

KIBOGORA POLYTECHNIC

FACULTY OF HEALTH SCIENCES

DEPARTMENT OF BIOMEDICAL LABORATORY SCIENCES

PREVALENCE OF NEISSERIA GONORRHEA INFECTIONS AND ITS ASSOCIATED RISK FACTORS AMONG WOMEN WITH 18-49 OLD YEARS ATTENDING KIBOGORA DISTRICT HOSPITAL FROM 2018- 2020

Undergraduate thesis presented in partial fulfillment of the requirement award of Bachelors
degree with honor in Biomedical Laboratory Sciences

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DECLARATION

We, MUKANEZA Beatrice and UWAMAHORO Chantal we declare that this is our own work and not a duplication of any similar academic work. It has therefore not been previously or concurrently submitted for any other degree, diploma or other qualification to Kibogora polytechnic or any other institution. All materials cited in this paper which are not our owner have been duly acknowledged.

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Declaration by the supervisor

I declare that this work has been submitted for examination with my approval as KP Supervisor

Supervisor name:

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ABSTRACT

Introduction: Untitled this Study “prevalence of Neisseria gonorrhoea infections and its associated factors among 18-49 years old women attending Kibogora District Hospital”. This infection is a sexually transmitted infection (STI) caused by Neisseria gonorrhoea bacterium. N. gonorrhoea infects the mucous membranes of the reproductive tract, including the cervix, uterus, and fallopian tubes in, and the urethra in women and men. The Objectives of this study are (1) To determine the rate of Neisseria Gonorrhoea infections among 18-49 years old women attending Kibogora District Hospital, (2) To evaluate the most affected age group by the gonorrhoeal infection among 18-49 years old, (3) To assess possible risk factors associated with Neisseria Gonorrhoea among 18-49 year’s old women attending Kibogora District Hospital.

Method: The study adopted a retrospective design with quantitative approach. The study was included of 226 women between 18-49 years old. Secondary data from 2018-2020 were used and checklist for risk factors. Data analysis was performed using the statistical package for social sciences (SPSS) software, version 20.

Results: This study found the prevalence of Neisseria gonorrhoea infections among 18-49 years old women attending Kibogora District Hospital was 27(11.9%) among 226 patients. The risk factors associated with Neisseria Gonorrhoea in patients under study are Age group, marital status and sex without condom usage. This decision has been set due to the facts that the corresponding p-value associated to the Chi-square statistics of these factors is all less than the cutoff (5%). That is, for the age group $\chi^2 (9) = 2.582$, p-value=0.02 < 0.05, marital status $\chi^2 (8) = 7.964$, p-value=0.043 < 0.05 and sex without condom usage $\chi^2 (14) = 27.812$, p-value=0.01 < 0.05.

Conclusion: This study concludes that, “prevalence of Neisseria gonorrhoea infections and its associated factors among 18-49 years old women attending Kibogora District Hospital were (11.9%) greater than the one from retrospective study conducted in Rwanda found that the prevalence of Neisseria gonorrhoea from inpatient and outpatient attending Butare University Teaching Hospital was 5.66%. Intervention in aims at Eradication of Neisseria gonorrhoea needs to educate Women to avoid sex transmission Infection by using Condom and the Ministry of health to improve availability of these condoms in all higher population center and mass screening and treatment of high suspected persons

DEDICATION 1

To almighty God

To my parents

To my brother and sisters

To all friends

UWAMAHORO Chantal

DEDICATION 2

To almighty God

To my Husband

To my Parents

To my brothers and sisters

To all friends

MUKANEZA Beatrice

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ABBREVIATION & ACRONYMS

AHA: African Humanitarian Action

ANC: Antenatal Clinic

DGI: discrete Gonococcal infection

HIV: Human Immune Deficiency Virus

IM: intramuscular

LBW: Low Birth Weight Infants

OR: Odd Ratio

PCR: Polymerase Chain Reaction

PROM: Premature Rupture of Membranes

SPSS: Statistical Package Social Sciences

STD: Sexually Transmitted Disease

STI: Sexually Transmitted Infection

TV: Trichomonas Vaginalis

WHO: World Health Organization

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CHAPTER ONE: GENERAL INTRODUCTION

1.0. Introduction

This chapter involves the background of the study, statement of the problem, general and specific objectives of the study research question and significance of the study, limitations and scope of the study.

1.1.BACK GROUND OF THE STUDY

Neisseria gonorrhoea is gram negative bacteria and sexually transmitted infections (STI) constitute a major burden of the diseases for women globally and include bacterial infections (gonorrhoea infection) rates of STIs in rising countries, especially those in sub-Saharan Africa, far go beyond those found in industrialized countries and STIs have been familiar as major contributor to the global burden of diseases. There were in excess of 333 million cases of the four curable STIs in the adults between the age of 17 and 50. 66 million cases of the gonorrhoea, making STIs among the most common causes of the illness in the world. The diseases associated with Neisseria gonorrhoea in women include cervicitis, urethritis, pharyngitis and proctitis. If untreated women may experience severe sequelae of pelvic pain, ectopic pregnancy and tubular infertility (Lai-King, 2005).

WHO in 2008, reported 36.4 million prevalence of Neisseria gonorrhoea worldwide and 8.2 million were in Africa region where 4.4 million were female between 15 to 49 ages.(WHO, 2012).

Survey conducted in Guinea revealed that 9.7% are prevalent to Neisseria gonorrhoea and having partner at perceived risk of infection, maternal extramarital intercourse and early sexual debut were risk factors associated with this infection (Wangnapi, 2015).

Study conducted in Ethiopia also showed the prevalence of Neisseria gonorrhoea of 9.8%, and most of the female between 20 to 24 years group were found to have this disease compared to

other age group. The risks of gonococcal infection were high in condom user due to the improper use during sexual intercourse (Addisu, 2020).

From south-Africa, the prevalence of Neisseria gonorrhoea were 10% and 2.5% were women between 18-49 years old and intra-vaginal cleansing were associated with this infection with p-value of 0.036 at 95% confidential interval(Peters, 2014). From the study conducted in Tanzania, showed the prevalence of 2.5% from the women between 18 to 34 years old and having more than one sexual partner was statistical significant from suffering from Neisseria gonorrhoea with p-value of 0.000(Yirenya, 2014).

Retrospective study conducted in Rwanda found that the prevalence of Neisseria gonorrhoea from inpatient and outpatient attending Butare University Teaching Hospital was 5.66%. And it was mentioned that having sex without condom was factors associated with this disease. (Ndoli, 2016)

1.2.PROBLEM STATEMENT

Gonorrhoea is a ubiquitous, worldwide sexually transmitted disease (STD) that is most common in developing nations. It is also extensively acknowledged that gonorrhoea is underreported, and its true occurrence is probably much better than the official numbers (Michael W, 2009).

According to The World Health Organization (WHO) predictable the pooled 2016 global prevalence of urogenital gonorrhoea, the amount of the world's population with gonorrhoea in a given year to be 0.9% in women and 0.7% in men, corresponding to a total of 30.6 million gonorrhoea cases worldwide. In addition, it is also related to cervical cancer and an important complication in pregnancy which has been related with prematurity and low birth weight infants (Robert, 2019).

Estimated 357 million new cases of curable STIs (gonorrhoea, Chlamydia, syphilis and trichomoniasis) occurred among 15–49 year-olds worldwide, including 78 million cases of gonorrhoea. Gonorrhoea caused by Neisseria gonorrhoea, is the second most common bacterial STI and results in substantial morbidity and economic cost worldwide. Uncomplicated gonococcal infection commonly manifests as urethritis in men and may cause mucopurulent cervicitis in women. Rectal and pharyngeal infections in both men and women are largely asymptomatic.

Gonococcal infections are often asymptomatic in women; the lack of discernible symptoms results in unrecognized and untreated infection that may lead to serious complications, including pelvic inflammatory disease, ectopic pregnancy and infertility. Untreated urethral infection in men can lead to epididymitis, urethral stricture and infertility. Infants of mothers with gonococcal infection can contract neonatal conjunctivitis, which may lead to blindness if left untreated (WHO, 2020).

Previous data have shown that more than 10 to 50% of women with Gonorrhoea are asymptomatic and probably clinical manifestation will develop after half year of infection in 50% of those individuals. The aim of this study was determined the prevalence of Neisseria gonorrhoea and its associated risk factors among 18-49 years old attending Kibogora District Hospital.

1.3. OBJECTIVES OF THE STUDY

1.3.1 General Objective

The general objective of this study was to assess prevalence of Neisseria gonorrhoea infections and its associated factors among women of 18-49 years old attending Kibogora District Hospital.

1.3.2 Specific Objective

- 1) To determine the rate of Neisseria Gonorrhoea infections among 18-49 years old women attending Kibogora District Hospital.
- 2) To assess possible factors associated with Neisseria Gonorrhoea among 18-49 years old women attending Kibogora District Hospital.

1.3.3. Research questions

- 1) What is the prevalence of Neisseria Gonorrhoea infections among 18-49 years old women attending Kibogora District Hospital?
- 2) What are possible factors associated with Neisseria Gonorrhoea among 18-49 years old women attending Kibogora District Hospital?

1.4.SIGNIFICANCE OF THE STUDY

The findings our research will be important as the following:

1.4.1. To researcher

This study will help other researcher to get literary information related to the prevalence of Neisseria Gonorrhoea infections and its associated risk factor from this study area.

1.4.2. To Kibogora Polytechnic

In this study Kibogora polytechnic will get the updates related to the health problem facing their environment community surrounding the institution. It will also provide literary information to the students during their future research.

1.4.3. To the Government

Through results provided from this study, government will be able to know the prevalence of Neisseria Gonorrhoea among women between 18 to 49 years old from this area.

1.5. SCOPE OF STUDY

1.5.1 Time scope

This study focused on the prevalence of Neisseria Gonorrhoea infections and its associated factors among 18-49 years old women attending Kibogora District Hospital.

1.5.2 Geographical scope

The study will be carried out at Kibogora District Hospital, Nyamasheke District, and Western Province of Rwanda

1.6. LIMITATIONS OF THE STUDY

This study was limited by time where we were doing our research at the same time with clinical placement. The study was limited by financial support in order to accomplish easily all study requirements such as transport, airtimes and data collection. Travelling during covid-19 was not easy.

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

This chapter reviews definitions of key concepts or terms and studies related to Prevalence and factors associated with Neisseria gonorrhoea. The study used books and journals from different libraries and online websites in order to access most reliable of the literature. We focused on, transmission of Gonorrhoea, overview of Neisseria Gonorrhoea. The risk factors associated with Neisseria Gonorrhoea and ends up with other related literature review on Neisseria gonorrhoea.

2.1. Definitions of key concepts/Terms

2.1.1. PREVALENCE

Prevalence is a measurement of all individuals affected by the disease at a particular time, and is often useful to reflect the burden of the disease in a certain population (Marlies, 2010).

2.1.2. Risk factors

Risk factor is any attribute, characteristic, probability, or exposure of an individual that increases the likelihood of developing a disease or injury (Marlies, 2010).

2.1.3. Description of Neisseria Gonorrhoea.

Neisseria gonorrhoea is a sexually transmitted infection (STI). It infects the mucous membranes of the reproductive tract, including the cervix, uterus, and fallopian tubes in women, and the urethra in women and men. There are some signs and symptoms in women followed the near the beginning symptoms are sometimes so kind that they are mistaken for a bladder infection or vaginal infection. Gonorrhoea can have some sign and symptoms include:, Anal eager, disquiet, Painful or recurrent urination, bleeding, or discharge, Abnormal vaginal discharge, Abnormal vaginal bleeding during or after sex or between periods, Genital itching, Irregular menstrual bleeding, Pain in the lower belly, Fever and general tiredness, Swollen and painful glands at the

opening of the vagina, Painful sexual intercourse, Sore throat, and pinkeye. In men same symptoms and signs are usually clear. Most men get treated before other problems occur. But some men with no symptoms can infect their sex partners. Sign and symptoms may comprise: At first, the discharge is clear or milky, and then it can become yellow, creamy, or a little bloody, Painful or frequent urination or urethritis, anal itching, discomfort, bleeding, or discharge, Sore throat. (This symptom is rare.) Other symptoms discrete Gonococcal infection (DGI) occurs when the gonorrhoea infection spreads to other parts of the body. This includes the skin, joints, , heart, or blood, A rash, Joint pain or arthritis, Inflamed tendons (stanfordUniversity, 2017).

Neisseria Gonorrhoea constitutes a major burden of disease for women globally and include rising countries, especially those in sub-Saharan Africa. In 1995 there were in excess of 333 million cases of the four main curable STDs in adults between the ages of 17 and 50, among of them 66 million were cases of gonorrhoea, making STDs most common causes of illness in the world (Gerbase, 1998).

2.2. Prevalence of Neisseria gonorrhoea

About 36.4 million cases of Neisseria gonorrhoea found worldwide and 8.2 million were in Africa region where 4.4 million were female between 15 to 49 ages.(WHO, 2012). In 2016, also WHO estimated that there were 86.9 million incident globally cases of gonorrhoea (global prevalence 0.9%) among adults between 15-49 years of age (Unemo, 2019).

In 2015, gonorrhoea was the second most commonly reported notifiable disease in the United States with a rate of 124 gonorrhoea cases per 100,000 populations. The rate of reported gonorrhoea infections increased 12.8% since 2014 and 19.9% since 2011. California has one of the highest rates of gonorrhoea in the United States (140 per 100,000) with most cases concentrated in Los Angeles County (150 per 100,000). In 2015, the rate of reported gonorrhoea infections were highest in males age 20-29 and females 15-24.5 Gonorrhoea disproportionately affects people of color. In 2015, the rate of reported gonorrhoea infections was highest among African Americans (425 per 100,000), Native Americans (193 per 100,000), Pacific Islanders (123 per 100,000), and Hispanics (81 per 100,000), versus whites (44.2 per 100,000) and Asians (22.9 per 100,000) (Buono, 2017).

The prevalence and proportion of laboratory-confirmed urethral *Neisseria gonorrhoea* (NG) infections that was asymptomatic among individuals presenting to clinics in Shenzhen, China. In a cross-sectional study, eligible individuals were invited to participate in the questionnaire, and urine specimens were collected to identify *Neisseria gonorrhoea* infections using a nucleic acid amplification test. Considering the differences in the presentation of symptoms between men and women, this study was stratified by gender. Corresponding outcomes were analyzed by Chi-square test and multivariate logistic regression. A total of 2,871 participants were asymptomatic and included in analyses: 1120 (39.0%) men and 1751 (61.0%) women. The prevalence of asymptomatic *Neisseria gonorrhoea* was 0.9% in men, and 0.4% in women (Shu-Xia Chang, 2020).

The meta-analysis of 35 studies showed that the pooled prevalence of *Neisseria gonorrhoea* infection among reproductive-aged women in sub-Saharan Africa was 3.28%. The prevalence of *N. gonorrhoea* infection was higher than that found in other studies carried out in the region. The results suggest that greater attention should be paid to the primary prevention of *N. gonorrhoea* (Zemenu, 2020).

The results of the study conducted in Uganda, demonstrated that of the 640 consecutive patients considered, 151(59%) were found to be having gonococcal urethritis. Gonococcal urethritis was found more in males' patients and less in the females, this is because females are mainly asymptomatic carriers and takes longer period of time for the signs and symptoms to show up (OKONGO, 2012).

2.3. Risk Factors Associated With *Neisseria*

Epidemiological diversity of gonorrhoea worldwide manifests itself in the availability of the geographical distribution and the prevalence among certain populations; determinant of such variables include sexuality and sexual orientation, socio-economics, demographics, geographical and cultural ramifications, quality of sex education, prevention, testing and diagnostics, as well as political commitment in the provision of health services (WHO, 2020).

Study by (Mengistu H et al, 2013), showed that among 215 cases, 11 (5.1%) were confirmed to have gonococcal infection. Of the 11 patients who were positive for gonococcal infection, 6(54.5%) were from rural, and 5(45.5%) were from urban setting. There is significant statistical association with living area ($p= 0.026$) and the odds of having gonorrhoea infection for women living in rural was four-times higher than urban counter parts. Gonococcal infection was observed in 6/11 (54.5%) of married women and 5/11 (45.5%) of students by occupation. Of the 25 pregnant women included in the study, one (4.0%) was positive for Neisseria gonorrhoea. Five of the 11 patients who were confirmed to have gonococcal infection were in age group of 20-24 years old (Unemo, 2019).

2.4. Other Related Literature review

2.4.1 Diagnosis of Gonorrhoea

2.4.1.1. Microscopic Examination of Neisseria Gonorrhoea

The most primitive laboratory method is the microscope examination of a stained smear of discharge. To a great extent the success of this method depends upon the way in which the smear is collected and prepared. Though apparently simple, the method of preparation nevertheless deserves close attention; it should be borne in mind that charcoal-impregnated swabs should be avoided in the preparation of smears. Smears should be made as thin and as even as possible. Before posting or staining, the smears should be exposed either to air-drying and gentle flame-fixation or to air-drying plus methanol fixation for not less than two minutes and preferably for 10 minutes. Fixation with methanol is much better than flame-fixation in the case of protein-rich smears from patients with a florid gonorrhoea. The general rule must be that the diagnosis of gonorrhoea by microscopy is made only after careful Gram-staining; the latter may be performed after previous staining with 1 % methylene blue, provided the immersion oil has been completely removed by means of xylol. The Gram-staining technique may be any one of the usually recommended methods, but it is important to be familiar with the method in question and to control the various ingredients for precipitation and infection (ALICE, 1965).

2.4.1.2. Culture of Neisseria Gonorrhoea

During culturing, most strains of gonococcus do not grow in veal or beef broth or on simple broth-agar plates. Sensitivity to inhibition, rather than complexity of nutritional requirements

may account for much of the fastidiousness of the gonococcus. The beneficial effect of the addition of chocolate, starch, albumin, serum or ascitic fluid to the medium is generally ascribed to a detoxifying action on inhibitors present in the agar or in the peptone, but fresh serum and ascitic fluid also contain factors essential for the growth of certain strains. In semi-solid broth-agar, most laboratory strains grow well in a layer just below the surface. The pH of the medium should be adjusted to between 7.2 and 7.6. In laboratories with some experience in the identification of gonococci and meningococci, it suffices to use fermentation plates of glucose and maltose only, because these sugars will permit the differentiation between *N. gonorrhoea*, *N. meningitidis* and *N. catarrhalis*, provided the colonies are typically non-chromogenic (ALICE, 1965).

2.4.2. Treatment of Gonorrhoea

The WHO guideline to treat *Neisseria gonorrhoea* recommends that local resistance data should determine the choice of therapy (both for dual therapy and single therapy). In settings where local resistance data are not available, the WHO guideline suggests dual therapy over single therapy for people with genital or anorectal gonorrhoea. The WHO guideline to treat *Neisseria gonorrhoea* suggests the following options:

- Ceftriaxone 250 mg intramuscular as a single dose plus azithromycin 1 g orally as a single dose
- Cefixime 400 mg orally as a single dose plus azithromycin 1g orally as a single therapy (one of the following, based on recent local resistance data confirming susceptibility to the antimicrobial)
- Ceftriaxone 250 mg intramuscular as a single dose
- Cefixime 400 mg orally as a single dose
- Spectinomycin 2g intramuscular as a single dose.

In people with gonococcal infections who have failed treatment, the WHO STI treatment guideline suggests the following options.

- ceftriaxone 500 mg IM as a single dose plus azithromycin 2 g orally as a single dose
- cefixime 800 mg orally as a single dose plus azithromycin 2 g orally as a single dose

- gentamicin 240 mg IM as a single dose plus azithromycin 2 g orally as a single dose
- Spectinomycin 2 g IM as a single dose (if not an oropharyngeal infection) PLUS azithromycin 2 g orally as a single dose (WHO, 2020).

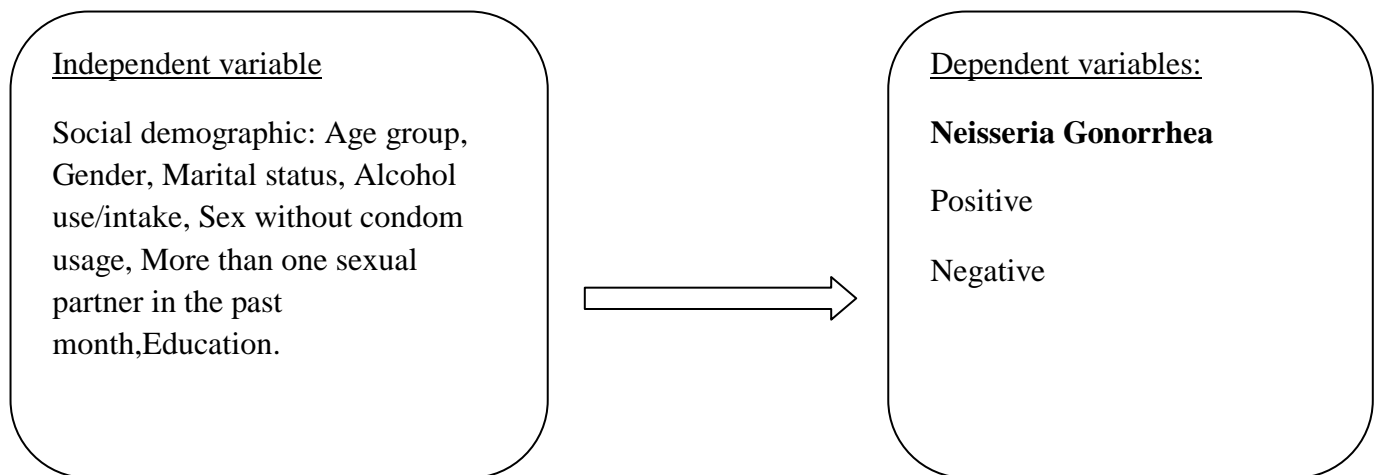
2.5. Conceptual Framework

This section shows the relationship between independent variables and dependent variables.

First of all, we start with definition: A variable is an object, event, ideas, feeling, time period, or any other type of category you are trying to measure.

Independent variable is exactly what sound is like. It is variable that stand alone and isn't changed by the other variables you are trying to measure as well as it can cause corresponding changes in other variables

dependent variable is exactly what it sounds like. It is something that depends on other factors and it can take different values only response to an independent variable.



CHAPTER THREE: RESEARCH METHODOLOGY

3.0 Introduction

This chapter aims to present the detailed scientific approach on how the study was conducted, the key points are: General description of the area of the study in which the data was collected, the presentation of the methodological considerations and the tools that the researcher was used to collect the necessary data; these are: the research area, design and approach, target population, sampling design, sampling method, and data analysis. Research methodology is a science that studies how to conduct research.

3.1. RESEARCH DESIGN AND APPROACH

3.1.1. Research Approach

The study used a quantitative approach to address research questions that are quantitative. The numerical data was used to explore prevalence of Neisseria Gonorrhoea infections and its associated factors among 18-49 years old women attending Kibogora District Hospital. The data was analyzed and represented during the study.

3.1.2. Research Design

A retrospective study was used. The selection of subjects was a retrospective view of outpatient records at Hospital from January 2018 to December 2020.

3.2. TARGET POPULATION

A population is the complete collection of all the elements that are of interest in a particular investigation. This target population is the population from which the sample will be drawn. A population can be defined as “all people or items (unity of analysis) with the characteristics that one wishes to study”. The target population of this study was all women between age group of 18-49 attended bacteriology department from Kibogora District hospital from 2018 to 2020.

3.3 SAMPLE SIZE

To determine the sample from population, the Yamane's formula has been applied, whereby the sample size is equal to the total population over one plus total population, multiplied by a square of margin of error (Israel, 1992).

$$\text{Hence, } n = \frac{N}{1 + (N * e^2)}$$

Total population attended bacteriology department at Kibogora District Hospital from 2018 to 2020 was 520.

By Yamane's formula, sample size can be calculated as follows:

$$\text{Sample size} = \frac{520}{1 + (520 * 0.0025)} = 226$$

Where n represents Sample Size, N = Total Population and e = Margin of error, which is 0.05

Hence, the sample size for this study was 226.

3.4. SAMPLING TECHNIQUES

Stratified random sampling along with judgmental sampling techniques was used during the study. Stratified sampling is where population is divided into strata (or subgroups) and random sample is taken from each subgroup whereas judgmental sampling is a strategy in which particular settings, persons or events are selected deliberately in order to provide important information that cannot be obtained from other choices (Taherdoost, 2016).

3.5. DATA COLLECTION PROCEDURE

Retrospectively, data was obtained by viewing medical records of each patient from consultation and laboratory services to get the prevalence of *Neisseria gonorrhoea* and its associated risk factors.

3.6. ETHICAL CONSIDERATIONS

Approval for study was obtained from Kibogora Polytechnic research committee. Permission for the study is also obtained from Medical Director of Kibogora District Hospital allowing the researchers to access the patients' records. Furthermore, strict confidentiality of all information, privacy of the patient was kept at each step of data collection and processing.

3.7. INCLUSION CRITERIA AND EXCLUSION CRITERIA

All women between 18-49 years old attended bacteriology department from 2018 to 2020, were included from this study. Women who did not fit these inclusion criteria were excluded from this study.

3.8. RESEARCH INSTRUMENTS AND DATA ANALYSIS

The data was gathered from patients' files using a checklist and data collection sheet to extract needed data. The checklist found out the data on socio-demographic variables and risk factors associated with Neisseria Gonorrhoea, where Data collection sheet was used determine the prevalence of Neisseria Gonorrhoea. The useful data was checked by Microsoft excel and analyzed using statistical package of social sciences (SPSS) version 20. Data also was presented using table. Descriptive statistics were used to find the frequencies and percentages. Chi-square Test along with Fisher Exact Test was used to find the association between variables with a p-value of <0.05 at 95 confidential interval.

3.9. RELIABILITY AND VALIDITY MEASURES

Validity and reliability of the instruments used in this study was given assurance in the way the researchers take some instruments for the necessary corrections. To ensure the validity of the instrument, researchers checked the Record book in bacteriology for the consistency of the items, intelligibility and clarity, for adjustment and realignment purposes. As for reliability, the concept refers to the degree to which the same results would be obtained in repeated attempt of the same tests. Moreover, ensuring the reliability of the instruments, the study be conducted into the data are collected and analyzed by SPSS program and Excel Program.

CHAPTER FOUR: DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4. 0. INTRODUCTION

This chapter deals with the analysis and interpretation of results from collected in relation to the study objectives the data collected was presented in form of descriptive statistical tables and percentages. The chapter is divided into three parts. Part one presents different data gathered while carrying out this research, their interpretation and analysis; part two presents the discussion of result and part three deals with summary of findings.

4.1. DATNA PRESENTATION AND INTERPRETATIONS

Table 1: Distribution of respondents by Age group

Age group	Frequency	Percentage
[18, 25[	51	22.6
[25, 32[	42	18.6
[32, 39[	62	27.4
[39, 49[	71	31.4
Total	226	100%

Source: Secondary data 2018-2020

In the table above shows that there were 51 (22.6%) patients in the age group of [18, 25[, 42(18.6%) patients in the age group of [25, 32[, 62 (27.4%) in the age group of [32, 39[and 71(31.4%) patients in the age group of [39, 49[

Table 2: Distribution of Marital status of the patients

Marital Status	Frequency	Percentage
Single	48	21.2
Married	158	70.0
Divorced	12	5.3
Widowed	8	3.5
Total	226	100%

Source: Secondary data 2018-2020

The table above shows that the patients who were single in our study were 48 (21.2%), 158 (70.0%), 12 (5.3%) were divorced while 8(3.5%) were widowed.

The next crucial aim was to assess the rate of Neisseria Gonorrhoea infection by age group in the patients under study. The table below describes the main data presented towards this aim.

Table 3: Distribution of NeisseriaGonorrhoea infection by age group

		Infection		
		Positive (+)	Negative (-)	Total
Age group	[18,25[	3	48	51
	[25, 32[	20	22	42
	[32,39[	4	58	62
	[39,49[	0	72	72
Total		27	199	226

Source: Secondary data 2018-2020

In the age group [18, 25[there were 3 (5.9%) patients with Neisseria Gonorrhoea infection (positive) and 48 (94.1%) patents without Neisseria Gonorrhoea infections, in [25, 32[age group there were 20 (47.6%) patients with Neisseria Gonorrhoea infection and 22 (52.4%) patients without Neisseria Gonorrhoea infection, in[32, 39[age group there were 4 (6.4%) patients with Neisseria Gonorrhoea infection and 58 (93.6%) patients without Neisseria Gonorrhoea infections

and in [39, 49] age group there was no positive patient, thus all the patients in this age group had no Neisseria Gonorrhoea infection. From the above table it reveals that the most exposed age group of the patients at the Kibogora District Hospital under study is [25, 32].

Again the table reveals useful information that the total rate of Neisseria Gonorrhoea among women aged between 18 and 49 years is 27 (11.9%).

To assess possible factors associated with Neisseria Gonorrhoea among 18-49 year's old women attending Kibogora District Hospital, the researchers attempted to compute the chi-square statistical metrics as a measure of association.

Table 4: illustrate the output extracted from SPSS

Factors	χ^2 -statistic	Degree of freedom (d.f)	Probability value (P-value)
Age group	2.582	9	0.02
Marital status	7.964	8	0.043
Alcohol use/intake	52.703	225	0.09
Sex without condom usage	27.812	14	0.01
More than one sexual partner in the past month	232.953	48	0.07
Education	43.978	225	0.06

The above table shows that the factors associated with Neisseria Gonorrhoea in patients under study are Age group, marital status and sex without Condom usage. This decision has been set due to the facts that the corresponding p-value associated to the Chi-square statistics of these factors is all less than the cutoff (5%). That is, for the age group $\chi^2 (9) = 2.582$, p-value=0.02 < 0.05, marital status $\chi^2 (8) = 7.964$, p-value=0.043 < 0.05 and Condom usage $\chi^2 (14) = 27.812$, p-value=0.01 < 0.05.

4.2 DISCUSSION OF FINDINGS

In this research paper the researchers attempted to determine the rate of Neisseria Gonorrhoea infections among 18-49 years old women attending Kibogora District Hospital and the main findings to this first objective was that the positive cases obtained among the patients under study were 27 (11.9%). In addition, the age group which was found to be more exposed than others has been the age group of [25, 32[containing 20 (47.6%) positive cases Neisseria Gonorrhoea infection among the patients implying that the patients aged between 25 and 32 years old are more exposed to get Neisseria Gonorrhoea infection compared to other age groups. The second exposed age group was found to be [32, 39[containing 4 positive cases of Neisseria Gonorrhoea infection. The non-exposed age group was found to be [39, 49[. The associated factors with Neisseria Gonorrhoea infections among 18-49 years old women attending Kibogora District Hospital were found to be age group $\chi^2 (9) = 2.582$, p-value=0.02 < 0.05, marital status $\chi^2 (8) = 7.964$, p-value=0.043 < 0.05 and sex without condom usage $\chi^2 (14) = 27.812$, p-value=0.01 < 0.05.

4.3 SUMMARY OF FINDINGS

In Distribution of respondents by Age group for 226 women Between 18-49 years old attending Kibogora District Hospital were found that there were 51 (22.6%) patients in the age group of [18, 25[, 42(18.6%) patients in the age group of [25, 32[, 62 (27.4%) in the age group of [32, 39[and 71(31.4%) patients in the age group of [39, 49[. The Distribution of Marital status of the patients, the table shows that the patients who were single in the sample were 48 (21.2%), 158 (70.0%), 12 (5.3%) were divorced while 8(3.5%) were widowed. Distribution of Neisseria Gonorrhoea infection by age group, In the age group [18, 25[there were 3 (5.9%) patients with Neisseria Gonorrhoea infection (positive) and 48 (94.1%) patients without Neisseria Gonorrhoea infections, in [25, 32[age group there were 20 (47.6%) patients with Neisseria Gonorrhoea infection and 22 (52.4%) patients without Neisseria Gonorrhoea infection, in [32, 39[age group there were 4 (6.4%) patients with Neisseria Gonorrhoea infection and 58 (93.6%) patients without Neisseria Gonorrhoea infections and in [39, 49[age group there was no positive patient, thus all the patients in this age group had no Neisseria Gonorrhoea infection. From the above table it

reveals that the most exposed age group of the patients at the Kibogora District Hospital under study is [25, 32]. Again the table reveals useful information that the total rate of Neisseria Gonorrhoea among women aged between 18 and 49 years is 27 (11.9%). The possible factors associated with Neisseria Gonorrhoea among 18-49 years old women attending Kibogora District Hospital, the researchers attempted to compute the chi-square statistical metrics as a measure of association. Shows that the factors associated with Neisseria Gonorrhoea in patients under study are Age group, marital status and Condom usage. This decision has been set due to the facts that the corresponding p-value associated to the Chi-square statistics of these factors is all less than the cutoff (5%). That is, for the age group $\chi^2 (9) = 2.582$, p-value=0.02 < 0.05, marital status $\chi^2 (8) = 7.964$, p-value=0.043 < 0.05 and sex without condom usage $\chi^2 (14) = 27.812$, p-value=0.01 < 0.05.

CHAPTER 5: CONCLUSION AND RECOMMENDATION

5.0 Introduction

The chapter presents the study conclusion and recommendations, based on the study objectives and research questions, and the research questions. The chapter ends up by the suggestions on future research studies for Neisseria Gonorrhoea infections.

5.1 CONCLUSION

This study concludes that, “prevalence of Neisseria gonorrhoea infections and its associated factors among 18-49 years old women attending Kibogora District Hospital were (11.9%) greater than the one from the Retrospective study conducted in Rwanda found that the prevalence of Neisseria gonorrhoea from inpatient and outpatient attending Butare University Teaching Hospital I was 5.66%.. Intervention in aims at Eradication of Neisseria gonorrhoea needs to educate Women to use Condom during sexual intercourse as protection against Neisseria gonorrhoea.

5.2 RECOMMENDATIONS

In view of the high prevalence of Neisseria gonorrhoea infections among 18-49 years old women attending Kibogora District Hospital should have prompt and adequate investigations with appropriate treatment to prevent adverse effect of the infection on the women. In addition, a comprehensive program on reproductive healthcare education with the aim of reducing vaginal infection prevalence should be put in place.

5.2.1 To Kibogora District Hospital

Kibogora District Hospital as health care provider should increase the education of women about the cause and prevention of Neisseria gonorrhoea especially in Women between 18-49 years old.

5.2.2 To Government of Rwanda and local authorities

The Government of Rwanda throughout the ministry of health Rwanda Biomedical Centre (RBC) should reinforce and follow up in case of education of the Nyamasheke citizens about the cause and prevention of Neisseria gonorrhoea. The Ministry of health will also reinforce for encouraging populations about using personal protective equipment during the sexual in order to protect themselves and also provide easy way to obtain these condoms in all highly popular centers and mass screening and treatment of highly suspected persons.

5.3 SUGGESTIONS FOR FURTHER STUDY

1. A similar study should be conducted in other health facilities of the country to compare the findings in Neisseria gonorrhoea among Women between 18-49 years old.
2. other research can examine the risk factors of Neisseria gonorrhoea prospectively because our study was limited by the medical records may not have included comprehensive information on Neisseria gonorrhoea risk factors.
3. Many studies reported high burden of Neisseria gonorrhoea infections in Africa this should be subjected of further researches in the country to assess the similarities or differences.

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Appendix 1 :DATA COLLECTION SHEET

YEARS	TOTAL CASES TESTED FOR N.Gonorrhea	TOTAL CONFRIMED N.Gonorrhea	CASES FOR
2018			
2019			
2020			
GRAND TOTAL			

Appendix 2 :CHECKLIST

Item	Factor	YES/ NO
Age	.....
Sex	Female	
	Male	
Religion	Christians	
	Muslims	
	None	
Socio-economic category	Category A	
	Category B	
	Category C	
	Category D	
	Category E	

Appendix 3: Data collection letter

*See Clinical Director
DASH
HR.*

KIBOGORA POLYTECHNIC

STUDENT PROJECT'S LETTER

DATE: 17th September, 2021

To whom it may concern;

We write this letter to humbly request you to allow Mrs MUKANEZA Beatrice and Mrs UWAMAHORO Chantal to conduct project work at Kibogora district hospital

The above mentioned are bonafide students of Kibogora Polytechnic pursuing Bachelor's degree in Biomedical Laboratory Sciences.

This candidate is currently conducting a project entitled **“prevalence of neisseria gonorrhoea infections and its associated factors among 18-49 years old women attending Kibogora district Hospital.”**

We are convinced that your institution will constitute a valuable source of information pertaining to their work. The purpose of this letter is to humbly request you to avail them with the pertinent information they may need. We pledge to ensure that all provided information will be used in the strict academic purpose.

Any assistance rendered to the candidate will be highly appreciated.

Approved by: *for* 

MUNYANDAMUTSA Fulgence
Head of department/Biomedical Laboratory Sciences
Kibogora Polytechnic


KIBOGORA DISTRICT HOSPITAL
RECEPTION / MAIL RECEIVED
Date: 20 SEP 2021
Names.....
Signature.....


KIBOGORA POLYTECHNIC
HEAD OF DEPARTMENT
BIOMEDICAL LABORATORY
SCIENCES