

**ASSESSMENT OF EFFECTIVE USE OF ANTI EPILEPTIC DRUG THERAPY AMONG
PATIENTS AT KAGANDO HOSPITAL**

BY

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**A RESEARCH REPORT SUBMITTED TO THE SCHOOL OF PHARMACY IN
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PHARMACY DEGREE AT KAMPALA INTERNATIONAL UNIVERSITY, WESTERN
CAMPUS.**

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DECLARATION.

I KATO LODRICK, declare that the work contained in this document is a representation of the activities I carried out during my research project and that it's a detailed account of the results of my findings.

Signature.....

Date.....20/12/2018.....

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SUPERVISOR.

Signature.....

Date20/2/2018.....

ABRAHAM MUHINDO.

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I thank all the participants who voluntarily accepted to participate in this study.

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DEDICATION.

I dedicate this work to my family, friends and relatives who have worked tirelessly always to enable me progress normally.

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CHAPTER ONE

1.0 INTRODUCTION.

Epilepsy is a chronic condition characterized by recurrent unprovoked seizures caused by abnormal discharges in the brain. (UCG, 2016). It is one of the most common neurologic disorders affecting over 50million people worldwide with no boundary to age, race, social class and geographical locality. Among patients who have epilepsy, 85% of them found in developing countries (an estimate of 40million) do not receive appropriate treatment. (WHO, 2014)

Globally epilepsy is the third most common neurologic disorder after cerebral vascular and Alzheimer's disease. Epilepsy is an assortment of different seizure types originating from several mechanisms that have a sudden discharge of cerebral neurons. The abnormal electrical activity may result in loss of consciousness, abnormal movements, atypical or odd behavior and distorted perceptions of limited duration but recur if untreated. In most cases, epilepsy has no identifiable cause however focal areas that are functionally abnormal may be triggered by alteration in blood gases, PH, electrolytes, blood glucose levels and changes in environmental factors such as sleep deprivation, alcohol intake and stress. Therefore in most cases epilepsy is referred to as idiopathic since the cause is not always known.

1.1.0 Background.

Epileptic seizures are common. The number of new cases per a given population has been estimated to be 20 and 70 cases per 100,000 persons and the risk of having the condition at some point in life at 2-5%.

Epilepsy is responsible for enormous amount of suffering. (Asmemaw, Solomon, Yohannes, Lulu *et al.*, 2016). On the African continent it affects 10,000,000 people directly. Epilepsy affects people of all ages but especially with in child hood and the elderly. (WHO, 2004).

Epilepsy provides a clearest example of neurological disorders for which effective and cost efficient treatment is available. Recent studies both in developing and developed

countries have revealed that if epilepsy is properly treated, up to 70% of the people with this condition could live productive and fulfilling lives, free from seizures. However, in developing countries up to 90% of the people who have this condition are excluded from care and consequently remain in the shadow of this treatment gap.(WHO, 2014). The prevalence of epilepsy in Uganda is estimated to be 3%. In addition to unpredictable seizures, some epileptic patients suffer with adverse effects of anti-epileptic drugs (AEDs), stigma, psychiatric co-morbidities, social or physical limitations and possibility of sudden unexpected death.(Nabukenya, Matovu, Wabwire, Wanyenze & Makumbi, 2014)

While Epilepsy is well known in African societies, people with epilepsy particularly those with generalized tonic-clonic seizures, experience discrimination in several areas of life even from health professionals. (WHO, 2003).Discrimination and exclusion are daily frustrations for people living with epilepsy. These forms of discrimination deprive patients of their rights for adequate information about their disease conditions, access to AED therapy and non-adherence to treatment.

The purpose of this study, to assess the prevalence and factors associated with non-adherence to anti-epileptic drugs (AEDs) and to provide recommendations for improvement.

1.2.0 Problem statement.

Adherence to anti-epileptic drugs is a challenge in the management of epilepsy. Although non adherence is considered to be a major cause of poor responsiveness, the prevalence and cause of non-adherence has not been extensively studied in Uganda. Very many factors can be associated with the problem of non-adherence that causes a poor seizure control among the epileptic patients.

The patient's attitude towards his/her disease condition may affect his or her ability to comply. Epileptic patients tend to develop a low self-esteem as a result of discrimination which affects their social life (WHO, 2014). Most of these patients' literacy levels are so low and they need a lot of medical attention to be able to adhere to their medications and achieve the therapeutic benefit by having a well-controlled

seizure. The Community, family, and social support are therefore a vital factor in determining the patient's ability to comply.

Patient's relationship with physicians, nurses, pharmacists and other health care providers directly involved in providing care to the patient can affect the patient's adherence. Physicians should educate patients about the intended use, expected outcomes, and potential side effects of each prescribed medication for the epileptic patients. Although it is impossible to describe each side effect of a given medication, it is important to address the common and rare but serious ones. At Kagando hospital, Physicians, nurses, dispensers and other facility health workers always give little attention to the epileptic patients especially due to patient workload. Therefore, these patients do not get enough information about their therapies, and they cannot contact their providers in case they have personal or emotional problems that could affect adherence.

Poor adherence and failure of anti-epileptic therapy being a common problem among this group of patients, there is a serious need for continued study and exploring this issue.

This study therefore will assess the major causes of poor adherence and failure of AED therapy.

1.3.0 Research questions.

What is the level of knowledge given to epileptic patients by prescribers other members of the health care team during the time of consultation?

What is the level of adherence to AEDs by these patients?

What are the possible causes of poor adherence to the medications prescribed?

What is the perception of patients about the AEDs being prescribed?

1.4.0 Objectives.

1.4.1 General objectives

To assess the factors associated with non-adherence which is the main factor affecting the effectiveness of drug therapy in epileptic patients.

1.4.2 Specific objectives.

To assess the level of knowledge given to patients by prescribers and dispensers about AEDs prescribed.

To determine the level of adherence to AEDs among patients at Kagando Hospital

To assess the psychosocial and social economic problems encountered by epileptic patients that affect adherence to medication.

1.5.0 Justification of the study

The outcome of epilepsy could be the same in every country in the world. It mainly depends on the accessibility, availability, and follow-up of the control of seizures with AEDs and cure of underlying etiology if possible. (WHO, 2003).

Epileptic patients are given long term medications which they may take throughout the course of their lives and therefore much attention should be given to them by prescribers, dispensers and other care providers towards providing them with enough information about their medications. Efforts to improve adherence to prescribed regimen of anticonvulsant medication have not been extensively studied. Research on effective use and adherence on medication has been more extensive in other conditions such as hypertension, which have similarities to epilepsy in their demand for long term treatment. (WHO, 2013)

A lot of research has been done on the quality of life of epileptic patients and seizure control. However, more data about patient adherence, patient-physician, patient-pharmacist and patient-family relationships is important to ascertain and control any factors that limit optimum therapy outcomes and patient related quality of life.

This study will assess the level of knowledge given to the patients by health care providers about their medications and its impact on adherence and proper seizure control.

1.6.0Significance of the study

The study will help the management of Kagando Hospital to identify the loop holes in the effective management of Epilepsy in outpatients.

The study results will be used to identify the major causes of poor adherence to AEDs in outpatients at the hospital. This can be used to project solutions to the problems.

CHAPTER TWO

2.0 LITERATURE REVIEW

Epilepsy is a group of neurologic disorders characterized by epileptic seizures. (Fisher, Robert, Acevedo, January 2010).

A seizure is a brief episode of signs or symptoms due to abnormal excessive or synchronous neuronal activity in the brain. (Magiorkinis, Kalliopi & Diamantis, April 2014).

2.1.0 Causes and symptoms of seizures.

Anything that irritates the brain can produce a seizure. Precisely what happens during a seizure on what part of the brain is affected by the abnormal electrical discharge.(Berkow, Beers, Bogin& Fletcher, 1997)

The multiple causes include but not limited to, high fever (heatstroke and infection), brain infections (AIDS, malaria, meningitis, syphilis, rabies, tetanus, toxoplasmosis and viral encephalitis), metabolic disturbances (hypoparathyroidism, hyperglycemia, hyponatremia, hypoglycemia, hypocalcaemia and hypomagnesaemia) , insufficient oxygen to the brain, destruction of the brain tissue, other illnesses (eclampsia, hypertensive encephalitis and lupus erythematosus) and exposure to toxic substances (alcohol, amphetamine, chloroquine and withdraw after use).(Berkow *et al*, 1997)

Frontal lobe abnormalities are characterized with twitches in a specific muscle. For occipital lobe abnormalities, hallucinations of flashes of light are the common symptoms, hallucinations of images and complicated repetitive behavior for instance walking in circles is common with temporal lobe abnormal discharge. Abnormal discharge in the parietal lobe is characterized by numbness or tingling in specific body part. Anterior temporal lobe discharges result in chewing movements and lip smacking. The discharge may involve a small part of the brain and lead only to person noticing odd smell or taste. If it involves large areas, it leads to convulsions (jerking and spasms of muscles throughout the body. A seizure usually lasts 2 to 5 minutes.(Berkow *et al*, 1997).

2.2.0 Epilepsy and genes

Most of the epileptic disorders are caused by interactions between several or even many genes. Genetic epilepsies that are due to gene mutations or defined structural chromosome aberrations are much rare. The discovery of several of the genes underlying these rare genetic epilepsies has already contributed extensively to the understanding of the basic mechanisms of epileptogenesis.(Ortrud, 2008)

2.3.0 Epilepsy and anti-epileptic drugs.

Epileptic seizures are episodes that can vary from brief and nearly detectable to long periods of vigorous shaking. (WHO, October 2012). In epilepsy seizure tend to recur, and have no immediate underlying cause while seizures that occur with a known cause are not deemed to represent epilepsy. (Fisher &Blume, 2005)

The most common type (60%) of seizures is convulsive. Of this one third begin as generalized seizures from the start. Two thirds begin as partial seizures which affect one hemisphere of the brain. The remaining 40% are non-convulsive for example absence seizure, which presents as a decreased level of consciousness and usually lasts 10 seconds. (National Clinical Guideline center, 2012)

Anti-epileptic drugs, also known as anti-seizure or anti convulsions are a diverse group of pharmacological agents used in the treatment of epileptic seizures.

Anti-epileptics suppress the rapid and excessive firing of neurons during seizures. AEDs are also increasingly being used in the treatment of bipolar disorders and borderline personality disorder. In epilepsy, they provide symptomatic treatment only and have not been demonstrated to alter the course of epilepsy.

Drugs classified as anti-convulsions are but not limited to, Barbiturates (Phenobarbital, methyl Phenobarbital), Benzodiazepines (clobazam, clonazepam, Diazepam, Midazolam, Lorazepam), potassium bromide, carbamates, carboxamides (Carbamazapine and oxcarbamazapine), fatty acids (valproates, vigabatin and Tiagabine). (BNF, 2013)

For ongoing management of epilepsy, patients are investigated first and started on medication under specialist care, then discharged to their general practitioner (G.P). Regular GP review is essential for drug management. It helps the GP know how much

the patient (and family) understand about epilepsy, acknowledge their distress at diagnosis, anger and answer their questions.(Chantal, Hazel, Jon &Stevenson, 2002).

Carbamazepine.

Carbamazepine is structurally related to tricyclic antidepressants. It is a drug of choice for simple and complex partial seizure and for tonic-clonic secondary to a focal discharge seizures and it is effective in trigeminal neuralgia and in prophylaxis of mood swings in manic depressive illness.

Carbamazepine should not be combined with mono amine oxidase inhibitors. It is a potent enzyme inducer and, in particular it accelerates the metabolism of warfarin, theophylline and oral contraceptives.(James, Lionel, Timothy & Albert, 2008).

Gabapentin.

Gabapentin inhibits high voltage activated calcium channels and elevates human brain Gama Amino Butyric Acid (GABA). It is a second line agent for patients with partial seizures who have failed initial treatment. It may also have a role in patients with less seizure disorders, such as new onset partial epilepsy, especially in the elderly. Dosing initiated at 300mg at bed time and increased to 300mg twice daily (BD) on the second day and 300mg three times daily (TDS) on the third day. Further titrations are then made. (Barbara, Joseph, Terry & Cecily, 2009).

Phenytoin

Phenytoin is effective against all types of partial and tonic clonic seizures but not absence seizures. Phenytoin limits the repetitive firing of action potentials evoked by a sustained depolarization inactivation. At therapeutic concentrations, the effects of sodium channels are selective, without changes in spontaneous activity or in response to GABA or glutamate. (Laurence, Keith, Donald & Iain, 2008)

Valproate

Valproate is a simple monocarboxylic acid, chemically unrelated to any other class of antiepileptic drug, and in 1963 it was discovered accidentally to have anticonvulsant properties in mice. It inhibits most kinds of experimentally induced convulsions and is effective in many kinds of epilepsy, being particularly useful in certain infantile epilepsy, where its low toxicity and lack of sedative action are important, and in adolescents who exhibit both tonic clonic and myoclonic well as absence seizure,

because valproate (unlike other antiepileptic drugs) is effective against each. Valproate works by several mechanisms, the relative importance of which remains to be clarified. It causes significant increase in GABA content of the brain and is a weak inhibitor of two enzyme systems that inactivate GABA, namely GABA transaminase and succinic semi aldehyde dehydrogenase, but in vitro studies suggest that these effects would be very slight at clinical dosage. (Rang, Dale, Ritter, Flower & Henderson,)

Non pharmacologic treatment of epilepsy.

Alternatives or adjuncts to pharmacotherapy may be helpful in some patients. Surgery is an extremely useful form of treatment in selected patients. Up to 90% of the patients treated surgically may improve or become seizure free. A study in 80 patients with majorly temporal lobe epilepsy randomized to surgery or continued medical treatment showed that after one year, patients were more likely to be seizure free.

Dietary modification may be used for patients who cannot tolerate AED or to treat seizures that are not completely responsive to AED. In most cases the dietary modifications consist of mainly ketogenic diet.

Another alternative is the vagus nerve stimulator (VNS). The device uses electrodes attached around the left branch of the vagus nerve which delivers stimuli on regular cycling basis. 30-40% of patients treated have a positive response. (James & Rex, 2009).

2.4.0Epilepsy in Africa

Epilepsy is one of the most common and serious brain disorders in the world.

The situation of epilepsy in Afro region reflects a worldwide prevalence which remarkably is uniform, although the incidence increases in Latin America, the Eastern Mediterranean, and South East Asia and in Africa. (WHO, 2004).

The prevalence of Epilepsy in Uganda is estimated to be 3%. In addition to seizures, patients also experience adverse effects of AEDs, stigma, psychiatric comorbidities, social or physical limitations. (Nabukenya *et al*, 2014).

2.5.0 Adherence to epileptic therapy.

Adherence generally refers to patients following medical recommendations. It is considered in behavioral terms, where by a patient has an active and informed role to

play in a therapeutic situation. In this case, adherence to prescribed medication was seen as a health promoting behavior. (WHO, 2013)

The types of non-adherence can be described as follows: reduced or increased amount of single dose, decreased or increased number of daily doses, extra dosing, incorrect dosing intervals, being unaware of the need for lifelong regular medication, taking duplicate medication, taking discontinued medication, discontinuing prescribed medication, regularly forgetting to take medication and incorrect use of medication.(Chandra, 1993)

The best indicator of adherence in epileptic patients is believed to be serum levels of anti-convulsions drugs. However, other non-conclusive methods have been used for purposes of convenience and cost. Medication use can be reviewed by use of medical records, patient self-report, pill counts, prescription refill rates, and biological assays including urine and saliva assays to quantify medication or metabolites.(Lamon, 1997)

CHAPTER THREE

3.0 METHODOLOGY AND MATERIALS

3.1.0 Study design.

The study was a cross sectional study with descriptive quantitative methods of data collection for over a period of three months. Patient, family or caretaker interviews were the sources of data.

3.2.0 Study area.

The study was carried out at Kagando hospital, located in Kasese district western Uganda, which is 105 km from Ishaka town in Bushenyi district. Kagando hospital also known as Kagando Mission hospital, is located in Kagando, Kasese district, Rwenzururu sub region, western Uganda at the foot hills of Rwenzori mountains and close to queen Elizabeth national park. Its location is approximately 25 kilometers by road south west of Kasese form where the district headquarters are located. It's also 17 kilometers by road east of Mpondwe at the international border with the Democratic Republic of Congo. The coordinates of Kagando Hospital are: 0° 3' 51.00"N, 29° 53' 51.00"E (Latitude: 0.064167; Longitude: 29.897500). The hospital is a private not for profit facility and is the biggest hospital in the district with a bed capacity of 320 serving as a referral within the district with specialized and general medical services

3.3.0 Study population

The study was conducted on epileptic patients of all ages, attending the Tuesday and Thursday psychiatric clinic at Kagando Hospital.

3.4.0 Selection criteria.

3.4.1 Inclusion criteria

All epileptic patients both male and female of all ages who came to the clinic and consented to the study. Consent for minors was sought from adult caretakers above 18 years.

3.4.2 Exclusion criteria.

Non-consenting epileptic patients and minors whose care takers did not consent were not included in the study.

3.5.0 Population and sampling.

3.5.1 Sample size determination

Solvin's formula was used for sample size determination.

$$N = n / [1 + (n \times e^2)]$$

Where n, is the total population size, N is the sample size, and e is the level of precision which is a constant 5%.

The number of epileptic patients attending to Kagando hospital psychiatric clinic is 106.

$$N = 106 / [1 + (106 \times 0.05^2)]$$

$$N = 106 / 1.265$$

$$N = 83.7$$

Therefore, the sample size was 83 patients.

3.6.0 Sampling procedure

The convenient sampling procedure was used.

3.7.0 Tools and data collection methods

A pretested questionnaire was used to interview subjects. Pretesting of the tool was done on the first ten subjects who accepted to participate in the study and adjustments were made where necessary.

Patient's demographic data like age, sex and level of education were also be obtained

3.8.0 Data collection.

A questionnaire was used to interview each subjected who accepted to participate in the study

3.9.0 Data analysis

The data collected on the questionnaires was entered into Microsoft Excel and then imported into STATAv14.2 for analysis. The frequencies were obtained for most of the

characteristics in the questionnaires and the results presented in tables and graphs. To detect for significant associations of the predetermined factors with adherence, logistic regression was carried out at a 5% level of significance ((95% CI) and a p value less than 0.05 considered significant. The odds ratios were reported together with their confidence intervals.

3.10.0 Ethical considerations

The research proposal was submitted to the Faculty Research and Ethics committee, and reviewed by the Institution Research Board before for approval.

Permission from the Medical director of Kagando hospital was sought which was transmitted to the psychiatric Unit leadership.

Confidentiality was ensured at all stages of data collection, data analysis and even after reporting.

3.10.1 Limitation of the study

Literacy levels of the psychiatric patients and care takers were low.

Insufficient funds as a result of transport price increments and weather changes.

Stage of the psychiatric episode

CHAPTER FOUR

4.0 RESULTS

This chapter contains the general findings and discussions of these findings of the study.

4.1.0 DEMOGRAPHIC DATA.

The descriptive statistics for the psycho-social and socio-economic characteristics of the respondents which is very important to identify their effects on adherence to AED therapy.

83 participants met our inclusion criteria majority of whom were aged 18-14years 38(45.8%). Most of the participants were females 42(50.6%). Social economically, majority of the respondents were unemployed, had not attained at least primary education 41(49.4%) and many were single 42(50.6%) but not living alone 66(79.5%), without any disability or psychiatric illness 74(89.2%). A great number of participants reported that they were satisfied with the support from the community 46(55.4%), most of them affirming largely that there were no reminders from family and friends to take their medication 44(53.0%). Table 1.

The gender results below are not consistent with Nabukenya et al, who realized more males, 54.3% than females 45.7% among epileptic patients in Butabika and Mulago Hospitals. However, the results about patient's marital status are consistent; where by 77.1% of the participants were never married. Social economically the results were consistent with Egenasi *et al*, 2015 whose study proved that most of this group of patients are unemployed 166(83.4%) in Kimberly Hospital South Africa.

TABLE 1. Showing the demographic distribution and social economic factors of the participants.

Characteristic	Frequency (%), N= 83
Age (years)	
<18	26 (31.3)
18 – 45	38 (45.8)
>45	19 (22.9)
Gender	
Male	41 (49.4)
Female	42 (50.6)
Employment	
Employed	6 (7.2)
Unemployed	20 (24.1)
Retired	5 (6.0)
Student	19 (22.9)
Housewife	3 (3.6)
Farmer	17 (20.5)
Other	13 (15.7)
Education level	
University	12 (14.5)
High school	12 (14.5)
Primary school	18 (21.7)
None	41 (49.4)
Marital status	
Married	27 (32.5)
Divorced	7 (8.4)
Widowed/widow	7 (8.4)
Single	42 (50.6)
Living alone	
Yes	17 (20.5)
No	66 (79.5)
Disability/psychiatric	
Yes	9 (10.8)
No	74 (89.2)
Community support	
Satisfactory	46 (55.4)
Non-satisfactory	37 (44.6)
Reminder from family and friends to take medication.	
Yes	39 (47.0)
No	44 (53.0)

4.2.0 ASSESSMENT OF THE PATIENT/PHYSICIAN RELATIONSHIP AND PATIENT/DISPENSER OR PHARMACIST RELATIONSHIP.

Generally, the relationship between the patient and physician, patient and pharmacist/dispenser is very essential for optimizing drug therapy and ensuring compliance on every encounter.

Most of the respondents affirmed that physicians did not know about their personal health habits 44(53.0) and that pharmacists/dispensers did not confirm whether or not they understood the instructions for taking their medication 50(60.2%). Table 2

TABLE 2. Showing patient/physician relationship and patient/dispenser questions and advice offered to patients.

Patient/physician/pharmacist behavior	Frequency, n (%)	
	Yes	No
Patient relationship with physician		
Patient contacts the physician whenever needed	47 (56.6)	36 (43.4)
Physician knows the patient's health habits	39 (47.0)	44 (53.0)
Patient comfortably asks their physician questions	45 (54.2)	38 (45.8)
Prompt ability of the physician to answer the questions	61 (73.5)	22 (26.5)
Pharmacist/dispenser questions and advice offered to patients		
Dispenser asking for first time drug taking by the patients	37 (44.6)	46 (55.4)
Dispenser confirming that their instructions have been understood	33 (39.8)	50 (60.2)
Dispenser informing the patient about the importance of adherence	53 (63.9)	30 (36.1)
Dispenser advice to the patient on how to take medication	54 (65.1)	29 (34.9)
Dispenser asking about non-compliance and the possible reasons	42 (50.6)	41 (49.4)

4.3.0 THE PERCENTAGE PROPORTION OF ADHERENT PATIENTS TO THEIR ANTI-EPILEPTIC MEDICATION

The percentage of patients who reported that they never fail to take their medication was high 54.2% and 45.8% reported that they had missed to take their medication at least once. This finding is consistent with findings by Ferrari et al, 2013 in Brazil where percentage adherence was 66.2% and also Gabi et al, 2015 in Saudi Arabia, 61.7%. However, 45.8% non-adherence prevalence is inconsistent with Fredrick et al findings in 2017 which showed a non-adherence level of 65.1% basing on self-reporting. Table 3

TABLE 3, showing the percentage proportion of adherent patients.

Percentage proportion	95% Confidence Interval
54.2%	35.2 – 56.8

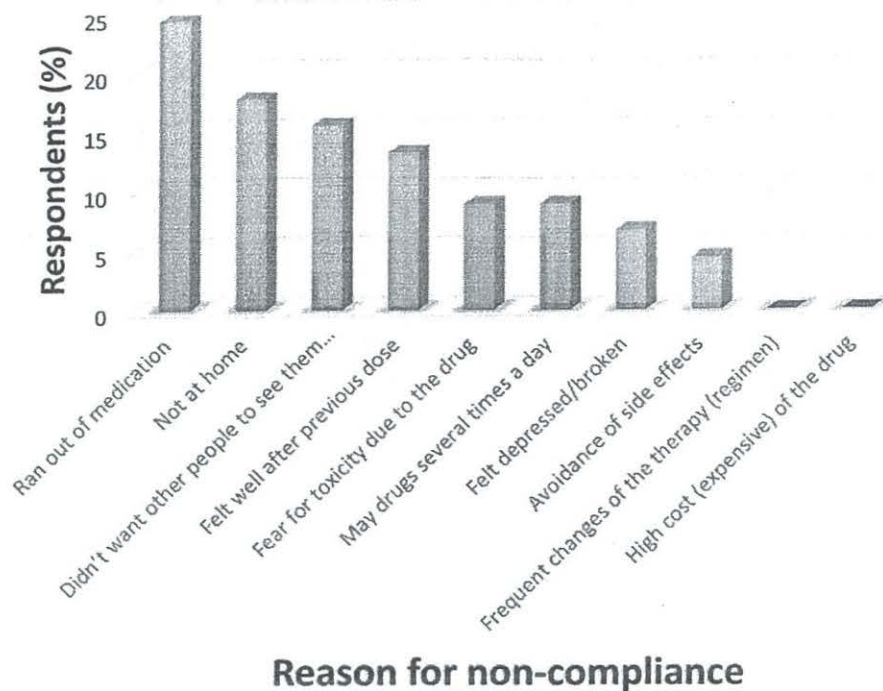
4.4.0 THE DETAILED ACCOUNT OF THE NON-ADHERENT PATIENTS (TIME FACTOR AND THE REASONS FOR NON-ADHERENCE)

Most of the non-adherent patients reported that they had failed to take their medication in the previous week before coming to pick their prescriptions, 31.1% (n = 14). 24% of the non-adherent patients reported that they missed their medication because they ran out of their medication, 17.8% reported that they were not home, 15.6% did not want other people to see them taking their medication, 13.3% felt well after previous dose. (Table 4)

TABLE 4; showing the detailed account of non-adherent patients

Parameter/reason	Frequency, % (n); N=45
Last time the patient was non-compliant	
The previous week	31.1 (14)
Between 1 and 2 weeks ago	15.6 (7)
Between 3 and 4 weeks ago	22.2 (10)
About 1 to 3 months ago	15.6 (7)
More than 3 months ago	15.6 (7)
Reason why the patient didn't comply	
Not at home	17.8 (8)
May drugs several times a day	8.9 (4)
Avoidance of side effects	4.4 (2)
Didn't want other people to see them taking the drugs)	
Frequent changes of the therapy (regimen)	15.6 (7)
Fear for toxicity due to the drug	0.0 (0)
Felt depressed/broken	8.9 (4)
Felt well after previous dose	6.7 (3)
Ran out of medication	13.3 (6)
High cost (expensive) of the drug	24.4 (11)
	0.0 (0)

GRAPH 1



4.6.0 FACTORS AFFECTING ADHERENCE (N=38)

Most of the non-adherent patients were between the age 18-45 years, 42.1% (n = 16). The results are not consistent with Fredrick *et al*, 2017 results which showed a statistically significant relationship between young age (<18years) with non-adherence $p = 0.001$. From our findings, there is no statistically significant relationship between patient's age and level of adherence to AEDs. Table 5

55.3% of most non adherent patients were male and the rest were female. 42.1% of the non-adherent patients had not attained any level of formal education. This finding is consistent with Egenasiet *al*, 2015 whose study in a South African public hospital Kimberly found out that majority of the epileptic patients who did not comply were not educated 13(52.0%). 59% of the non-adherent patients were single though only 16% of these patients reported that they were living alone. However, 60.5 % of these non-adherent patients reported that they never received any reminder from their family and friends to take their medication. This is a clear indication of limited family and community support offered to these patients in ensuring that they adhere to their therapy. Other factors are clearly indicated in table 6 below.

4.7.0 PATIENT'S ATTITUDE TOWARDS HIS/HER ABILITY TO COMPLY AND WHETHER HE/SHE BELIEVES THERAPY IS BENEFICIAL.

Among the non-adhering patients, 71% (n = 27) were very sure they would be able to comply. More so, 71.0% were convinced that therapy would be beneficial. This positive attitude was realized in both adhering and non-adhering subjects. However, a small proportion of participants were not sure if the therapy would be beneficial 15.8% (n = 6) of the non-adhering patients. Most non adherent patients reported that there were no reminders from family and friends to take their medication 23(60.5), p value of 0.025% and an odds ratio of 0.36. Patients who have a positive attitude about their readiness to comply are 2.77 times more likely to adhere than those patients who are not sure. Also, patients who get a reminder from their family and friends have 64% chances of adhering to their therapy, compared to those patients who do not get the reminder. The participant's positive attitude towards the positive outcome of therapy had no statistically significant relationship with adherence. Table 5.

TABLE5, showing the demographic and social economic factors among the non-adherent patients.

Factor	Patients' adherence, % (n)	Odds ratio	95% CI	P value
Age (years)		0.93	0.52 – 1.68	0.811
<18	34.2 (13)			
18 – 45	42.1 (16)			
>45	23.7 (9)			
Gender		0.65	0.27 – 1.54	0.327
Male	55.3 (21)			
Female	44.7 (17)			
Employment		0.91	0.73 – 1.13	0.377
Employed	15.8 (6)			
Unemployed	21.0 (8)			
Retired	7.9 (3)			
Student	18.4 (7)			
Housewife	2.6 (1)			
Farmer	13.2 (5)			
Other	21.0 (8)			
Education level		0.75	0.50 – 1.11	0.149
University	21.0 (8)			
High school	13.2 (5)			
Primary school	23.7 (9)			
None	42.1 (16)			
Marital status		1.26	0.91 – 1.75	0.160
Married	26.3 (10)			
Divorced	5.3 (2)			
Widowed/widow	10.5 (4)			
Never married	57.9 (22)			
Living alone		1.73	0.57 – 5.21	0.334
Yes	15.8 (6)			
No	84.2 (32)			
Disability/psychiatric		0.64	0.16 – 2.59	0.534
Yes	13.2 (5)			
No	86.8 (33)			
Community support		0.56	0.23 – 1.35	0.194
Satisfactory	63.2 (24)			
Non-satisfactory	36.8 (14)			
Reminder from family and friends		0.36	0.15 – 0.88	0.025
Yes	23 (60.5)			
No	15.0 (39.5)			
Patient's readiness to comply		2.77	1.47 – 5.22	0.002
Not sure	10.5 (4)			
Quite sure	18.4 (7)			
Very sure	71.1 (27)			
Patient's positive attitude towards the outcome		1.50	0.87 – 2.59	0.149
Not sure	15.8 (2)			
Quite sure	13.2 (5)			
Very sure	71.0 (27)			

Table 6, showing physician factors and dispenser questions and advise to patients who did not adhere.

Factor	Adherence, %(n)	OR	95% CI	P value
Patient relationship with physician				
Patient contacts the physician whenever needed		0.61	0.25 – 1.47	0.271
Yes	63.2 (24)			
No	36.8 (14)			
Physician knows the patient's health habits		0.80	0.34 – 1.90	0.614
Yes	50.0 (19)			
No	50.0 (19)			
Patient comfortably asks their physician questions		1.67	0.70 – 3.99	0.251
Yes	47.4 (18)			
No	52.6 (20)			
Prompt ability of the physician to answer the questions		0.59	0.22 – 1.61	0.303
Yes	78.9 (30)			
No	21.1 (8)			
Pharmacist/dispenser questions and advice offered to patients				
Dispenser asking for first time drug taking by the patients		0.55	0.23 – 1.31	0.177
Yes	52.6 (20)			
No	47.4 (18)			
Dispenser confirming that their instructions have been understood		0.68	0.28 – 1.68	0.395
Yes	44.7 (17)			
No	55.3 (21)			
Dispenser informing the patient about the importance of adherence		0.45	0.18 – 1.13	0.090
Yes	73.7 (28)			
No	26.3 (10)			
Dispenser advice to the patient on how to take medication		0.94	0.38 – 2.33	0.898
Yes	65.8 (25)			
No	34.2 (13)			
Dispenser asking about non-compliance and the possible reasons		0.71	0.30 – 1.69	0.436
Yes	52.3 (21)			
No	47.4 (17)			

CHAPTER FIVE

5.1.0 DISCUSSION, CONCLUSIONS AND RECOMENDATIONS

5.1.1 DISSCUSSION

We found high levels of adherence to AED among the epileptic patients 45(54.2%) at Kagando Hospital. 45.8% of the epileptic clients reported having missed their medication at least once, although these finding are non- concordant with the findings of Fredrick *et al*, 2017 who found a non-adherence level of 65.1% basing on self-reporting amongst epileptic clients on AED.

In our study we found most of the participants were females 42(50.6%). Social economically, majority of the respondents were unemployed, had not attained at least primary education 41(49.4%) and many were single 42(50.6%) but not living alone 66(79.5%), and without any disability or psychiatric illness 74(89.2%). A great number of participants reported that they were satisfied with the support from the community 46(55.4%), most of them affirming largely that there were no reminders from family and friends to take their medication 44(53.0%). The gender results are not consistent with Nabukenya *et al.*, 2014, who realized more males, 54.3% than females 45.7% among epileptic patients in Butabika and Mulago Hospitals. However, the results about patient's marital status are consistent with our study.

While the relationship between the patient and physician, patient and pharmacist/ dispenser is very essential for optimizing drug therapy and ensuring compliance on every encounter, we found out that most physicians did not know about their patients personal health habits 44(53.0) and that pharmacists/dispensers did not confirm whether or not they understood the instructions for taking their medication 50(60.2%). The inability of physicians and dispersers to establish a relationship or create rapport with their clients and obtain more health related habits could be as a result of high patient volumes that health personnel will not have enough time.

Our study further found that non-adherent patients were between the age 18-45 years, 42.1% (n = 16). This probably could be due to the fact that majority of the members in this age group are prone to stigmatization, not willing to be seen with their medications and are too busy however these findings are not consistent with Fredrick *et al*, 2017 who found

statistical significant relationship between young age <18years with non-adherence $p = 0.001$. In terms of gender males (55.3%) were non adherent as compared to females (42.1%), this may be so as most men are associated with other habits like alcoholism, smoking, that often are likely causes of non-adherence.

We found high levels of non-adherence in none educated individuals 16(42.1). This may be due to the information flow gap that may arise with this particular group. This finding is consistent with Egenasi *et al.*, 2015 whose study in a South African public hospital Kimberly found out that majority of the epileptic patients who did not comply were not educated 13(52.0%).The findings of this study showed a great statistical significance between reminders from family, friends and patients readiness to comply as essential factors for adherence(p -value 0.025 CI 0.15-0.88 and p - value 0.002 CI 1.47-5.22) respectively.

5.1.2CONCLUSION.

There were low levels of non-adherence to AED by epileptic patients at Kagando hospital with several factors in play that need the attention of both the physician, care takers, the dispensers and the clients. The reminders from family and friends to take medications and patients' willingness to comply were strong important factors for adherence.

5.1.3 RECOMMENDATIONS

1. Healthy education and behavioral interventions for epileptic patients as well as communities should be encouraged at Kagando Hospital.
2. Good follow up measures by the practitioners or care givers should be put in place.
3. More detailed studies need to be carried out on the patients' health related quality of life to reach out to other members of the community who cannot access the treatment facilities.
4. More research on the effective management of epilepsy should be done in other parts of the country to obtain a more comprehensive report on the management of epilepsy in the whole country.

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Appendix I:

QUESTIONNAIRE

KAMPALA INTERNATIONAL UNIVERSITY SCHOOL OF PHARMACY

Questionnaire to ascertain the effective use of AEDs among epileptic patients at Kagando Hospital;

Patients or caretakers and the researcher should fill the questionnaire together.

A. GENERAL INFORMATION.

1. Age
 - a. <18years
 - b. 18-45years
 - c. >45years.
2. Gender
 - a. Male
 - b. Female
3. Employment
 - a. Employed
 - b. Un employed
 - c. Retired
 - d. Student
 - e. House wife
 - f. Farmer
 - g. Other
4. Education level
 - a. University
 - b. High school
 - c. Primary school
 - d. None
5. Marital status
 - a. Married
 - b. Divorced

- c. Widowed/widow
- d. Never married
- 6. Do you live alone?
 - a. Yes
 - b. No
- 7. Disability/psychiatric
 - a. Yes
 - b. No

B. Subject's attitude towards his/her ability to comply health care provider's instructions and whether he or she believes therapy is beneficial.(Tick in the right box)

1. Are you sure you will be able to comply with the physicians medication instructions?

Not sure at all	quite sure	Very sure
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2. Are you sure that treatment will be positive in controlling the seizures?

Not sure at all	Quite sure	Very sure
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C. Community (family and friends) support(tick the appropriate box)

1. Are you satisfied with the support from your family and friends?

I am satisfied	I am not satisfied

2. Do your family and friends remind you to take your medication on time?
- a. Yes
 - b. No

D. Patient adherence to anti epileptic medication

1. When was the last time when you failed to take your medication?
- a. Last week

- b. 1-2 weeks ago
 - c. 3-4 weeks ago
 - d. 1-3 months ago
 - e. More than 3 months ago
 - f. I never fail to take my medication
2. People do not take their medication for various reasons. Here is the list of various reasons. (you can tick more than one option)
- a. I was not at home
 - b. I a number of drugs several times a day
 - c. I wanted to avoid side effects
 - d. I did not want other people to see me taking medication
 - e. My doctor frequently changes my therapy
 - f. I felt the drug to be toxic/harmful
 - g. I felt depressed or broken
 - h. I felt well
 - i. I ran out of medication
 - j. The drug was too expensive

E. Patient relationship with physician

- 1. I can contact physician whenever I have a personal or emotional problem
- 2. My physician knows my health habits (e.g. smoking, alcohol, nutrition, other diseases)
- 3. I do not feel comfortable asking my physician questions
- 4. My physician always explains to me the need to take my medication and the effects of skipping therapy.

F. Pharmacist/dispenser questions and advice offered to patients

- 1. Has the dispenser asked you whether you are taking the drug for the first time?
- 2. Has the dispenser asked you to repeat aloud the instructions on how to take the medication?
- 3. Has the dispenser informed you on the importance of complying with the medication
- 4. Has the dispenser advised you in detail on how to take your medication?
- 5. Has the dispenser asked you about skipping your doses and why?

Appendix11

RESEARCH BUGDET.

No	Item	Quantity	Unit cost(Ug. shs)	Total cost(Ug. shs)
1	Proposal printing and binding	3 copies	10000	30,000
2	Stationery		30,000	30,000
3	Questionnaires	120 copies	800	96,000
4	Report printing and binding	3 copies	20000	60,000
5	Internet services	4 months	25000	100,000
6	Transport			100,000
	TOTAL			416,000

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TIME FRAME.

Date	12 th /03/2018 24 th /04/2018	to	1 st /06/2018 31 st /07/2018	to	15 th /08/2018 31 st /09/2018
Activity.	Proposal writing		Data collection		Data analysis

Appendix IV

CONSENT FORM.

KAMPALA INTERNATIONAL UNIVERSITY SCHOOL OF PHARMACY

Title: ASSESMENT OF EFFECTIVE USE OF ANTI EPLEPTIC DRUG THERAPY AMONG OUT PATIENTS AT KAGANDO HOSPITAL

I, **KATO LODRICK**, a fourth year pharmacy student at Kampala International University request you to participate in this study about Assessment of effective use of antiepileptic drug therapy among out patients at Kagando hospital.

Introduction

This study is carried out among epileptic patients attending to the epileptic clinic at Kagando hospital. The purpose of the study is to assess the factors associated with non drug adherence and poor seizure control among the epileptic patients.

Participation in study

Your participation in this study is **voluntary** and you have the right to accept or refuse to participate. If you would rather not answer any question, there will be no problem. You may withdraw from the study at any time you wish.

Benefits:

The study will help the management of Kagando hospital to identify the loop holes in the effective management of Epilepsy in outpatients. The study results will be used to identify the major causes of poor adherence to AEDs and the possible solutions to the problem.

Risks:

I understand there are no attendant risks and researcher risks involved. Your name will not be written anywhere and therefore no one else will know that these are your responses.

Information handling

The information that you provide during the study will be kept **confidential**. Only the Researcher will have access to it.

Role as the participant

You are to answer the questions as asked by the interviewer from the questionnaire form.

You will participate in only one study

If there is anything that is unclear or you need further information, you should ask and it will be clarified

Declaration of the Volunteer

I consent voluntarily to participate as a subject in this study, having read and understood the above information.

.....

.....

Name/Signature of Volunteer

Date: