EXPLORING THE ROLE OF HEALTH CENTER NURSES IN EARLY DETECTION

OF NON-COMMUNICABLE DISEASES IN KICUKIRO DISTRICT, RWANDA

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DECLARATION AND AUTHORITY TO SUBMIT THE DISSERTATION

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a. *Declaration by the Student*

I do hereby declare that this *dissertation* submitted in partial fulfillment of the requirements for the degree of **MASTERS OF SCIENCE** in **NURSING**, at the University of Rwanda/College of Medicine and Health Sciences, is my original work and has not previously been submitted elsewhere. Also, I do declare that a complete list of references is provided indicating all the sources of information quoted or cited.

Date and Signature of the Student

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b. *Authority to Submit the dissertation*

Surname and First Name of the Supervisor: **DR. ELEAZAR NDABARORA**

In my capacity as a Supervisor, I do hereby authorize the student to submit his/her **dissertation**.

Date and Signature of the Supervisor:

DR. ELEAZAR NDABARORA   12/06/2017

DEDICATION

This research is dedicated to Almighty God the only Truth,

I am grateful to my lovely husband Emmanuel, my children Shami, David and Lydia, my mother, Monique, my sisters, Laetitia and Ange, my friends, my fellow Christians and Servants of God who provided me with their support and prayers, I wish them many blessings.

ACKNOWLEDGEMENTS

ABSTRACT

Introduction and background: Noncommunicable Diseases (NCDs) are becoming a major public health problem, which occupies more than 60% of total deaths globally. Early detection can help to reduce costly treatment at an advanced stage. Nurses, who are the frontline workforce, play a big role in managing NCDs as caregivers, educators, managers and researchers. The Ministry of Health has put in place a program that aims to do earlier detection of NCDs, at least once a year for eligible women and men.

Objectives: The main objective was to explore the involvement of health center nurses in in the national program of NCDs checkup. Specific objectives of the study were (1) to describe the knowledge of nurses on NCDs and checkup program for NCDs, (2) to describe the role of nurses in use of forms for NCDs checkup, and (3) to identify the challenges of nurses in using forms for NCDs checkup, as part of the implementation of the program for early detection of NCDs at health centers.

Methodology: This study was conducted in one of the four districts in Kigali City. A quantitative approach and an observational, descriptive design were adopted to conduct this study. The sampling method was stratified sampling. The study was done in 42 among 68 nurses from four health centers of the district that were randomly selected. Data collection used a self-report questionnaire given to nurses who accepted to participate voluntarily in the study. Descriptive data were entered into the Statistical Package of Social Sciences (SPSS) version 19, and then analyzed using Pearson Chi-square at a level of 95% of confidence interval, to determine association between variables, after; they were presented in tables as frequency and percentages.

The Results: The results demonstrated that a good number of nurses have good knowledge of NCDs with more than 80% and use forms for NCDs checkup by 64.3% of nurses. Knowledge was associated with the use of checkup forms (p-value .000), and the level of education, experience and services allocation were associated with the use of checkup forms (p-value. 037 at 95%CI, .005 and .004 at 95% CI respectively). However, nurses reported challenges of low staff, lack of training and low equipment and this was associated with the use of checkup forms

(P-value .012). There was also an association between services and receiving guidelines for NCDs and use of forms for NCDs checkup (p-value .006 and .003 at 95% CI).

Conclusion: knowledge, time of receiving checkup forms and allocated services were found to influence the use of forms for NCDs checkup. The level of education and experience were also influencing the frequency of using forms NCDs checkup. Nurses have an important role in early detection of NCDs and need to be empowered with a favorable working environment in health centers.

OPERATIONAL DEFINITIONS

- **Early detection for NCDs:** Methods to determine in patients the nature of a disease or disorder at its early stage of progression. Generally, early diagnosis improves prognosis and treatment outcome (Reference.MD, 2012p.1; Ruf and Morgan, 2011p.1). In this study early detection of NCDs at the health center level refers to the systematic interviews by using appropriate checkup forms, blood sugar measurements, hypertension measurement, that are conducted to suspect any NCDs among eligible clients, which are women aged from 35 years old and men from 40 years old and above.

➤ **Non- communicable disease:** are chronic conditions that do not result from an infectious process, and hence are "not communicable." They have a prolonged course, that does not resolve spontaneously, a complete cure is rarely achieved (Center for Disease Control, 2013p.1). In other terms, they are diseases which are not infectious and characterized by chronicity, so that they require long term treatment. This study consider the NCDs which are frequent in Rwanda, including cardiovascular diseases (mainly hypertension), diabetes mellitus, kidney diseases, cancers mainly cervical and lung cancer, eye diseases, and injuries (Ministry of Health, 2014p.2).

➤ **Nurse**: a health professional trained in nursing science, in a duration between three (enrolled nurse) and seven years or more (registered nurse/ advanced nurse), after completing a program of generalized nursing education, he/she is authorized by the appropriate regulatory authority to practice nursing in his/her country (International Council of Nurses , 2015p.2).

The nurse is prepared for activities that are including the promotion of health, prevention of illness, and care of the physically or mentally ill, disabled people of all ages; in all health care and other community settings, to carry out health care, teaching, to participate fully as a member of the health care team, to supervise and train nursing and health care auxiliaries and do research in health care (International Council of Nurses 2015p.2). In this study, it refers to a nurse who works in health center without considering the level of education or the area of specialization.

➤ **The role of Nurse**: Virginia Henderson explained that the role of a nurse is to provide care by doing activities that a person could do him/herself if they would have the ability, the knowledge and the will, to make them reach a state of optimal independence (Virginia Henderson, 1980).

In this study, it refers to the role of nurses in program of detecting NCDs, by using the forms for NCDs checkup. These roles of nurses, according to the context of health centers, can be clinical as the nurses provide checkup services and can be educative when nurses go on outreach to encourage people to do a checkup. This role can also be administrative, when nurses give report of NCDs checkup to the authorities, the role can also be research when the checkup forms are used by researchers as secondary data. These roles could also depend on the service in which the nurse is allocated, whether it is clinical service, outreach, or administrative

➢ **Health center:** is a health facility, that provides primary health services and related services, to residents of a defined geographic area, that is medically underserved (Johnhopkin School of Public Health, 2015p.1). In our context, they are peripheral level of health services in primary health care settings. Usually health centers in the health care system of Rwanda are parallel to geographical sectors. In this study health center will be used to represent first level of the primary health care setting.

LIST OF SYMBOLS AND ACRONYMS

AACN: American Association of Colleges of Nursing

BP: Blood Pressure

BPHC: Bureau of Primary Health Care

HC: Health Center

HTN: Hypertension

ICN: International Council of Nurses

LMIC: Lower and Middle Income Countries

MOH: Ministry of Health

NCD: Non Communicable Diseases

PHC: Primary Health Care

WHO: World Health Organization

WHO PEN: WHO Package of Essentials interventions for NCDs management

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CHAPTER ONE

INTRODUCTION

1.0 General introduction

Noncommunicable diseases (NCDs) are becoming a major global health concern that accounts for more than 60% at the same time causing high morbidity (WHO, 2013p.1). The situation is worse in Lower and Middle Income Countries (LMIC), where 80% of NCDs are found, with premature deaths before 70 years old (WHO, 2013p.2). The cost of treating NCDs is high compared to the limited resources of health care systems in LMIC (WHO, 2010p.6). Therefore, prevention and early detection could be done at lower cost in PHC settings to prevent complications that are disabling and requiring expensive treatment (Amarchand et al., 2015p.2).

The role of nurses is evident, as they are majority of healthcare workforce (ICN, 2008). Different roles of nurses were defined by researchers, and they are known to be found in four areas that are clinical/practice, leadership/management, education and research (ICN, 2008). They perform a variety of activities to promote health, to prevent disease, to manage patients with diseases and other health conditions like pregnancy and birth (ICN, 2008). Nurses were found to play important role in primary health care settings, where they provide health care to patients with different diseases including NCDs (ICN, 2008). The Rwandan MOH has established a program of checkup for eligible adult men and women (MOH, 2014). Therefore, the researcher was interested in that program in primary health care setting, and aimed at exploring the involvement of nurses in that program as implemented in Rwandan health centers. This chapter comprises the background to the study, the problem statement, the research objectives, the research questions, and the significance of the study.

1.1 Background to the study

Lower and Middle Income Countries carry the most heavier burden of NCDs which is added to the burden of communicable diseases, that are specifically the Human Immunodeficiency virus (HIV), Malaria, Tuberculosis, Neglected tropical diseases and maternal child diseases, and this

makes the issue a great concern that needs urgent actions (Bollu et al., 2015p.1; Katende, Groves and Becker, 2014 p.1; Kavishe et al., 2015 p.18; Parmar et al., 2014 p.680). Considering that the treatment of NCDs is costly at advanced stage of diseases, and the context of local health services which are on their way to be strengthened, the approach of early detection has been shown to be more helpful to manage NCDs for prevention and control of those diseases (Bollu et al., 2015 p.74; Kavishe et al., 2015 p.18). There is evidence that NCDs could be managed in PHC settings by non-physicians professionals including nurses specifically (ICN, 2008).

NCDs' prevalence is demonstrated by many studies around the world. A study done in Canada, found that hypertension is number one to cause death and also a modifiable risk factor of stroke and other cardiovascular diseases (Levine and Neary, 2014 p.7). India was found with a high prevalence of diabetic patients and for that cause it was called "diabetic capital of the world" (Bollu et al., 2015 p.78). In Malaysia, another study revealed that patients had good knowledge of the diseases however, there was negative attitudes and risky practices despite their good knowledge of NCDs prevention and control (Bollu et al., 2015 p.78; Mustapha *et al.*, 2014, pp. 4–5).

A study done on Seychelles Island found that only 50% were aware of their status, 34% were treated and 10 % had controlled their blood pressure, positive attitude and practices were observed in a small proportion (Bollu et al., 2015 p.78). Furthermore, the studies which were done in Myanmar, Tanzania, Uganda and Rwanda, with use of WHO STEPS survey instrument, revealed that there was high prevalence of risk factors of NCD among people(Aung, 2014 pp.51-52; Kavishe et al. 2015P.19;). Those risk factors were low intake of fruits and vegetables, obesity and overweight, high consumption of alcohol, lack of physical inactivity and non-compliance to measures of road safety. Consequently, there was observation of high rates of hypertension, diabetes mellitus, and road crashes with injuries (MOH, 2015, pp. 1–2; Mustapha et al, 2014p.2)

Researchers show that there is a need to improve knowledge in community, for early detection, treatment and self-management, of blood pressure and blood sugar (Katende, Groves and Becker, 2014, p. 1,4). However, poor knowledge, attitudes and practices are still hindering the appropriate management of NCDs. This was evidenced by, a recent study that uncovered 90% of Ugandan patients, who were not aware of their hypertensive condition , including those did

not have enough knowledge about the diseases of hypertension and diabetes (Katende, Groves and Becker, 2014 p. 4). Another challenges is the fact that, individuals with NCD who are free from any symptoms, may feel healthy and do not attend to healthcare services. There is implication that health care providers should motivate the people to do checkup for early detection (Mustapha et al., 2014 p.4-5).

In Rwanda , like in other countries, studies has shown high prevalence of risk factors of NCDs (MOH, 2015, pp. 1–2). Therefore, NCDs are increased in district hospitals reaching to 51.86 % of patients coming in outpatient consultation and 22.3 % of those hospitalized (MOH, 2015p.3). Recently MOH set a program of voluntary medical checkup for the community to detect undiagnosed cases of NCDs (MOH, 2014p.1-2).The ministry of health emphasized on the importance of the mentioned program, during an international scientific conference on NCDs held in June 2016.

The program of Voluntary Medical Checkup for community based health insurance (CBHI) members, was proclaimed by the ministerial order no 20/1354/DGCS/2014 of 21st March 2014, this order was given according to the Law No 62/2007 of 30/12/2007 establishing and determining the functioning and management of the community-based health insurance scheme and ministerial health instruction 20/62 of 20 March 2014 and pursuant to instructions No 20/55 of 30/11/2011 determining the management of the community based health insurance scheme (MOH 2014p.1-2). The programs is constituted with nine articles including sensitizing members of CBHI for voluntary checkup and determine health status for individuals, decision made after checkup, data collection payment for service and medical file used in voluntary medical checkup. The file describes all parts to be assessed to identify signs of chronic diseases like hypertension, kidney diseases, respiratory diseases, eye diseases and others (MOH 2014p.1-2).

It was found that the role of nurses working at community and health center levels is of great impact, considering that one of the strategies envisaged by the WHO, is the Global Action Plan for the fight against NCDs which aims to embark on community sensitization and early detection and treatment with use of a multidisciplinary teams at different levels of health system and for the success of these programs (WHO 2012p.6-9). Major studies demonstrated the association of nurse staffing and patient outcomes, like one study that was done by Bae in 2014; it has shown

that a workload of eight patients versus four was found to be associated with increase of mortality to a rate of 31%. Therefore, there is scientific evidence of the association between lower nursing workloads and better patient outcomes (Bae et al. 2014 in ICN 2015p.2). Therefore, nurses who are frontline staff should be represented in higher levels of health care setting to participate in decision making, their knowledge and experience may contribute to improve processes in health settings. The knowledge of different roles of nurses would help to understand their right place in health care management (Aantjes, Quinlan and Bunders, 2014, p. 1; Mustapha et al.2014, pp.4-5; Needleman and Hassmiller, 2009, pp.626-628).

In primary health care settings, nurses are managers of health centers; they organize and coordinate the functioning of health centers and give report to the administrators from district hospitals. They participate in meetings of local leaders, and participate in the training and evaluation of other nurses. The nurses who are not managers have different responsibilities according to services available in H.C. They insure activities of vaccination, antenatal care, VCT/PMTCT, diagnosis and treatment of local diseases, referring complicated cases to district hospitals, perform deliveries and care of mothers and their babies, they provide drugs and manage stock of drugs and cold chain for vaccines, they provide health care education for prevention of communicable diseases like malaria, parasites, HIV and STIs (MOH, 2013p.21). By the way health centers are of big number of health facilities whereby they reach to a number of 465. Otherwise, district hospitals are of the number of 42 and referral hospitals are counted to be five (MOH, 2013pp.11). However, their role in managing non-communicable disease is less defined which may lead to the delay of diagnosis and referral process of NCDs patients.

Nurses are mainly placed in health centers, so they are needed to be involved actively in programs to fight against NCDs. They are the ones to provide education and motivation of the community, to be checked at health centers where they have easy access with their community based health insurance scheme _CBHIS (MOH, 2014p.1-2). In addition, they should participate in planning and decision making to facilitate operational activities which take place in health centers and provide relevant information regarding the progress of the health programs (MOH, 2014 p1-2; Katende et al., 2014; Mustapha et al., 2014; Ugochukwu, 2013p.130).

1.2 Problem statement

The prevalence of noncommunicable diseases is increased in countries, for example, in 2014 seven million Canadians were diagnosed with hypertension (Levine and Neary, 2014). Similarly, in Malaysia, there are about 2.6 million adults, who live with type 2 diabetes melitus (Mustapha et al., 2014). In Rwanda, district hospitals received up to 51.86 % of patients coming in outpatient consultation and 22.3 % of hospitalized patients (MOH, 2015p.3). However, early detection in primary health care could prevent costly hospitalization due to the delay of diagnosis. Different authors mentioned the role of nurses as care givers, educators, managers and researchers (Aung Htet, 2014; WHO, 2012p.1; Ugochukwu et al., 2013 p.120). In addition the roles of caregiving and health education are more emphasized, in the context of early detection of NCDs, while the role of management and leadership is less explored.

Studies also show the necessity of strengthening health services to improve care of NCDs patients (Mustapha et al., 2014 p.4-5). Therefore nurses who are a big part of health workforce, and mainly placed in health centers should be focused on, to insure the quality of health services given to patients (MOH, 2014p.1-2; Katende et al. 2014 p.4-5). Nurses are needed, to engage actively in programs to fight against NCDs through participation in planning and decision making of health programs, to facilitate operational activities in health centers and provide relevant information regarding the progress of those health programs (MOH, 2014p.1-2; Katende et al., 2014p.4-5; Ugochukwu et al., 2013p.130).

Even though, many studies were done on NCDs, regarding health policy like in Mongolia and Malaysia, management of patients and in India, on risk factor, in Uganda and Tanzania , there is a need to consider the role of nurses in management of NCDs (Chimeddamba et al., 2015p.1; Kavishe et al., 2015 p.1; Mishra et al., 2015p.1). Furthermore, nursing role in managing non-communicable disease is less defined in Rwandan health centers; consequently, there is a delay of diagnosis and referral process of NCDs patients.

However, few studies worked on early detection of NCDs, and so far, to the author's knowledge, there is no study that was done on the role of nurses in early detection of NCDs and specifically in health centers of Rwanda.

1.3 Objectives of the study

1.3.1 General objective

The general objective of the study, is to explore the role and the involvement of health center nurses in the national program of checkup for early detection of NCDs.

1.3.2 Specific objectives

1. Describe the knowledge of health center nurses on NCDs and program of NCDs checkup in Rwanda.
2. Describe the role the health center nurses in participation of the program of NCDs checkup by using the forms for checkup provided by the ministry of health.
3. Identify challenges encountered by health center nurses while providing services for NCDs checkup.

1.4   Research questions

1. What is the knowledge, do health center nurses have on NCDs and program of NCDs checkup in Rwanda?
2. How the health center nurses play their role in the program of NCDs checkup, by using the forms for checkup provided by the Ministry of health?
3. What are the challenges, encountered by health center nurses, while they provide health services of NCDs checkup?

1.5 Significance of the study

This study will contribute to improve the program of NCDs checkup in the community, whereby individuals and families will be informed, screened and treated for those diseases at an early stage with lower cost.

The nurses in primary health care facilities will be able to provide information on the progress of checkup program and could be assisted where it is needed.

Leaders and policy makers will use this study to follow up the implementation of the program of NCDs checkup, and address the challenges encountered, at an early stage, for the success of the program. When people will be checked, there will be a way to find enough information on NCD status, of the population considering that the limits of NCD data may be another hindrance in planning appropriately for relevant interventions.

Educators and researchers will use this study for accurate information on the NCD status in our country, and could use it for other studies, considering that data on NCD in LMIC are still limited as stated by other researchers. The study could also be used in revising curriculum for preparing future nurses to provide better care to patients with NCDs for example by including the course of NCDs in pair with that of communicable diseases. In addition the palliative care aspect should be considered as the NCDs are mostly chronic diseases.

Nursing profession will benefit from this study to show the role of nurses within the interprofessional team, in regard to fight against NCDs, and their scope of practice will be more explicit. If we consider other health professionals who focus more on communicable diseases, doing studies in laboratories for diagnosis, treatment and vaccines, nurses should focus more on NCDs using the approaches of the behavioral change model throughout health education, health promotion, and palliative care.

This study will also show the influence of nurse leaders and managers in policy implementation, which should be linked to their participation in policy making, and finally explain reasons to involve nurse leaders in other national policies which are like gender policies, nutritional policy, and food hygiene policies, road security policy, that would contribute to fight against NCDs.

1.7 Conclusion

This chapter has described the general overview of non-communicable diseases, the background; the problem statement has identified the need of study on NCDs in nurses at health centers, the objectives, the research questions, and the significance of the study.

CHAPTER TWO

THE LITTERATURE REVIEW

2.0 Introduction

The second chapter will describe first, the global overview of NCDs, including the prevalence and mortality of NCDs, the WHO global action plan for NCDs, and the countries implementation of WHO program. Second, the role of nurses in the context of Primary Health Care, which will include, the role of nurses, the knowledge of nurses, the nurses with PHC guidelines and the national policy and program for detection of NCDs. Thirdly, the theoretical framework and the conceptual framework .The sources of information were Google search, Google scholar, British medical center (BMC), Research gate, Health affairs and others. The terms used for searching are role of nurses, primary health care, early detection and non-communicable diseases. The citation will use reference style of Harvard- cite Them Right ninth edition.

2.1 Global overview of NCD

2.1.1 The prevalence and mortality of NCDs in countries

There is a high prevalence of NCDs across different countries, either in higher income countries or in low and middle income countries. For example the prevalence rates of hypertension are 23% in Canada, 32% in Germany and 34.3 % in Australia (Levine& Neary, 2014 p.7; Neuhauser et al. 2015). In Malaysia they counted 2.6 million of diabetics in 2011 (Janus et al., 2008). LMIC has an estimate of 86% of people living with NCDs and there is a trend that the prevalence would double in 2030 (WHO, 2013p.1). The global status of NCD report of 2014 also shows that there are high mortalities due to those diseases as illustrated by table one which is below:

Table2. 1: A world view of premature NCD mortality

Country	Continent	2010	2012
Australia	Oceania	9.9%	9.4%
Germany	Europe	13.0%	12.3%
Canada	America	11.2%	10.7%
India	Asia	26.1%	26.2%
Kenya	Africa	18.4%	18.1%
Malaysia	Asia	20.1%	19.6%
Nigeria	Nigeria	19.8%	19.8%
Rwanda	East Africa	19.5%	19.1%
South Africa	Africa	27.7%	26.8%
Uganda	East Africa	21.3%	21.2%

A study done in Canada found that hypertension is number one to cause death and risk factor of complications like stroke and other cardiovascular diseases. In addition to that, seven million Canadians are diagnosed with hypertension with a rate of more than 23% and 17% among them, are not aware of their hypertensive condition (Levine and Neary, 2014 p.7). In India a study was done to assess the knowledge, attitudes and practices among hypertensive and diabetic patients and found that there was poor knowledge on hypertension. Furthermore, the study found that the knowledge has implication for the compliance to the medication and suggested the establishment of pharmaceutical program for education of patients with hypertension and diabetes (Bollu et al., 2015 p.78). In Seychelles many people were unaware, and untreated of their hypertension, and there was a slight difference of healthy practices between non-hypertensive, unaware hypertensive and aware hypertensive (Aubert et al., 1998, p. 1136; Edwards et al., 2016). The above authors concluded that knowledge of people was possibly linked to a prevention program however this program needed to be improved for more awareness and healthy lifestyles and claimed for guidelines for health professionals for behavior changing approach .

In Germany, the prevalence of hypertension was between 30 and 32% , and young men between 18 and 29 years were more likely to have increased and uncontrolled hypertension (Neuhauser et al., 2015)

In Australia, a research done found that one third or 34.3 % of the population were hypertensive with higher prevalence in men and less awareness in young people of 25-44years (Janus et al., 2008). Awareness was in 12% of young people compared to old people between 45 and 54 years of whom awareness was found in 64% and those aged 75 to 84 were aware of their hypertensive status in 78% of participants (Janus et al., 2008).

India was found to be more prevalent in diabetic patients and was called "diabetic capital of the world'' (Bollu, 2015). Therefore a study was done to assess KAP among diabetic and hypertensive patients then findings revealed poor knowledge on hypertension, in contrast to Malaysia where another study revealed had good knowledge of the diseases among patients. However, there was poor attitude and practice in regard to those diseases despite of their knowledge (Mustapha et al., 2014). Furthermore, the same authors stated that knowledge may have implication to compliance to medication and suggested for educational program for patients with hypertension and diabetes.

In Malaysia authors found that overweight or obesity was likely underestimated. However, it was proven that obesity linked to high proportion of undiagnosed diabetics and hypertensive (Mustapha et al., 2014p.2). Then the survey was done and estimated that for every one person diagnosed with diabetes, another remains undiagnosed, and for every two known hypertensive adults, there were three who remained undiagnosed (Mustapha et al., 2014p.2). In 2011, a rate of 15.1% in adult with18 years and above, has met the criteria for obesity and this comprises about 2.5 million Malaysians. Consequently the prevalence of type 2 diabetes also increased from 11.6% in 2006 to 15.2% in 2011, which are about 2.6 million adults. Hypertension also remained high at 35.1%, which equates to 5.8 million adult Malaysians, and 32.7%, or 6.2 million adult Malaysians, were diagnosed in 2011 with hypercholesterolemia (Mustapha et al., 2014p.2).

The study done in Myanmar, on the prevalence of risk factors of NCD among adults, WHO STEPS survey instrument, found that low intake of fruits and vegetable consumption (82.3%), overweight (44%), hypertension (48.2%), diabetes (18%), and 32 % of the total respondents lived with three or more risk factors of NCDs among the study population (Aung, 2014 pp.51-52).

In Tanzania and Uganda another study was done to assess the prevalence of NCDs and their risk factors, among adults with ≥18years.WHO STEPS survey instrument was used to test for chronic diseases, hypertension, diabetes mellitus, chronic obstructive pulmonary diseases, cardiac failure, epilepsy and HIV (Kavishe et al. 2015p.19). Authors considered the last one as a chronic disease though it is known to be an infectious disease. Main findings revealed prevalence of hypertension as 16% to 17% in Tanzania, 12 % to 26% in Uganda, and this one was more prevalent in several groups of population which were young people, men, widows/divorced, and lower educated people. The prevalence of Diabetes mellitus was 1% to 4%, prevalence of risk factors was also high like overweight was found in 46% of participants, and more prevalent in women and in urban people; tobacco use was ranged between 12 % and 23% in men and 1%to 3% in women, alcohol abuse was 6% to 13% in men and 1%to 6% in women. The study uncovered that unrecognized and uncontrolled hypertension together with high prevalence of NCDs risk factors were major problems, and concluded to a need of reinforcing health services in prevention and early detection and treatment of chronic diseases, in Uganda, Tanzania, and elsewhere in Africa (Kavishe et al. 2015P.19).

The similar study done in Rwanda has found that the main risk factors were unhealthy diets with 99.1with less than five servings of fruits and vegetables. Harmful use of alcohol was found in 23.5%, physical inactivity found in 21.4%, and tobacco use in a rate of 12.9% of respondents (MOH, 2015, pp. 1–2). However there was no measurement of blood glucose, and blood cholesterol. Regarding the injuries, 89.8% of drivers and passengers were found not to use seat belts, 74.0% of motorcycles or motor-scooter were not always using a helmet. In addition, a rate of 5.3% have been involved in a road crash in the 12 past months, and a rate of 34.4% have been seriously injured. The study also revealed a mean of body mass index in respondents was 22.3%, whereby overweight was found in 16.1%, and obesity in 2.7% of respondents. The previous study suggested that prevention should be given a higher priority (MOH, 2015p.3). Another research in Rwanda, found that among workers, who were assessed, 36% were hypertensive and 33% were not aware of their status (Banyangiriki and Phillips, 2013, p. 925).

2.1.2 Global action plan to fight against NCDs

In date, WHO established a plan of action to fight against NCDs and called all government to make policies pertaining to that plan (WHO, 2013). Therefore, MOH has established a policy and strategies to fight against NCDs which include setting laws to control main risk factors. Those laws comprise prohibition of sales and advertisement of tobacco, drinking excessive alcohol, and eating unhealthy foods containing excessive fats, salt, or sugar. Another strategy is to encourage regular exercise, consumption of vegetables and fruits, controlling body weight, regular checkup of blood pressure and blood sugar (MOH, 2015 p.2). WHO has also developed a tool for managing NCDs in primary health care settings called "WHO Package of Essential Noncommunicable disease interventions -WHO PEN" which is a tool to improve access of cost effective interventions to the poor even in resource constrained settings (WHO, 2010). The components of that tool will be described in the subtitle of the role of nurses in PHC context.

2.1.3 The six objectives according to WHO's plan of action to fight against NCDs

WHO has set six objectives that aim to fight against NCDs, and those ones, are set on national level so that all countries could elaborate policies basing on those objectives. The following ones are:

1. To raise the priority accorded to the prevention and control of non-communicable diseases in global, regional and national agendas and internationally agreed development goals, through strengthened international cooperation and advocacy.
2. To strengthen national capacity, leadership, governance, multisectorial action and partnerships, to accelerate country's response for the prevention and control of non-communicable diseases.
3. To reduce modifiable risk factors for non-communicable diseases and underlying social determinants through creation of health-promoting environments.
4. To strengthen and orient health systems to address the prevention and control of non-communicable diseases and the underlying social determinants through people-centered primary health care and universal health coverage.

5. To promote and support national capacity for high-quality research and development for the prevention and control of non-communicable diseases.

6. To monitor the trends and determinants of non-communicable diseases and evaluate progress in their prevention and control (WHO, 2013).

In addition to those objectives, WHO also set nine targets to reduce mortalities due to main four NCDs (WHO, 2013). Those include the reduction of salt intake, raised blood sugar and blood pressure, and avail essential drugs affordable in public facilities and they are illustrated in figure one, which is below:

A 25% relative reduction in risk of premature mortality from cardiovascular diseases, cancer, diabetes, or chronic respiratory diseases.

At least 10% relative reduction in the harmful use of alcohol, as appropriate, within the national context.

A 10% relative reduction in prevalence of insufficient physical activity.

A 30% relative reduction in mean population intake of salt/sodium.

A 30% relative reduction in prevalence of current tobacco use in persons aged 15+ years.

A 25% relative reduction in the prevalence of raised blood pressure or contain the prevalence of raised blood pressure, according to national circumstances.

Halt the rise in diabetes and obesity.

At least 50% of eligible people receive drug therapy and counselling (including glycaemic control) to prevent heart attacks and strokes.

An 80% availability of the affordable basic technologies and essential medicines, including generics, required to treat major noncommunicable diseases in both public and private facilities.

Figure 2.1: Nine global targets for reduction of NCDs risk factors (WHO 2013)

2.1.4 Countries and WHO program implementation

A study was done on policies in **Europe** and **America** and specifically in England, New Zealand and the US, and has developed a high performing chronic care system that has ten characteristics, that are to be used to assess how a health system could respond to needs of patients with chronic conditions(Mays, 2013pp13-14). Those characteristics are the following:

1. Universal coverage

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2. Carefree at the point of use or at a cost that does not act as a major deterrent to use

3. A delivery system that focuses on the prevention of ill-health and not just the treatment of sickness

4. Priority is given to patients to self-manage their conditions with support from carers and families

5. Priority is given to primary health care, particularly multi-disciplinary team work in chronic care led by nurses

6. Population management is emphasized by stratifying people with long term conditions according to their clinical risk and supporting them commensurately

7. Care is integrated so that primary health care teams can access specialist advice and support from outside primary care, when needed

8. Information technology is used to improve chronic care (e.g. to facilitate communication between different professionals and to enable people to be supported at home.

9. Care is effectively coordinated, particularly for people with multiple conditions who are at greater risk of hospital admission, including across the health and social care disability for support (e.g. through providing care coordinators, giving people their own budgets for care and/or allowing them to make direct payment for services)

10. The other nine characteristics are linked into a coherent whole as part of a strategic approach to change that addresses several of the characteristics at the same time (Harris and Lloyd, 2012). .

Australia: a theoretical framework was established to understand prevention in primary health care and was adopted internationally, which include five actions to be done by health care providers to assess patient systematically on their status regarding risk factors of NCDs, their readiness to change, advise them on ways of behavior change ,and provide necessary assistance and follow up, those actions are summarized in 5As Ask, Assess, Advise/Agree, Assist, and Arrange (Harris and Lloyd, 2012).

1) **Ask:** A systematic identification of behavioral risks and factors that influence those risks which are individual and psychological factors, interpersonal relationships, roles and responsibilities, social norms, working conditions, health service utilization, food habits and how one belongs to the community (Harris and Lloyd, 2012).

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2) **Assess:** A strategy of managing risk factors was established according to 5inteAs, and they are used for diagnosis and management. In doing assessment, each patient is assessed about smoking status for each patient aged more than ten years. Every two years, the patients should be asked on the intake of fruits, vegetables and saturated fats consumed every day, and the quantity of alcohol intake for those who are aged15 year or more. In addition, they should be asked for level and frequency of physical activity and be checked for BMI and use charts of growth for children.

Adults from eighteen years and above should be checked for blood pressure and cholesterol for those who are aged 45 years and above every five years. Assessment of health literacy can also help to provide appropriate health education by asking about the frequency of reading health information or reading about one's disease condition and barriers of reading or filling medical forms. Two risk assessments are recommended in Australia: The one is an Absolute Cardiovascular Risk assessment (CVAR) which should be performed for all adults aged 45 years and older every two years. This assesses the risk of a cardiovascular event over the next 5 years. The Calculation uses information on the patient's age, sex, smoking status, total and HDL cholesterol, systolic blood pressure and if the patient is known to have diabetes or left ventricular hypertrophy.

  Another one is the Australian Type 2 Diabetes Risk Assessment Tool (AUSDRISK) which should be performed every three years on patients 40 years or older. This assesses the risk of developing type 2 diabetes over five years based on the patients age, sex, ethnicity, family history, past history, smoking, diet, physical activity, BMI and waist circumference(Harris and Lloyd, 2012).

3) Advise/Agree: Patient at risk should be advised regarding measures of prevention, which include: adherence to smoking cessation programs and pharmacological ways like use of drugs like Quilting; reduce consumption of saturated fats and salts and increase consumption of fruits and vegetables two to five intakes daily; practice physical activity at least 30 minutes daily. For people who are obese, they should aim for weight loss of 5% by increasing physical activity by 60 minutes during five days per week. Children would also be assisted with education and support (Harris and Lloyd, 2012).

4) Assist: assistance is necessary to ensure the maintenance of healthy behaviors like healthy diet and exercise. Six sessions per months could be effective and sustainable. Primary health care providers should with involve in the initial assessment and long term follow otherwise long term maintenance could be poor. Different ways could be used like group or individual programs, use of technology like telephone, internet or other social media, it would be also necessary to involve different health professionals, including nurses and organizations, whether for health or not (Harris and Lloyd, 2012).

5) Arrange: long term follow up and support is needed to maintain behavior change considering that some individuals may have relapses of smoking and alcoholism and weight gain (Harris and Lloyd, 2012).

Practice nurses have an important role in conducting part or all of the health checks in general practice. These roles may include identifying patients for health checks, assessing their risk factors, providing motivational counseling, education and negotiating behavioral goals, and arranging referral and follow up. Health checks occurred in 7.6% of encounters with a practice nurse indicating that there is scope for a greater role (Harris and Lloyd, 2012).
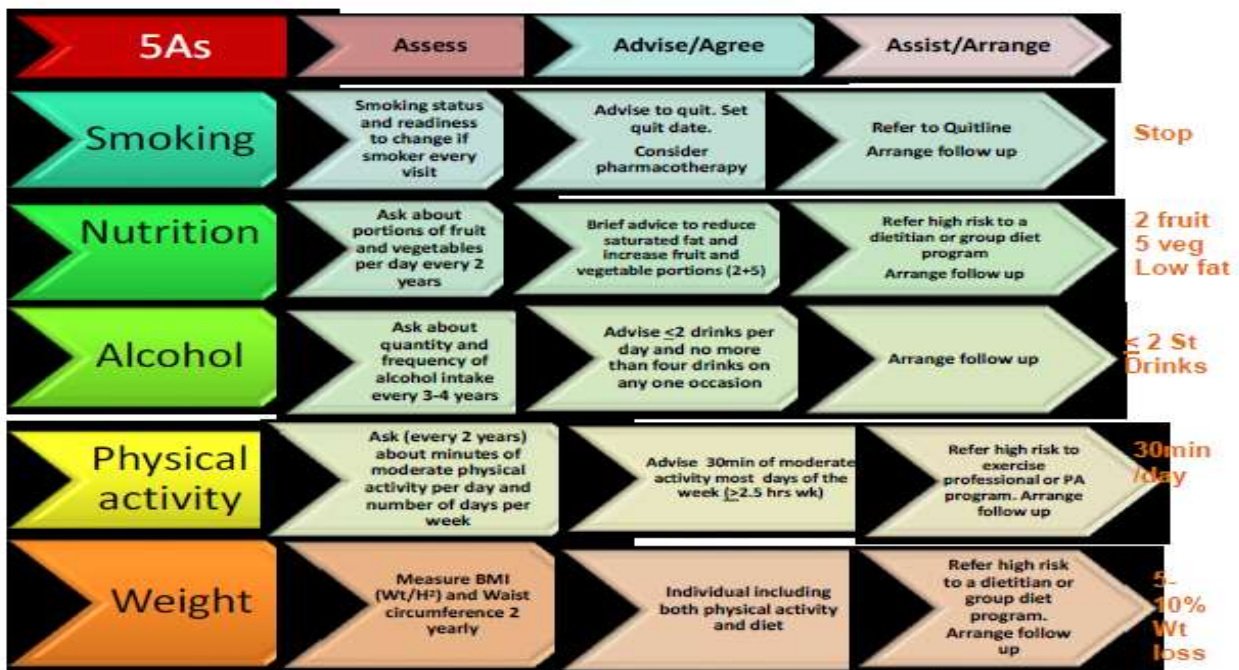
Figure 2.2: Behavioral risk factors and guideline recommendations across the 5As (Harris & Lloyd, 2012)

1)   **In Botswana:** a research was conducted on obesity and found out a high prevalence of obesity (Letamo, 2010). That situation was similar in Malaysia where researches were done on diseases of diabetes and hypertension. However, besides establishing policies still obesity was increased and awareness among the population, was not sufficient, and the prevalence of diabetes remained to be high (Mustapha et al 2014).

2)   **In India:** A program of integration of NCD management in India was done and was composed of different activities including risk assessment, domestic and opportunistic assessment and strengthening of health facilities. A risk assessment was done using a 10-item questionnaire covering age, tobacco use, alcohol use, physical activity, diet, waist circumference and family history of NCDs. Two categories of patients were identified according to their scoring over 20.The first category of patient who scored more than eight; they were measured for BP and BMI. The second category of patients who scored twelve or more were referred for electrocardiogram (ECG) and blood sugar measurement and those ones who were diagnosed were registered in NCD clinic for follow up and were treated according to the protocol (Amarchand et al., 2015 p.132). Domestic screening was done by doing scheduled visits while opportunistic screening was done for each patient aged 20 years and above   which could be changed to 40 years according to the workload of health workers. Strengthening of health facilities was done by training health workers on simplified protocols for treatment of common NCDs that were hypertension, diabetes and coronary artery disease, providing essential drugs and consumables for the diagnosis, which were ECG, blood sugar and cholesterol measurement using strips, glibenclamide, metformin, enalapril, simvastatin, chlorthiazide and low dose aspirin (Amarchand et al., 2015p.132). In addition the approach of community health workers and community participation was used to educate the population about prevention and self-management for those who have already got the diseases (Bollu et al., 2015).

3)   **Mongolia:** researches on NCDs and their risk factors were strengthened with the establishment of policies regarding children nutrition. However the implementation of policies was still limited , and laws regarding diets and physical activities were not reinforced .In

addition, researchers did not given much attention to chronic respiratory diseases (Chimeddamba et al., 2015).

4)   **Zambia:** An approach of HIV services was used to manage NCDs as they are both chronicle diseases and those services for NCDs patients are provided in secondary and tertiary level of health services (Aantjes, Quinlan and Bunders, 2014). A model of Home Based Care was already established for HIV services provided as care for chronic patients. Then from that model, programs regarding management of NCD patients were suggested to be combined to those ones for HIV and TB as they are all chronic diseases whether communicable or not, in addition to that WHO have been advocated for that combination (Aantjes et al, 2014 p.2). Strengthening PHC services could improve care given to patients with chronic diseases patients. This will require increase the number and training of nurses and other health professionals provide equipment, drugs effectively and establish a strong record system (Aantjes et al, 2014 p.3).

2.2 The role of nurses in the context of Primary Health Care

2.2.1 The role of nurses

Different authors mentioned the role of nurses as care givers, educators, managers and researchers (WHO, 2012p.1; Ugochukwu et al., 2013 p.120). However in the context of early detection of NCDs, the roles of caregiving and health education are more emphasized while the role of management and leadership is less explored (Ugochukwu et al., 2013 p.130).

A study done in South Africa described different role of nurses and revealed nurses as care providers. They are expected most of the time to be the ones who take care of patient and this role is practiced in 57.4% of nurse activities at hospital and 53.35 % in outpatient for patient assessment, then in 58.9% and 55.8% for treatment and care (Ugochukwu et al., 2013, p. 130).The same study uncovered health education as another role expected from nurse to provide education on prevention of diseases in individuals and communities, and this one is found to be frequent in 51.7% of nurses at the hospital, and 52.8% in outpatient services. Management of care and patient environment was found in 51.8% and 47.8% as another important role where nurses are found in management and administration of health care settings. The care of mothers and infants was also found to be another important role in 39.1% of nurses at the hospital and in

39.0 of the nurses at outpatient services. Other roles of nurses were not analyzed, including patient advocacy, management of patients with chronic diseases, and participation in the management of the health care system and policy making (Ugochukwu et al., 2013 pp.123-127). Again, nurses demonstrated the leadership in different countries like in Korea and Pakistan (ICN, 2008). From this example, it seems that nurses should be considered in programs for preventing NCDs as they relate to their daily tasks such as measuring blood pressure and blood sugar.

It is said that nursing interventions to prevention are more effective than screening (Sargent, Forrest and Parker, 2012). However there is still a number of unknown patients to detect for earlier management of chronic diseases condition (Katende et al., 2014; Mustapha et al., 2014). There is a need to involve different teams of health care providers, and nurses have been shown to play an important role in NCD prevention and control, as they are a major part of health workforce reaching a number of 19 million worldwide (WHO, 2013, p.6).

Another study done in South Africa was to explore the role of nurses in African countries and findings were focused on the roles of caregiver, health educator, advocator, and manager. Although the managing role was mentioned, it is not recognized enough which may a hindrance to meet goals of health programs, if nurses do not participate in policy making and decision-making in higher levels of the healthcare system (Ugochukwu et al., 2013).

Studies by World Health Organization, 2013 shows that nurses play important role in fighting NCDs, and they support their education, research, and leadership in policy making in regard to NCDs. However, in our local context, the program designed specifically to develop health workforce address to general health workforce and not address specific needs for nurses, and this may have consequences on national health programs, while the implementation depends mainly on nurses who are a big part of the health workforce.

Studies have shown the role of nurses as caregivers, educators, research, but their leadership role are not clearly mentioned, this may be a hindrance of early detection of NCDs and later the burden of disease will be difficult to manage at advanced stages with higher cost for patients, their families and the government. If nurses are involved in policy making and elaboration of health programs, their implementation could be easily facilitated as they are the one who

implement those programs, and it is known that they make a major part of health workforce and frequently placed at the frontline in primary health care settings (Katende et al.,2014 p. 1; Ugochukwu et al. 2013p. 118, 120, and130).

Actually the key roles of nurses are defined as managers of care for patient, managers of patient environment, and providers of health education, responsible in diagnosing and treatment of unhealthy conditions, patient advocators, and participants in management of health system and policy making (ICN, 2014 pp.867-868 ; Kendall, 2008 p.5). In South Africa, nurses' roles were found to be care providers in hospitals, outpatient services and maternal child care; they also play role in health education, and management of care (Ugochukwu et al., 2013, p. 130).

In Rwanda nurses provide nursing care to patients at all levels of healthcare. However the roles are different at each level. In hospitals they provide drugs and surveillance of hospitalized patients. They interact with their families and provide them health education; they exercise leadership and management of units and departments, in organizing and coordinating nursing activities. They also manage the therapeutic environment and resources such as drugs, sterile items, machines, and other equipment used in nursing care (Middleton, 2016 p.4-6). They also document data from the patients, that are used by researchers from different teams of health care doctors, nurses, midwives, and allied health care professionals. Those ones include: dentists, laboratory technicians, radiologists, physiotherapists, anesthesiologists, nutritionists, and public health officers. All of them, they collaborate and communicate with all those professionals, to advocate for patient care (MOH, 2013 p.11-12).

2.2.2 The knowledge of nurses

Knowledge of nurses was shown to improve their skills in providing care to patients like in study done in Uganda on knowledge of nurses and researchers assessed their Knowledge, Skills and Attitudes as the effect of education intervention among nurses significant improvement was observed after education program to improve knowledge and skills of nurses in low resource environments (Katende, Groves and Becker, 2014). However, other researchers stated not all nurses are able to access evidence based information to update their knowledge and skills, considering their working environment and conditions (Bollu et al., 2015).

The literature says that educative interventions could increase skills of nurses to provide effective care to patients and this could also influence the implementation of the program as seen previously (Katende, Groves and Becker, 2014, p. 1). However, the majority of nurses was not trained in regard to NCD and checkup program and the use of checkup forms could be linked to participation in training of NCD and checkup program. In another study done in Pakistan, only one third of the nurses have got good knowledge on cancer and those who had knowledge were those who were exposed to patients with cancer or who graduated in private schools which provided knowledge of cancer in their educational program (Ahmed et al., 2006) The same was found in Australia, cancer nurses identified a gap in their knowledge and skills to be able to effectively and efficiently address with patients, carers and families, the four keys modifiable lifestyle NCD associated risk factors (Johnson et al., 2015 p.12).

Again 7.1% could be limited by overload to use or maximize the availability of the information as stated by other researchers (Katende, 2014). It was also found that education level could enhance quality of care (Hiwot et al., 2014, p.1). Furthermore, the Ministry of health recommended that, a nurse who works in a public institution should be a registered nurse. Therefore nurses should be encouraged to update their level of education, and be facilitated where needed. Although the program was started using e-learning, there is still a big number of nurses who are not attended by that program. In addition, challenges like low staffing and lack of material may also limit their potential to provide effective health care (Bollu et al., 2015).

Although WHO, provides guidelines for comprehensive care of hypertension in lower and middle income countries, especially in regard to early detection, risk assessment, and patient education, they are some challenges for nurses to deliver care to patient appropriately due to lack of access to resources with evidence based information regarding managing diseases and lifestyle changes. Those information could enable them to respond better to the need of patients to whom they provide care, as some authors stated that proper care depend on knowledge of caregivers. In addition, there is a need to do study on empowerment of the local nurses in regard to WHO guidelines for comprehensive care of hypertension in LMIC, if those guidelines and protocol are not disseminated they would be variability in nursing practice in procedures of diagnosing and treatment of chronic diseases (Katende, Groves and Becker, 2014).

2.2.3 Nurses and guidelines of NCD management in Primary health care settings

Primary health care is essential health care based on practical, scientifically sound and socially acceptable methods and technology made universally accessible to individuals and families in the community through their full participation and at a cost the community and country can afford to maintain at every stage of their development in the spirit of self-reliance and self-determination. It forms an integral part both of the country's health system, of which it is the central function and main focus, and of the overall social and economic development of the community. It is the first level of contact of individuals, the family and community with the national health system, bringing health care as close as possible to where people live and work, and constitutes the first element of a continuing health care process (Declaration of Alma Ata, 1978).

Noncommunicable diseases were found to be manageable in PHC setting by different health professionals including nurses. Therefore, WHO developed Package of Essential Noncommunicable disease interventions -WHO PEN which is a tool to improve access of cost effective interventions to the poor even in resource constrained settings (WHO, 2010). The objective 2 of the NCD Action Plan highlights the need to establish national policies and plans for NCD prevention and control. As one of the key components of this objective, WHO is called upon to "provide technical guidance to countries in integrating cost-effective interventions against major NCDs into their health systems". Furthermore, the Action Plan proposes that Member States "implement and monitor cost-effective approaches for the early detection of cancers, diabetes, hypertension and other cardiovascular risk factors" and "establish standards of health care for common conditions like CVD, cancers, diabetes and chronic respiratory diseases integrating whenever feasible their management into PHC" (WHO, 2010).

2.2.3.1 WHO Package of Essential Noncommunicable disease interventions -WHO PEN (WHO, 2010)

In the interests of equity, a prioritized set of technologies has to be made available in primary care based on population needs. These technologies include a few core medical devices such as weighing scales, Sphygmomanometers, Oxymeters and equipment for urine albumin and blood glucose analysis. When resources permit, pulse Oxymeters, nebulizers, electrocardiographs,

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defibrillators, and blood cholesterol and Creatinine Assays also need to be added on to this list. If combined with trained personnel and referral systems, these basic technologies will enable most patients with major NCDs to be treated close to client facilities and will help to enhance utilization of primary care services. The coordination between NCD prevention and control and PHC services should result in:

a. The adoption of the WHO PEN protocols for diagnosis and treatment of major NCDs in health posts, health centers and first level referral facilities or district hospitals.
b. The development of the materials and organizing activities to train health workers in integrated case management
c. The insurance of the supply of essential medicines and equipment
d. Delivering educational messages on prevention of NCDs
e. Expanding the information system so that it covers all major NCDs
f. Monitoring activities for assessment of progress in implementation and impact.

2.2.3.2 Coordination with support programs in the MOH

The main MOH supporting programs, services and departments at regional and central levels that should participate in the WHO PEN implementation are:

1. The Human Resources Development Department: can collaborate in the adaptation of training materials to train staff on the use of the WHO PEN technical protocols and tools and organize in-service training courses and evaluate the training activities.

2. The Essential Drugs Program: procure and distribute medicines.

3. The Laboratory Services: issue guidance on laboratory procedures, supply materials and reagents, and undertake training and quality assurance.

4. Essential Medical Equipment Program: can procure and distribute BPMDs, pulse Oxymeters, nebulizers, peak examiners and oxygen sources.

5. The Health Education Bureau: develop and produce educational materials for patients, families and the community.

6. The Public Relations Department: develop and implement advocacy strategies.

7. The Health Information Management System Department: should review the information needed to monitor and evaluate the WHO PEN.

8.   Technical and operational outline

a)   The Nursing Services: develop guidance on the role of nurses in integrated approaches to prevention and management of NCDs.

b)   The Medical and Nursing Schools: integrate guidance into medical and nursing curricula on the role of physicians and nurses in integrated approaches to prevention and management

2.3 The challenges in provision of health care for NCD checkup

2.3.1 Nurses and Rwanda national policy and program for NCD prevention and control

MOH has established a policy and strategies to fight against NCDs those include setting laws to control main risk factors. Those laws comprise prohibition of sales and advertisement of tobacco, excessive alcohol, and unhealthy foods containing excessive fats, salt, or sugar. Another strategy is to encourage regular exercise, consumption of vegetables and fruits, controlling body weight, regular checkup of blood pressure and blood sugar (MOH, 2015). Furthermore the Ministry of health has established a program of the NCDs checkup, in community based health insurance.

The program is called " Voluntary Medical Checkup" for community based health insurance (CBHI) members, was proclaimed by the ministerial order no 20/1354/DGCS/2014 of 21st March 2014, this order was given according to the Law No 62/2007 of 30/12/2007 establishing and determining the functioning and management of the community-based health insurance scheme and ministerial health instruction 20/62 of 20 MARCH 2014 and pursuant to instructions No 20/55 of30/11/2011 determining the management of the community based health insurance scheme (MOH, 2014).

The program is constituted with nine articles including sensitizing members of CBHI for voluntary checkup and determine health status of individuals, decision made after checkup, data collection payment for service and medical file used in voluntary medical checkup. The file describes all parts to be assessed to identify signs of chronic diseases like hypertension, kidney diseases, respiratory diseases, eye diseases and others (Ministerial order, 2014). This program was introduced in health center nurses, by providing trainings in selected nurses from different health centers in the country.

2.3.2 Challenges in health care

Researchers have revealed that common challenges of health services are, the insufficient staff shortage, inappropriate infrastructure, low resources of material and equipment, and lack of awareness and knowledge in health care professionals (Aantjes et al., 2014; Katende et al., 2014).

Not a single day could pass for a nurse without measuring blood pressure and blood sugar or at least one of them. Where it is not done, there is a major problem in health care which should be addressed, to make sure that early detection of health problems is done as required (Katende, Groves and Becker, 2014).

Nurses manage   many patients with chronic diseases as they need care and advising about healthy lifestyle, their role is important in PHC settings to reduce mortality, influence submission to lifestyle changes and cost reduction considering that in PHC settings there are several issues of low resources and shortage of medical practitioners (Sargent, Forrest and Parker, 2012)

2.4 Theoretical framework

There are different models used to assess quality of care like who framework and Bamako initiative framework and the Donabedian Model was found the best fit to guide this study.

The Donabedian Model is a health care delivery model (Donabedian, 1988). It has been used in studies to evaluate the quality of health care delivery and improvement in healthcare settings and comprises three aspects of health care service; these are structures, process, and outcomes. In this study all the three components were explored to describe the knowledge of nurses, their use of forms for NCDS checkup, and their challenges, during the implementation of the program for early detection of NCDs.

1)   **Structures** are the necessary resources that will be used by nurses to implement the program of voluntary checkup. This includes the facilities to provide health services for NCDs detection, equipment needed, human resources and integration of these services in general.

2)   **The Process** includes activities done by nurses that aim to detect the diseases earlier before the complications and intervene timely. Those activities early detection, follow up of patients on treatment, preventive care, education of patients and their families. In addition, home

visits and campaigns could be used to sensitize the people; the nurses may collaboration with community health workers, among others.

3) **Outcome**s are the results of the health services provided that can be observed, measured and quantified, and they are indicators of quality care provided to individuals and the community. In our context, those outcomes will be the use of checkup forms and the interventions taken by nurses for early detection and suspicion of cases and refer them to the District hospital to confirm diagnosis and initiate the treatment as required. The following diagram summarized the adapted Donabedian model to be used in this study.

Independant variables
Demographic characteristics
Knowledge of nurses
Receiving guidelines for checkup forms
Challenges encountered

Dependant variables
Use of forms for NCDs checkup
Frequency of using forms for NCDs checkup

Intervening variables
Educational interventions
Awareness of population
People coming for checkup
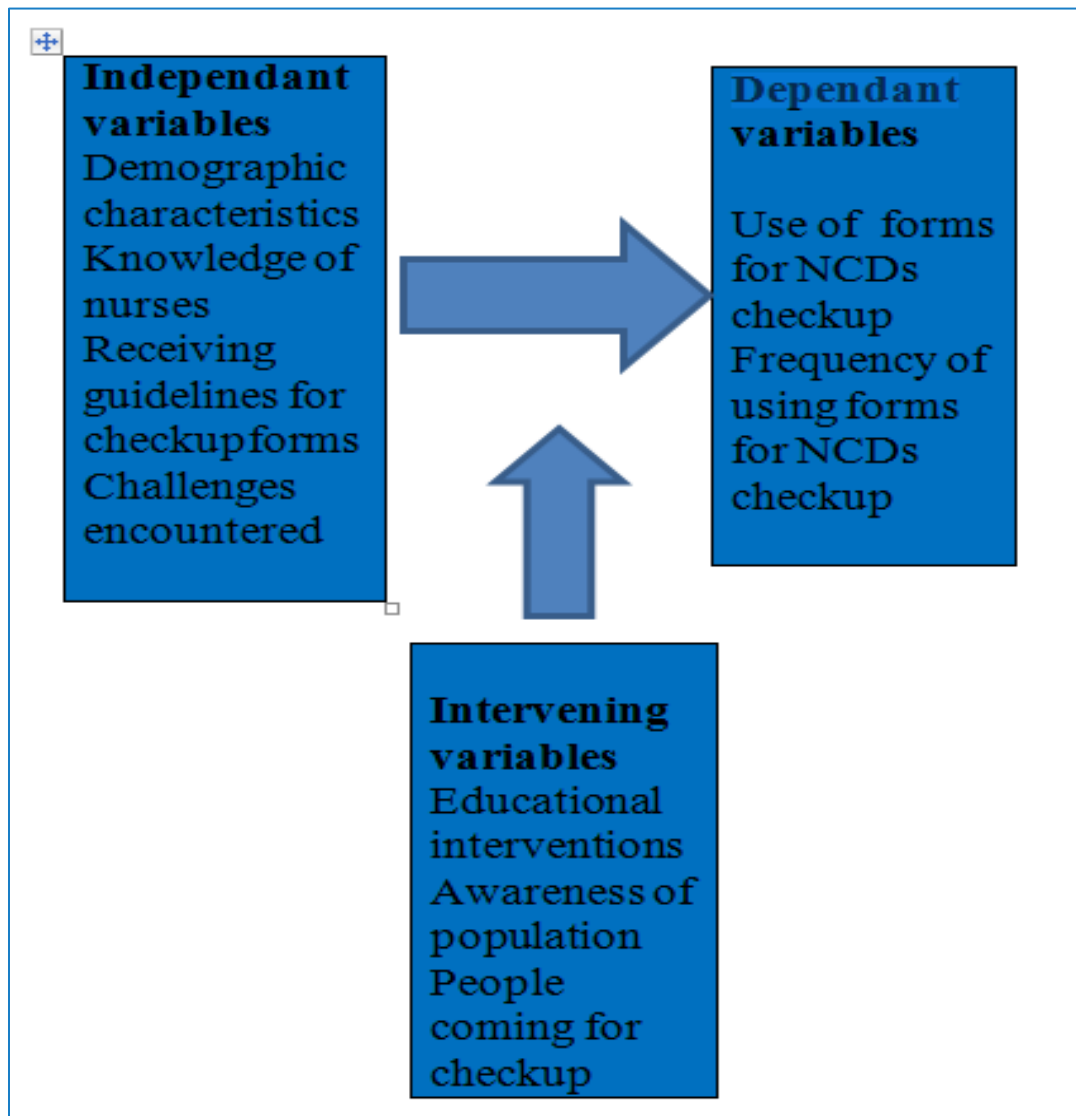
Figure 2.3: **The adapted conceptual framework, from Donabedian Model (Donabedian, 1988)**

2.6 Conclusion

This chapter described the global overview of NCDs to show the magnitude of the problem, the WHO global action plan for NCDs with its objectives and targets, the countries implementation of WHO program through different continents, the role of nurses in the context of primary health care including the role of health center nurses, the knowledge of nurses, the challenges of nurses in primary health care settings, comprising the challenges in provision of health care for NCD checkup, the theoretical framework and the conceptual framework.

CHAPTER THREE

METHODOLOGY

3.0   Introduction

This chapter describes the methodology that was used in this study. It comprises a description of the study approach, study design, the study area, the sampling strategy and the sample size, the data collection tools and procedures, the data analysis and management, the ethical considerations and the study limitations.

3.1   The study approach

The study adopted a quantitative approach. A quantitative approach, is that which uses numbers to clarify the magnitude of the research question (Creswell, 2014). This approach assisted the research to collect the data on the knowledge of nurses on NCDs and early detection program, its implementation and challenges they encounter.

3.2   The study design

A research design is a strategy that is used to find responses to research questions and specify the variables to be considered, the type of data which are to be collected, the methods and the time of data collection (Polit and Beck, 2008). A nonexperimental crosssectional design, was used to undertake all the steps required for this study.

3.3   The study setting

The study was conducted in health centers of Kicukiro District, which is one among three districts of Kigali City. The district possesses six health centers, namely Gahanga, Gatenga, Gikondo, Kicukiro, Nyarugunga, and Masaka (Kicukiro Distric Maaster Plan, 2014). There is one referral hospital, which is the Rwanda military hospital located in Kanombe sector, one district hospital of Masaka. The study was carried out in four health centers, since they have started to provide NCDs early detection services, as per the National Ministerial Order (MOH, 2014).

3.4 The population study

The research population refers to the entire group of people or things on which the researcher is interested (Creswell, 2014). The research focused on health center nurses of the four health centers in Kicukiro District. The population was composed of enrolled and registered nurses. In this study, the entire population was the number of nurses working in the six health centers of Kicukiro District, which are 101 nurses, the target population was 68 nurses, who work in the four health centers that were randomly selected for this study, 42nurses were accessible to participate in the study.

3.5 Sampling strategy

A sample is a portion which is taken from the population to represent the whole population for inference; sampling is a process to determine appropriate sample that will represent the population (Polit and Beck, 2008). In this study a stratified sampling method was used. Kicukiro District was selected, because of the easy access to the district, considering limited resources and time of the researcher. However, the four districts were randomly selected for the study, to minimize the bias.

Table 3.5: A table for stratification

Stratum	Gahanga	Gikondo	Masaka	Nyarugunga	Total
Population size	16	22	14	16	68
Sampling fraction	3/4	3/4	3/4	3/4	3/4
Final sample size	12	16.5	10.5	12	51

3.6 Sample size calculation

The sample size was calculated, using online sample size calculator which is Raosoft, and the total number of 58 nurses, was found were taken using, and all of them were taken as a sample since from their number did not reach one hundred (Raosoft, 2004).

n=N x/ ((N-1) E2 + x)

$$= 68.x/ ((68-1)0.05^2 + x = 58$$

Whereby:

n: is the sample size

N: is the population size

And **E**: is the margin of error

3.7   Data collection procedures

Data collection is the process of gathering information needed for research the data may be collected in numbers or words (Creswell, 2014). Data collection methods are approaches used to gather information for research and those are observation, interviews, and questionnaires. This study used questionnaire adapted from questionnaire used by other researchers for data collection, one questionnaire from WHO for primary care evaluation tool, another was NCD research questionnaire used in research done in Guntur (WHO, 2014). The questionnaire is attached as an appendix and comprises three sections. These are Section A: Demographic data, Section B: knowledge on NDs and early detection program, Section C: Use of the NCDs checkup forms and the challenges encountered by health center nurses in service provision for NCDs checkup. In addition the questionnaires were translated in local language of Kinyarwanda, to facilitate the respondent using the language of their preference.

3.8   Test and retest study

Test and retest study was done before the research to enable adjustment of the questionnaire when it is necessary to adapt the questionnaire, to the field of the research. This was done in some of the nurses working in the health care settings which are not included in the sample area before the study.

3.9   Validity and reliability of research instruments

Validity is the relevancy of the research instrument to measure what is supposed to measure; while the reliability is the reproducibility of the instrument to measure the same variable at different point of time (Polit and Beck, 2008). The questionnaire was examined and approved by the supervisors and the internal review committee. The questionnaire was used also tested after Test and retest study was study with Cronbach correlation coefficient which is not lesser than 0.70 (Litwin, 2003) . In this study, the correlation coefficient was 0.87.The instruments had the content validity as they were adapted to match with the objectives of this study ,the face validity was proven by aprouval of the supervisors and IRB, the construct validity was done with test of correlation reliability as mentioned above.

Objectives	Research question	Questionnaire
1) Describe the knowledge of nurses on NCD prevention and control in Rwanda.	1) What is the level of knowledge of nurses on NCD prevention and control in Rwanda.	**SECTION B Q1-Q5**
2) Describe the role of nurses in using forms for NCD checkup	2) What are the roles of nurses in using forms for NCD checkup	**SECTION B** **Q76-Q10**
1) Identify challenges encountered by nurses using forms for NCD checkup	What are the challenges do nurses encounter while using forms for NCD checkup	**SECTION C Q1-Q7**

3.10 Data collection procedure

Data collection was done after receiving the permission to collect data from the school of Nursing and Internal Review Board (IRB) which is a regulatory body to insure ethical practice in research. The researcher went to see the authorities of Masaka district hospital which is in charge of all the health centers in the health district.

The researcher also has gone to ask for the permission from the priest representative of Caritas that was necessary for the health centers under the authority of the Catholic Church, specifically the health center of Gikondo and Masaka. After obtaining those permissions, from each of the authorities, the approval was to be presented to the representatives of the health centers to ask for availability of nurses to participate in research. Then the nurses were explained the research and its purpose, using the note that was attached to the informed consent form and the questionnaire. The willing participants have signed the informed consent form. The researcher distributed the research questionnaires and provided clarification where it was needed. Each participant used the preferred language among the two of English or Kinyarwanda. The duration of reading and responding to the questionnaire was practically of between 20 and 30 minutes. The questionnaire was shortened to avoid using much time that can delay the time of nurses who will be expected to be taking care of the patients. A number of 58 self-administered questionnaires were distributed to nurses at health centers and 42 were returned, giving a response rate of 72.41%.This was due to different reasons that included the overload of nurses, the absence of those who were in their annual or maternity leave.

3.11 Data analysis

Data from the questionnaires was collected and entered as descriptive data, in the computer as nominal and categorical variables. Categorical variables were coded to enable the statistical analysis. Data were analyzed by using SPSS V.20 Descriptive data were entered into the Statistical Package of Social Sciences (SPSS) version 19, then analyzed using Pearson Chi-square at a level of 95% of confidence interval, to determine association between variables, after, they were presented in tables as frequency and percentages.

3.12 Ethical considerations

A letter for ethical clearance was guaranteed by the UR/CMHS, and was being presented Masaka District hospital authorities who supervise the health centers where the study was carried out. The District hospital leadership to allow the data collection and the Director of district hospital provided the approval for data correction after receiving the email from those who are in charge of ethics in the Ministry of health. Then the approval was presented to health center managers. This research was in respect to the ethical principles for the protection of participants from any harm. Prior to data collection, the researcher explained the nature of the study to the participants, and clarify that the participation is voluntary. The participants were given an informed consent form and those who agreed to participate were explained their full right to withdraw at any stage of the study. Although this study was by its nature of minimum potential harms, the researcher ensured that there would be no harm to the participants.

3.13 Limitation of the study

This was limited by sample size considering the low staffing conditions of the primary health care settings, and could not be generalized. However, it could show the overview of how the program of early detection of NCDs is implemented by nurses in the primary health care settings in the four health centers. This study could be a contribution to help evaluators of the program and use it to improve the program by addressing some of the issues encountered by the nurse in the practical field. The knowledge of nurses also was self-reported future research may develop a tool for assessment of knowledge of nurses. A more focused study, with more details, may be needed regarding the knowledge of nurses on NCDs.

3.14 Data management

Soft data were stored in computer with a password known by the researcher only, and hard data were kept in a locked cupboard at a place which is secure, and none could access the data, except the researcher and supervisors. In addition, those data will continue to be kept up to five years. The confidentiality of data was insured by not linking the data to the identification of the participants. After data analysis, findings were communicated to the permitted authorities from the UR/CMHS.

3.15 Data dissemination

The findings were reported to UR/CMHS to be presented and submitted for further researches. The researcher intends to publish the findings in a scientific journal.

3.16 Conclusion

This chapter described the study approach that was quantitative , study design that was nonexperimental crossectional, the study setting was in four health centers of Kicukiro District, the sampling strategy was purposive, data collection methods was a questionnaire which was validated and reliable, data collection procedures were respecting the academic and ethical regulations, data analysis were done using SPSS with descriptive statistics, data management respected the regulations, ethical consideration were respected for the participants a it was voluntary with informed consent, data dissemination were also to be done for academic purpose and study limitations were found to be small size of the sample population.

CHAPTER FOUR

PRESENTATION OF FINDINGS

4.1   Introduction

This chapter presents the study findings according to the objectives of the study, that were firstly to describe the knowledge of health center nurses on NCDs and checkup program, secondary, to describe the role of health center nurses participate using the forms for NCDs checkup, and finally to identify challenges encountered by health center nurses in using the forms for NCDs checkup.   The independent variables include: the distribution of nurses by demographic characteristics, the knowledge of nurses on NCDs and checkup programs, and the challenges encountered by nurses during the phase of implementing that program. The dependent variables were the use of checkup forms and frequency of using the mentioned forms. Significant relationships between variables are also mentioned. The findings will be presented as frequencies and percentages in the tables.

4.1   Distribution of nurses by demographic characteristics

A total of 68 nurses, were working in the four health centers in Kicukiro District, in which the study was conducted, and the respondents were 42 among 58 nurses selected as a sample, at a response rate of 72.41%. The respondents were from four health centers, namely Gahanga with a rate of 21.4% (n=9), Gikondo rating 35.7% (n=15), Masaka with percentage of 16.7% (n=7), and Nyarugunga rated 26.2% (n=11).

The nurses were deployed in different services according to the respective percentages: those who were allocated in administration 7.1 % (n=3), in consultation 35.7% (n=15)., in maternity 16.7%(n=7), in antenatal care and family planning 4.8% (n=3), in VCT (Voluntary counseling and test for HIV, ARV (antiretroviral therapy) and TB (Tuberculosis service) 19%(n=2), in Immunization 7.1% (n=8), and in pharmacy distribution 9.5% (n=4). Usually there is a roster between nurses in different services; it is not common that a nurse is allocated to one service within the health center.

The majority of nurses, 69% (n=29) were female against 31% (n=13) of their male counterparts. The percentages of their levels of education were, respectively 47.6 %, 35.7%, and 16.7% of A2, A1 and A0 level. The majority of nurses, 47.6 % (n=20) were enrolled nurses with an education level of A2. The majority of nurses were enrolled nurses. The majority of nurses, 71.2 % (n=30) were with an experience of more than five years, and the age of nurses was mostly aged between 30 and 39 years at 52.4(n=22). The details of demographic characteristics are illustrated in the table 4.1 below:

Table 4.1 Distribution of nurses by demographic characteristics

Distribution of nurses by health centers	Frequency(N=42)	Percentage (%)
Nyarugunga	11	26.2
Gahanga	9	21.4
Masaka	7	16.7
Gikondo	15	35.7
Distribution of nurses by allocated services		
Administration	3	7.1
Consultation	15	35.7
Maternity	7	16.7
Antenatal care & FP	2	4.8
VCT, ARV&TB	8	19
Immunization	3	7.1
Pharmacy distribution	4	9.5
Distribution of nurses by age		
20-29	9	21.4
30-39	22	52.4
40-49	6	14.3
50+	5	11.9
Distribution of nurses by sex		
Male	13	31
Female	29	69
Total	42	100
Distribution of nurses by level of education		
A2	20	47.6
A1	15	35.7
A0	7	16.7
Distribution of nurses by years of experience		
1-2 years	9	21.4
3-4years	3	7.1
5 and plus years	30	71.2

4.2 The knowledge of nurses on non-communicable diseases and checkup program

The majority of nurses had good knowledge of NCD, checkup program and nursing responsibilities. The majority of nurses reported that they had good and very good knowledge of NCDs, with a rate of 40.5% (n=17) and 42.9 % (n=18) respectively. The majority of the nurses had a good and very good knowledge of NCDs causes, at a rate of 31.0% and 42.9% respectively. A rate of 47.6% and 31.0% had a good and very good knowledge of NCDs diagnosis respectively. A rate of 23.8% (n=10) and 35.7% (n=15) had a good and very good knowledge of the program for NCDs checkup, respectively. The details of knowledge of nurses are illustrated in Table 4.2 below:

Table 4.2.1 The knowledge of nurses on non-communicable diseases and checkup program

Knowledge of nurses regarding NCDs	Frequency(N=42)	Percentage (%)
Very good	18	42.9
Good	17	40.5
Moderate	6	14.3
Fair	1	2.4
Knowledge of nurses regarding causes of NCDs		
Very good	18	42.9
Good	13	31
Moderate	8	19
Fair	3	7.1
Knowledge of nurses regarding responsibilities of nurses in managing NCDs		
Very good	14	33.3
Good	18	42.9
Moderate	9	21.4
Fair	1	2.4
Knowledge of nurses regarding diagnosis of NCDs		
Very good	13	31
Good	20	47.6
Moderate	8	19
Fair	1	2.4
Knowledge of nurses regarding program for checkup of NCDs		
Very good	15	35.7
Good	10	23.8
Moderate	12	28.6
Fair	5	11.9

4.2.2 The average percentage of knowledge of nurses

The average knowledge of nurses was very good and good in 37.16% (n=16) and 37.16% n=16) respectively, the knowledge was moderate in 20.46% (n=8) and fair in 5.24% (n=2) of participants.

4.2.2 The average percentage of knowledge of nurses		
Grade	Frequency	Percentage
Very Good	16	37.16
Good	16	37.16
Moderate	8	20.46
Fair	2	5.24
Total	**N=42**	**100**

4.3.1 Role of nurses in allocated services

The roles of nurses was find to be management in 7.1% (n=3) of nurse participants, caregiving was found in 69.0% (n=31), education was found in 23.8% (n=10) of participants. The role of research was less defined in health centers, and sometimes mixed with management role when they are asked to provide responses or reports for research purposes.

4.3.1 Role of nurses in allocated services	Frequency (N=42)	Percentage (%)
Management/administration(research)	3	7.1
Caregiving	31	69.0
Education	10	23.8

4.3.2 The role of nurses in use of checkup forms of checkup program

Almost half of respondents, 52.4% (n=22) had received Ministerial Instructions and Forms for NCDs checkup. Those forms are called community health assessment checklists. There was a gap of 47.6% of nurses who have never received NCDs them. A rate of 11.9% had received guidelines two years ago, 35.7% had received them between six and one year, and 9.5% had received the guidelines less than six months ago. The difference of time of receiving guidelines could be due to the fact that the nurses did not have the same years of working experience or due to the attendance of the training sessions for the checkup program. Although 64.3% (n=27) of the nurses stated that they used the forms for checkup, only 35.7% (n=15) used them daily. A rate of 31% (n=13) affirmed that people were coming frequently, while 47.6 % (n=20) affirmed that people came sometimes for doing checkup. The details of use of checkup forms are illustrated in the Table 4.3 below:

Table 4.3.2 The use of checkup forms of checkup program

Receiving guidelines for checkup program	Frequency	Percentage
Yes	22	52.4
No	20	47.6
Time of receiving guidelines for checkup		
Two years ago	5	11.9
From six months to one year	15	35.7
Six months ago	4	9.5
Not yet	18	42.9
Use of forms for checkup		
Yes	27	64.3
No	15	35.7
Frequency of use of forms for checkup		
Everyday	15	35.7
Every week	11	26.2
Every month	3	7.1
Never	13	31
People coming for checkup		
Frequently	13	31
Sometimes	20	47.6
Rarely	8	19
Never	1	2.4
	N=42	%(100)

4.4 The challenges of nurses in offering services for checkup programs

Table 4.4 reveals that 40.5 % (n=17) of the nurses had received few training and 50 % (n=21) had not received any training on NCDs. The percentages of nurses who had received some training on checkup were 47.6 % while 40.5 % had not received any training. A rate of 45.2% could get easy access to EBP information was easy for 45.2% of the nurses, while 28.6% experienced difficulty in accessing information to EBP and 10% had no access. The rooms for NCDs checkup were considered small by 40.5% of the nurses and 23.8% of the respondents affirmed that, rooms were shared with other services. Of the 68 nurses, 64.3% affirmed that there was not enough equipment. The majority 90.5 % affirmed that people coming for checkup were few. Challenges encountered by nurses were found to be staff shortage, lack of training, lack of equipment by 47% (n=20), 35% (n=15) and 14.3% (n=7) of respondents respectively (Table 4.4).

Table 4.4 Challenges encountered in doing checkup		
Training for NCDs	**Frequency**	**Percent**
Many	1	2.4
Few	17	40.5
None	21	50
Unavailable	3	7.1
Training for checkup program		
Many	2	4.8
Few	20	47.6
None	17	40.5
Unavailable	3	7.1
Access to EBP		
Easy	19	45.2
Difficult	12	28.6
No	8	19
Limited time	3	7.1
Rooms for doing checkup		
Enough	11	26.2
Small	17	40.5
No space	4	9.5
Shared	10	23.8
Equipment for checkup		
Available	15	35.7
Not enough	27	64.3
People coming for a checkup		
Many	4	9.5
Few	38	90.5
Challenges that are stated by nurses		
Low staffing and overload	20	47.6
No training	15	35.7
Equipment	7	16.7
	N=42	%

4.5 Association between dependent and independent variables

There was no association between the age, sex, experience, level of education and the use of forms for NCDs checkup. The experience, the level of education was associated with the frequency of using those checkup forms, with p-values of .005 and .037respectively. Allocated services were also associated with the frequency of using the forms. Again, challenges that include together, staff shortage and lack of training or equipment were associated with use of checkup forms at p-value of .012.

Knowledge, receiving checkup forms, and time of receiving forms, were associated with the use of checkup forms as well as the frequency of using them. The p-values were respectively, .000, .001 and .001 for the use of checkup, then .000, .000, and .001 for the frequency of using checkup form,

There was no association between health centers and use of checkup forms. However, there was association between health centers and the frequency of using checkup forms with the p-value 95% CI. Again there was association between service and use of checkup forms with p-value of .003 at 95% CI of .006. Whereby, 35.7% were using the forms every day, possibly due to the fact that they were working in service of consultation on a regular basis, and other were using them occasionally in case of suspicion of the diseases like in Maternity or FP. Allocated service were also associated with the use of checkup forms.

There was association between knowledge of nurses and use of checkup forms with p-value of .000 (95% CI). Again receiving guidelines was associated with the use and the frequency using forms for checkup forms. There was association between challenges and use of checkup form at p- value of .012. A rate of 64.3% (n=27) was using the forms for checkup.

Table 4.5: Association between independent and dependent variables

	Frequency of use		Use of checkup forms	
	Chi-Square	P-value at 95% CI	Chi-square	P-value at 95%CI
Demographic characteristics				
Age	6.428[a]	.032	1.467[a]	.094
Gender	2.447[a]	.056	1.310[a]	.150
Level of education	4.852[a]	.037	3.547[a]	.63
Experience	13.051[a]	.005	5487[a]	.38
Service in which the nurse is allocated	17.198[a]	.004	14.210[a]	.006
Knowledge	20.614[a]	.000	12.600[a]	.000
Receiving checkup forms	24.520[a]	.000	14.263[a]	.001
Time of receiving checkup forms	20.352[a]	.001	14.210[a]	.001
Equipment	4.175[a]	.05	.058[a]	.257
Challenges	9.378[a]	.012	1.939[a]	.90

4.6   Conclusion

This chapter has described the distribution of nurses according to the demographic characteristics. Demographic characteristics included the selectd health centers as well the allocated services, the age, the sex, the level of education, and the work experience they have. The knowledge of nurses on NCDs and checkup programs comprised the knowledge of nurses on NCDs, their causes, their diagnosis, the responsibilities of nurses in managing NCDs and the program for NCDS checkup. The role of nurses was concerning the fact of receiving guidelines on use of checkup forms, the time of receiving them, the use of checkup forms and frequency of use with the people who come for checkup. The challenges encountered by nurses, during the phase of implementation of the mentioned program. Those included the access to trainings or other evidence based information, the rooms, equipment, and attendance of people who come for checkup service. Knowledge of nurses,receiving guidelines, services and level of education were found to be significantly associated with the use of checkup forms and the frequency of use the mentioned forms.

CHAPTER FIVE

THE DISCUSSION OF RESULTS

5.0   Introduction

This chapter will discuss on different findings about the demographics of participants, which include their health centers and services of provenance. In addition, will be discussed, findings on the knowledge of nurses, the use of forms for NCDs checkup and the challenges encountered by nurses in using the mentioned forms in health centers. The significant associations will also be discussed, and the chapter will end up with the conclusion.

5.1   Discussion of demographic findings

A total of 68 nurses, were working in the four health centers in Kicukiro District, in which the study was conducted. The respondents were from four health centers, namely Gahanga with a rate of 21.4%, Gikondo rating 35.7%, Masaka with percentage of 16.7%, and Nyarugunga rated 26.2%.

The nurses were deployed in different services according to the respective percentages: those who were allocated in administration 7.1% , in consultation 35.7%, in maternity16.7%, in antenatal care and family planning 4.8%, in VCT (Voluntary counseling and test for HIV, ARV (antiretroviral therapy) and TB (Tuberculosis service) 19%, in Immunization 7.1%, and in pharmacy distribution 9.5%. Usually there is a roster between nurses in different services; it is not common that a nurse is allocated to one service within the health center.

Comparatively, those services provided by nurses, there are similarities and differences in other countries. By using an example from a study done in South Africa, nurses were playing different roles in providing health care services. A percentage of 47.8% were managers and administrators of health care settings compared to 7.1% in this study. A percentage of 53.35% were doing an outpatient assessment compared to 35.7% in this study. Care for mother and infants were given by 39.0% of nurses in South Africa compared to 16.7 in maternity, antenatal care and family planning in Rwanda. Education on prevention of diseases were done in 52.8% of nurses in South

African study, while similar services are provided in voluntary counseling and test for HIV by 19% of nurses in this Rwandan study. Provision of treatment was given by 58.9 in South African study, compared to 9.5% in this Rwandan study (Ugochukwu, 2013).

The majority of nurses, 69% were female against 31% of their male counterparts. The female predominance in nursing is also found in other countries like in United States, whereby a survey has found that only 9.1 % of nurses were men, and the same was stated in United Kingdom, where a newspaper of The Guardian announced that only 11.4% of nurses were men (SPC, 2015; Williams, 2017). The reason was found to be that women were traditionally known to provide care to patients since the starting of nursing, when the religious nun were creating organizations for taking care of sick (Marshall,1999), there is progressive entrance of men in nursing , however, it does not integrate the gender roles or improve gender relations, even in female dominated occupation like nursing , there is still high valuation of males to give them place to administrative and elite positions (Evans,1997)

Prof Donna Fitzsimons, head of the university's school of nursing and midwifery, says: "Nursing is all about the empathy and caring that people show, but those traits are not exclusively female and it's very important for patients that we have diversity on all levels."

The percentages of their levels of education were, respectively, 47.6 %, 35.7%, and 16.7% of A2, A1 and A0 level. The majority of nurses had an education level of A2, who are enrolled nurses with a rate of 47.6 %. Comparatively, in US, 69.6% of Asian Registered Nurses entered the profession with a bachelor's or higher degree, though only 14.6% of black American nurses are holders of masters or doctoral degrees (SPC, 2015).

The majority of nurses were with an experience of more than five years, their rate was 71.2 %. The age of nurses was between 30 and 40 years with more than 5years of experience, and the majority of nurses were with an experience of more than five years, their rate was 71.2 %. Compared to US and South Africa, the percentage of 14.8% of nurses are aged or under 30years. In South Africa, 5% of Registered Nurses are aged under 30 years, while 30% are aged 50 years and above ,then 27% of them are aged 60 years and above . However, 14% of Enrolled

Nurses are under 30years, 29% are aged 40years and 25% are aged 60years (SANC, 2016; SPC, 2015).

There was no association level of education and use of forms. However, other literatures state that the level of education could influence the health care. In this study, nurses were using forms differently, from health center to another one. A study done in Ethiopia also revealed that the attitude wee different between nurses from public and private institutions (Hiwot et al., 2014, p.5). This study found that there was association between services and use of forms for NCD checkup. These findings are similar to the study done in Ethiopia that confirmed the strong association of the type of wards in which nurses work in and their attitude towards the palliative care (Hiwot et al., 2014, p.5).

This study found that only three, among the four roles of nurses in different services were played. Those roles are care provision, health education, nursing management and research. A study done in South Africa found that the roles of nurses as caregivers, health educators and managers of administration of health settings (Ugochukwu et al., 2013 p. 130). However, these studies did not mention the research role of the nurses in health care settings.

5.2   Discussion on knowledge of nurses regarding   NCDs

The majority of nurses had good knowledge of NCD, checkup program and nursing responsibilities. The majority of nurses reported that they had good and very good knowledge of NCDs, with a rate of 40.5% and 42.9 % respectively. The majority of nurses were with a good and very good knowledge of NCDs causes, with a rate of 31.0% and 42.9% respectively. A rate of 47.6% and 31.0% had a good and very good knowledge of NCDs diagnosis respectively. A rate of 23.8% and 35.7% had a good and very good knowledge of the program for NCDs checkup, respectively. Comparatively, a study that was done in Ethiopia on knowledge of nurses regarding palliative care, has found that 30.5%   had a good knowledge of palliative care (Hiwot et al., 2014). In Uganda another study on knowledge of nurses regarding hypertension has found that participants had 62.8% of required knowledge before the educational intervention provided to them (Katende et al., 2014).

This study revealed the association between knowledge of nurses and use of checkup forms with p-value of .000 at 95% CI. These findings are opposed to the ones found in a study conducted in Brazil which found that nurses' knowledge of NCDs was not associated with initiative to screen the women for cervical cancer, as the Ministry of Health has recommended (Jesus et al., 2016). In this study, receiving guidelines was associated with the use and the frequency of using checkup forms. This was also observed in Egypt, whereby, the nurses who received nursing guidelines improved their compliance to the measures of infection control in the care of patient with burns (Mohammed, 2016 p. 5,6). When nurses are given clear guidelines they would easily comply with them. In addition, it would be better to include them in the teams who set guidelines for health care in order to improve the clarity of those guidelines.

In Egypt, a study found that educational sessions improved the knowledge of nurses, regarding the infection control measures, from 68%, to 89.6% at a P-value less than 0.001 (Yasmine et al., 2014). Further studies are needed to explore the clarity of guidelines in nurses and the importance of involvement of nurses in the process of setting health care guidelines. We could also question the involvement and participation of nurses and nurse leaders in the development of those guidelines to insure that all the practical aspects are observed.

5.3   Discussion on the use of forms for NCDs checkup.

Almost half of respondents, 52.4% had received Ministerial Instructions and Forms for NCDs Checkup. Those forms are called community health assessment checklists. Although 64.3% of the nurses stated that they used the forms for a checkup, only 35.7% used them daily. Comparatively, a study that was done in Egypt among 35nurses, to evaluate the effect of nursing guidelines on nurses' knowledge and patient 's safety, which has revealed that 51.7% of nurses were satisfying the performance scale in using the guidelines of patient safety and nosocomial infection control (Mohammed, 2016). Compared to the Ethiopian study, that was done among 341 nurses, to assess knowledge, attitude, practices and factors associated with palliative care, then the practice of palliative care was found to be implemented poorly, in76.2 % of participants (Hiwot et al., 2014).

Another study was done in Malawi was done to assess challenges and opportunities among health professionals, to evaluate the implementation of a program of NCDs prevention and control, and the mentioned study revealed that the activities were facility based instead of doing community outreach (Lupapfya et al., 2016). The same study, outlined challenges of program implementation as lack of human resources, equipment, supplies, finances, and transportation.the study also suggested the improvement of existing health services with data management system and innovative financial solutions for better implementation of NCDs activities.

5.4   Discussion on challenges in using checkup forms

This study reveals that 40.5 % of the nurses had received some training and 50 % had not received any training on NCDs. The percentages of nurses who had received some training on checkup were 47.6 %, while 40.5 % had not received any training. A rate of 45.2% could get easy access to EBP information was easy for 45.2% of the nurses, while 28.6% experienced difficulty in accessing information to EBP and 10% had no access. The rooms for NCDs checkup were considered small by 40.5% of the nurses and 23.8% of the respondents affirmed that rooms were shared with other services. Of the 68 nurses, 64.3% affirmed that there was not enough equipment. The majority 90.5 % affirmed that people coming for checkup were few. Challenges encountered by nurses were found to be overload, lack of training, lack of equipment by 47%, 35% and 14.3% of respondents respectively.

There was association between challenges stated by nurses and use of forms for NCDs checkup in this study. Those challenges were low staffing, lack of training and lack of equipment. Other researchers have also found that those challenges are a limitation for proper care for patients (Aantjes et al., 2014; Harris and Lloyd, 2012; Katende, Groves and Becker, 2014; Hiwot et al., 2014) The challenges that were observed in Zambia there was mixture of services between NCDs and HIV services , similarly in this study, in some areas there was mixture of services between NCDs and general consultation (Aantjes, Quinlan and Bunders, 2014). In Uganda, knowledge and access to information were found to limit nurses to provide proper care to hypertensive patients (Katende, Groves and Becker, 2014). Researchers, has also found that

nurses role is influenced by supportive and discouraging aspects that are, hospital managers, culture of health and education as supportive aspects and on the other hands, discouraging aspects were, lack of resources, unclear role definition, and the lack of skills (Kemppainen, Tossavainen and Turunen, 2012). The similar challenges were also found in Malawi, added of finances, supplies and transportations(Lupapfya, 2016).

In Ethiopia, insufficient knowledge was a limitation for nurses, to provide palliative care (Hiwot et al., 2014). Staff shortage was stated to be another limitation to health interventions in low and middle income countries (Yamey, 2012). Another study, has also found that nurses in South Africa had challenges in implementing Integrated Management of Child Illnesses program in Primary Health Care due to shortage of staff and insufficient spaces and all nurses were not trained on the program (Maleshane, 2012). PHC nurses evaluated the program of outreach in treating TB patients in South Africa by Lay Health Workers, due to the inability of nurses to reach all patients of tuberculosis on daily basis, the nurses supported and evaluated an outreach program, with training and support to LHW, then they found that the successful treatment of TB patient, was improved at a rate of 18.7% (Dick, 2007).

5.5   Conclusion

This chapter discussed on the findings about demographic data about nurses and their health center of provenance, services allocation, age, sex, level of education and their level of experiences. There were similarities in countries like US for gender predominance, South Africa, for the education, age and experiences. The findings on knowledge of nurses, use of forms for NCDs checkup and encountered were also discussed. Similarities were also found in Ethiopia and Egypt for knowledge and implementing programs and common challenges were occured Finally, there was discussion on significant associations between variables. There was an association between knowledge, receiving guidelines and the use of forms for NCDs checkup. Services, Education were found to be associated with frequency of using the mentioned forms. Again those associations were also found in Ethiopia and Egypt.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.0 Introduction

As previously mentioned in chapter one, this study was aimed to explore the role of health center nurses in early detection of NCDs, and targeted the assessment of knowledge of NCDs, their roles in using forms for checkup NCDs and the challenges they encountred by nurses while they use checkup forms to implement the program to detect noncommunicable diseases. This chapter will draw the conclusion of this study and provide recommendations that are needed, with regard to the objectives that were intended.

6.1 Conclusion

To summarize this study, non-communicable diseases are emerging in our low and middle income countries, countries and organizations elaborated policies and strategies to fight against those diseases. Nurses are playing a big role in the health system as caregivers, leaders, educators and researchers. In addition, they are the main health care providers in primary health care settings,called health centers in this study; with the potential to foster the implementation of health programs, aimed to raise awareness in regards with NCDs detection and management. Therefore, they need empowerment to maximize their potential, through enhancing education, regular trainings and professional development, and proper working environment, in the daily tasks of providing care to patients. In addition, they should participate in decisions that are made in setting guidelines for health programs.

As stated in chapter one the study had the objectives of assessing the knowledge of nurses regarding NCDs and checkup program, the use of forms for NCDs checkup and the challenges encountered during the provision of checkup services. In chapter two, the literature shows that NCDs are prevalent in all the countries, and WHO set the guidelines to address the management of those diseases. All countries are concerted to fight the diseases and they set policies and guidelines to address those NCDs. The role of nurses is evident in managing NCDs, as they are majority of the health care team, and work at the frontline in health centers. However, they face

challenges of insufficient knowledge and limited resources at the primary health care settings; in addition, their leadership role is less considered in positions, where the guidelines are developed. The researchers found that the lack of knowledge, shortage of staff and low resource environment, were found to be a major limitation of nurses, to provide care to patients especially those with chronic conditions.

The chapter three described the procedure of collecting data from a health center nurse. The study assessed those statements in sixty-eight nurses, who work in the four health centers of Kicukiro District. The chapter four described the findings and analyzed the associations that are significant. The findings revealed that the majority of nurses had good knowledge of NCDs, and were using the forms for NCDs checkup. However, a number of nurses who does not have sufficient knowledge, and who do not use the checkup forms, is not negligible. Furthermore, a big number of nurses reported challenges encountered in using checkup forms, such as low staffing, lack of training and low equipment and rooms. In addition, those challenges were significantly associated with the use of forms, and there was a significant association between knowledge, allocated services and receiving guidelines of NCDs to the use of those forms.

The chapter five compared the findings of this study to other studies and findings revealed that, the knowledge of nurses and receiving guidelines were associated with health care services they provide to patient. However, some studies found that nurses could provide care without knowledge of guidelines. The study was limited by low sample size, and the knowledge of nurses was self-reported. There is a need to do further research on knowledge of nurses on noncommunicable diseases and health care programs that are established on a national level.

6.2 Recommendations of the study

In this study, the knowledge, allocated services, receiving guidelines and challenges like staff shortage and lack of equipment, were significantly associated with the use of forms for NCDs checkup by nurses; while services and education level could influence the frequency of using forms for NCDs checkup .Therefore, we recommend to:

1. **The regulatory bodies of nurses**

In education: the knowledge of nurses should be improved by continuous trainings for professional development. In addition, in collaboration with Ministry of health, nurses should be facilitated to update their level of education.

In practice: advocating that, the knowledge acquired from schools of nursing should be used, in parallel with a better working environment for nurses.

2. **To the Ministry of health:**

In administration: the Guidelines that are used in health care, should be developed in consideration of multidisciplinary teams, in which nurses are represented effectively.

In practice: there should be appropriate room for NCDs checkup services equipped with essential materials that are needed, as required by the WHO Package of Essentials for management of noncommunicable diseases.

3. **To the University of Rwanda and other researchers**

In research: There is a need to do further research on knowledge of nurses on noncommunicable diseases and guidelines used in healthcare.

In education: Improve the curriculum of nurses by emphasizing the knowledge on early detection of noncommunicable diseases and health programs that are set by the ministry of health, in order to improve the quality of care provided in health centers.

4. **To the administrators and nurse leaders**

In administration: There is a need to empower and encourage nurses to update their knowledge on health programs, which will help them to improve their practice.

In practice: There is a must, to advocate for nurses, in matters of challenges encountered by nurses in their workplace; which are the staff shortage, lack of equipment and insufficient knowledge; in consideration that, those challenges are a limitation to the quality of health care provided by nurses, and could undermine the important role of nurses in health care, and particularly in health centers.

A checkup program to insure the success of that program. As we found, in some health centers the checkup services are mixed with general consultation. Therefore, nurses who are allocated in consultation rooms would be more focused to be trained (Table 4.5)

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APPENDIXES

Appendix l: QUESTIONNAIRE

SECTION A **Demographic information: Insert a cross (X) or a V according to the appropriate response.**	**Circle the appropriate number according to the correct answer**
1. Service: ………………… 2. Age: …………………….. 3. Sex:……………………..	➢ Male ☐　　　　Female ☐
4. Level of education:	➢ A0 ☐ A1 ☐　A2 ☐ Other ☐
5. Years of experience	➢ 1-2 years ☐ ➢ 3-4years ☐ ➢ 5 + ☐

SECTION B KNOWLEDGE OF NURSES	Circle the appropriate number according to the correct answer
1. To which level do you know four essential NCDs	1. Excellent 2. Good 3. Moderate 4. Fair
2. To which level do you know four main factors	1. Very good 2. Good 3. Moderate 4. Fair
1. To which level do you know main roles of nurse for managing NCD patients	1. Very good 2. Good 3. Moderate 4. Fair
2. To which level do you know essential measurements to diagnose NCDS	1. Very good 2. Good 3. Moderate 4. Fair
5. To which level do you know about community medical checkup program	1. Very good 2. Good 3. Moderate 4. Fair
6. Did you receive guidelines and forms for the program of voluntary medical checkup	YES NO
7. When did you receive guidelines and forms for the program of voluntary medical checkup	1. Two years ago 2. From six months to one year 3. Six months ago

	4. This month 5. Not yet
8. Do you use forms for a checkup in the consultation room	YES NO
9. How often do you use forms for a checkup in the consultation room	1. Frequently/ Everyday 2. Sometimes/ Every week 3. Rarely/ Every month 4. Never/I never use them
10. How often do you receive people coming for checkup?	1. Frequently 2. Sometimes 3. Rarely 4. Never

SECTION C
FACTORS AFFECTING IMPLEMENTATION OF THE PROGRAM
Encircle the appropriate statement

1. Guidelines on NCDs diseases

a. I have attended many trainings on NCDs diseases
b. I have attended few training on NCDs diseases
c. I have attended no training about NCDs diseases
d. I have attended training about NCDs diseases, but I did not attend

2. Trainings on checkup

a. I have attended many trainings on the checkup
b. I have attended few training on the checkup
c. I have attended no training on the checkup
d. I have attended training on checkup, but I did not attend

3. Access to EBP information

a. Easy access
b. Little access
c. No access
d. Access but not enough time

4. Places

a. There is enough space
b. There is a small space
c. There is no space at all
d. The space is shared with other services like vaccination, antenatal care,…

5. Equipment (BP machine, Glucometer, items for measuring weight and length)

a. Equipment are available
b. Equipment are not enough
c. Equipment are unavailable
d. Equipment are not familiar for using them

6. People coming for a checkup

a. People are many

	b. People are few
	c. No one is coming
	d. Other

7. **What are the barriers to the implementation of the NCDs early detection program?**

…………………………………………………………………………………………………

…………………………………………………………………………………………………

Thank you for your participation!

Rwanda Community Health Assessment Checklist

Patient Name:		
Date of Birth:	Gender:	
Age:		Date of Evaluation:
Allergies:	Height:	Weight:
BMI:	Blood Pressure:	Pulse:
Past Medical History:		Current Medications:

Please check one for each of the following:	Yes	No	N/A	Comments
General Aspects				
Have you had recent unexplained weight loss?	☐	☐	☐	
Do you have dizziness?	☐	☐	☐	
Do you have unusual thirst?	☐	☐	☐	
Do you have frequent/abundant urination?	☐	☐	☐	
Do you have mood changes?	☐	☐	☐	
Do you have hallucinations?	☐	☐	☐	
Are you pregnant?	☐	☐	☐	
Head and Neck				
Do you have difficulties seeing objects close to you?	☐	☐	☐	
Do you have difficulties seeing objects far away?	☐	☐	☐	
Do you have difficulties seeing things in the periphery?	☐	☐	☐	
Do you have blurred vision?	☐	☐	☐	
Do your eyes itch?	☐	☐	☐	
Have your eyes changed color?	☐	☐	☐	
Do you have any difficulties hearing?	☐	☐	☐	
Do you have pain in your teeth?	☐	☐	☐	
Do your gums bleed?	☐	☐	☐	
Have you had pain in your throat?	☐	☐	☐	
Dou you have pain during swallowing?	☐	☐	☐	
D you have difficulty swallowing solids, liquids or both?	☐	☐	☐	
Do you have often morning headaches?	☐	☐	☐	
Thorax				
Do you have shortness of breath related to exertion?	☐	☐	☐	
Do you have a persistent cough?	☐	☐	☐	
Do you have a history of pulmonary TB?	☐	☐	☐	
Do you have heart palpitations?	☐	☐	☐	
Do you have chest pain?	☐	☐	☐	
Is there a history of asthma or skin allergy in your family?	☐	☐	☐	
Do you have breast pain?	☐	☐	☐	
Do you palpate a lump in your breast? (Nodule)	☐	☐	☐	
Do you have skin modification on your breast?	☐	☐	☐	
Do you have breast discharge?	☐	☐	☐	
Is there any history of breast cancer in your family?	☐	☐	☐	

REPUBLIC OF RWANDA

KIGALI CITY
DISTRICT KICUKIRO
HOPITAL MASAKA
B.P 3472 KIGALI
E-mail: masaka.hospital@mah.gov.rw

TO: Madam MBARUSHIMANA Judith
UNIVERSITY OF RWANDA

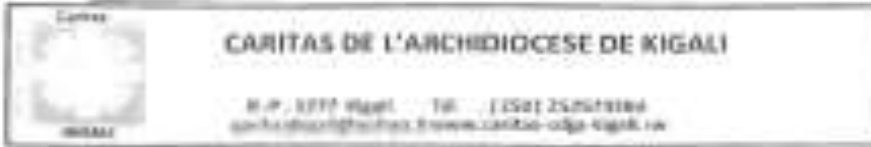Re: PERMISSION TO CONDUCT DATA COLLECTION

Dear Madam,

Refering to the letter written on 23rd February 2017 requesting to conduct a study entitled « **Exploring the role of health center nurses in early detection of non communicable diseases in Kicukiro District, Rwanda**" The management of Masaka District Hospital is pleased to informe you that, you have authorization to conduct your study in Gahanga, Gikondo, Masaka and Nyarugunga health centers .

Data collection will start from 28/03/2017 to 28/04/2017.

Sincerely

Dr. Marcel DUSKEYI
Masaka HospitalActing Director

CARITAS

INRAU

CARITAS DE L'ARCHIDIOCESE DE KIGALI

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N-Ref Gael/2xxx/2017   Kigali le 3/04/2017

NIBIKISHIMAYA Isabé

Objet: Réponse à votre lettre du 03/04/2017

Madame,

Référence faite à votre lettre reçue 04/04/2017 dont l'objet consiste à demander une autorisation du faire le collecte des données au Centre Médico Social Gikondo et Centre de Santé Masaka, du 17/04/2017 au 17/05/2017.

Nous avons le plaisir de vous informer qu'en accord avec les Titulaires, cette autorisation vous est accordée avec bienveillance.

Nous vous adressons nos salutations.

Directeur de la Caritas Kigali
Archidiocèse de Kigali

CC :
- Monsieur Directeur de l'Hôpital de Masaka
- Présidente du CODA de Centre Médico Social Gikondo et CS Masaka
- Mesdames les Sœurs Titulaires CMS Gikondo et CS Masaka

APPENDIX B

INFORMATION DOCUMENT

Dear Participant,

I, MBARUSHIMANA JUDITH, a Masters student at UR/CMHS, School of Nursing, we are conducting this study on the "EXPL0RING THE ROLE OF HEALTH CENTER NURSES IN EARLY DETECTION OF NONCOMMUNICABLE DISEASES IN KICUKIRO DISTRICT, Rwanda".

To complete this study, we would like to invite you to participate in the study and provide information that is required. We therefore need to provide you the following information regarding this study.

We will collect information from different registers that are used in the health care process at health centers, as well as interviews at that level of care. Although, the study will not benefit you directly; however, it will provide necessary information on the quality of health data and its use for improving the quality of care for the clients.

Your participation in this study is voluntary; and there is no obligation to do so. If you consent to participate, you have the right to withdraw any time if you feel uncomfortable to continue, and without any inconvenience. Only your participation will inconvenient your time, as your contribution that we are requesting. The completion of the interview could take about 20-30 minutes.

The individual responses you will provide will be kept confidential, and they will not be linked to your identity through the data management process, and the interview-guide will not require you to put your name only your signature will be needed. The data collected from health facilities will be captured in the computer using codes and this data will be analyzed without any link to these facilities in such a way that it is not possible to link any information to its source.

You are free to ask any question for more clarification, and the data collector will be there to respond accordingly. Below are addresses for the researcher that you may contact if you need to do so.

Thank you,

Judith Mbarushimana
Date & Signature ……………………….

CONSENT FORM

DECLARATION

I………… (Initials of the participant),

By signing this document, I give my consent to participate in the study entitled "EXPL0RING THE ROLE OF HEALTH CENTER NURSES IN EARLY DETECTION OF NONCOMMUNICABLE DISEASES IN KICUKIRO DISTRICT, Rwanda".

Written and oral information was provided to me, and I understood the nature of the study, and I found convenient to participate in the study.

I was informed that the participation in the study is voluntary, and I guarantee my participation freely. It was agreed that I can withdraw from the study if I opt to do so without any inconvenience, and that the information I will provide will be kept confidential, and will not be linked in any manner to my identification throughout the whole research project.

Signature …………………………..

Date …………………………………

APPENDIX D

ETHICAL CLEARANCE APPROVAL LETTER

MBARUSHIMANA Judith

UNIVERSITY OF RWANDA

PHONE NO: 0783561573

EMAIL: judigm35@gmail.com

To: THE HEALTH CENTER MANAGER OF GAHANGA

Dear Sir/Madam,

Re: Request for permission to collect data

I hereby submit my request for permission to collect data in Health Center that is under your authority. The data collection would start from **27th February 2017** up to **27th April 2017**.

Actually, I am a student in the Masters of Science in Nursing at the University of Rwanda/College of Medicine and Health Science, doing research dissertation entitled **"EXPLORING THE ROLE OF HEALTH CENTER NURSES IN EARLY DETECTION OF NONCOMMUNICABLE DISEASES IN KICUKIRO DISTRICT, RWANDA"**. The required documents are attached to this letter

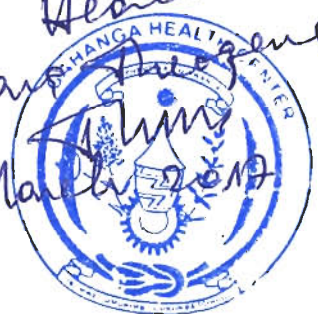We are looking forward to hear from you.

Faithfully Yours,

MBARUSHIMANA Judith

Cc: THE DIRECTOR OF MASAKA DISTRICT HOSPITAL

MBARUSHIMANA Judith

UNIVERSITY OF RWANDA

PHONE NO: 0783561573

EMAIL: judigm35@gmail.com

To: THE HEALTH CENTER MANAGER OF GIKONDO

Dear Sir/Madam,

Re: Request for permission to collect data

 I hereby submit my request for permission to collect data in Health Center that is under your authority. The data collection would start from **27th February 2017** up to **27th April 2017.**

Actually, I am a student in the Masters of Science in Nursing at the University of Rwanda/College of Medicine and Health Science, doing research dissertation entitled **"EXPLORING THE ROLE OF HEALTH CENTER NURSES IN EARLY DETECTION OF NONCOMMUNICABLE DISEASES IN KICUKIRO DISTRICT, RWANDA".** The required documents are attached to this letter

We are looking forward to hear from you.

Faithfully Yours,

MBARUSHIMANA Judith

Cc: THE DIRECTOR OF MASAKA DISTRICT HOSPITAL

MBARUSHIMANA Judith

UNIVERSITY OF RWANDA

PHONE NO: 0783561573

EMAIL: judigm35@gmail.com

To: THE HEALTH CENTER MANAGER OF MASAKA

Dear Sir/Madam,

Re: Request for permission to collect data

I hereby submit my request for permission to collect data in Health Center that is under your authority. The data collection would start from **27th February 2017** up to **27th April 2017**.

Actually, I am a student in the Masters of Science in Nursing at the University of Rwanda/College of Medicine and Health Science, doing research dissertation entitled **"EXPLORING THE ROLE OF HEALTH CENTER NURSES IN EARLY DETECTION OF NONCOMMUNICABLE DISEASES IN KICUKIRO DISTRICT, RWANDA".** The required documents are attached to this letter

We are looking forward to hear from you.

Faithfully Yours,

MBARUSHIMANA Judith

Cc: THE DIRECTOR OF MASAKA DISTRICT HOSPITAL

MBARUSHIMANA Judith

UNIVERSITY OF RWANDA

PHONE NO: 0783561573

EMAIL: judigm35@gmail.com

To: THE HEALTH CENTER MANAGER OF NYARUGUNGA

Dear Sir/Madam,

Re: Request for permission to collect data

I hereby submit my request for permission to collect data in Health Center that is under your authority. The data collection would start from **27th February 2017** up to **27th April 2017.**

Actually, I am a student in the Masters of Science in Nursing at the University of Rwanda/College of Medicine and Health Science, doing research dissertation entitled **"EXPLORING THE ROLE OF HEALTH CENTER NURSES IN EARLY DETECTION OF NONCOMMUNICABLE DISEASES IN KICUKIRO DISTRICT, RWANDA".** The required documents are attached to this letter
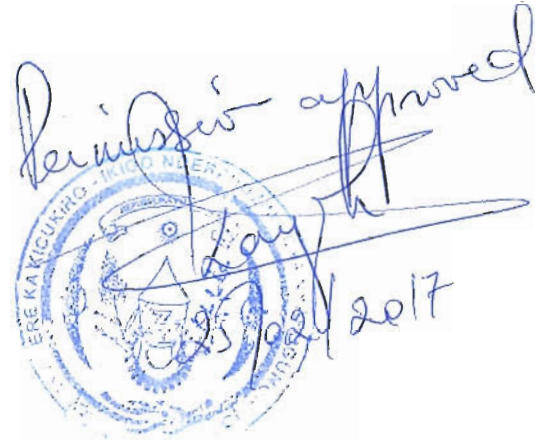
We are looking forward to hear from you.

Faithfully Yours,

MBARUSHIMANA Judith

Cc: THE DIRECTOR OF MASAKA DISTRICT HOSPITAL

UR-COLLEGE OF MEDICINE AND HEALTH SCIENCES

P.O.BOX 3286 KIGALI

DECLARATION AND AUTHORITY TO SUBMIT THE DISSERTATION

Surname and First Name of the Student: **MBARUSHIMANA Judith**

Title of the project: **Exploring the Role of Health Center Nurses in Early Detection of Non-Communicable Diseases in Kicukiro District, Rwanda**

a. _Declaration by the Student_

I do hereby declare that this **_dissertation_** submitted in partial fulfillment of the requirements for the degree of **MASTERS OF SCIENCE** in **NURSING**, at the University of Rwanda/College of Medicine and Health Sciences, is my original work and has not previously been submitted elsewhere. Also, I do declare that a complete list of references is provided indicating all the sources of information quoted or cited.

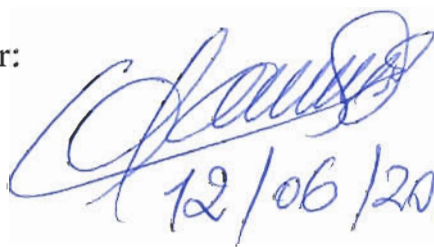Date and Signature of the Student

MBARUSHIMANA Judith

b. _Authority to Submit the dissertation_

Surname and First Name of the Supervisor: **DR. ELEAZAR NDABARORA**

In my capacity as a Supervisor, I do hereby authorize the student to submit his/her **dissertation**.

Date and Signature of the Supervisor:

DR. ELEAZAR NDABARORA 12/06/2017

Kigali, 09/01/2017
Ref: CMHS/IRB/016/2017

MBARUSHIMANA Judith
School of Nursing and Midwifery , CMHS, UR

Dear Mbarushimana Judith

RE: ETHICAL CLEARANCE

Reference is made to your application for ethical clearance for the study entitled *"Exploring The Role Of Health Center Nurses In Early Detection Of Non-Communicable Diseases In Kicukiro District, Rwanda"*

Having reviewed your protocol and found it satisfying the ethical requirements, your study is hereby granted ethical clearance. The ethical clearance is valid for one year starting from the date it is issued and shall be renewed on request. You will be required to submit the progress report and any major changes made in the proposal during the implementation stage. In addition, at the end, the IRB shall need to be given the final report of your study.

We wish you success in this important study.

Professor Kato J. NJUNWA
Chairperson Institutional Review Board,
College of Medicine and Health Sciences, UR

Cc:
- Principal College of Medicine and Health Sciences, UR
- University Director of Research and Postgraduate studies, UR

SCHOOL OF NURSING AND MIDWIFERY

Kigali, on 30 / 01 /2017
Ref. No: IRB 016/ UR-CMHS/SoNM/17

**TO WHOM IT MAY CONCERN**

Dear Sir/Madam,

Re: Request to collect data

Referring to the above subject, I am requesting for permission for MBARUSHIMANA Judith, a final year student in the Masters of Science in Nursing at the University of Rwanda/College of Medicine and Health Science to collect data for his/her research dissertation entitled EXPLORING THE ROLE OF HEALTH CENTER NURSES IN EARLY DETECTION OF NONCOMMUNICABLE DISEASES IN KICUKIRO DISTRICT, RWANDA.

This exercise that is going to take a period of 2 months starting from 13th February 2017 to 12th April 2017 will be done at HEALTH CENTERS OF GAHANGA, GIKONDO, MASAKA, AND NYARUGUNGA.

We are looking forward for your usual cooperation.

Sincerely,
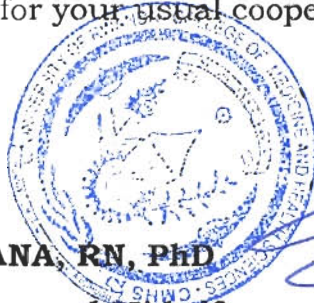
Dr. Donatilla MUKAMANA, RN, PhD
Dean, School of Nursing and Midwifery
College of Medicine and Health Sciences

KIGALI CITY
DISTRICT KICUKIRO
HOPITAL MASAKA
B.P 3472 KIGALI
E-mail: masaka.hospital@moh.gov.rw

TO: Madam MBARUSHIMANA Judith
UNIVERSITY OF RWANDA

Re: PERMISSION TO CONDUCT DATA COLLECTION

Dear Madam,

Refering to the letter written on 23rdFebruary 2017 requesting to conduct a study entitled «
Exploring the role of health center   nurses in early detection of non communicable diseases
in Kicukiro District, Rwanda" The management of Masaka District Hospital is pleased to
inform you that, you have authorization to conduct your study in Gahanga, Gikondo, Masaka and
Nyarugunga health centers .

 Data collection will start from 28/03/2017 to 28/04/2017.

Sincerely

Dr. Marcel UWIZEYE
Masaka Hospital acting Director

N.Ref/SANTE/022/2017   Kigali le 3/04/2017

MBARUSHIMANA Judith

Objet: Réponse à votre lettre du 03/04/2017

Madame,

Référence faite á votre lettre reçue 04/04/2017 dont l'objet consiste à demander une autorisation de faire la collecte des données au Centre Médico-Sociale Gikondo et Centre de Santé Masaka, du 17/04/2017 au 27/04/2017.

Nous avons le plaisir de vous informer qu'en accord avec les Titulaires, cette autorisation vous est accordée avec bienveillance.

Nous vous souhaitons bon travail.

Abbé Donatien TWIZEYUMUREMYI
Directeur de la Caritas Kigali
Archidiocèse de Kigali

CI :
- Médecin Directeur de l'Hôpital de Masaka
- Présidants de COSA de Centre Medico Sociale Gikongo et CS Masaka
- Révérendes Sœurs Titulaires CMS Gikondo et CS Masaka