Determinants of Competence Acquisition and Application in Nursing Service Delivery by Comprehensive Nurse Graduates in Uganda

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Abstract

The study on determinants of Competence Acquisition and Application in Nursing Service Delivery by Comprehensive Nurse Graduates was conducted from Regional Referral and District hospitals in Uganda. With objectives to identify factors associated with competence acquisition and competence application and to determine the satisfaction of patients and stakeholders regarding nursing service delivery by the Comprehensive Nurse graduates in Uganda. A descriptive structured cross-sectional design with a sample size of 336. Data collection using a semi- structured questionnaire and interview guide in December 2019 - January 2020. Data analysis by statistical analyses: SPSS 21 statistical software. The overall competence on average, stood at 3.51±0.32, suggesting good competence acquisition. However, 14 of 24 stakeholders in hospitals stated training CNs exposed to was inadequate. Gauging the service delivery in therapeutic interventions, staff described CNs performance as good in-patient care outcomes, incorporation of relevant knowledge to provision of optimal care, and decision making for particular situations. Despite a good rating of performance majority pointed to very poor service delivery. However, the majority of stakeholders expressed dissatisfaction, more so competences in midwifery. In analyses, training and working experience emerged as significant determinants in predicting competence acquisition. Associated factors included the length of service at the health facility. The stakeholder satisfaction was negative, unlike the patients with a positive attitude. Similarly, individual and contextual factors have effects on competence acquisition and application. Organizing In-Service Training/Continuous Professional Developments for CN graduates, attention in areas of skill gaps, sufficient time allocation for courses, and more staff recruitment to be considered.

Keywords: *Client/Patient, Competence Acquisition, Competence Application, Competences, Mid-Level cadres of health, Stake holders.*

Introduction

Generally, there is overall growth in the production and supply of the health workforce, and this has surpassed population growth, leading to improvements in the density of registered health workers to the population. One of the greatest growths in absolute terms has come from nurses, as a result, there exists a positive return on investment for nurses [1]. [2] Stated that in most cases, graduate nurses do not feel skilled, comfortable, and confident within their first year of employment.

According to United Nations Development report of 2009, most medical workers leave the country amidst poor and uncompetitive working environment after completion [3].

Over the last few years since 1993, the Uganda Government has invested into developing the Comprehensive Nurse cadres at certificate and diploma level. A Comprehensive Nurse is a multi-skilled Nurse who can provide promotive, preventive, curative and rehabilitative services in the minimum health care package at all levels of health service

delivery, unlike the traditional nurse or midwife who is trained to work in a hospital. They are to promote primary health care, provide health care services to the communities in the absence of the doctors and provide preventive medicine to the community members other than working in the hospitals [4]. The introduction of health centers in Uganda at the village, parish, sub-county, and county levels throughout the Country reinforced the need to have multi-skilled health workers [2]. This cadre of professionals intended to provide the range of services at the lower-level health centers was missing, hence the introduction of a comprehensive nursing cadre who would provide basic services at this level. This study looked at the experiences of Comprehensive Nurse Graduates focusing on the determinants of competence acquisition and application to nursing service delivery in Uganda. The Government of Uganda Human Resources for Health Policy Document [5] clearly states that the existing training curricula for nurses show gaps or irrelevance in view of the existing work situations. Due to this scenario, the Comprehensive Nurses curricula were recommended and developed to train a human resource capable of providing care to the community. There are public concerns about the service delivery of the Comprehensive Nurse graduates in providing effective patient care. Some of the health workers often display inadequacy in performing medical procedures to the expectation of the public because they lack the specific skill mix to effectively respond to the health needs [6].

Problem Statement

The curriculum for comprehensive nurses training incorporates classroom coverage, laboratory skill demonstrations, and clinical placement for skills acquisition as stated in the Ministry of Education and Sports Business: Technical, Vocational Education and Training Curriculum for Certificate in Nursing 2018 curriculum.

However, the public express inadequacy by comprehensive nurse graduates in competence acquisition and application for effective and efficient service provision. The service recipients have indicated concern that most comprehensive nurses are unable to deliver effective and efficient nursing services to their satisfaction. During the 52nd session of the World Health Organisation (WHO) Regional Committee for Africa [7], ministers of health identified a concern about the care of patients/clients. This raises questions about whether the problem originates from the curriculum and its implementation at the institution of training or practicum site. Currently, with several Comprehensive Nurse Graduates coming out and practicing nursing, no comprehensive study has been conducted to assess the capability of comprehensive nurse graduates in nursing service delivery. The study explored the determinants of competence acquisition and application by comprehensive nurses during service delivery in Uganda.

Purpose of the Study

The purpose of the study was to explore the factors that determine competence acquisition and application to practice in the clinical setting by comprehensive nurse graduates in Uganda in order to develop strategies to improve performance for better health service delivery in the country.

Significance of the Study

The study primarily was intended to enable the researcher to identify the gaps in the provision of health care by the comprehensive nurse during their practice. It also assessed the client/patient satisfaction to comprehensive nurse provision of care. The study benefit for nurse leaders will be the availability of appropriate information for the training institutions on the challenges of student nurses in competence acquisition and application to practice in a clinical setting. It will help to develop the most appropriate and practical

strategic approaches to training comprehensive nurses with the required competencies in providing care to patients/clients in the communities where they work.

The findings of the study will benefit nursing educators by contributing to academic knowledge about comprehensive nurse education on the conceptualization of competency acquisition and application in service delivery by extending the existing literature and tools of assessment to the training institutions. Furthermore, it will benefit policy makers by enabling them to evaluate if the set goals for the introduction of the comprehensive nurse graduates is being achieved. It will assist to develop relevant policies for proper guidance and effective training and deployment of Comprehensive Nurses for efficient health service provision. Similarly, the patients/clients will benefit from the study findings because the report will be utilized to improve on the outcome of care for the patients and community at large since the challenges will have been identified and measures developed to address them.

Limitations of the Study

The researcher had the following challenges:
1. Financial constraints,
2. Failure to access some stakeholders,
3. Poor infrastructure, especially access roads,
4. Poor weather and,
5. Challenge of poor Internet for literature search.

The resolution of the anticipated challenges was by using the available funds accordingly, accessing the stakeholders who were present at the time of data collection, use of available transport means, and worked extra hours whenever the internet was available.

Methods

In this section, the researcher describes the methods followed and responds to the question of how the problem was studied.

Study Site

Description of Study Area

The study was conducted in the East and Northern regions of Uganda at the Regional Referral and District hospitals. The Hospitals are public health facilities funded by the Uganda government under the Ministry of Health, and general care in the hospitals are free. The Regional Referral hospitals are managed by Directors, and the District hospitals are managed by medical superintendents.

The regional hospitals included namely to the North: Arua, Gulu, and Lira Regional Referral Hospitals, To the East: Jinja, Mbale, Soroti, and Moroto Regional Referral Hospitals, and the District hospitals were named to the North: Anaka, Kiryandongo, Nebbi, and Yumbe General Hospitals, To the East: Bugiri, Jinja, Mbale, Sororti, and Moroto Regional Referral Hospitals, The District hospitals: to the North: Anaka, Kiryandongo, Nebbi General Hospital, and Yumbe General Hospitals, To the East: Bugiri, Katakwi, Tororo General Hospital, and Kayunga Hospital, Finally the Nurse Training institutions offering comprehensive nurse programmes thus Lira and Arua School of Comprehensive nursing in the north and Soroti School of Registered Comprehensive nursing and Jinja School of comprehensive nursing in the eastern part of Uganda.

Study Design

The study was a cross-sectional study with mixed methods of data collection. Both qualitative and quantitative methods of data collection were employed. The quantitative component for interview of graduate comprehensive nurses and patients, and the qualitative component was a Key informant interview for Tutors, Principals, Senior Principal Nursing Officer (SPNO), Principal Nursing Officer (PNO), Commissioner nursing,

and Registrar Uganda Nurses and Midwifery Council.

Study Population

The study population included comprehensive graduate nurses, clients /patients, senior principal nurse officers, Commissioner nursing, Registrar Uganda nurses and midwifery council, Tutors, and Principals of training institutions.

Sample Size

Table 1. Distribution of Participants by Disciplinary Field

Category	Disciplinary Field	Number of Participants	Sampling method
Comprehensive Nurse Graduates	Regional Referral hospitals	111	Random sampling
	District hospitals	66	
Principals	-	3	Purposive sampling
Senior Principal Nurse Officers	-	5	Purposive sampling
Patients/clients	-	146	Random sampling
Principal nurse officers	-	3	Purposive sampling
Others	Commissioner Nursing	1	Purposive sampling
	Registrar Nursing	1	
Total	**-**	**336**	

Sampling Technique/method

The sampling technique used was stratified sampling technique for the study sites, random sampling for the comprehensive nurse graduates, patients/clients, and purposive sampling for the Senior and Principal nursing officers, Principals and tutors, Commissioner nursing and Registrar UNMC. The sample size was determined depending on the total number of registered Comprehensive Nurses by the Uganda Nurses and Midwives Council and the number of those who are employed by the Uganda Government in the Regional Referral and District Hospitals in the study area. The stakeholders identified were purposively selected on the basis of their profile because they are key in the training and recruitment process of the comprehensive nurses. The technique was used to eliminate bias and give equal chance to the participants.

Inclusion Criteria

The study included CN graduates, PNOs, SPNOs, and patients in the district and regional referral hospitals who consent to participate in the study, plus Commissioner Nursing and Registrar Uganda Nurses Midwifery Council).

Data Collection Instruments

Data collection methods used were interviews and survey. Therefore, the study used questionnaires for interviews and interview guides for qualitative information for a thorough investigation and to obtain authentic information for reliable results. The choice of method and instrument used was dependent on the type of information obtained and the target group for the data collection.

Research Procedure

Upon approval of the research proposal, the researcher obtained a Bonafide certificate from TAU University. Research assistants were recruited and trained for two days. Consent was sought from the relevant authorities from the field. The research assistants and researcher did the final data collection from 9th December 2019 to 15th January 2020. Data was assembled, then the researcher and a statistician conducted

data entry and analysis and, interpretation and writing of draft and the final report was under the supervision of the research guide.

Data Management

Quantitative Data

A Consistency check across the different sources of data was done. Filled in questionnaires was checked for completeness and quality. The completed questionnaires were stored in a cupboard under a key and lock. The data was cleaned where necessary, and any missing data was completed by returning to the source respondents in the field.

Qualitative Data

The interviews were concurrently transcribed and translated in English. They were then manually coded and analyzed. Transcripts were coded independently by the principal investigator.

Data Analysis

Analysis of Qualitative Data

Analysis of qualitative data was followed by a phenomenological approach to produce identified transcripts of the Key Informant Interview. Phenomenology focuses on describing what people experience and how their experiences affect them. Responses were recorded by an audio recorder and subsequently transcribed. Thereafter, a code for capturing inductive and deductive themes was developed. The codes were used to develop an analytical matrix that included a summary of each participant's responses in each category. Representative verbatim quotes were selected for presentation. To ensure confidentiality, all the interviewed key informants were given pseudo names to represent their real names.

Analysis of Quantitative Data

Statistical analyses were carried out using SPSS 21 statistical software for Windows. At the univariate level, descriptive statistics was performed on the respondents' baseline.

Proportions (categorical variables), means (SD) and medians (IQR)(continuous variables) was computed. Bivariate logistic regression analysis was performed to determine the association between the dependent and independent variables. At the multivariable level, all explanatory variables with a p value< 0.20 in the bivariate analysis.

To establish the determinants of competence, the 4-point Likert scale items was used in measuring the competence (1=Do not have a clue to 4=Very competent) was summed up to come with a General/overall indicator of competence. A one-way analysis of variance (One-Way ANOVA procedure) and independent t-tests for equality of means was performed to evaluate whether significant mean differences exist in the acquisition and application of competencies of comprehensive nurse graduates by their socio-demographic factors such as age, sex, marital status including clinical environment factors and training factors. At the multivariate level of analysis, an Ordinary Least Squares regression was conducted to establish the factors that significantly predict the dependent variable (acquisition and application of competencies). The coefficient value was considered statistically significant at a 5 percent level of significance.

Ethical Considerations

Permission was sought from TAU University for data collection. A clearance was sought from the Mulago National Referral Hospital IRB, to conduct the data collection. Consent was obtained from the in-charge of study sites for data collection. There was a need to empower the respondents to consent for participate in the study and be aware of potential risks if any, with its legal implications to both parties. During the whole study period, it was important to observe transparency, come up with internationally acceptable data, consult with the supervisors regularly and have regular feedback. The application of moral rules and

professional codes of conduct to the collection, analysis, reporting, and publication of information about research subjects, in particular, active acceptance of respondents' right to privacy, confidentiality and informed consent, was observed.

Results and Discussion

A number of empirical studies have found competence acquisition and application to be determined by a host of factors. These factors have over time become critical avenues for improving service delivery in health care systems. This chapter presents some of the determinants of competence application and acquisition in nursing service delivery by comprehensive nurse graduates in Uganda, with a particular focus on district and regional referral hospitals in eastern and northern Uganda.

Background Information of Respondents

The sample size comprised 177 CNs from a representative sample of a total of 15 district and regional referral hospitals in the Northern and Eastern regions. Out of the entire sample, 37.3% CNs were randomly selected from district hospitals, while the rest (62.7%) were working in regional referral hospitals. In relation to gender distribution, females constituted the highest proportion (59.9%). This is in view of the fact that females constitute the largest proportion of students who enroll for a course in comprehensive nursing. A significant proportion of these CNs (69.5%) had an Ordinary level as their highest academic attainment, while slightly more than a quarter possessed an Advanced level certificate. From the cross-tabulation, the highest number of CNs with a certificate were those whose highest academic attainment was 'O' level while the likelihood of having a diploma was highest among the CNs with an Advanced level certificate. (Table 2).

Table 2. Background Information of the Comprehensive Nurses (n=177)

Variables		Freq	Percent
Level	District hospital	66	37.3%
	Regional referral hospital	111	62.7%
Sex	Male	71	40.1%
	Female	106	59.9%
Level of education	O' Level	123	69.5%
	A' Level	54	30.5%
Level of training	Certificate comprehensive nurse	124	70.1%
	Diploma comprehensive nurse	53	29.9%

The total number of patients/clients was 146, and from this number, it can be seen that the results were slightly more skewed in favor of females, who were represented by 58.2% while males were represented by 41.8%. The highest proportion of the patients stopped at the primary school level followed by individuals with secondary education as their highest level of academic attainment.

Less than a quarter (18.5%) had higher education, while the smallest percentage (6.8%) had no formal education. In terms of age, individuals in the age bracket of 25-34 constituted the highest percentage of the participants (37.7%), and these were closely followed by patients/clients in the age bracket of 15-24 years. Only 19.9% were between 35-44, while patients aged 45 and above comprised the smallest percentage.

Basic Health Facilities and Infrastructure

The descriptive statistics in table 4 show that most of the facilities explored were readily present in the hospitals, although some were reportedly lacking. From the descriptive, over 90% of the CNs reported that in the hospitals where they are working, equipment such as adult weighing scale, slides, microscope, needles and syringes, blood pressure machines, and delivery beds were readily available. Others latex gloves, thermometers, and a waiting area to protect patients from sun and rain were also available.

Objective one: Factors associated with Competence Acquisition

From a review of previous empirical studies, seven competency levels were examined. From each of these dimensions, CNs were asked to rate themselves on different dimensions of competency-based on a four-point Likert scale (i.e., 1=Do not know, 2=know in theory, 3= good but need more guidance and 4=very competent). For each of the statements representing a particular dimension of competence, respondents were asked to tick the option that best described their opinion. Tables 3-6 present the descriptive statistics for the responses provided.

Table 3. Availability of Basic Health Infrastructure and Facilities in Hospitals

Variables	No		Yes		Mean	Std.D
Delivery beds?	8	5.0%	153	95.0%	1.0	.2
In-patient beds (excluding baby cots and maternity beds)?	7	4.1%	165	95.9%	1.0	.2
Regular water supply from safe source on-site	20	11.4%	155	88.6%	.9	.3
Functioning land line/cellular telephone supported by the facility?	48	27.1%	129	72.9%	.7	.4
Functioning computer for staff use?	94	53.1%	83	46.9%	.5	.5
Functioning internet services for staff use?	115	65.3%	61	34.7%	.3	.5
Awaiting area for patients protected from sun and rain?	12	6.8%	165	93.2%	.9	.3
Routinely available electricity during service hours or a backup generator with fuel?	33	18.6%	144	81.4%	.8	.4
Adequate drugs and supplies (presence tracer medicines and non-expired on the day of the assessment)	78	44.8%	96	55.2%	.6	.5
The capacity to obtain basic laboratory results within one day (i.e. HIV test, syphilis test and malaria blood test if appropriate)	10	5.7%	166	94.3%	.9	.2
Blood pressure machine/cuff	7	4.0%	170	96.0%	1.0	.2
Stethoscope(s)	7	4.0%	170	96.0%	1.0	.2
Microscope	5	2.8%	172	97.2%	1.0	.2
Slides	2	1.1%	175	98.9%	1.0	.1
Adult weighing scale	1	0.6%	176	99.4%	1.0	.1
Weighing equipment (i.e. Salter scale or similar hanging scale) for under-five-year-olds	5	2.8%	171	97.2%	1.0	.2
Thermometer(s)	9	5.1%	167	94.9%	.9	.2
Refrigerator	17	9.7%	159	90.3%	.9	.3

Latex gloves			9	5.2%	165	94.8%	.9	.2
Needles and syringes			6	3.4%	168	96.6%	1.0	.2

Table 4. Responses on Competences Acquisition in Diagnostic Functions and Managing Situations

Components of competence	Do not have a clue		Know in theory		Good but need more guidance		Very competent		Mean	Std Dev
Diagnostic functions										
Ability to identify patient's /family members' need for emotional support	0	0.0%	1	0.6%	70	39.5%	106	59.9%	3.6	0.5
Arranging expert help for patient when needed	0	0.0%	5	2.8%	78	44.1%	94	53.1%	3.5	0.6
Documentation of patient care	0	0.0%	2	1.1%	42	23.7%	133	75.1%	3.7	0.5
Managing situations										
Ability to recognize situations posing a threat to life early	1	0.6%	4	2.3%	79	44.6%	93	52.5%	3.5	0.6
Prioritization of activities flexibly according to changing situations	3	1.7%	5	2.8%	77	43.5%	92	52.0%	3.5	0.6
Acting appropriately in life-threatening situations	0	0.0%	3	1.7%	85	48.0%	89	50.3%	3.5	0.5
Planning care consistently with resources available	1	0.6%	3	1.7%	66	37.3%	107	60.5%	3.6	0.6
Keeping nursing care equipment in good condition	0	0.0%	2	1.1%	24	13.6%	151	85.3%	3.8	0.4

Table 5. Responses on Competences Acquisition in Work Roles

Work roles	Do not have a clue		Know in theory		Good but need more guidance		Very competent		Mean	Std Dev
Ability to recognize colleagues' need for support and help	0	0.0%	6	3.4%	43	24.3%	128	72.3%	3.7	0.5
Being aware of the limits of your own resources	0	0.0%	1	0.6%	48	27.1%	128	72.3%	3.7	0.5
Acting responsibly in terms of limited financial resources	3	1.7%	5	2.8%	57	32.2%	112	63.3%	3.6	0.6
Providing expertise for the care team	2	1.1%	5	2.8%	101	57.1%	69	39.0%	3.3	0.6

Acting autonomously	4	2.3%	9	5.1%	112	63.3%	52	29.4%	3.2	0.6
Incorporating new knowledge to optimize patient care	0	0.0%	9	5.1%	90	50.8%	78	44.1%	3.4	0.6
Utilizing information technology in your work	2	1.1%	20	11.3%	75	42.4%	80	45.2%	3.4	0.6
Coordinating patient's overall care	0	0.0%	2	1.1%	74	41.8%	101	57.1%	3.3	0.7
Giving feedback to colleagues in a constructive way	0	0.0%	2	1.1%	48	27.1%	127	71.8%	3.6	0.5
Developing patient care in multidisciplinary teams	3	1.7%	7	4.0%	88	49.7%	79	44.6%	3.7	0.5

Table 6. Level of Education and Patient Satisfaction with CN Care

Variables		N	Mean	Std. Dev	F	P
Access	No formal education	10	3.85	0.32	-	-
	Primary	58	3.74	0.50	1.136	.337
	Secondary	51	3.66	0.47	-	-
	Higher	27	3.84	0.44	-	-
Appointment	No formal education	10	3.50	0.55	-	-
	Primary	58	3.37	0.79	.604	.613
	Secondary	51	3.47	0.78	-	-
	Higher	27	3.60	0.52	-	-
Nurses	No formal education	10	4.00	0.39	-	-
	Primary	58	3.60	0.63	2.272	.083
	Secondary	51	3.90	0.68	-	-
	Higher	27	3.84	0.81	-	-
General satisfaction	No formal education	10	3.95	0.45	-	-
	Primary	58	3.71	0.63	.563	.640
	Secondary	51	3.81	0.61	-	-
	Higher	27	3.80	0.60	-	-
Overall satisfaction	No formal education	10	3.84	0.29	-	-
	Primary	58	3.64	0.44	1.408	.243
	Secondary	51	3.72	0.36	-	-
	Higher	27	3.79	0.36	-	-

In measuring the CNs' competence in terms of the acquisition of competences in diagnostic functions, three items were formulated, and from the results, the highest level of competence was in the area of documenting patients' care records, where three quarters of the CNs stated that they were very competent. It was, however noted that whereas a fairly large number of the staff stated that they were good in identifying patients' need for emotional

support, they needed more guidance to enhance this skill. In addition, the findings showed that although more than a half of the sample responded that they were very competent in arranging expert help for patients when needed, a fairly high number, 78 (44.1%), were of the view that much as they were good, they cannot work independently and as such suggested that perfection of this competency is more likely to be attained if more guidance is provided to them or if they are mentored in this area.

With regard to helping roles, most of the nurses were very competent in making decisions guided by ethical values and planning patient care according to individual needs. In these two areas the percentage of CNs who claimed that they were competent was above 60%. In relation to teaching and coaching as one of the indicators of competence acquisition, nearly three quarters (71.8%) agreed that they are very competent in public health promotions.

It was also noted that a fairly high proportion of these nurses were equally very competent in recognition of the needs of family members for guidance and could as well evaluate patient education outcomes together with the patient and family. More than a quarter of this CNs admitted that they are good but also need more guidance in the same dimension of competence acquisition.

Overall, the average rating of competence acquisition shows that the dimensions that contribute more to competence acquisition are those with an overall higher mean value after obtaining a composite index for that variable. Thus, in the order of strength as figure 1 illustratively portrays, coaching tops the list of the major competences acquired (mean 3.65±0.39). This is closely followed by competence in diagnostic functions (3.61±0.41), managing situations (3.57±0.38), and helping roles (3.56±0.37).
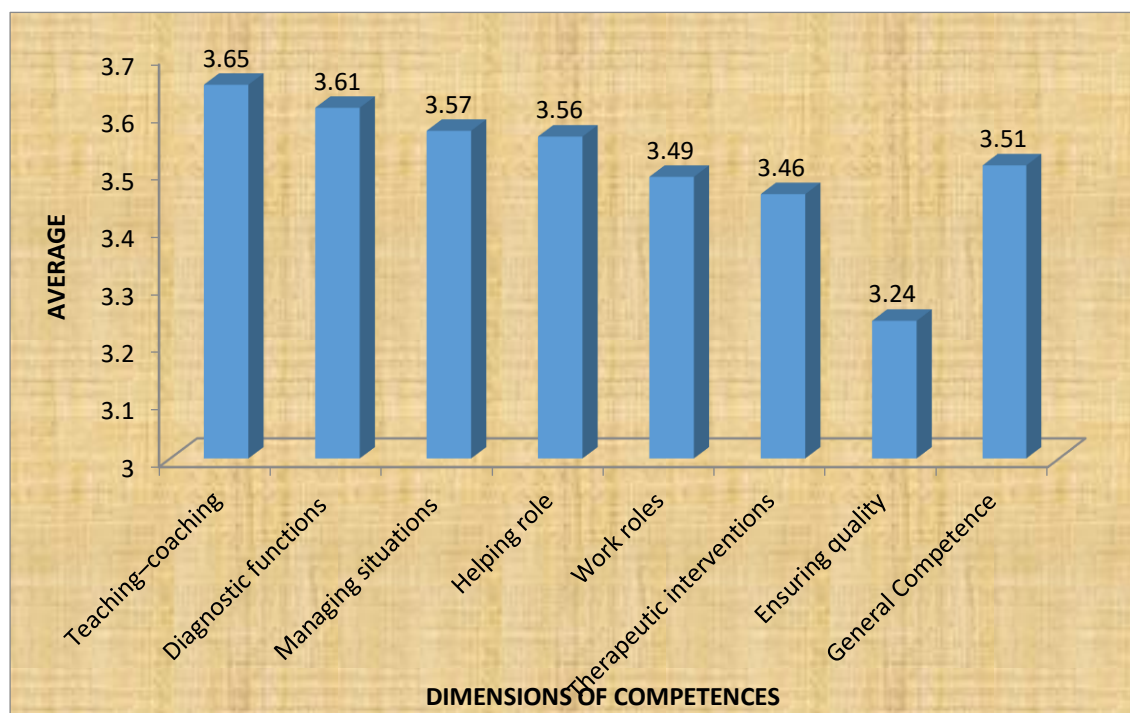
Figure 1. Overall Rating of the Different Components of Competence Acquisition

The inadequacy of competency was mainly attributed to the training period, which was perceived to be short and congested. The problem of the short training period was also confirmed by tutors on being asked to rate the competences of CNs on completion of the course in the fields of General nursing, Midwifery, Public Health, Psychiatric nursing, Pediatrics, and Nursing management. Others, however attributed the problem of low

competence in the graduates to poor staffing and infrastructural facilities. In this regard, respondents had this to say:

"Staffing level is very low compared to the number of students. As I talk about right now, we have a total of 32 staff members (part and fulltime) while the number of students is 1532. On top of that, we do not have enough classroom blocks and adequate lab facilities. Really, how can they acquire the required competences?" (Male tutor aged 34 years).

"We feel that the staffing be improved because we have seen one tutor handling more than two course units, and this may not enable him to perfectly deliver the services as expected. We are five health tutors and among these, we have two who have retired so there is a gap. At the moment, the tutor to student ratio is 1:80 yet the ideal would be 1:8. If the staffing is adequate enough, these skills would be thoroughly attained by our graduates" (Female Tutor aged 47 years).

All in all, it can be said that among the respondents of different categories, what is common in the responses is that they all agree that there are some weaknesses in the training and as such, something has to be done to make it more relevant. In exploring which variables are responsible for the variations in competence acquisition among the CNs, different statistical analyses were performed to determine which factors differentiate CNs who are very competent from those who either need more guidance, in theory, or those without a clue of what is to be done.

For all dimensions of competence acquisition, nurses whose highest level of academic attainment was Advanced level on average rated their competences higher than their colleagues with Ordinary level certificates. This is because the average for the latter was significantly ($p<0.05$) higher than that of the former in all competence domains and general competence It, therefore, follows that higher level of academic attainment is associated with an increase in the acquisition of competences required in nursing service delivery, as to whether this acquisition translates in an application is the question which was addressed in the second objective.

"At the certificate level, the training offered is not adequate to prepare them given the three areas of midwifery, nursing and mental health the graduates must handle" (Female SNO aged 37 years).

"The government should stop training comprehensive nurses, and either train them in midwifery alone since they get mixed up with a lot of information and they end up learning little" (Female Ag. SNO aged 36 years).

By and large, in analyzing the competences acquired, diploma holders surpass those with certificate in diagnostic functions, managing situations, therapeutic interventions, helping roles, teaching roles, ensuring quality services work roles and overall competences.

One tentative deduction from both qualitative and quantitative results is that most of the required skills are learned on the job, and the nursing schools do not fully contribute in training graduates to perform to the level of the stakeholder expectations.

Objective Two: Factors Associated with Competence Application

A look at the responses on the performance of diagnostic functions shows that most of the nurses rated their performance good in the three areas. These were followed by the staff who described their service delivery as being very good. For reasons yet to be known, the performance of diagnostic functions was poor in the identification of patients' need for emotional support, arranging expert help when needed, and documentation of their care. Ineffective application of the acquired competences in managing situations could for instance, be a result of a lack of essential drugs and supplies, lack of essential infrastructure and equipment for managing emergency situations, and lack of power, among others.

In relation to the helping role, the ratings were also based on five statements which required respondents to state whether their performance was very poor, poor, good, or very good. The major dimension of helping role in which application of competence in service delivery was reportedly highest was in relation to decision making guided by ethical values. Here, most of the nurses contacted either perceived their performance as very good or simply good. The same response was obtained in planning patients' care according to individual needs. As for other dimensions of helping roles, nearly 50% of the CNs intimated that their level of service delivery was good, and a quarter of the sample perceived their performance as being poor. This was particularly in relation to supporting patients' coping strategies, developing of the treatment culture of their respective units, and modifying the care plan according to individual needs.

Teaching coaching was yet another aspect in measuring the service delivery of CNs. On this construct, the responses mainly fluctuated between good and very good. One of the key components of the application of competences in healthcare systems is the ability of nurses to ensure that the quality of healthcare services is always maintained. According to WHO [8], all health facilities, goods, and services are obliged to be of scientifically and medically good quality. In relation to ensuring quality services, most of the responses were between poor or good, save systematic evaluation of patients' satisfaction with care whose major responses were either good or very good. In fact, among the 3 indicators this item had the highest average of 3.4±0.6 as opposed to 2.7 for commitment to organization philosophy and identification of areas in which further development and research were generally low.

The overall mean for all the seven constraints was 3.03±0.6, which implies that, on average, CNs rated their level of service delivery as being good. This was confirmed by the results of the interviews where tutors commented on the competence of CNs in the following expressions:

"As far as the training is concerned, by the time we graduate our students, they are competent enough in all those areas, but it depends on the interest of an individual because most of them I can say more than 50% are employed by NGOs. The NGOs have given us very good reports on their performance. In government facilities, we have received feedback from in-charges, and most of them are doing quite well in midwifery, but the only challenge we get is that there is some bias to comprehensive nurses by other sectors like the midwives majorly. Sometimes they tend to develop bias that CNs are incompetent, but when you put them into practice, you do observe a difference between them and our graduates" (Male tutor aged 43 years).

Another tutor's response was CN perfect equally well with the single trained. He only attributed the negative perception of CNs to stereotypes as seen below:

"Most people in health facilities perceive them as half-baked nurses. However, it is a policy that there should be ways and means of improving the training. Secondly, the extension program is trying to bridge the gap in nursing and midwifery" (Female tutor aged 47 years).

"In public health facilities, the problem is that in the facilities they are deployed, they find the staff who were single trained as say a midwife probably heading the unit and this person being comprehensive coming to work as a mid-wife, they complain that CNs lack key competency skills and lack expertise. But others have given us perfect reports that our graduates have provided them necessary care mothers need perfectly. So, these reports vary from individual to individual (Male tutor aged 43 years).

"In relation to knowledge, my observation is that they have the theory part but when it comes to hands on, they really have a gap, and this is related to the time they have for practice. And, according to the program, they have several

activities which are in the school such that at times, when students are allocated in the unit, they don't accomplish what they are supposed to do in the hospital. So, they don't really have enough time so that they improve and transfer what they leant from class to practice" (Female SPNO aged 59 years).

"Few staff in clinical area, as some staff look at teaching the students as a wastage of time, think when will the day's work end" (Male aged 55 years).

"The course outline is given by Uganda Nurses and Midwifery Examination Board but at times due to time factor, they are not completed leading to knowledge gap" (Female NO aged 35 years).

Indeed, in the interviews with SNOs and PNOs on being asked what can be done to address the noticeable health worker performance challenges, most of the responses rotated around organizing Continuous Professional Development, In-Service Training, Continuous Medical Education, mentorship programs, meetings, encouraging nurses to go back to school so that they can improve on their education skills, direct one-on-one supervision, advocating for extension in the period of training.

Others are encouraging specialization in both nursing and midwifery fields, advocating for more time spent on clinical or nursing placements, allocate the comprehensive Nurse with another staff/Nurse who has more knowledge and skills than him/her. Some of the excerpts in this direction are worth highlighting:

"Close monitoring during training practicum site in MHC area, on site mentorship has become helpful for those who show commitment (reproductive area)" (Female aged 45 years).

"In my current capacity, I advocate that they are placed and allocated more time in obstetrics and gynecology" (Tutor aged 37 years).

"Currently what we do to the students is to group them ad give assignments, group discussion, case study and presentation in class" (Female NO aged 35 years).

In the results, there was significant gender disparities in the application of the acquired competences in service delivery between male and female CNs ($p < 0.05$). In the finding, males had a higher average on all the dimensions explored in this study, while the values for females were the lowest throughout. It therefore follows that the probability of applying the competences significantly increases if a CN is a male, but the same cannot be said if the CN happens to be a female.

In view of the above, one of the SNOs suggested that at the point of deployment, a high level of discretion should be exercised when deciding where CNs should go for placement. In her wisdom, CNs should be assigned to hospitals for easy monitoring. She stated:

"In the area of deployment, it's better to deploy the comprehensive nurses in places like hospitals, regional referral hospitals, but not in the lower-level units because in the lower-level units, there are no competent people to supervise them yet in hospitals, there are the number of skilled nurses and midwives to guide them in order to improve. But when they are sent to lower-level facilities and are faced with challenges with mothers and baby, it becomes a problem because there is no one to help especially if it's their first time to be deployed at work. They should get an experience like being attached to a hospital where there many people who can guide them, especially in the practical areas" (Female SPNO aged 59 years).

"Comprehensive nurses should be deployed in Health Centre (four) IVs and above before deploying them to lower facilities such that they can be mentored by the seniors" (Female SPNO aged 51 years).

Having discovered the gap between what stakeholders need from the graduates and what

training schools provide to students, it can be said that one of the most vital measures nursing training schools can adopt to further improve the competences of graduates to adequately fit in the workplaces is to put in place measures aimed at increasing their collaboration with health facilities.

This is expected to not only promote and expand opportunities for graduates to access work-based learning but is also important in creating a more responsive system that helps in bridging the performance gaps. Ultimately, this is expected to make graduates become more competent and be successful in their chosen occupations, which benefits themselves, the workplace, and the communities. The perspective most mentioned among the interviewees was that follow-up for graduates on practicum are needed, and this was identified as one of the major areas where collaboration between nursing schools and health facilities was more emphasized, as indicated below:

"There should be a clinical instructor to follow students in the practicum side. In addition, there should be regular meetings between the health facilities and the training school such that the gaps identified by mentors in the students are closed because if that is not done, then there would be no way they can improve on the practice of students" (Female SPNO aged 59 years).

Through building synergies between training schools and health facilities, mentors get to know what students were exposed to in classes. One of the participants in the interviews had this to say:

"Mentors are people of different backgrounds. You find mentors who didn't go through the same course as the person there are mentoring, and you will also find mentors whose knowledge is different from what the person they are mentoring was taught. Those are the areas where they face major challenges. These challenges can easily be overcome if a training instructor is around to explain to the

mentor how the students have been taught… if you have a mentor who is accommodative, even what looks like a challenge can easily be overcome especially in the area of knowledge because science knowledge is not static, it keeps on changing" (Female PNO aged 45 years).

Objective Three: Determining the Satisfaction of Patients/Clients and Stakeholders regarding Nursing Service Delivery by CN Graduates in Uganda

Among the four measures of satisfaction, patients/clients were more satisfied with nursing services. This affirmation is based on the overall mean response of 3.79±0.7, which indicates that most of the patients were more inclined to choose to agree with the 5-point Likert scale rating. From this construct, ability of the nurses to listen carefully was most important, followed by the actions of the service provides in ensuring that the client does not get a feeling that she/he is wasting the time of the nurses. In addition, most of the clients expressed agreement that on the whole, the nurses not only take time to explain things carefully but also go an extra mile in reassuring the clients that their problems will adequately be handled and leave the hospital when they have fully recovered.

Nevertheless, it was noted that when it comes to the availability of facilities to deal with emergencies, the rating went down (3.6±1.0) which implies that some of the government facilities experience shortage or lack adequate facilities for emergency care and could be among the reason for poor service delivery of CNs in this area. This revelation was also echoed by the CNs as one of the major factors which constrain their service delivery in health facilities. In the interview, the same sentiments were repeated by one of the respondents as shown below:

"The most obvious gap among CNs is the inability to detect obstetric emergencies and timely referral. Most deaths review audits show

this challenge among comprehensive nurses" *(Female aged 45 years).*

A look at the mean scores for each dimension of satisfaction with CN care shows that for all measures of satisfaction, patients with no formal education had the highest satisfaction.

"The level of performance of Comprehensive nurses is fair compared to solid midwives or general nurses (PNO).

The level of performance of comprehensive nurses is fair and not good or very good, which I relate to the comprehensive workload which was added to them, yet the time is little to cover the different course units for both nursing and midwifery" (Female SNO aged 37 years).

However, the highest number expressed dissatisfaction with these cadres' performance in service delivery. The major theme arising from the data was that where they are deployed, many of the CNs lacked competences in midwifery. This can be confirmed in the following revelation from the interviewees:

"The performance of CNs is better especially in nursing procedures but needs improvement in the midwifery" (SNO).

"Training offered by training institutions have both adequate and inadequate preparations. Adequate; in terms of ministry's accreditations and award of academic qualifications. Inadequate in terms of less training periods for comprehensive Nursing course units –Lack skills in midwifery; Lack *skills in pediatric, Pharmacy etc."* *(Female SNO).*

However, some attributed service delivery to intrinsic factors such as the eagerness or motivation to learn, which enables them to offset the impact of inadequate training as indicated below:

"The level of service delivery among CNs depends on one's interest. If they have the interest to learn, their performance is fair in a way that they will be able to ask where they don't know but if the interest is not there, their competences can hardly improve. The performance of CNs is very good when they are interested in what they are doing especially on the nursing side. Most of them are poor in midwifery" (Male SNO aged 55 years).

The topmost constraints are understaffing, shortage of drugs & supplies, lack or shortage of equipment, and poor infrastructure (water, electricity, and beds). It was also established that some health facilities lack proper accommodation for health workers, which make some trek long distances from home to their duty stations and in some cases results into late coming. Poor/ lack of motivation or promotion was also seen as an impediment to effective delivery of the health services in the hospitals where this study was conducted. Language barrier and lack of career advancement were equally cited as factors limiting the effective delivery of services in health facilities. In light of these constraints, several suggestions were given (Figure.2).
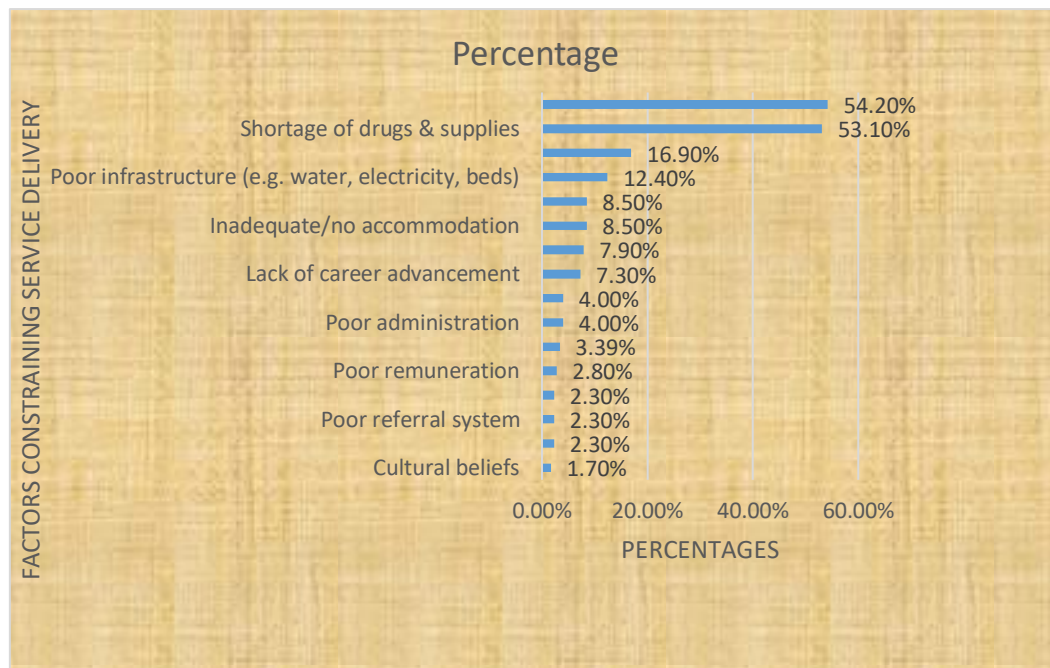
Figure 2. Factors constraining service delivery in health facilities (n=177)

In the interview with some stakeholders, a question was put to them requiring them to explain what they think the government can do to streamline the CNs training and deployment. The major recommendations were that for quality teaching, the number of students admitted should be reduced. There is also a need of increasing the training time for comprehensive nurses to 3½ years of training if the graduates are to become competent enough to deliver services well. It was also suggested that regulating bodies should also address the issue of human resource shortages by recruiting more tutors in all Nursing training institutes. They also underlined the importance of reviewing the curriculum for training the comprehensive nurses by emphasizing a component of midwifery and emergency nursing care. Another suggestion was that the government should improve on infrastructural development and permit schools to selectively admit only qualified student nurses who can easily be managed and control the opening of profit-oriented nursing schools (Figure. 3).
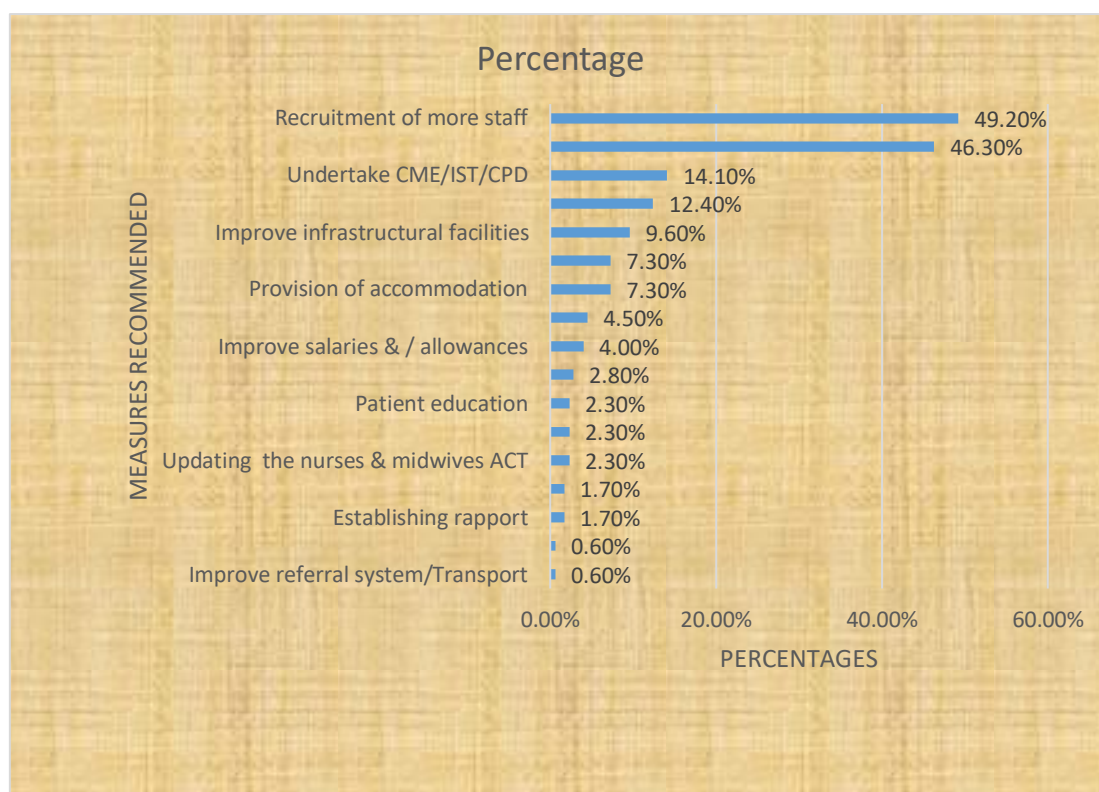
Figure 3. Measures Recommended in order to Improve Service Delivery in Health Facilities (n=177)

Discussion of Results

Determinants of Competence Acquisition and Application

From the Likert scale rating of 1-4, the findings showed that in relation to competence acquisition, the mean score was 3.5 ± 0.3, which was at a 'very competent level' while the overall mean score for competence application was 3.0±0.6, which was at 'good level'. In each of the seven dimensions of competency CNs on average, perceived themselves as 'very competent while in the actual application of the acquired competences, they stated that they were generally 'good' based on their self-assessment. These findings match the ones obtained [9], whose mean score of nurses' clinical competence was on average rated "very good" while the mean score of using clinical competence in practice was at rated "good level". The findings only slightly differ in the subscales of competence in the sense that whereas this study revealed that teaching-coaching was rated highest in acquisitions of

competence while managing situations had the highest mean for application competences, for [9], "managing situations" and "therapeutic interventions" had the highest mean for clinical competence and "using clinical competence in practice" respectively. Similar results have been reported by [10]. Their analysis led them to conclude that overall, nurses had positive perceptions toward their competency, albeit 'teaching-coaching' was the least rated among the seven dimensions of the competency scale. In research [11], nurse competences in managing situations were assessed the highest by nurses. Generally, in the opinion of CNs they rated their competence acquisition and application high. From the results of the analysis, some individual and institutional-based factors emerged significant in predicting these competences.

In evaluating the role of education in determining the acquisition and application of competences in nursing service delivery by CNs, the findings of analysis showed significant disparities between CNs with

diploma and those with certificates. The former exhibited significantly higher competences than the latter in both acquisition and application of competences in nursing service delivery. Considering the vital role of education in improving service delivery, low levels of education of service providers is an alert for stakeholders in hospitals about the prevalence of poor therapeutic care, wrong diagnosis, poor management of situations, inadequate helping roles, teaching-coaching, ensuring quality and work roles and their associated consequences, which should seriously be taken into consideration.

The results confirm the findings [12], whose analysis indicated that students in both educational programs (degree and diploma nursing students) differed significantly in each of the subscales with degree holders' confidence higher than that of diploma holders. When it came to actual application of competences, the disparities between the two categories were significantly evident with males' degree of application of the acquired competences higher than that of females, a finding that credence to the results obtained [13]. In their analysis, it was also established that male responders rated themselves as expert more often than females did in the infection prevention. Researchers have attributed these differences to different factors. But according to [14], the significant differences in the application of competences are due to a constellation of barriers at work in nursing that sideline and disregards female nurses from taking part in decision-making and limited or no opportunities for career development for them.

Availability of computers and internet facilities is crucial as it supports an electronic health records (EHR), obtaining information about past and ongoing treatments of patients, access to clinical knowledge such as drug information, nursing assessments, articles and nursing best practice guidelines and resources to better understand health situations and plan

of care [15]. Information and communication technologies (ICTs) have the potential to transform the delivery of healthcare radically. Limited access to computer is therefore a great barrier to service delivery [16]. Mair et al. as cited [17] rightly opines, e-health (particularly the Internet) are important as they assist in the management and processing of nursing data, information, and knowledge to support nursing practice, education, research, and administration. The results suggest that nursing competence may be negatively affected if computers and the internet are inappropriately used. This means that competence acquisition and application can only improve in the delivery of nursing services delivery if e-health infrastructures are properly used.

Patient/stakeholder Satisfaction towards the Service Delivery of Comprehensive Nurse Graduates

In this study patients' overall mean score of 3.77 ± 0.9 for all the indicators of satisfaction was high and indication that they described CNs as "good". These perceptions were imperative in bridging the gap between the anticipated and the actual care provided by these health care practitioners in hospitals. In agreement with these findings, the results [18], revealed that participants had high mean score regarding the total score of graduated nurses' performance in Hospitals. In relation to the highest satisfaction from nursing care provided, the findings perfectly align with (19). as cited [20] who also found nursing care as the highly-rated aspect of service delivery by graduate nurses.

However, in detailing information obtained from the stakeholders about their satisfaction with the competences of CNs in nursing service delivery, the information gathered was generally different from that provided by patients. The responses for the two categories only merged on one aspect where both reported CNs are generally good in performing nursing duties.

According to most of the interviewed stakeholders, overcrowding, short duration of the training period, inadequate staff and mentors, shortage of equipment and appliances, poor attitude by some CNs are some of the major causes of the gross incompetence. Among others, these researchers discovered that nurses were devoid of skills in clinical skills, patient management, and inability to transfer their nursing education and training into their practice role.

Conclusion

In the multivariate analyses, level of training and working experience emerged as significant determinants in predicting competence acquisition of CNs. In the regression output for competence application, the factors which were significant included gender, highest level of academic attainment, level of training, and routine availability of electricity in the hospital. The variables which were positively related to both outcome variables but insignificant in the multi variate analysis included length of service in the health facility, regular water supply, and availability of drugs and supplies. Presence of these resources and facilities was not significantly important in accounting for the variations in competency levels. On the other hand, the negative effect of e-health infrastructure (computers and internet) was an unexpected finding. It implied that in hospitals where these infrastructures were available, the CNs reported lower levels of competence compared to their counterparts where these facilities were lacking.

In relation to satisfaction with CNs, this study concludes that unlike patients whose perceptions of CNs in service delivery was positive, stakeholders had negative opinions about Comprehensive Nursing graduates' competences. From their perceptions, it was discovered that individual and contextual factors have important effects on competence acquisition and application.

Conflict of Interest

The researcher had no conflict of interest in financial gains or towards responsibilities of Comprehensive nurse graduates in service delivery.

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