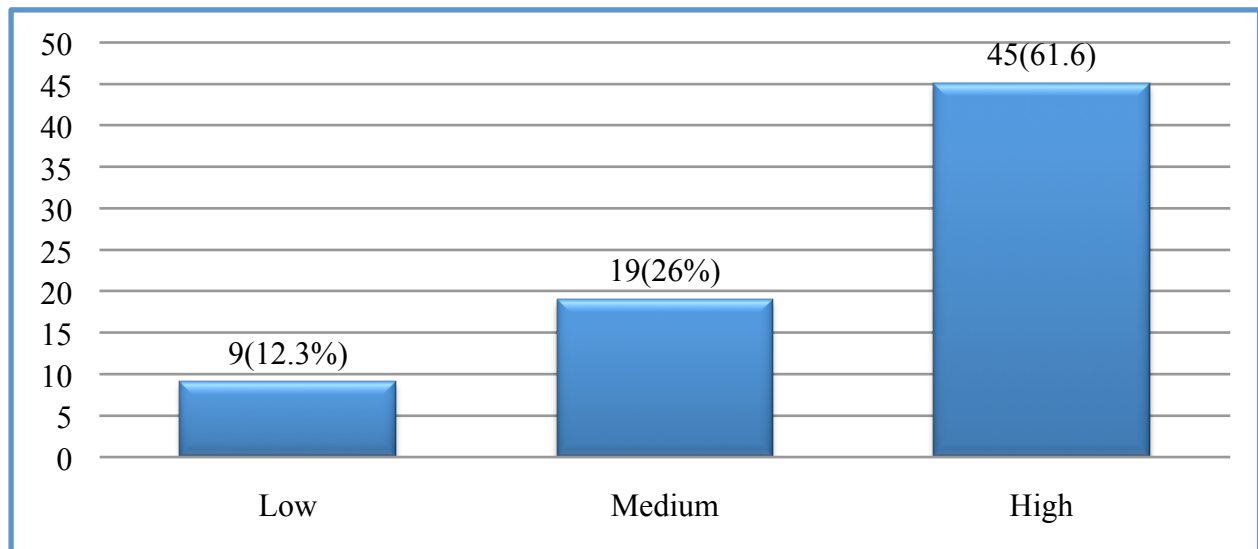


Figure 4.9 Level of knowledge on patient and family education about antipsychotic medication

#### 4.5. The overall score knowledge on antipsychotic medication

In order to determine the total score knowledge on antipsychotic medication all items in questionnaire were considered. The summed score for all correct responses was 79 (100%). The mean score for the total knowledge was 68.04%, with a deviation from the mean of 11.53%. The highest score was 90% and the lowest was 29%. The overall picture of participants' knowledge of antipsychotic is medium as shown by 65.8% (n=48) who are knowledgeable, 24.7% (n=18) who were very knowledgeable and 9.6 (n=7) who were not knowledgeable.

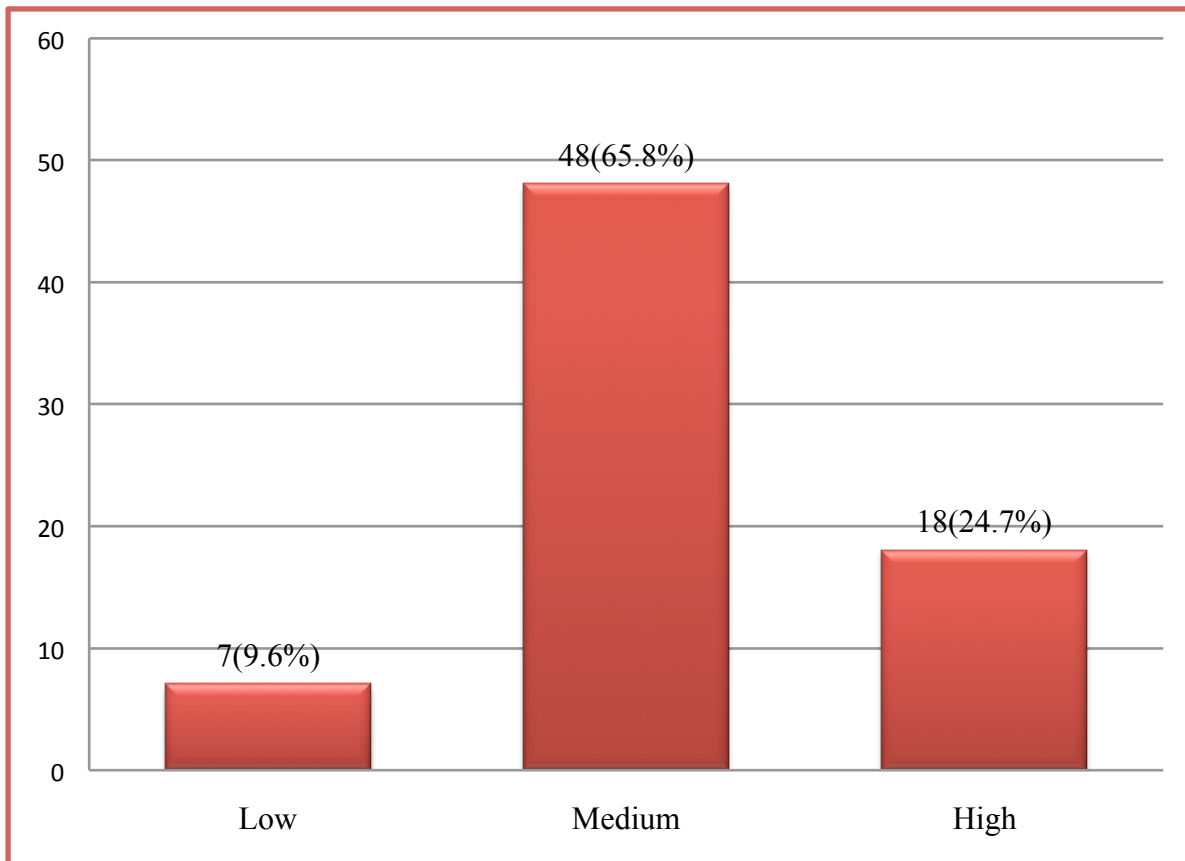


Figure 4.10 Overall antipsychotic medication knowledge score

## 4.6 Association between nurses' demographic variables, their score and level of knowledge

The knowledge of antipsychotic management was divided into 5 scoring categories: knowledge of therapeutic effects, identification of medication name, identification of adverse effects, knowledge of compliance promotion practice and knowledge of patient and family education practice. The two subcategories which were made included knowledge of antipsychotic medication (therapeutic effects, name and adverse effects) and knowledge of antipsychotic management (promotion of compliance, patient and family education). All five categories were added up to make an overall knowledge score. The mean score of each category was found as illustrated in table 4.3

Table 4.3 Mean score knowledge according category

Category	Mean score	SD
Knowledge score on therapeutic effects	72.85%	14.99%
Knowledge score on antipsychotic medication name	81.91%	16.88%
Knowledge score on adverse effects	38.61%	12.38%
Sub-score knowledge on medication	64.22%	9.83%
Knowledge score on patient' compliance promotion practices	83.75%	22.75%
Knowledge score on patient and family education	74.54%	23.52%
Sub-score knowledge on medication management	79.50%	20.20%
Overall knowledge score	68.04%	11.53%

The mean scores suggest that respondents are more knowledgeable in some aspects of antipsychotic medication and less knowledgeable in others therefore affecting their overall knowledge. To establish the factors contributing to nurses' knowledge about antipsychotic medication a decision was taken to explore how the demographic variables may influence the overall knowledge of the participants in the study.

#### 4.6.1 Association of respondents' gender and their overall score knowledge on antipsychotic medication

In this study, there was no statistically significant difference (p-value of 0.885) in knowledge between males and female as evidenced by Mann-Whitney U test which revealed that knowledge level of antipsychotic medication for males (Md=69.62, n=33) and females (Md=69.62, n=40), U test value =647, z=-.144. Furthermore, the difference was explored between the categories of knowledge and the results yielded no statistical difference as illustrated in table 4.4

Table 4.4 Association of gender and level of knowledge

Gender	Level of knowledge				P-value
	Low	Medium	High	Total	
Female	4 (10%)	26 (65%)	10 (25%)	40(100%)	0.986
Male	3(9.1%)	22 (66.7%)	8 (24.2%)	33(100%)	

#### 4.6.2 Association of age of respondents and their score knowledge on antipsychotic medication

There was no difference in the median between the group aged of 25 years and fewer and the group aged between 26-35 years (Md=70.89). However, there was a difference in other groups, those aged between 36-45 years (Md=68.35) and the group aged 46 years and more (Md=65.13). Even though there is slight diminution of the mean with old age, there was no statistical significant response observed ( $X^2=4.320$ ,  $df=3$ ,  $p=0.229$ ). The chi-square test for independence also revealed no significance between level of knowledge (low, medium and high) and age groups for the respondents ( $p=.792$ ).

#### 4.6.3 Association of years of experience as a nurse and participants score knowledge

The participants who have 6-10 years of experience scored high median (70.89), followed by the participants who have more than 20 years of experiences and participants who have experience of 0-5years (69.62), median of for the participants who have 11-20 years of experience as a nurse scored the lowest median (63.29). These differences among experience age groups yielded

no statistical significance as evidenced by a p-value of 0.382,  $\chi^2 = 3.063$  with the degree of freedom of 3. The study further explored the differences according the level as illustrated in figure 4.5

Table 4.5: Association of participants' gender and their level of knowledge

Experience as a nurse	Level of knowledge			Percentage	P-value
	Low	Medium	High		
0-5 years	4 (11.8%)	20 (58.8%)	10 (29.4%)	34 (100%)	0.785
6-10 years	1 (4%)	19 (76%)	5 (20%)	25 (100%)	
11-20 years	2 (15.4%)	8 (61.5%)	3 (23.1%)	13 (100%)	
More than 20 years	0	1 (100%)	0	1 (100%)	

The group with 6-10 years of experience in the nursing profession had the highest percentage (76%) of knowledgeable with regards to antipsychotic medication. The group with experience of 0 to 5 years of experience had the high number of very knowledgeable compared to other groups while the group with 11-20 years of experience had a high percentage of participants with low knowledge.

#### 4.6.3.4 Association of years of experience at the actual hospital and their score knowledge

A Kruskal-Wallis test revealed no statistical significant difference ( $p=0.653$ ) in knowledge level across four groups (group1,  $n=46$ : 0-5 years; group2,  $n=20$ : 6-10 years, group3:  $n=6$ : 11-20 years and group 4,  $n=1$ : more than 20 years). Group 4 scored highest median ( $Md=78.48$ ) followed by group2 with ( $Md=70.25$ ), group1 ( $Md=69.62$ ) and the participants with medium experience (group3) scored the lowest median ( $Md=68.35$ ).

Table 4.6 Association of years of experience at the actual hospital and level of knowledge

Experience at Ndera hospital	Level of knowledge			Percentage	P-value
	Low	Medium	High		
0-5 years	5 (10.9%)	29 (63%)	12 (26.1%)	46 (100%)	0.543
6-10 years	2 (10%)	15 (75%)	3(15%)	20 (100%)	
11-20 years	0	4 (66.7%)	3 (33.3%)	6 (100%)	
More than 20 years	0	0	1(100%)	1 (100%)	

#### 4.6.4.5 Association of participants 'qualification and their score knowledge

A statistical significant difference ( $p=0.010$ ) was found in knowledge on antipsychotic medication across six different groups qualification (group1,  $n=2$ : Nurse auxiliary, group2,  $n=17$ : enrolled nurses, group3,  $n=45$ : advanced diploma in mental health, group4,  $n=6$ : advanced diploma in general nursing, group5,  $n=2$ : bachelor in nursing and group5,  $n=1$ : masters). The group with a bachelor's degree

In nursing scored high median ( $Md=73.42$ ) followed by the group with advanced diploma in mental health ( $Md=72.15$ ). It was not expected that nurse auxiliaries would score a high ( $Md=70.89$ ) than the other remaining groups (advanced diploma in general nursing:  $Md=69.62$ ; enrolled nurses:  $Md=65.82$ ) and masters with the lowest score ( $Md=29.11\%$ ). The statistical test (Chi-square) was performed to determine the relationship between their level of knowledge and their qualifications was found to be significant at illustrated as highlighted in table 4.7

Table 4.7 Association of participants 'qualification and their level knowledge

Qualification	Level of knowledge			Percentage	P-value
	Low	Medium	High		
Nurse auxiliary		1 (50%)	1(50%)	2(100%)	0.030
Enrolled nurse	4(23.5%)	12 (70.6%)	1(5.9%)	17(100%)	
Advanced Diploma in mental health	2(4.4%)	29(64.4%)	14(31.1%)	45(100%)	
Advanced Diploma in general nursing		5 (83.3%)	1(16.7%)	6(100%)	
Bachelor in nursing		1(50%)	1(50%)	2(100%)	
Masters in nursing	1(100%)			1(100%)	

As illustrated in the table above, the majority (three groups) of the participants were knowledgeable. It was not expected for a participant with a master's degree to be not knowledgeable with regards to antipsychotic medication.

#### 4.6.5.5 Association of participants training and their score of knowledge

A Kruskal-Wallis test revealed no statistical significant difference ( $p=0.308$ ) in knowledge across the four groups (group 1,  $n=59$ : training in academia, group 2,  $n=3$ : workshop training, group 3,  $n=$  peer education training and group 4,  $n=8$ , in service training). The participants trained in academia had the highest score ( $Md=70.89$ ), followed by the participants who were trained in workshops ( $Md=69.62$ ), participants trained through in service training ( $Md=66.46$ ) and participants trained by peers scored ( $Md=64.56$ ). The chi-square test was performed to determine relationship between nurses level of knowledge and educational training and no statistical significance was found ( $p=0.427$ ).

## **4.7 Conclusion**

In this chapter, data was presented from the main findings of the study. Overall findings showed that nurses working at Ndera Neuro-Psychiatric hospital had medium knowledge on antipsychotic medications. The study shows that nurses with high levels knowledge on some aspects of medication (medication name, monitoring patients' compliance) but average (therapeutic effects, family and patient education) and poor knowledge (adverse effects) for others. These findings are somehow contradictory as the knowledge on adverse effects is crucial in other aspects of medication such as patient and family education and monitoring of patients' compliance to medication. Nursing role in antipsychotic management necessitates in-depth knowledge than that observed through this study's findings. Therefore, this is an indication that nurses need further training especially pragmatic psychopharmacology in order to help them to better fulfil their role.

Chapter five will discuss the findings, make recommendations and conclude the study

## **Chapter five: Discussion of the finding**

### **5.1 Introduction**

This chapter concludes the study with a discussion on the results presented in chapter four, recommendations as well as the study's limitations.

For this study positivism, exploratory and non-experimental design was used to achieve the purpose of the research. The objective of this study was to assess nurses' levels of knowledge on antipsychotic medication; determine nurses knowledge on health education as well as characteristics associated to their knowledge.

### **5.2 Demographic Information**

In this study there were 40 (54.8%) female and 33 (45.2%) males bringing the total number of 73 participants. This is consistent with country profile where 66% of nurses are female (African Health Workforce Observatory, 2009:26) The high number of females may be explained by the fact that nursing has been dominated by females as highlighted in other studies (Pudney and Shiels, 2000). The modern nursing profession is associated with feminization (Evans, 2004:325) as nursing education has failed to provide an environment that is conducive to attract men in the profession (O'Lynn and 2004:230) In the study by Pudney and Shield (2000:368), 90% of qualified nurse were female contrary to this study where the number of males is quite high (45.2%). These results are consistent with the results of the study conducted in Australia by Gough and Happel (2009:3160) who found that mental health nursing has a high number of males than other nursing specialities.

The findings of this study reveal that the majority of nurses (61.5%) were young (aged between 26-36 years). These findings are quite similar to the national profile as evidenced in the study by Africa health workforce observatory (2009:30) where the majority of the nursing workforce ranges between 31-40 years old. However those results are different from those of the United Kingdom where nursing profession is challenged by the retirement of an ageing nursing workforce (Bennett and Maben, 2007:62). Most of the nurses (46.6%) have an experience of 0-5

years in the profession, followed by those who have 6-10 years of experience. The results also show that the majority (63%) have few years of experience (0-5 years) at Ndera Neuro-Psychiatric hospital. This may be explained by the fact the country has a young population, one third of the Rwandan population is aged between (15-34 years) and that most of the workforce was killed and others exiled during the genocide against Tutsi in 1994 (Schaal and Elbert, 2006:100).

In this study, the number of nurses with advanced diploma in mental health nursing (61.1%) was higher than others qualifications. This is not surprising as Ndera Neuro-Psychiatric hospital is a unique psychiatric hospital in the country employing most of the mental health specialists. It is promising to find a small number of enrolled nurses (23.3%) and it shows that nurses are upgrading their studies at high levels (high school and universities). According to Roxburgh, Tayror and Murebwayire (2009:350), the enrolled nurse training programmes were phased out in order to train nurses at advanced level. The number of nurses with a postgraduate degree is still low as training at that level has only been recently initiated at Kigali Health Institute and the few post graduate nurses have been trained abroad, particularly in South Africa (Ministry of health, 2007:20).

## **5.2 Nurses knowledge on antipsychotic medication**

The results of this study showed that more nurses were knowledgeable on antipsychotic medication. This was considered as average because the participants could achieve the score of 80% if they agreed with all statements. Based on the nature of questions and the fact that the nurses manipulate daily antipsychotic medication, working at referral level the study applied rigorous criterion to define high knowledge at reaching the score of 75% and above. Hence, 75.3% (n=55) were knowledgeable, 12.3% (n=9) were having low knowledgeable and only 12.3% (n=9) were very knowledgeable. The mean score also showed that the knowledge level of participants was on average (64.33%, SD: 9.83%). These results are consistent with the findings by Sodha, McLaughlin, Williams and Dhillon (2002:313) who found that 83% of nurse prescriber and 90% of non-prescriber had poor to average knowledge in regard to medication

related issues. Three domain of antipsychotic medication were isolated to explore further participants' knowledge of that particular matter.

### **5.2.1 Nurses knowledge on therapeutic effects of antipsychotic medications**

One of the research questions addressed in this study was to determine nurses' knowledge on antipsychotic therapeutic effects, nursing understanding of clinical values of antipsychotic medication as well as managing medication according patients' needs and responses required knowledge base in psychopharmacology. The participants in the study by Manias and Bullock (2004:89) emphasized on the crucial nursing role of checking the effectiveness of medication on the symptoms presented by the patients. The findings of this study, revealed that the majority of nurses were very knowledgeable (45.2%, n=33) about therapeutic effects of antipsychotic medications followed by knowledgeable (43.8%, n=32) with only 11%, n=8 who had insufficient knowledge. The mean score of all participants was below (72.85%) the score considered as high with a score ranging from 18.52% and 100%. Similar results were found in the study by Ndotsi and Newell(2009:378) who found variability in knowledge score between their participants with satisfactory answer on dosage and indication of medications.

According to Aschenbrenner and Venable, (2009:40), nurses need to interrogate if the therapeutic effects of a given prescribed medication correspond to patients' symptoms. Even though the majority of the participants in this study are knowledgeable, the minimum score is alarming (18.52%) as one person who scored such may be alone on duty and may not be able to ensure adequate drug administration. This was highlighted in a study by Armstrong-Ester et al. (2007:36) where nurse reported inappropriate reasons to administer the antipsychotic medication such as making patients content, facilitate nursing care or to reduce distress of the family. The results of this study suggest the improvement of participants' knowledge on therapeutic effects.

### **5.2.2 Nurses knowledge on antipsychotic medication name**

The mean score of knowledge on antipsychotic medication name was 81.91% (SD=16.88). Drawing from these findings, it is clear that nurses could correctly identify the antipsychotic medication name. Armstrong-Ester et al (2007:35) found inconsistent results in their study, where nurses were lacking knowledge about antipsychotic medication administered to old

people. They stressed that, monitoring of effectiveness and adverse effects entail knowledge of these medications. For this reason, during the whole process of medication management, they have to be sure of medication that patient receive in regard to the name.

The nurses in this study were very knowledgeable (68.5%) and knowledgeable (28.8%) about antipsychotic medication they deal with in everyday practice. That means that they were not confused on what medication to order or to administer to the patient. However, Eisenhauer, Hurley and Dolan (2007: 86) stressed that medication knowledge transfer involve vigilance and critical thinking in order to endure that correct medication is given. Vogelsmeier, Scott-Cawiezell and Zellmer (2007:6) emphasized on good communication between the team members to ensure that accurate order, correct time and alleviating confusion between medications. In their study, Ellenbecker, Frazier and Verney (2004:168) found that nurses had difficulty in recognizing medication as they found generic and brand names confusing. The 2.7% of nurses lacked knowledge of antipsychotic name and that may be linked to the confusion or difficulties encountered in communicating with others in order to gain knowledge.

### **5.2.3 Knowledge on antipsychotic adverse effects**

Antipsychotic medications are classified into two groups: old generation and new generation. In this study nurses were asked to identify the adverse effects pertaining of each group or shared by both. The difference of both classes are highlighted in the literature by McEvoy, Zigman and Margolese(2010:145); Horacek et al. (2006:390) and Pandya(2009:24) who stressed that the first generation of antipsychotic act in blocking the receptors  $D_2$  while the second generation act in blocking the receptor  $D_2$  and  $5-HT_2$ , therefore producing different therapeutic and adverse effects.

In this study, the mean score of all nurses were 38.61% (SD=12.38). The majority of nurses 67.1% (n=49) were inadequately knowledgeable as they scored under 50% for summed items. These results indicate knowledge deficit in regards to adverse effects of different antipsychotic classes. Similar finding were found in a study by Hemingway, Baxter, Smith, Burgess-Dawson and Dewhirst (2011:371) where 46% of nurses reported that their lack of knowledge on adverse effects of medication constituted a barrier in medication administration and by Manias and Bullock (2002:776) where nurses had insufficient knowledge on different groups of medications.

The lack of knowledge in the differentiation of adverse effects of classical and new generation of antipsychotic may be associated by the fact that at Ndera Neuro-psychiatric hospital they have a limited number of new antipsychotics as evidenced by their 2011 annual report where they reported have only Risperdal in their stock (Hopital Neuro-Psychiatric Caraes Ndera, 2011:31). Adewuya et al (2006:210) found that Nigerian patients were treated with old generation medication due to lack of alternative treatment. However, these findings are alarming as only 32.9% are knowledgeable. The adverse effects of antipsychotic medication may be life threatening if not well monitored (Neuhut et al., 2009, Berman, 2011, Strauw et al., 2007), and may cause irrevocable symptoms (Pandya, 2009, Muench and Hamer, 2010) expose to metabolic (Newcomer and Haupt, 2006, Lambert et al., 2005, Osborn et al., 2008), cardiac (Koponen et al., 2008, Healey, 2010) and other risks especially to some special groups such as old people (Panula et al., 2009, Knol et al., 2008), pregnant women (Galbally et al., 2010) and children ((Fritz, 2006, Self et al., 2010).

The possible risks of antipsychotic medication must be discussed with patients openly and accurate information should be given (Jones and Jones, 2008:54). Moreover, the studies by King (2004:365); Manias and Bullock (2002:779), indicated that nurses knowledge on pharmacological theories are essential for monitoring adverse effects and identifying patients' needshence, knowledge of adverse effects was perceived as crucial to nursing role.

### **5.3 Knowledge on antipsychotic medication' health education**

Participants were asked about their nursing practices in order to ensure patients' compliance to antipsychotic medication and education to family and patients about medication they prescribed. The aim of these questions was to identify knowledge level of nurses working at Ndera Neuro-Psychiatric hospital about monitoring practices of patients taking antipsychotic medication.

The findings of this study revealed that nurses do have sufficient knowledge as the mean score was 79.50% (SD=20.20%). Studies by Sodha, McLaughlin, Williams and Dhillon (2002:313) have different results with poor knowledge of non-prescriber nurses about patients' counselling, education in regard to medication.

Lan, Shiau and Lin (2003:372) maintained that monitoring of patients under antipsychotic medication requires cautiousness and knowledge especially when teaching patients about adverse effects as they may be reluctant to take medication. The results of this study are encouraging as 65.8% (n=48) of participants are very knowledgeable and 27.4% (n=20) are knowledgeable. Though, past research has demonstrated that nurses did not dedicate enough time to deliver information to the patients (Kendall et al., 2007:176). In a study by Honey and Lim (2008:15) only 13% of the graduate nurses reported that they used their pharmacology knowledge patient monitoring.

In this study, the responses ranged from 0-100%, the answers (strongly disagree, disagree and neutral) were rated as negative and scored as zero and few participants did not agreed or strongly agreed with all statements. This may be linked to hesitation or lack of confidence on behalf of our participants. Early studies highlighted nurses' lack of confidence in pharmacology related issues (Sodha et al., 2002:312).

### **5.3.1 Nurses knowledge on monitoring patients' compliance**

Participants in this study showed a very good level of knowledge in this regards as evidenced by the mean score of 83.75% and the highest score of 100%. These findings are inconsistent with the results of a study by Manias and Bullock (2002:783) which found that nurses, graduate nurses and experienced nurses lacked pharmacological knowledge especially in pragmatic clinical situations. Also in a study by (Happell et al., 2002:254), the relevance to correlate surveillance of medication and patient life style was not perceived by nurses who worked in inpatient services.

According to Janssen et al. (2006:234) nurses must adjust their treatment model to individual patient, prevent and monitor adverse effects, establish good relationship with patient, thus promote therapeutic alliance. Byrne et al (2005:517) found that poor knowledge hinder nurses' capacity to implement adherence strategies. The score on the level of knowledge on monitoring compliance also showed high knowledge as the majority (n=55, 75.3%) scored high marks. As the questions asked in this study were related to everyday practice about medication related issues and adherence promotion, we may be sure that the majority of nurses are aware of strategies to promote patients' compliance. However, the asked question may not be exhaustive

and their knowledge may be related to the statements used for this study. Different strategies have been highlighted in literature such as rationalisation of the antipsychotic medication regimens (Rummel-Kluge et al., 2008: 386) motivational interviews (Drymalski and Campbell, 2009:12) cognitive-behavioural therapy associated with psychosocial interventions (Patel et al., 2010:273). All those strategies require nurses to possess a strong knowledge base in theoretical as well as practical psychopharmacology. It is stressed that the clinical effectiveness of antipsychotic medication can only be observed if patients remain on medication (Davies et al., 2010: 103). Therefore, nurses must remember and update their knowledge on how to ensure that the medication they administer to the patient is taken.

### **5.3.2 Knowledge on patient and family education practices**

From the conceptual point of view, education of patients and their family is at the centre of nursing role in management of medication and that requires knowledge on medication and patient variables as well as interaction which occur between both parties (Aschenbrenner and Venable, 2009:3). The results of this study suggest that nurses had good knowledge; the mean score was 74.54% which is considered as average in this study. These results are consistent with others studies where nurses' knowledge was good (Eisenhauer et al., 2007:85, Vogelsmeier et al., 2007:10, Hemingway et al., 2011:373). However in most studies nurses' knowledge about patient education was poor (Lim et al., 2010:104, Sodha et al., 2002:313, Ndosi and Newell, 2009:577, Dilles et al., 2010:178).

Patient and family education was perceived by nurses as a core responsibility in a study by Happell, Manias and Pinikahana (2002:254), especially with regards to information given about adverse effects and how medication could be managed in daily life. The research on psychosis also found that the family of the patient plays a vital role in patient functioning and urged to build and maintain relationships with them by giving information about symptoms and medication and providing emotional support (Uys and Middleton, 2004:386-387). It is clear that understanding of medication therapeutic actions and adverse effects contraindication and follow up will be at the base of accurate and valuable education. The results of this study are therefore promising as the majority of participants have a high level of knowledge about family and patient education (61.6%, n=45 very knowledgeable) and 26% (n=19), knowledgeable.

Although, nurses are knowledgeable about patient and family education the researcher is not sure of the transfer of this theoretical knowledge into practice. It was found that nurses working with inpatients found their environment particularly demanding with no time to dedicate to patient and family education even though they were aware of its importance (Happell et al., 2002:255, Ellenbecker et al., 2004:166) and the study does not ignore that the lowest score in the study was 0% and 12.3% (n=9) of the participants had poor knowledge.

#### **5.4 Overall knowledge on antipsychotic medication management**

The results of this study suggest that participants had good knowledge on antipsychotic management as evidenced by the mean score of 68.4% (SD=11.53%). The findings are similar to that found in study done in the United Kingdom (Sodha et al.2002) to assess prescriber and non-prescriber nurses' confidence and pharmacological knowledge. The study found that the overall knowledge averaged 78% of prescribers and 71% of non-prescribers was at average level of knowledge. The average level was also found in Malaysia by Lexshimi,Daud &Zulkifli (2009:23). For this study, 65.8% were knowledgeable (average) and 24.7% were very knowledgeable.

However, the level of knowledge in this study is higher than the level in previous studies. The results of the study by Jones, Robson, Whitefield &Gray (2010:810) showed that only 48% of nurse prescribers had acceptable knowledge. With regards to their responsibilities this was considered as inadequate knowledge. Insufficient pharmacological knowledge for nurses was found in a number of studies (King, 2004, Ndosu and Newell, 2009, Manias and Bullock, 2002, Simonsen et al., 2011). It was found that educational preparation for nurses in pharmacology was not sufficient enough to enable them to ensure their role (Manias and Bullock, 2002) and different authors suggested the review of nursing curriculum (Manias and Bullock, 2002, Hughes, 2010) and continuing education (Carithers, 2011) in order to equip nurses with solid knowledge base in pharmacology.

## **5.5 Association of respondents' demographic variables and their knowledge**

The findings of this study found no difference in knowledge according to the age of the participants. This is inconsistent with the results of a study by Grendell-Niemi et al.(2005:690) who found that nurses with more than 30 years of nursing experience were more knowledgeable than those with less nursing experience. In this study the group ranging between 26-35 years scored high median but there was no major gap with other groups.

In this study, the experience in nursing profession and in hospital did not influence knowledge of the participants on antipsychotic medication. Similar results were found in the study by Lexshimi et al. (2009:23). However, other studies have shown that experience has a positive influence on nurses' level of knowledge on pharmacology. Ndosi& Newell (2009:577) explored knowledge of nurses on medication they deal with on a daily basis and found that nurses with more experience were very knowledgeable than the lesser experienced. Even though they were no statistically significant difference, the majority of nurses with high levels of knowledge had between 0-5 years of experience while the group with experience between 6-10 years had a high number of medium knowledge (76%). These finding revealed unexpected results as the researcher assumed that nurses who manipulate medication every day for a given period may become familiar with how it works and the elements of surveillance about that medication.

The antipsychotic medication may be classified in high alert medication as it demands nurses to be vigilant in patient safety and compliance. In a study on nurses' knowledge on high alert medication, it was found that nurses with great experience were more knowledgeable of high alert medication and self-evaluation with regards to medication competencies. The results of this study may be due to the fact that many of the participants were less experienced at Ndera Neuro-Psychiatric hospital 46.6% (0-5 years) and 34.2% (6-10 years).

A link between qualification and knowledge on pharmacology has been established in the literature (Ndosi and Newell, 2009:577). The results of this study also revealed association between knowledge on antipsychotic medication and participant qualification ( $p=0.010$ ). The participants with a bachelor's degree scored high median (73.42) as well as advanced diploma in mental health nursing (72.15). This is also consistent with the results of the study by Sodha et al. (2002:314) who found that high qualification lead to increased knowledge and confidence in

pharmacology. However, in this study, the participant with a master's degree scored low knowledge (29.11). This may be due to the fact that, the participant was new at Ndera Neuro-psychiatric hospital as the masters qualification did not appear in the annual report for the year 2010 (Ndera Neuro-Psychiatric hospital, 2011:57) and the mental health nursing may not be the speciality of this participant. Nevertheless, the researcher did not expect an advanced nurse practitioner to score low knowledge in psychopharmacology. The nurse auxiliary scored about the same as the highly qualified nurse (65.82). This may be due to the fact that there is no difference in job description in regard to medication management with their highly qualified counterparts. Similarly Dilles et al.(2010:178) found no difference between nurse assistants and registered nurses' tasks.

The findings for this study yield no association between training and knowledge on antipsychotic medication. Training in psychopharmacology is considered as a speciality area and it is emphasized on in training of mental health nursing at Kigali Health Institute. This curriculum seems to lack comprehensive and depth in the understanding of pharmacokinetic and pharmacodynamics (Kigali Health Institute, 2007). According to the annual report Ndera hospital organize continuous education for its employees via workshops, peer education and in service training (Hopital Neuro-Psychiatric Caraes Ndera, 2011). However, this was also not sufficient enough as there was one training session in a year for all the hospitals.

This is consistent with previous studies (Manias and Bullock, 2002:782, Grandell-Niemi et al., 2005:692) which found that education preparation of nurses in pharmacology was insufficient. In service training and seminars have been recommended as a complementary method but not enough if isolated (Ito and Yamazumi, 2003:211, Manias and Bullock, 2002:780). This study suggests continuous and strong education and training in regard to psychopharmacology.

## **5.6 Limitation of the study**

This study explored knowledge of nurses working at Ndera Neuro-Psychiatric hospitals that are responsible for antipsychotic medication management (ordering, prescribing, administering and monitoring) for inpatients. It is therefore hoped that this small exploratory study will contribute towards the field of nursing management and clinical practice particularly mental health.

However, some limitation was identified. The major limitations were derived from methodological issues. The sample size was determined using non-probability convenience sampling which is subject to bias and subjectivity (Polit and Beck, 2008:340). Hence, the sample cannot be assumed to be representative and therefore the results cannot be generalized to Rwanda. However, these results may contribute towards raising awareness on pharmacological knowledge gaps for nurses and serve as a basis of improvement and further investigations.

The questionnaire used to gather data depended solely on self-report measures based mainly on Likert scale. Therefore, participants may be indisposed to disclose their state of mind and results may be based just on guessing. As the questionnaire was distributed at work, the participants' responses could be influenced by external factors such as presence of a colleague who may mislead or simply by being there (Kothari, 2006:86). The instrument may also be complex to be understood by the respondents. To minimize such errors the questionnaire was reviewed by a panel of experts, and piloted and distributed during participants' free time. In addition the instrument was adapted for two published instruments; even though pilot testing and reliability was done, further psychometric tests would be very useful.

Nurses' knowledge on psychopharmacology is a significant issue in inpatient settings as well as throughout health care system. Unfortunately, there is paucity of literature to base the interventions worldwide particularly in Africa. The actual literature used in this study emphasize on knowledge of antipsychotics in the elderly people; medication administration and errors.

## **5.7 Recommendations**

The results of this study provide a good starting point for further research into the nurses knowledge on medication management in Rwanda and its effects on patient safety, medication cost and quality care in general; as well as educational preparation for Rwandan nurses in regard to pharmacology.

Nursing management interventions are recommended in order to increase knowledge consciousness. It is therefore crucial to establish a staff evaluation system and nurses should be offered opportunities such as self-assessment of their pharmacological performance and to

increase their knowledge. Nurse Managers are in best position and have legal responsibility to promote staff development with regards to competencies required in their job description; they should therefore assess nurses' educational needs and provide an environment favourable to need satisfaction. Pharmacology learning forms part of continuous learning. Therefore, the management of institutions should provide organized and systematic continuous education in regards to antipsychotic medication management as well as other medications. This will ensure that staff achieves the desired level of knowledge. The nurses are also urged to be lifelong learners through self-assessment and updating their knowledge.

In regard to clinical practice, nurses are in better position to ensure medication management and patient safety. Nurses must be aware that medication management is their responsibility and that they are accountable to patient safety and errors that occur during medication process. It is recommended to nurses to review and update knowledge of each medication they manipulate in order to avoid medication errors. The hospital could institute medication safety procedures, education and information protocols that can serve as knowledge base in medication management.

Different studies have underlined inadequacies in pharmacological education. Nursing education training in both nursing schools and on job training opportunities should aim at addressing nurses' lack of knowledge particularly mechanisms of action, effectiveness, adverse effects, contraindications and interactions. Provision of adequate training on nursing role in patient and family education as well as the promotion of patients' compliance is recommended. The actual curriculum should also be scrutinized and revised in order to alleviate knowledge gaps in providing breadth, depth pharmacological theoretical and practical knowledge.

The results for this study suggest the need for further investigations to identify more precisely factors that influence nurse knowledge on psychopharmacology. The actual curriculum and nursing education need further studies in order to analyse if nurses are really prepared for their role in antipsychotic management. A qualitative study is recommended to analyse and understand profound specific factors influencing nurses' knowledge on antipsychotic medication.

## **5.8 Conclusion**

The overall aim of this study was to explore nurses' knowledge of medication management specific to antipsychotic medication and factors associated with knowledge. As discussed the majority of at Ndera Neuro-Psychiatric hospital nurses are female, young in the nursing profession and with limited experience. Most nurses have an advanced degree in mental health nursing and have followed psychopharmacological training in academic institutions. Nurses showed high knowledge in regard to antipsychotic medication name; monitoring patients' compliance and average knowledge on therapeutic effects and on patient and family education practices. However they scored very low on adverse effects, therefore, the results showed that overall nurses' knowledge on antipsychotic management is medium.

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## Appendix 1: Data collection instrument (English)

**Study title:** Exploring nurses' knowledge on the antipsychotic medication management in inpatient psychiatric settings in Rwanda.

### Section A: Demographic data

#### 1. Gender

Female  Male

#### 2. Age in years (number in years)

25 year and fewer  26-35 years   
36- 45 years  46 years and more

#### 3. Experience as nurse

0-5 years  6- 10 years  11- 20 years  More than 20 years

#### 4. Experience at Ndera Hospital

0-5 years  6- 10 years  11- 20 years  More than 20 years

#### 5. Qualification of participants

Nurse auxiliary  Enrolled nurse  advanced diploma in mental health

Advanced diploma in general nursing  Bachelor  Masters

PhD

#### 6. Training on psychopharmacology

In academia  Workshop  Peer education  in service training

**Section B: Knowledge on antipsychotic medication**

<p><b>1=strongly disagree</b></p> <p><b>2=disagree</b></p> <p><b>3=neutral</b></p> <p><b>4=agree</b></p> <p><b>5= strongly agree</b></p>
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<b>7. What do you understand by antipsychotic medication?</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
1.The old generation has demonstrated effectiveness against positive symptoms					
2.The new generation of antipsychotic is the first line for treatment of psychosis					
3. All the first episode clients should have an antipsychotic free of at least 48 hours					
4. The new antipsychotic has demonstrated effectiveness against negative symptoms of psychosis					
5. The antipsychotic medication use start with low dose and increase gradually					
6. The antipsychotic medication are used in small dose in older people					
7. The antipsychotic medication has demonstrated effectiveness in treatment of delusions					
8. The patients experiencing hallucinations should be treated with antipsychotic medications					
9. Antipsychotic medication is effective to reduce aggressiveness					
10. Patients who have an initial dysphoric response to medication are more likely to stop medication					
11. Antipsychotics should be used to treat the abnormal behaviour in psychosis					

12. Blockage of dopamine produce a reduction of hallucinations					
13. Blockage of dopamine produce a reduction of delusions					
14. Blockade of serotonin 5-HT2 produce a reduction of affective flattening					
15. Blockade of serotonin 5-HT2 produce a reduction of alogia and anhedonia					
16. They can have permanent side effects that affect the clients movement					
17. Patients taking chlorpromazine are susceptible to orthostatic hypotension					
18. They can result in increased risk of cardiovascular disease					
19. Antipsychotics rather than benzodiazepines should be used for sedation					
20. Antipsychotics should be given with careful caution during pregnancy					
21. Patients with epilepsies should be well monitored under antipsychotic medication					
22. Cardiovascular diseases may constitute a contraindication of antipsychotic medications					
23. The precautions should be taken to prescribe an antipsychotic medication to patients with diabetes					
24. Special attention should be paid to old people and children under antipsychotic medication					
25. Alcohol must be avoided with an antipsychotic medication					
26. The antipsychotic should decrease effectiveness if given with anticonvulsants					
27. The antidepressants should be given with precautions to patients under antipsychotic medication					

<b>8. Is the following an antipsychotic drugs?</b>	<b>Yes</b>	<b>Non</b>	<b>Don't know</b>
1.Haloperidol			
2.Levopromazine			
3.Chlorpromazine			
4.Risperidone			
5.Zuclopentixol			
6.Flupentixol			
7.Pimozide			
8.Olanzapine			
9.Sulpiride			
10.Pericyazine			

**9. Indicate with a tick the side effect that result from first generation, second generation or if from both then tick both**

Side effects / adverse effects	First generation	Second generation
1. Dry mouth, ***		
2.Blurred vision***		
3. Dizziness***		
4.Weight gain***		
5.Constipation ***		
6.Restlessness*		
7.Sadness*		
8.Cardiac arrhythmias ***		

9. Hypotention***		
10. Hyperprolactnemia***		
11. Muscle spasms or cramps*		
12. Tremors, *		
13. Tardive dyskinesia *		
14. Agranulocytosis**		
15. Hyperglycemia**		
16. Hyperlipidemia**		

\*: First generation \*\* : Second generation \*\*\* : Both

**Section C: Nursing role**

<p><b>1=strongly disagree</b>  <b>2=disagree agree</b>  <b>3=neutral</b>  <b>4=agree</b>  <b>5= strongly agree</b></p>
----------------------------------------------------------------------------------------------------------------------------------------

<b>10. Do you think the following statements meet the patients' medication compliance promotion?</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
1. Discussing with patient what they think is wrong with them					
2. Assessing patients' history of illness					
3. Assessing physical health					
4. Discussing with patients their worries or concerns about illness					
5. Discussing with patients the link between disruptions in their life and the need to take					

medication					
6. Discussing with the patient the good and not so good things about medication					
7. Asking patients what they expect from medication					
8. Asking patients what they expect from care giver					
9. Discussing with patient the meaning medication has to them					
10. Having a written agreement with the patient about taking medication					
11. Giving to medication to the patient					
12. Checking to see if the patients has adverse effects					
13. Checking and measure the vital signs ( BP , Pulse, Temperature, )of the patients					
14. Engaging with the patient in the counselling around medication compliance issues					

<b>11. Do you think the following statements meet the patients and family education on psychotic medication?</b>	1	2	3	4	5
1. Involve and collaborate patient and family in medication therapy					
2. Discuss with patient the way medication works					
3. Discussing with the patient confusion between symptoms and adverse effects					
4. Discussing the adverse effects with the patients					
5. Discuss the adverse effect with the family of the patient					

6. Discussing with the family the way medication works					
7. Giving patient written information regarding the medication they are prescribed					
8. Giving the families of the patient written information about medication					
9. Undertaking group education about medication with patients and families					
10. Giving the patient information about treatment strategies (hospitalization, day or night therapy ,psychotherapy, psycho-education, and type of drugs( oral, IM,IV, long acting)					
11. Giving the patient the choice about medication					
12. Giving the patient and families information about available services ( Eg: referral services, decentralized services, outpatient, inpatient services)					

## Appendix 2: Data collection instrument (French)

**Titre d'étude :** *Exploring nurses' knowledge on the antipsychotic medication management in inpatient psychiatric settings in Rwanda.*

### Section A: Données démographiques

#### 1. Genre

Féminin  Masculin

#### 2. Age en année (nombre d'années)

25 ans et moins  26-35 ans

36- 45 ans  46 ans et plus

#### 3. Expérience comme infirmier(e)

0-5 ans  6- 10 ans  11- 20 ans  Plus de 20 ans

#### 4. Expérience à l'hôpital de Ndera

0-5 ans  6- 10 ans  11- 20ans  Plus de 20 ans

#### 5. Qualification professionnelle du participant

Auxiliaire  Infirmière A2  A1 en santé mentale

A1 en science infirmière  Licence  Maitrise  Doctorat

#### 7. Formation en pharmacologie

Université/Ecole  Séminaires  Education par les pairs

Formation continue

**Section B: Connaissances sur les médicaments antipsychotiques**

<p><b>1=Fortement d'accord</b>  <b>2=D'accord</b>  <b>3=neutre</b>  <b>4=En désaccord</b>  <b>5= Fortement en désaccord</b></p>
-------------------------------------------------------------------------------------------------------------------------------------------------

<b>7. Que comprenez-vous par médicaments antipsychotiques</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
1. Les antipsychotiques classiques ont démontré leur efficacité contre les symptômes positifs					
2. La nouvelle génération antipsychotique est le traitement de choix pour les psychoses					
3. Pour tous les premiers épisodes psychotiques, les patients doit être observés au moins 48 heures sans traitement antipsychotique					
4. Les nouveaux antipsychotiques ont démontré leur efficacité contre les symptômes négatifs					
5. L'usage des antipsychotiques commence par une dose minimale et augmente graduellement					
6. Les antipsychotiques sont utilisés à de petite doses chez les gens âgés					
7. Les médicaments antipsychotiques ont démontré l'efficacité contre les délires					
8. Les patients souffrant des hallucinations peuvent être traité par les médicaments antipsychotiques					
9. Les médicaments antipsychotiques sont efficaces pour réduire l'agressivité					
10. Un patient qui répond initialement par l'humeur dysphorique au traitement antipsychotique est plus susceptible d'arrêter les médicaments					
11. Les médicaments antipsychotiques peuvent être utilisés pour traiter un comportement désorganisé					
12. Blocage de la dopamine produit une réduction des hallucinations					
13. Blocage de la dopamine produit une réduction des délires					
14. Blocage de la sérotonine 5-HT2 produit une réduction de l'affect émoussée					
15. Blocage de la sérotonine 5-HT2 produit une réduction d'alogie					

et de l'anhédonie					
16. Ils ont les effets secondaires permanents qui affectent les mouvements du client					
17. Les patients sous chlorpromazine sont susceptibles d'une hypotension orthostatique					
18. Les antipsychotiques augmentent le risque des maladies cardiovasculaires					
19. Les antipsychotiques plutôt que les benzodiazépines doivent être utilisés pour la sédation					
20. Les antipsychotiques doivent être utilisés avec précautions pendant la grossesse					
21. Les patients avec épilepsies sous traitement antipsychotique doivent être bien contrôlés					
22. Les maladies cardiovasculaires peuvent constituer une contre-indication des médicaments antipsychotiques					
23. Les médicaments antipsychotiques sont prescrits avec précautions chez les patients souffrant du diabète					
24. Les enfants sous traitement antipsychotiques méritent une attention spéciale					
25. Alcool doit être évité avec un traitement antipsychotique					
26. L'efficacité des antipsychotiques est réduite si administrés avec les anticonvulsivants					
27. Les antidépresseurs doivent être donnés avec précautions chez les patients sous antipsychotiques					

<b>8. Les médicaments suivants sont-ils antipsychotiques?</b>	<b>Oui</b>	<b>Non</b>	<b>Je ne sais pas</b>
1. Haloperidol			
2. Levopromazine			
3. Chlorpromazine			
4. Risperidone			
5. Zuclopentixol			
6. Flupentixol			
7. Pimozide			

8.Olanzapine			
9.Sulpiride			
10.Pericyazine			

**9. Indiquer ou cocher les effets secondaires qui résultent de la première génération, seconde génération, ou cochez les deux si même effet secondaire.**

<b>Effetssecondaires</b>	<b>Premiere generation</b>	<b>Seconde generation</b>
1.Bouche sèche		
2. Vision floue		
3. Vertiges		
4. Gain pondéral		
5.Constipation		
6. Agitation		
7. Tristesse		
8. Arrythmiecardiaque		
9. Hypotension		
10.Hyperprolactnemie		
11. Crampe et spasmemusculaire		
12. Tremblement		
13. Dyskinesie tardive		
14. Agranulocytose		
15. Hyperglycemie		
16. Hyperlipidemie		

### Section C: Nursing role

	<b>1=Fortement d'accord</b> <b>2=D'accord</b> <b>3=neutre</b> <b>4=En désaccord</b>
<b>5= Fortement en désaccord</b>	

<b>10. Quel est le rôle infirmier dans la gestion des médicaments antipsychotiques?</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
1. Discuter avec le patient de ce qu'il pense de ses problèmes					
2. Discuter avec le patient de son histoire					
3. Evaluer l'histoire de la maladie du patient					
4. Evaluer l'état de la santé physique					
5. Discuter avec les patients de leurs inquiétudes et préoccupations sur la maladie					
6. Discuter avec le patient sur le lien entre les perturbations dues à la maladie et la nécessité de prendre les médicaments					
7. Discuter avec le patient les effets bénéfiques et les effets secondaires des médicaments					
8. Demander aux patients ce qu'ils attendent des médicaments et des soignants					
9. Discuter avec le patient ce que le médicament signifie pour lui					
10. Avoir le consentement écrit sur la prise des médicaments					
11. Administrer les médicaments aux patients					
12. Vérifier pour voir si le patient n'a pas des effets secondaires					
13. Contrôler et mesurer les signes vitaux du patient					
14. Engager le counselling avec le patient autour des médicaments et de la compliance					

<b>11. Pensez-vous que les déclarations suivantes rencontrer les patients et l'éducation familiale sur les médicaments antipsychotiques?</b>	1	2	3	4	5
1. Intégrer le patient et la famille dans la thérapie des médicaments					
2. Discuter avec le patient le médicament manière dont fonctionne					
3. Discuter avec les patients la confusion entre les symptômes et les effets indésirables					
4. Discuter les effets secondaires avec les patients					
5. Discuter les effets secondaires avec la famille du patient					
6. Discuter avec la famille la manière dont les médicaments fonctionnent					
7. Fournir aux patients des informations écrites concernant les médicaments dont ils sont prescrits					
8. Fournir aux familles de l'information écrite sur les médicaments des patients					
9. Entreprendre avec les familles l'éducation groupale sur les médicaments					
10. Fournir aux patients l'information sur les stratégies de traitement (hospitalisation, thérapie du jour ou nuit, psychothérapie, psychoéducation et le type de médicaments (oral,IM,IV,retard)					
11 Donner au patient le choix sur les médicaments					
12. Donner l'information des patients et des familles sur les services disponibles					

### **Appendix 3: Information document (English)**

**Study title:** Exploring nurses' knowledge on the antipsychotic medication management in inpatient psychiatric settings in Rwanda.

Dear nurse,

I am GASANGANWA Marie Claire students in Master's Program in nursing management at University of KwaZulu-Natal. I am currently conducting a research thesis entitled: Exploring nurses' knowledge on the use of antipsychotic medication at Ndera Neuropsychiatric hospital, Rwanda.

I would very much appreciate your participation in this research study. I will not ask your name so the information you provide will be anonymous and confidential. The findings of this study will be used to identify knowledge gaps, training needs and to plan accordingly. As you have been selected to be part of my study sample, the questionnaire to be completed will help to collect data needed for this study.

Your participation in this study is voluntary and you will be free to withdraw from the study at any time if you no longer wish to participate in the study without consequence. Your consent to participate in this study will be confirmed by completing the questionnaire.

If you have any question or concerns regarding this research project please feel free to contact me at [gasanganwa@yahoo.fr](mailto:gasanganwa@yahoo.fr) or you may contact my supervisor Mrs Shangase Nondumiso at [shangasen@ukzn.ac.za](mailto:shangasen@ukzn.ac.za).

Thank you for your time and cooperation.

Sincerely

#### **Appendix 4 : Information document (French)**

**Titre d'étude** : Explorer les connaissances des infirmières sur la gestion des médicaments antipsychotiques en milieu hospitalier psychiatrique au Rwanda.

Cher infirmiers (ères),

Je suis Gasanganwa Marie Claire, étudiante en maîtrise, gestion des soins infirmiers à l'Université de Kwa-Zulu Natal. Actuellement, pour ma thèse, j'ai entrepris une étude intitulée "Exploration de la connaissance des infirmiers (ères) sur l'utilisation des médicaments antipsychotiques à l'hôpital Neuropsychiatrique de Ndera, Kigali-Rwanda"

Je vous serais très reconnaissante pour votre participation à cette étude. Nous ne vous demandons pas vos noms et les informations fournies resteront anonyme et confidentielles. Les résultats de cette étude seront utilisés pour identifier les lacunes des connaissances, identifier les besoins en formation et de planifier en conséquences. Si vous avez choisi de participer à cette étude, le questionnaire qui doit être rempli nous aidera à rassembler les données nécessaires à cette étude.

Votre participation est volontaire et vous serez libre de se retirer à tout moment que vous voulez sans conséquences. Votre consentement à participer à cette étude sera confirmé en remplissant le questionnaire. Si vous avez des questions ou des préoccupations concernant ce projet de recherche s'il vous plaît n'hésitez pas à me contacter à [gasanganwa@yahoo.fr](mailto:gasanganwa@yahoo.fr) ou contacter mon superviseur Madame Nondumiso Shangase à [shangasen@ukzn.ac.za](mailto:shangasen@ukzn.ac.za).

Merci pour votre temps et la coopération

Sincèrement

## **Appendix 5: Informed consent and declaration of consent (English)**

### **Consent to participate in research**

**Study title:** Exploring nurses' knowledge on the antipsychotic medication management in inpatient psychiatric settings in Rwanda.

Dear Nurse

You have been asked to participate in a research study. You have been informed about the study by GASANGANWA Marie Claire having read the information document which has the details of this study. You may contact on [gasanganwa@yahoo.fr](mailto:gasanganwa@yahoo.fr). Tel: +250788459195, +27833635747 at any time if you have questions about the research. You may also contact my supervisor on [shangasen@ukzn.ac.za](mailto:shangasen@ukzn.ac.za) or Tel: +27312602855.

Your participation in this research is voluntary, and you will not be penalized or lose benefits if you refuse to participate or decide to stop. If you agree to participate in this study, you will sign below this document in the space provided as a show of your declaration consent.

### **Declaration of consent**

I..... (Full names of participant) hereby confirm that I understand the contents of this document and the nature of the research project and I agree to participate voluntary in this research project. I understand that I am at liberty to withdraw from the project at any time, should I so desire.

.....

**Signature of participant**

.....

**Signature of researcher**

.....

**Date**

.....

## **Appendix 6 : Le consentement éclairé et de la déclaration de consentement**

### **1. Consentement à participer à la recherche**

**Titre de l'étude:** Explorer les connaissances des infirmières sur la gestion des médicaments antipsychotiques en milieu hospitalier psychiatrique au Rwanda.

Chers infirmiers(ères)

Vous avez été invité à participer à une étude de recherche. Vous avez été informé de l'étude menée par Marie Claire GASANGANWA avoir lu le document d'information qui a les détails de cette étude. Vous pouvez contacter le chercheur sur [gasanganwa@yahoo.fr](mailto:gasanganwa@yahoo.fr) , Tél:+250788459195, +27833635747, à tout moment si vous avez des questions concernant la recherche. Vous pouvez également communiquer avec mon superviseur sur [shangasen@ukzn.ac.za](mailto:shangasen@ukzn.ac.za), ou Tel: 27312602855. Votre participation à cette recherche est volontaire, et vous ne serez pas pénalisé ou perdre des avantages si vous refusez de participer ou de décider d'arrêter. Si vous acceptez de participer à cette étude, vous allez signer ce document ci-dessous dans l'espace prévu comme une démonstration de votre déclaration au consentement.

### **2. Déclaration de consentement**

Moi, ..... (Nom et prénom du participant)  
confirme par la présente que je comprends le contenu de ce document et la nature du projet de recherche et je suis d'accord pour participer volontaire dans ce projet de recherche. Je comprends que je suis à la liberté de se retirer du projet à tout moment, dois-je le désire.

Signature du participant .....Date

Signature du chercheur.....Date

Appendix 7: **Request of permission to conduct the research at Ndera Neuro-Psychiatric hospital**

Director General  
Ndera Neuro-psychiatric hospital,  
Kigali / Rwanda

27<sup>th</sup> June, 2011

Reverend Brother:

**Application to conduct a research at Ndera Neuro-psychiatric hospital**

I hereby request permission to conduct research at Ndera Neuro-Psychiatric hospital.

I am a student at the University of KwaZulu-Natal in the School of Nursing, undertaking a Master degree in Nursing Management. One of the requirements for the degree is to conduct a research project.

The title of the research is *“Exploring nurses’ knowledge on the antipsychotic medication management in inpatient psychiatric settings in Rwanda”*

Ndera Neuro- Psychiatric hospital was purposively chosen to be the setting for this study. Data will be collected from 82 nurses working at Ndera hospital. Nurses will be required to complete one questionnaire and this will take place during break time. This protocol will be submitted to the Research Ethics Committee of the University of KwaZulu-Natal, for approval. It is also being submitted to the Research and Ethics committee of KHI for approval. These approvals will be forwarded to you as soon as they are available. Also attached is the informed consent for participants which shows that participation is voluntary and how the rights and identity of the patients will be protected in the research process.

Your consideration will be greatly appreciated.

Yours faithfully

Appendix 8: **Letter of request for application for approbation**

Marie Claire Gasanganwa

30<sup>th</sup> Jun, 2011

The Executive Secretary

KHI Research Committee,

Kigali -Rwanda

Dear Sir:

Application for approbation of a research proposal

I hereby request the approbation of my research proposal by KHI. I am a student at the University of KwaZulu-Natal in the School of Nursing, undertaking a Master degree in Nursing Management. One of the requirements for the degree is to conduct a research project

The title of the research is *“Exploring nurses’ knowledge on the antipsychotic medication management in inpatient psychiatric settings in Rwanda”*

Ndera Neuro- Psychiatric hospital was purposively chosen to be the setting for this study. Data will be collected from 82 nurses who are working at Ndera hospital. Nurses will be required to complete one questionnaire and this will take place during break time. This protocol will be submitted to the Research Ethics Committee of the University of KwaZulu-Natal, for approval. This letter will be forwarded to you as soon as it is available.

The research protocol, the data collection tools and the consent form for participants are enclosed herein.

Your consideration will be greatly appreciated.

Yours faithfully

Marie Claire GASANGANWA

Research Supervisor: Mrs NONDUMISO Shangase (University of KwaZulu-Natal)

## Appendix 9: Permission to conduct research at Ndera Neuro-Psychiatric hospital



**HOPITAL NEURO-PSYCHIATRIQUE CARAES NDERA**  
**FRERES DE LA CHARITE**  
B.P.423 Kigali; Tél 0255113551 / 0788827364  
E - mail :cnkubili@yahoo.fr



Ndera, July, 29th, 2011



Madam GASANGANWA MARIE Claire  
School of Nursing  
University of Kwazulu-Natal  
**SOUTH AFRICA**

Dear madam

**RE : your application to conduct a research at Ndera Neuropsychiatric Hospital**

Reference is made to your application of June 27<sup>th</sup>, 2011, relating to the permission for conducting a research project which title is "*Exploring nurses' knowledge on the antipsychotic medication management in inpatient psychiatric settings in Rwanda*"; I am pleased to inform that your request has been recognized. Therefore, at the end of your study you will be required to submit the final report to the management of the hospital.

I wish you success in your study.

Brother Charles NKUBILI  
Director General

## Appendix 10: Ethical approval from KHI' Ethics Committee



RBC/KIGALI HEALTH INSTITUTE

B.P. 3286 Kigali, RWANDA  
Tel: + (250) 572172; +250 571788  
e-mail: [deanchd@khi.ac.rw](mailto:deanchd@khi.ac.rw)

### INSTITUTIONAL REVIEW BOARD

Kigali, 18<sup>th</sup> July, 2011

RBC/KHI/IRB/...5.../2011

To: Marie Claire GASANGANWA

Dear Marie Claire,

#### Re: ETHICS CLEARANCE

Reference is made to your application for ethics clearance for the study entitled **'Exploring Nurses' Knowledge on the Management of Antipsychotic Medication in Rwanda'**

You will be pleased to learn that **the ethics clearance has been granted** for your study; after exhausted review procedure. You shall be required to submit the progress report and any other major changes made in the proposal during the project implementation stage. Additionally, the RBC/KHI Institutional Review Board shall require to be given a copy of your final study report.

I wish you success in this important academic activity

Kigali Health Institute  
K.H.I  
Faculty of Allied Health Sciences

**MAIGEH P Elias**

Ag. Chairperson, RBC/KHI Institutional Review Board

#### Cc:

- Rector – RBC/KHI
- Vice Rector in charge of Academic affairs and Research – RBC/KHI
- Chairperson – RBC/KHI IRB
- Director of Research & Consultancy – RBC/KHI

## Appendix: 11: Ethical approval from UKZN



Research Office, Govan Mbeki Centre  
Westville Campus  
Private Bag x54001  
DURBAN, 4000  
Tel No: +27 31 260 3587  
Fax No: +27 31 260 4609  
[snymanm@ukzn.ac.za](mailto:snymanm@ukzn.ac.za)

29 September 2011

**Mrs MC Gasanganwa (209510755)**  
**School of Nursing**

Dear Mrs Gasanganwa

**PROTOCOL REFERENCE NUMBER: HSS/0944/011M**  
**PROJECT TITLE: Exploring nurses' knowledge on the antipsychotic medication management in Inpatient Psychiatric settings in Rwanda**

In response to your application dated 01 August 2011, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol has been granted **FULL APPROVAL**.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment /modification prior to its implementation. In case you have further queries, please quote the above reference number.  
**PLEASE NOTE: Research data should be securely stored in the school/department for a period of 5 years.**

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully

.....  
**Professor Steven Collings (Chair)**  
**HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS COMMITTEE**

cc. Supervisor – Mrs N Shangase  
cc. Mr S Reddy

## Appendix 12: Permission to use questionnaire

[Précédent](#) | [Aller au message Suivant](#) [Ajouter un drapeau à ce mail](#)

### Re: Questionnaire!

Samedi 14 mai 2011 10h34

De:

"mbyrne@uow.edu.au" <mbyrne@uow.edu.au>

[Afficher les détails du contact](#)

À:

"Marie Claire GASANGANWA" <gasanganwa@yahoo.fr>

Sure. You have my permission

Dr. Mitchell Byrne  
Clinical and Forensic Psychologist  
Senior Lecturer

---

**From:** Marie Claire GASANGANWA <gasanganwa@yahoo.fr>

**Date:** Sat, 14 May 2011 17:59:39 +1000

**To:** Mitch Byrne <mbyrne@uow.edu.au>

**Subject:** Questionnaire!

## Appendix 13: Permission to use questionnaire

[Précédent](#) | [Aller au message Suivant](#) | [Retour aux messages](#)  
[Marquer comme non lu\(s\)](#) | [Imprimer](#)

[Ajouter un drapeau à ce mail](#)

## Re: Instruments

Mardi 5 Juillet 2011 14h53

De:

"Christine Smith" <SmithC5@cardiff.ac.uk>

[Ajouter l'expéditeur dans les contacts](#)

À:

"Marie Claire GASANGANWA" <gasanganwa@yahoo.fr>

Dear Maria

Thank you for your email regarding your MSc studies.

You are welcome to use the questionnaire that was used in the pilot study- Nurses knowledge in the use of anti psychotic medication and older people. Please ensure that its referenced in your work and in any future publications.

I can send you an electronic copy if you would like that?

Best wishes in your studies

Regards

Dr Christine Smith

---

From: Marie Claire GASANGANWA <gasanganwa@yahoo.fr>  
To: Christine Smith <smithc5@cf.ac.uk>  
Date: 05/07/2011 10:05  
Subject: Instruments

**Appendix 14: Proof reading**

**P O Box 31000  
Mayville  
Durban  
4058**

**19 December 2011**

**Attention: Post graduate Coordinator**

Dear Madam/Sir,

**Re:** Proof reading done for Mrs Marie Claire Gasanganwa

I acknowledge that I proof read for the above student. I did not alter any of the content nor add anything. The main body required language editing, style and overall editing for consistency in in-text referencing system. The work done was all cosmetic; i.e. restructuring sentences, wording and general grammar corrections.

Please do not hesitate to call me if need be on mobile: 0786583842 or mail me on [romamoragg@yahoo.co.uk](mailto:romamoragg@yahoo.co.uk) or [hlanganiso@yahoo.ac.uk](mailto:hlanganiso@yahoo.ac.uk)

**Sincerely yours,**

**Eve D Mafema**

