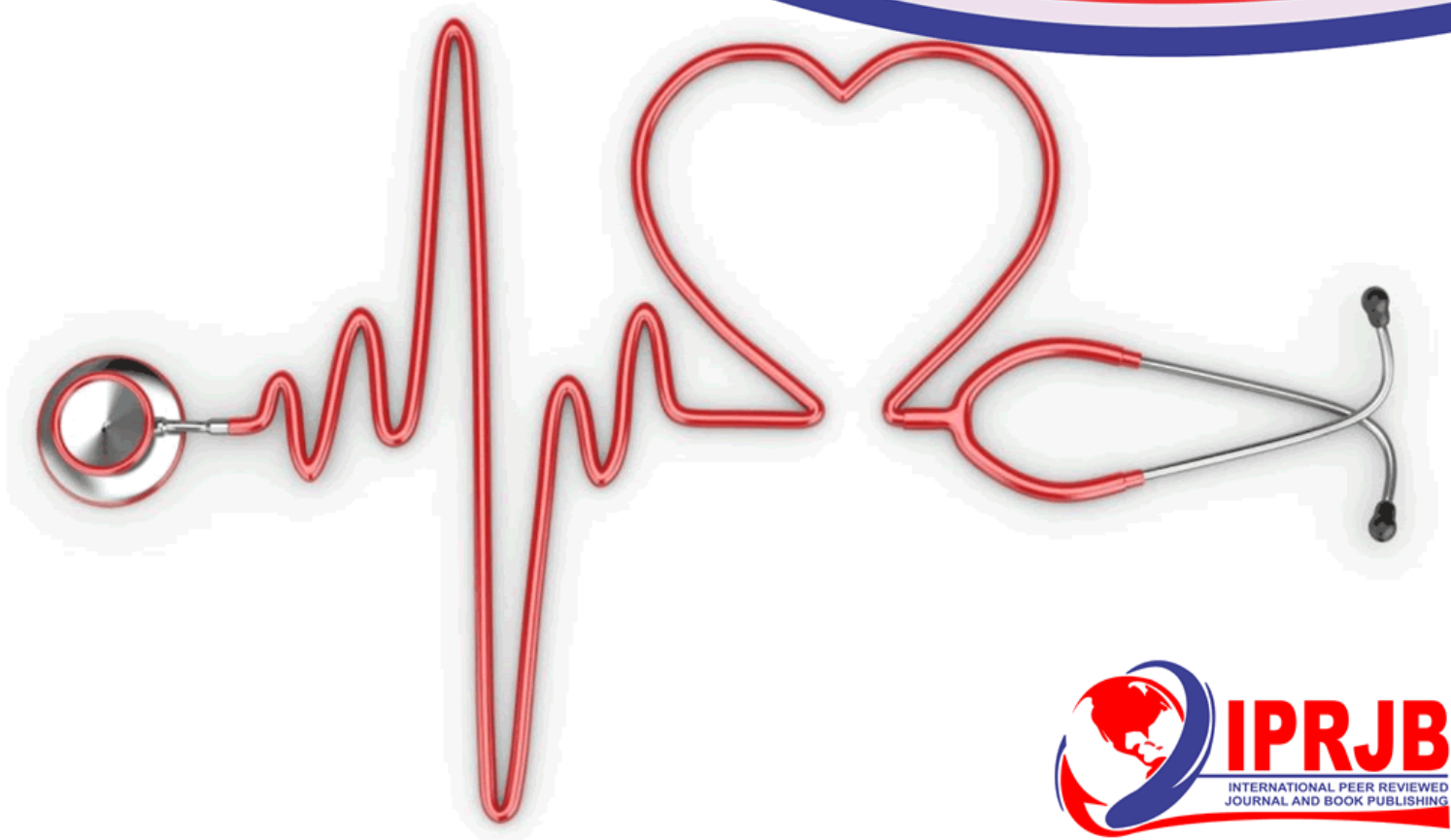


Journal of Health, Medicine and Nursing (JHMN)

THE EFFECT OF INFECTION CONTROL PRECAUTIONARY MEASURES AND BASIC EQUIPMENT'S ON PRIMARY HEALTH SERVICE DELIVERY PREPAREDNESS IN NYANDARUA COUNTY GOVERNMENT PRIMARY HEALTH FACILITIES

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BASIC EQUIPMENT'S ON PRIMARY HEALTH SERVICE DELIVERY
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FACILITIES**

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Abstract

Purpose: The main purpose of this study was to establish the effect of infection control precautionary measures and basic equipment's on primary health service delivery preparedness in Nyandarua County government primary health facilities

Methodology: The study was descriptive cross sectional. The target population in the study was dispensaries and health centers of the county government of Nyandarua. The desired sample size was 47 dispensaries and health centres from Olkalou, Ndaragwa and Kinangop out of the overall 68 in the county. A structured questionnaire was used to collect data. The study used both descriptive and inferential statistics in data analysis. Descriptive statistics include percentages; mean and standard deviation while inferential statistics include correlation and binary logistic regression analysis.

Results: The study findings established that basic equipments were available in 69%) of the Nyandarua county government primary health facilities. The "Linda mama" basic equipments in the laboratory for antenatal clinic (ANC) profiling were 69% as well. The findings confirmed that majority (85%) of the infection control precautionary measures in the primary health facilities in Nyandarua County were in place.

Unique contribution to Theory, Practice and Policy: The study recommends that the department of health services in the county government of Nyandarua should conduct an audit of all the primary health facilities to take account of what gaps exist and put in place the appropriate measures to fill them.

Keywords: *Basic Equipment's, Infection Control Precautionary Measures, Service Delivery Preparedness and Nyandarua County*

1.0 INTRODUCTION

Infection Control Precautionary Measures

Standard precautions for infection prevention are the basic measures for infection control used as a minimum in the care of patients, environment and healthcare providers themselves. Hand hygiene is a major component. It's one of the most effective methods to prevent transmission of pathogens in health care set ups. Generally, the use of personal protective equipment (PPEs) should be guided by risk assessment and the magnitude of contact anticipated with blood and body fluids, or pathogens. Together with practices carried out by health workers when giving care, all persons (including patients and visitors) should adhere to infection control practices in health care settings (WHO, 2006).

It should be assumed that each person is potentially infected; or colonized with an organism that could be transmitted in the healthcare workplace and the CDC (Centers for disease control and prevention) notes that standard precautions require all HCW's (Health care workers). Patients and healthcare staffs are all at risk of getting an infection. An estimate of 10% of patients acquires a healthcare associated infection (HAI). The six elements of the "chain of infection" that must be available for a transmission to occur are the infectious agent, a reservoir, portal of exit, means of transmission, portal of entry and a susceptible host. There are some highly transmissible infections that require additional precautions but all HCWs have an obligation to implement the standard precautions. Managers of healthcare facilities are responsible for ensuring that the resources necessary for implementation of standard precautions are provided including an infection prevention and control service, an occupational health service, an infection prevention and control induction programme for new staff, an ongoing infection prevention and control education programme for staff, equipment (e.g. personal protective equipment, cleaning equipment), physical infrastructure (isolation rooms, hand wash sinks etc.) and development of an action plan to address any non-compliance with standard Precautions identified by regular audits (Centers for disease control and prevention [CDC], 2009).

Baylis and Morgan (2017) points out that the indications for gloves use are to protect hands from contamination with organic matter, micro-organisms and chemicals, reduce the risks of transmission of microorganisms to both patients and staff. The procurement team ought to understand the rationale for the selection of gloves in clinical settings. Siegel, Rhinehart, Jackson and Chiarello, as cited by Grissinger, (2013) notes that all health staff members should understand that any form of syringe or needle re-use is dangerous and should be avoided. The current CDC guidelines recommend that syringes and needles be used not more than once. Grissinger, (2013) also cited Pugliese, Gosnell, Bartley and Robinson who had concluded that nearly 1% of health workers sometimes or always reused a syringe for more than one patient after changing only the needle.

In healthcare, patient and personnel protection against infection is the rationale that determines the indications for hands disinfection, surface disinfection (elimination of microbial reservoirs within the patient's immediate environment), decontamination of medical devices and laundry, disinfection of critical waste and in exceptional cases also of excretions. The role of disinfection in infection prevention has been analyzed over the past 50 years both in the form of benefit and risk assessments as well as in an epidemiological aspect. Currently, the efficacy of disinfection

measures, the user safety and environmental compatibility in line with the state of the art are considered. The user is able to determine and correctly put in use the disinfectant most suited to the intended purpose. Disinfection is effected with the aim of killing pathogens or putrefactive microbes by means of chemical and, or physical inactivation, so that under the given circumstances they cannot give rise to infection or putrefaction respectively (Kramer, 2007).

Decontamination should be the first step in handling used healthcare instruments and equipments in for example the three buckets system preferably by using 0.5% solution of chlorine from readily available liquid chlorine or its tablets. A fresh solution should be made every morning, or after 8 hours, or more often if the solution becomes visibly dirty. Thereafter, prior to disinfecting or sterilizing, all instruments and equipments must be cleaned to remove organic materials or chemical residues. If instruments and equipment's are not cleaned thoroughly, organic matter could prevent the disinfectant or sterilizing agent from having contact with the instrument or piece of equipment and might also bind and inactivate the chemical activity of the disinfectant. All surfaces of instruments and equipment's, including channels and bores, should be cleaned by using liquid soap or enzymatic detergents. Liquid soap suspends grease, oil, and other foreign matters in solution so that they can be removed easily by the cleaning process. An abrasive cleaner, such e.g. steel wool, for household cleaning, shouldn't be used because it can scratch the instruments, which creates potential harborage sites for microorganisms. Disinfection removes microorganisms from instruments and equipment's, but it is not a sterilizing process. Therefore, it should not be used as a convenient substitute for sterilization. Disinfection destroys organisms on delicate or heat sensitive instruments that cannot be sterilized or when single use items are not available. It is not favorable for instruments for use in critical sites, because it's required that these instruments must be sterile. Sterilization is complete destruction of all microbes (bacteria, viruses, fungi, and parasites), including bacterial endospores. It protects patients and is recommended for all instruments and other items that will come in contact with the blood stream or tissues under the skin, as well as on drapes and some surgical attire. Physical or chemical methods of sterilization may be employed (Ministry of public health and sanitation and Ministry of medical services [MoPHS& MOMS], 2010).

Basic Equipments and Health Services Delivery Preparedness

Medical equipments have a critical role and impact on the quality of patient care. Much useful information about essential drugs has been available but less information is available about essential medical equipments. Selecting supplies is also an important aspect. Equipments are often given little attention. This results in procurement of inappropriate items. Procurement, effective storage, stock control, care and maintenance of basic equipments are also critical. For people to have confidence in health services and health workers, adequate supplies of equipments alongside drugs are very essential. There has been limited information available about the aspects of management of medical supplies and equipments (Kaur, Hall & Attawell 2001).

A joint survey by KMPDB (Kenya medical, pharmacists and dentists board), WB (World bank), MOH (Ministry of health) and economic survey indicates that 25% of public health facilities lack the minimum basic equipments like a stethoscope, a weighing scale, a thermometer and a

sphygmomanometer as compared to 20% that lack clean water. In comparison, 90% of private health institutions are connected to electricity against only 66% of the public (Mutisya, 2018).

Use of laboratory testing can readily be incorporated into routine clinical services. Effective application of basic laboratory tests at primary health care levels improves diagnosis and patient treatment significantly. Basic laboratory tests can promote better diagnosis and management of 60% of the most common diseases and conditions presented in outpatients of primary health facilities. However, many of the primary health facilities lack essential diagnostic equipments for patients' examination. It's advocated by the World Health Organization (WHO) that basic laboratory services should support clinical and public health activities at PHC level and the government of Kenya has planned for appropriate diagnostic services at all levels of the health care system. Most health facilities are situated in the rural areas where majority of the population lives. Considerable constraints exist in establishing rural laboratory units and supporting their operations (Carter, Lema, Wangai, Munafu, Rees & Nyamongo, 2012).

In Nigeria, medical disposables such as hand gloves were reported to be available in 77.18 % of all the healthcare facilities. Functional stethoscopes were reported by 77.22% of the healthcare facilities, while only 68.10% had sphygmomanometers. Among the states in southern Nigeria, regression results showed that indices of medical equipments availability among other variables increased significantly ($p < 0.05$). Adult weighing scale was available in 94.5%, of the health facilities in Anambra state, although only 85.4% was functioning. The states with lowest functioning adult weighing scales were Taraba (51.8%), Kebbi (52.2%), Niger (58.7%) and Bauchi (59.4%). Availability of functioning infant weighing scale was reported by 69.1, 65.9 and 65.8% of the respondents from Bayelsa, Ekiti and Anambra states respectively. Thermometers were found in 91.00% of the healthcare facilities in Anambra state, while only 58.9% of those from Kebbi had it (Oyekale, 2017).

A hospital that keeps at all times the key medical equipments on hand is ready for any case that might pass through their doors. Medical treatment requires that in order to provide complete care, a health provider must be in possession of a complete and all the necessary equipments. For a health facility to comprehensively treat patients there is a standard set of medical equipments that all health facilities should always have on hand (AKW, 2011). Medical equipments were found to be strong predictors for effective health care delivery in selected state government hospitals in Oyo State in Nigeria. Effective health care delivery can significantly be predicted through adequacy of equipments. Availability does not always significantly predict effective health care. Therefore, it could be inferred that inadequate or non-availability of facilities, equipment and resources especially basic resources could be said to be responsible for substandard care (Raj, 2009).

It has been mentioned various times that most of the medical equipments in the developing world is broken. About 96 % of these equipments are estimated to be out of service. More than 50 % of the medical and laboratory equipments in resource-stricken settings are not in service. This has been having devastating health impacts. In Ethiopia for example, lack of proper management of medical equipments has constrained the capacity of health institutions to provide adequate health services where only about 61 % of medical equipments in public hospitals and other health facilities are functional at any one time. Medical equipment management defines the

organization and coordination of activities that ensure the good management of equipments related to patient care in any health facility. Functionality of equipments is critical for quality services. Otherwise, certain services cannot be rendered at all or that the quality of the services delivered would be low. The expectation of healthcare seekers is that the equipments used in the facilities are enough, clean and safe (Ademe, Tebeje & Molla, 2016).

Merab (2018) points out the need for KEBS (Kenya bureau of standards) to recalibrate medical equipments for health facilities to ensure they are in line with international standards. Uncalibrated ones are a predictor of most misdiagnosis happening now and again in health facilities. Health seekers also want to be assured that there are various modern methods of sterilizing medical equipment. Where these are either absent or inadequate, they would prefer to go to other facilities, even if they will be required to pay. A survey of the primary health care centers in Delta State of Nigeria showed that these medical devices and equipment were deficient in various combinations from one center to another. Consequently stakeholders were generally not satisfied with the quality of services. The community was unanimous that this was caused by insufficient allocation of resources to the health; particularly the primary health care subsector (Ged, 2016).

The World Health Organization (WHO) identified the shortage of functional medical equipment in low income countries as a critical barrier to meeting the health related Millennium Development Goals (MDGs). Equipment donations should meet guidelines to ensure they are more sustainable and contribute positively to service delivery. WHO estimates that between 50 and 80% of medical equipments is out of service in low income countries. Up to 80% of the medical equipment in some sub-Saharan African countries is donated equipment. A study of 20 developed and developing countries found that the appropriate selection of medical equipment could save up to 90% of the costs associated with the operation and maintenance of the equipment over its lifespan (Tropical Health & Education Trust [THET], 2016).

1.1 Problem statement

Nyandarua county assembly believes that there are several impediments in their county's health system (NCA [Nyandarua County Assembly], 2015). Patients too have severally protested health services citing lack of essential drugs as an example (Maina, 2018) but the county government has reiterated its commitment on quality, affordable and accessible health care (CGN [County Government of Nyandarua], 2018).

However, only 19% (Table 3 and 4) of the county government's primary health facilities are accredited for national insurance cover (NHIF [National Hospital Insurance Fund], 2017) which may depict the level of service delivery preparedness though Smits, Supachutikul, and Mate (2014) have doubted the credibility of accreditations globally. The primary health facilities in the study area perform 86% of the workload in the county government health facilities (DHIS [District Health Information system] 2, 2018) and have an immediate contact with the community. Kimura (2016) considers Nyandarua to be the poorest among the Kikuyu counties yet its land is fabulously fertile where potatoes, peas literally grow on their own, the cows are a wonder to behold but the county's children stunting (29.4%) is higher than all the counties' (26%) put together (MOH [Ministry of Health], 2015).

2.0 METHODOLOGY

The study was descriptive cross sectional. The target population in the study was dispensaries and health centers of the county government of Nyandarua. The desired sample size was 47 dispensaries and health centres from Olkalou, Ndaragwa and Kinangop out of the overall 68 in the county. A structured questionnaire was used to collect data. The study used both descriptive and inferential statistics in data analysis. Descriptive statistics include percentages; mean and standard deviation while inferential statistics include correlation and binary logistic regression analysis.

3.0 RESULTS FINDINGS

3.1 Descriptive Analysis

3.1.1 Infection Control Precautionary Measures

The study sought to establish the effect of infection control precautionary measures on primary health service delivery preparedness in Nyandarua county government primary health facilities. This section presents the descriptive results to show the extent of infection control precautionary measures in Nyandarua county government primary health facilities. Table 1 below shows that when the respondents were asked whether primary health facilities had unused, clean, adequate and ready for use disposable latex gloves or their equivalent for personal hands protection (PPE) supplied throughout the year and 42 (91%) of them agreed and strongly agreed that the gloves were available throughout the. More than four out of five (39= 87%) of the respondents agreed and strongly agreed that their health facilities had soap and running water in the clinical area supplied throughout. This contradicts the view of WHO (2018) that 35% of healthcare facilities do not have even water and soap for hands washing.

The study further sought to find out whether there were conspicuously and strategically placed signs near sinks and hand sanitizers with the “5 moments of hands washing” or other reminders in the clinical or the outpatient room. The results showed that only half (23= 50%) agreed and strongly agreed which indicates that these signs are conspicuously and strategically missing in several health facilities. However, some 96% of respondents agreed and strongly agreed that their health facilities had alcohol based hand rub placed strategically in the clinical area/ room. A similar number (44= 96%) agreed and strongly agreed that their health facilities have no any other syringes in the clinical and/or injection room/ area for use apart from auto-disable syringes with a re-use prevention feature. This favour the Siegel, Rhinehart, Jackson and Chiarello, as cited by Grissinger, (2013) that all health staff members should understand that any form of syringe or needle re-use is dangerous and should be avoided. However, the (2= 4%) who strongly disagreed that the health facilities have no any other syringes in the clinical and/ or injection room/ area for use apart from auto-disable syringes with a re-use prevention feature surpasses the Grissinger (2013) findings which also cited Pugliese, Gosnell, Bartley and Robinson who had concluded that nearly 1% of health workers sometimes or always reused a syringe for more than one patient after changing only the needle.

About nine in ten (41= 90%) of the health facilities agreed and strongly agreed that their health facilities had an environmental disinfectant (e.g. Chlorine, alcohol) for use and almost a similar

number (39= 85%) agreed and strongly agreed that they had a three buckets system for use placed in the clinical area. These findings confirmed that majority (85%) of the primary health facilities in Nyandarua County had infection control precautionary measures in place. This negate the findings by Sabit, Abazinab, Woldie and Alaro (2016) that almost half (47.7%) of the health facilities in the Sub-Sahara did not fulfill the criteria for infection prevention supplies. This abide by WHO (2006) recommendation that together with practices carried out by health workers when giving care, all persons (including patients and visitors) should adhere to infection control practices in health-care settings.

Table 1: Descriptive Results for Infection Control Precautionary Measures

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	% (N)	% (N)	% (N)	% (N)	% (N)
Health facility have unused, clean, adequate and ready for use disposable latex gloves or their equivalent for personal hands protection (PPE) supplied throughout the year	2.2% (1)	4.3% (2)	2.2% (1)	17.4% (8)	73.9% (34)
Health facility has soap and running water in the clinical area supplied throughout the year	2.2% (1)	8.9% (4)	2.2% (1)	28.9% (13)	57.8% (26)
There are conspicuously and strategically placed signs near sinks and hand sanitizers with the “5 moments of hands washing” or other reminders in the clinical/ outpatient room	17.4% (8)	19.6% (9)	13% (6)	23.9% (11)	26.1% (12)
Health facility have alcohol based hand rub placed strategically in the clinical area/ room	2.2% (1)	2.2% (1)	0% (0)	39.1% (18)	56.5% (26)
Health facility have no any other syringes in the clinical and/ or injection room/ area for use apart from auto-disable syringes with a re use prevention feature	4.3% (2)	0% (0)	0% (0)	17.4% (8)	78.3% (36)
Health facility has an environmental disinfectant (e.g. Chlorine, alcohol) for use?	4.3% (2)	0% (0)	6.5% (3)	19.6% (9)	69.6% (32)
Health facility has a three buckets system for use placed in the clinical area	0% (0)	10.9% (5)	4.3% (2)	30.4% (14)	54.3% (25)

3.1.2 Basic Equipment

The study further sought to find out the impact of basic equipments on primary health service delivery preparedness in Nyandarua county government primary health facilities. According to the table 2 below, only about eight in ten (37= 80%) agreed there was an adult scale, the same (44= 96%) for stethoscope, (18= 39%) for light source and (45= 98%) for the thermometer. This surpasses Nigeria where the functional stethoscopes were reported by 77.22% of the health care facilities. This Nigerian study found out that adult weighing scale and thermometers were available in 94.5% and 91.0% respectively of the health facilities in Anambra state according to Oyekale and compares with Nyandarua (2017). It was realized that it was more than (78%) of the above equipments which are usually found in the consultation area that were available.

All these basic equipments were available in majority of the primary health facilities having the light source scoring the least. At the same time, all the laboratory basic equipments which are usually used for the antenatal clinic (ANC) profiling for pregnant women in the “Linda mama” programme service entitlement scored as follows; Glucometer & glucose strips 32 (70%), Haemoglobinometer or Hemocue and strips 21 (46%), Urine dipsticks for protein and glucose (26= 57%), HIV rapid test kit; first and second line 43 (94%), Syphilis rapid test kit with strips and reagents 28 (61%), Urine pregnancy test kit with strips 29 (63%) and Blood group kit; ABO kit 24 (52%). The finding in this section demonstrates that majority (63%) of the primary health facilities in Nyandarua County had basic equipments for service delivery and this could be an indicator for the performance of “Linda mama” programme for pregnant women. The finding is inconsistent with Carter, Lema, Wangai, Munafu, Rees and Nyamongo (2012) that most health facilities are situated in the rural areas and that these health facilities have considerable constraints in establishing laboratory units and supporting their operations.

Both groups of the basic equipments in this objective scored more than 2/3 (69%) notwithstanding that Ademe, Tebeje and Molla (2016) argued that the expectation of healthcare seekers is that the equipments used in the facilities are enough, clean and safe. The county’s level (69%) of basic equipments is lower than the findings by Sabit, Abazinab, Woldie and Alaro (2016) that majority (85.2%) of the public health facilities in Africa fulfilled the criteria for basic equipments despite Kaur, Hall and Attawell (2001) who note that medical equipments have a critical role and impact on the quality of patient care though it is also insinuated that medical equipments are often given little attention. However, the level of basic equipments in Nyandarua contradicts what was found out by a joint survey by KMPDB (Kenya medical, pharmacists and dentists board), WB (World bank), MOH (Ministry of health) and economic survey as indicated by Mutisya (2018) that 75% of public health facilities have minimum basic equipments.

Table 2: Descriptive Results for Basic Equipment

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	% (N)	% (N)	% (N)	% (N)	% (N)
Adult scale	8.7% (4)	8.7% (4)	2.2% (1)	19.6% (9)	60.9% (28)
Stethoscope	4.3% (2)	0% (0)	0% (0)	21.7% (10)	73.9% (34)
Light source	39.1% (18)	17.4% (8)	4.3% (2)	10.9% (5)	28.3% (13)
Thermometer	2.2% (1)	0% (0)	0% (0)	23.9% (11)	73.9% (34)
Glucometer & glucose strip	19.6% (9)	8.7% (4)	2.2% (1)	28.3% (13)	41.3% (19)
Haemoglobinometer or Hemocue and strips	39.1% (18)	10.9% (5)	4.3% (2)	15.2% (7)	30.4% (14)
Urine dipsticks for protein and glucose	30.4% (14)	13% (6)	0% (0)	13% (6)	43.5% (20)
HIV rapid test kit; first and second line	4.3% (2)	2.2% (1)	0% (0)	19.6% (9)	73.9% (34)
Syphilis rapid test kit with strips and reagents	23.9% (11)	15.2% (7)	0% (0)	19.6% (9)	41.3% (19)
Urine pregnancy test kit with strips	30.4% (14)	6.5% (3)	0% (0)	21.7% (10)	41.3% (19)
Blood group kit; ABO kit	37% (17)	8.7% (4)	2.2% (1)	13% (6)	39.1% (18)

3.2 Inferential Statistics

3.2.1 Chi-Square Measures of Association

The results of chi-square show that infection control precautionary measures were insignificant ($\chi^2=1.204$, $p=0.272$) to the primary health services delivery preparedness centrally to common expectations. The results show that basic equipment had a significant effect ($\chi^2 =10.369$, $p=0.001$) on the primary health service delivery preparedness. The findings established that having basic equipments increase the level of health service delivery preparedness in primary health facilities. The finding concurs with those of Raj, (2009) who inferred that inadequate or non-availability of facilities, equipment and resources especially basic resources could be said to be responsible for substandard care.

Table 3: Chi-Square Measures of Association

Variable	N	Chi-Square (χ^2)	Df	P-value
Infection Prevention and Control	46	1.204	1	0.272
Basic Equipments	46	10.369	1	0.001

Dependent Variable: Service Delivery Preparedness

3.3.2 Univariate Binary Logistics Regression Analysis

Table 4: Univariate Binary Logistics Regression Results

Variable	B	S.E	Odds Ratio	P Value
Infection Prevention and Control Measures				
Inadequate Infection Prevention and Control Measures (ref)			1.000	
Adequate Infection Prevention and Control Measures	0.916	0.853	0.400	0.283
Basic Equipment				
Unavailable Basic Equipment (ref)			1.000	
Available Basic Equipment	2.162	1.100	8.684	0.049
Significance P < 0.05 Sample size= 46				

The study also sought to establish the effect of infection prevention and control measures on level of service delivery preparedness among the primary health facilities in Nyandarua County. The results show that primary health facilities with adequate infection prevention and control measures were 0.400 (Odds Ratio=0.400) more prepared in service delivery compared to those with inadequate health facilities. However, the results showed that the effect of infection prevention and control measures on service delivery preparedness was insignificant ($p= 0.283$).

The third objective of the study was to determine the effect of basic equipments on service delivery preparedness in Nyandarua County and the univariate results in Table 4 further show that health facilities with basic equipment were 8.684 (Odds Ratio= 8.684) times more prepared in service delivery than those without adequate basic equipment. The results further show that basic equipment had positive and significant effect on ($\beta = 2.162$, $p = 0.049$) service delivery preparedness. The finding are consistent with those of Kaur, Hall and Attawell (2001) who found

that medical equipments have a critical role and impact on the quality of patient care who also insinuated that medical equipments are often given little attention.

3.3.3 Multivariate Analysis Logistics Regression

Table 5: Multivariate Logistics Regression Analysis

Variable	B	S.E	Odds Ratio	P Value
Infection Prevention and Control Measures				
Inadequate Infection Prevention and Control Measures (ref)			1.000	
Adequate Infection Prevention and Control Measures	0.337	0.943	1.401	0.105
Basic Equipment				
Unavailable Basic Equipment (ref)			1.000	
Available Basic Equipment	1.637	1.166	0.195	0.001
Significance P<0.05	Sample size= 46			

The multivariate binary logistic regression results show that primary health facilities with adequate infection prevention and control measures (Odds Ratio=1.401) were 1.401 more prepared in service delivery compared to those with inadequate health facilities. However, the results showed that the effect of infection prevention and control measures on service delivery preparedness was insignificant though Baylis and Morgan (2017) and Grissinger (2013) found that it is necessary for health providers to have adequate infection control precautionary measures.

Further, the results in Table 5 show that health facilities with basic equipment had odds ratio of 0.195 which implied that primary health facilities with adequate basic equipment were 0.195 times more prepared in service delivery than those without adequate basic equipment. The results further show that basic equipment had positive and significant effect on ($\beta=1.637$, $p=0.001$) service delivery preparedness. The finding concurs with those of Raj (2009) who inferred that inadequate or non-availability of facilities, equipment and resources especially basic resources could be said to be responsible for substandard care.

5.0 SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of Findings

The study sought to determine the effect of infection control precautionary measures on primary health service delivery preparedness in Nyandarua county government primary health facilities. The findings confirmed that majority (85%) of the infection control precautionary measures in the primary health facilities in Nyandarua County were in place. However, both univariate ($p=0.283$) and multivariate ($p=0.105$) inferential analysis on infection control precautionary measures on service delivery preparedness had an insignificant correlation. The chi square findings ($p=0.272$) also showed the same thing. The study further sought to find out the impact

of basic equipment's on primary health service delivery preparedness in Nyandarua county government primary health facilities. The study findings established that basic equipment's were available in 69%) of the Nyandarua county government primary health facilities. The "Linda mama" basic equipment's in the laboratory for antenatal clinic (ANC) profiling were 69% as well. The finding further show that availability of the basic equipment differed from one health facilities to another. The study found that basic equipment's and service delivery preparedness had a strong, positive and significant correlation. The findings also showed that having basic equipment's increased the level of service delivery preparedness among the primary health facilities in Kenya. The findings show that basic equipment's had a positive and significant effect on level of service delivery preparedness among the primary health facilities in Nyandarua County. The findings established that having basic equipment's would result to increase in level of service delivery preparedness among the health facilities in Nyandarua County.

5.2 Conclusion

The study concluded that the health care provided in primary health facilities is dependent on level of preparedness of the facilities which included having adequate basic equipments and infection control precautionary measures

5.3 Recommendations of the Study

The study recommends that the department of health services in the county government of Nyandarua should conduct an audit of all the primary health facilities to take account of what gaps exist and put in place the appropriate measures to fill them. The study further recommends that the department of health in the county government of Nyandarua should be conducting a prior demand analysis for basic requirements and supplies to make prompt plans for the timely and continuous availability of items like laboratory equipments throughout the year without interruptions. Finally, the department of health should explore other additional factors that enhance primary health service delivery preparedness and improve on them for maximum service delivery benefits to the citizens.

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