

Predictors of Effective Preceptorship among Nurses in Clinical Teaching at Tenwek Hospital, Bomet Kenya.

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ABSTRACT

Background: Preceptorship is a clinical teaching model through which students are facilitated to acquire professional competencies. Clinical education is one of the most important components of a nursing curriculum as it develops the students' cognitive, psychomotor and affective skills (competencies). As the numbers of students increase coupled with the faculty shortage, clinical preceptors are the best choice to ensure student learning in the clinical settings. This study assessed clinical preceptors' views and experiences of precepting nursing students at Tenwek Hospital by looking at the preceptors' personal, work place related factors and the predictors of effective preceptorship.

Materials and Methods: Cross sectional research design was adopted. Data was collected from 134 participants who received structured questionnaires, SPSS version 25 was used to perform analysis. Validity tested was done with Cronbach's alpha ($\alpha = 0.885$) indicating that the questionnaire was reliable.

Results: Findings showed that the resources, preceptor's preparation and selections have significant influence on effective preceptorship (mean=3.86, SD=0.9961, Friedman test $X(14) = 496.399$, $p=0.001$) and likewise to communication & Support system and Preceptorship (mean=3.6495, SD=1.140, Friedman test $X(6) = 123.763$, $p=0.001$). Communication, support systems, resources, preceptor preparation & selection were found to be predictors of effective preceptorship.

Conclusion: From the study it can be concluded that resources, preceptor's preparation and selection are important factors for a successful preceptorship. Furthermore, effective communication & Support system was observed to significantly play a critical role in Preceptorship. From the study it can also be noted that number of students' nurses, structures and processes are significant predictors of effective preceptorship. In general Preceptorship models, play a key role in clinical teaching as it helps the students to develop the necessary professional attributes and as well as apply theory in real practice. Hence it is very critical for training institutions to design a preceptorship model that ensures motivation of preceptors among other factors for a successful clinical teaching.

Keywords: Clinical teaching, Mentorship, Preceptor, Preceptorship

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I. Introduction

Preceptorship is defined as teaching learning method used in health professions education during clinical teaching of students with a focus on their clinical and ethical development. A Preceptor is a professional with general or specialized training who is able to help students in clinical sites to gain variety of competencies. There is a close relationship between the preceptor and the student during preceptorship which helps facilitate professionalism in training through role modelling (Giroto et al 2019).

Preceptorship model as a teaching strategy has greatly been utilized in health training institution especially nursing training to help in ensuring the development of students' competencies by helping students to move from novice level to experts where they are able to learn specific knowledge and sets of skills and being able to perform specific tasks that are relevant to the profession (Lalonde & McGillis Hall, 2016). It is worth noting that, the nursing curriculum is comprised of theory and practical aspects of teaching that prepares students to acquire the necessary competencies so as to be qualified professionals. (Dias & Khowaja, 2017). In view of this, clinical teaching remains an essential and integral component being utilized in clinical teaching

since majority part of the students training is in clinical placement where students' are able to practice with real patients and apply theory to practice. (Jamshidi et al., 2016).

Preceptorship has been used since 15th century but in nursing education, it was first introduced in 1975 and has since been used as an effective teaching strategy in clinical placements (Shamian & Inhaber, 1985). This model help to ensure there is a good cooperation between hospitals and health care training institutions such as colleges/universities and increases the number of trained health care providers which will have a positive impact on the professional support for student nurses as well as health service delivery (Kangethe at al., 2016).

II. The issue

In developed countries, preceptorship of student nurses is well arranged between the training schools and clinical placement sites where there is good eligibility, proper selection criteria, adequate preparation and clear expectation from the preceptors (Ecuyer et al., 2018). In the United States of America, preceptors should have an experience of one to three years so as to participate in preceptorship of students but its only 78% of the 52 states that have well documented regulation and good arrangement of the preceptors (WHO, 2016).

According to the World Health Organization on the strategies for reaching Universal Health Coverage(UHC), it was observed that Preceptors are very critical as they contribute to a great extent to the production of the nursing and midwifery health workforce by emphasizing on clinical competence, individualized care while utilizing interprofessional and multi-professional strategies in health workforce training (Hugo L. 2020).

According to Ecuyer et al., 2018,he indicated that, in developing countries, preceptorship to student nurses is well arranged between the training schools and training hospitals however in Africa, overallly there is inadequate number of well-trained preceptors,at the same time there is less tutor-student contact hour which all make it difficult to adequately address all student nurse issues while in the clinical placements.

The situation in Central Africa is not much different, about 58.9% of the preceptors lack opportunities to improve the pedagogical skills and are not prepared for clinical teaching so as to be able to handle the huge responsibility that comes with their role (Eta et al., 2017).Among the training institutions in Kenya, preceptorship of student nurses in is not well addressed and many institution have not come up with clear guidelines and policies on the same.

In Tenwek Hospital clinical teaching of nursing students has been going on since the school was established in 1986. Overtime students have increased in number and consequently a preceptor to student nurse ratio has gone up and there has ben no study done to explore of the effectiveness pf clinical teaching.

General Objective

To determine the Predictors of effective Preceptorship among nurses in clinical teaching at Tenwek hospital, Bomet Kenya

Specific Objectives

- i. To determine the preceptors' personal factors that influences preceptorship and clinical teaching at Tenwek hospital
- ii. To determine the work place related factors that influences preceptorship and clinical teaching at Tenwek hospital
- iii. To assess the preceptee related factors that influences preceptorship and clinical teaching at Tenwek hospital

Theoretical framework

This study is based on the Novice to Expert theory of teaching and learning which was forwarded by Banner's in the year 1984, otherwise referred to as "Benner's model". This model of learning has a lot of relevance in explaining how students learn in the clinical areas. While Benner focused on nursing students in the clinical setting, her theory likely applies to learners from other health care disciplines. This model holds that nurses develop skills over time from both education (including clinical experience) and personal experience. According to Benner, The model is comprised of five levels of nursing experience namely; novice, advanced beginner, competent, proficient and expert.

Conceptual Framework

Description of the Framework

This research thesis is based on Donabedian's model (2005). The conceptual framework outlines the relationship between the dependent and independent variables. The **independent variables** included the preceptors' personal related, workplace related factors and preceptee related factors while the **dependent variable** is effective preceptorship in clinical teaching as outline in the figure 1 below;

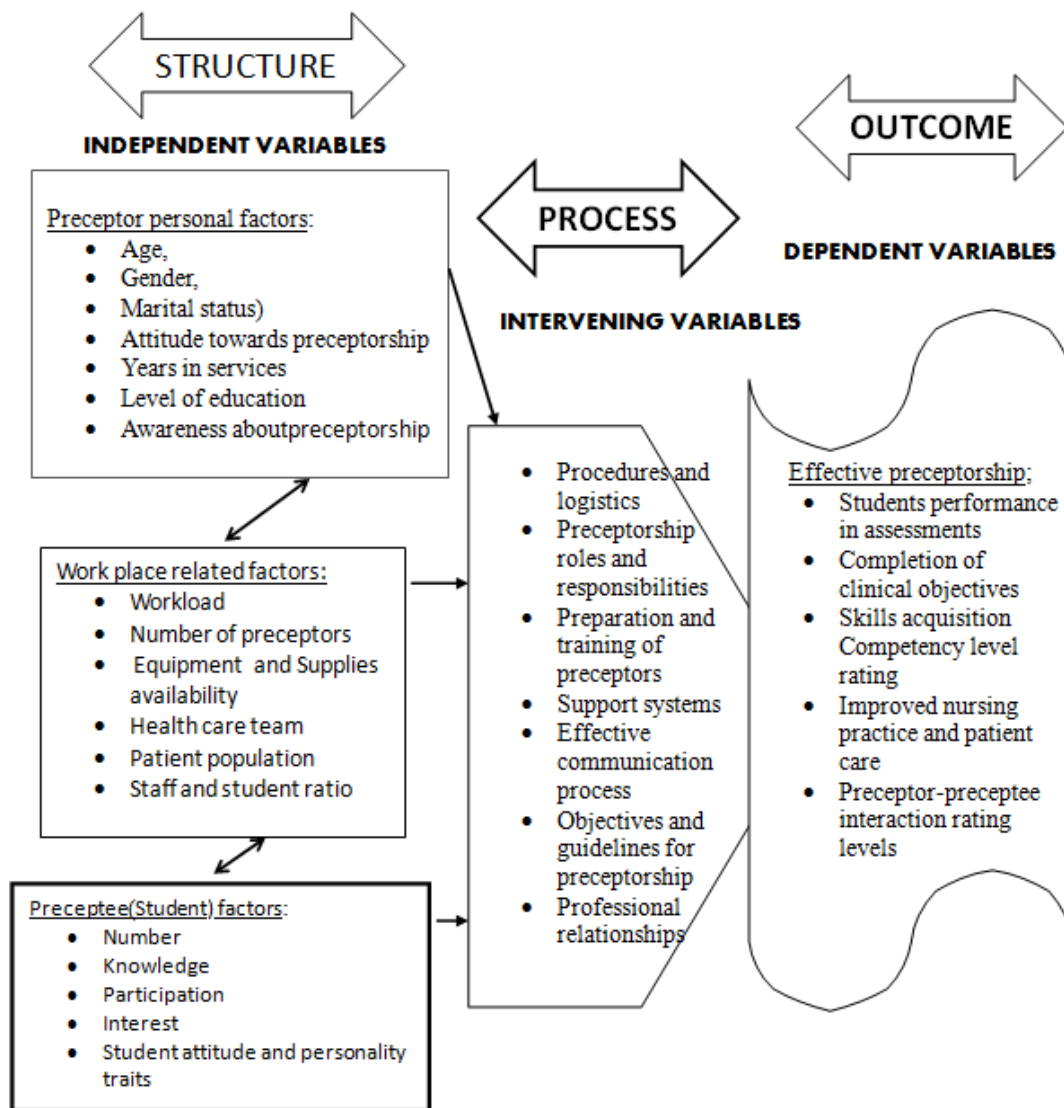


Figure 1: Conceptual Framework of the study

III. Materials and Methods

Research Study Design: Descriptive cross sectional design was utilized

Study Location/Site: The study was carried out at Tenwek Hospital which is a Faith Based Referral Hospital committed to excellence in compassionate health care, spiritual ministry and training for service to the glory of God. The hospital has a bed capacity of 300 and offers a wide range which is located at Bomet County in the south Rift, with a bed capacity of 300, providing general and specialized services to the patients. Tenwek hospital provides services to the patients as well as training health care professionals in different specialty. These include; nurses, clinical officers and doctors. It also serves as a clinical placement location for different institution offering nursing training namely Tenwek College of health sciences, Kabarak University, Amref international university and other institutions of higher learning.

Study population: Target Population

All nurses and midwives working at Tenwek hospital form the target population. A total of 206 qualified nurses working in different department where student nurses are rotating during their clinical placement who have at least one year clinical experience were engaged in the study.

Inclusion Criteria

All the consenting nurses and midwives who had served for a period of more than one year to qualify as preceptors were included in the study.

Exclusion Criteria

Preceptors who have been working in the respective departments for a period less than year, those not willing to participate, and those on leave i.e. study leave, maternity leave etc.

Sample Size Determination

The desired sample size was carried out using Fisher’s formula and the final sample size of 134 out of a total of 206 participants was used.

Sampling Technique/Procedures

A Stratified sampling method was used to obtain the sample size for preceptors from each department where the nurses work. Furthermore, simple random sampling method was then used to select the respondents from each stratum until the researcher obtained the exact target sample size.

Data Collection

Data collection tools were pre-tested at Litein AIC hospital, so as to check checking for consistency, acceptability and approximating duration of time required for completion. Upon consenting to take part in the study, the preceptors were then served with questionnaire papers which they will answer the and the questioners were be collected later. In addition, focus group discussion was used to obtain qualitative data from key informants which are about 10 % of the entire study population.

Plan for Data Cleaning, Analysis and Data Presentation

Data analysis was carried out using Statistical Package for Social Scientists (SPSS).A bivariate data analysis to find the relationship between the each independent and dependent variable. Qualitative data was analyzed by transcribing all the participants’ words into key statement and ideas and then classifying statements for each topic and categories all the related statements then summarize the findings by themes/objectives.

Dissemination of Research Findings

Study findings was documented in a report and the copies were be produced that will be submitted to different stakeholders. One copy will be submitted to Amref International University, another to the administration of Tenwek Hospital, and a Third copy will be retained by the researcher.

Ethical Consideration

AMREF Ethics and Scientific Review Committee (ESRC).Approval was also obtained from the NACOSTI as well as from the Institutional research ethics committee. Study was conducted according to the Declaration of Helsinki, Informed consent was used to obtain information from the study participants.

IV. Results

Introduction

Results of the study whose aim was to test associations between preceptors’ characteristics, workplace factors on effective preceptorship as well as determine predictors of effective preceptorship among nurses in clinical teaching hospital in Kenya, are presented in this chapter. Data collected was verified, validated, and coded for analysis. SPSS version 25 was used to perform analysis.

Response Rate

Out of 134 questionnaires that were given out to participants, all of them were issued and collected back, representing 100% response rate.

Pilot test results.

Testing the feasibility of the data tool helped reformat the instrument to avoid misapprehensions; bias; detect ambiguous questions; and detect mishaps, hence assuring the validity of the data. A pilot study was done with 14 participants who represented 10% of the study population. Cronbach alpha for reliability was 0.885 suggesting high internal consistency of our scale.

Table 1: Reliability statistics

Cronbach's Alpha	N of Items
.885	31

Participants Characteristics

Participants characteristic were sought for, these characteristics included; gender,age,marital status,level of education and years of experience. Out of 134 Nurses,58%(78/134) were female,Majority 74%(99/134) were of age between 20 to 30 years,Most 68%(90/134) of the nurses had Diploma, On marital status 67%(90/134) were married and 52%(70/134) had worked for less than 5years. A summary of the above is illustrated in table 3 below.

Table 2: Participants characteristics

Total (N=134, %)	
What is your gender? n (%)	
Male	56 (42.0)
Female	78 (58.0)
What is your age, n (%)	
Between 20-30 years	99 (74.0)
31-40 years	29 (22.0)
41-50 years	6 (4.0)
What is your highest level of education, n (%)	
Certificate	21 (16.0)
Degree	17 (13.0)
Diploma	90 (67.0)
higher diploma	6 (4.0)
What is your marital status, n (%)	
Married	90 (67.0)
Single	43 (33.0)
What is your working experience, n (%)	
Below 5 years	70 (52.0)
6-10 years	50 (38.0)
11years and above	13 (10.0)

To determine association between participant’s characteristic and aggregate score of effective preceptorships, one-way ANOVA was performed to compare the means of aggregate scores between each of the groups. Analysis suggested that gender ($F(20,113) = 1.580, p=0.070$), Age ($F(20,113) = 0.948, p=0.529$), Level of education ($F(20,113) = 0.945, p=0.533$), Marital status ($F(20,112) = 0.789, p=0.721$) and work experience ($F(20,112) = 0.789, p=0.278$), had no statistically significant association with effective preceptorship. As shown in table 4 below;

Table 3: Comparison of Effective Preceptorship means score and characteristics of preceptors

		ANOVA				
		Sum of Squares	df	Mean Square	F	Sig.
What is your gender?	Between Groups	7.124	20	.356	1.580	.070
	Within Groups	25.473	113	.225		
	Total	32.597	133			
What is your age?	Between Groups	5.812	20	.291	.948	.529
	Within Groups	34.643	113	.307		
	Total	40.455	133			
What is your highest level of education?	Between Groups	12.324	20	.616	.945	.533
	Within Groups	73.713	113	.652		
	Total	86.037	133			
What is your marital status?	Between Groups	3.595	20	.180	.789	.721
	Within Groups	25.502	112	.228		
	Total	29.098	132			
What is your working experience?	Between Groups	10.251	20	.513	1.188	.278
	Within Groups	48.321	112	.431		
	Total	58.571	132			

Incentives

The researcher was interested in finding out the influence of incentive on preceptorship. Majority of the participants 94% (126/134) indicated that they are not given incentive to teach students nurses, On whether if given money they would teach student nurses 32% (42/134) said yes, when requested to comment on their answers, out of 93 comments given 33% (31/93) indicated training is part of their responsibility thus no need for

payment while others indicated that they have to mentor others since they were also mentored. However, 32% (30/93) were categorical that money is a motivating factor to them to teaching student nurses. Similarly, When asked if they would teach students even when tired provided incentive was given 53% (71/133) said yes, With reasons ranging from money being a motivating factor 35% (23/65) ,They were mentored so they have to mentor others 28%(18/65), it's part of their responsibility so no incentives is required 23%(15/65) and money does not increase productivity 14%(9/65).The table 4.1.3 shows summary on need for incentive

Table 4.1.3 Incentives

Incentives	Yes	No
Are you given monetary incentives when you teach student nurses?	6% (8/134)	94% (126/134)
Do you think you are supposed to be given money as a result of teaching student nurses at clinical area?	32% (42/134)	68% (91/134)
Would you teach student nurses even if you are tired provided there are incentives?	53% (71/134)	47% (63/134)

Work place related factors influencing preceptorship at Tenwek Hospital

One of the objectives of this study was to find out how workplace factors influences preceptorship. Findings showed that, the numbers of nurses per shift were mostly between 3 to 4 and numbers of patients were mostly less than 31 per day. Similarly numbers of students in Ward was mostly 6-10 per shift.As shown in table 6 below;

Table 4: Workplace related factors

Workplace factors	Total
How many nurses are on duty at each shift, n (%)	
1 – 2	26 (19.00)
3 – 4	53 (40.00)
5 – 6	37 (28.00)
Above 6	18 (13.00)
How many patients do you usually have in your ward/unit per day, n (%)	
Less than 31	70 (52.00)
31-40	45 (34.00)
41-50	9 (7.00)
51-60	1 (1.00)
above 60	8 (6.0)
Roughly how many student nurses do you usually have in your ward per day, n (%)	
Less than 5 students	53 (40.00)
6-10 students	62 (46.00)
11-15 students	15 (11.00)
16-20 students	3 (2.00)
Above 20 students	1 (1.00)

Table 5: Comparison of Effective preceptorship mean score and workplace related factors

		ANOVA				
		Sum of Squares	df	Mean Square	F	Sig.
How many nurses are on duty at each shift?	Between Groups	17.200	20	.860	.959	.516
	Within Groups	101.314	113	.897		
	Total	118.515	133			
How many patients do you usually have in your ward/unit per day?	Between Groups	13.661	20	.683	.579	.920
	Within Groups	132.128	112	1.180		
	Total	145.789	132			
Roughly how many student nurses do you usually have in your ward per day?	Between Groups	9.823	20	.491	.761	.753
	Within Groups	72.901	113	.645		
	Total	82.724	133			

Result from the table 7 above suggest that the number of nurses per shift ($F(20,113) = 0.959, p=0.516$), Number of patients in the ward per day ($F(20,112) = 0.579, p=0.920$) and Number of student nurses in the ward per day ($F(20,113) = 0.761, p=0.753$) had no statistically significant association with effective preceptorship.

Preceptee factors affecting preceptorship

From the table 7 above, the majority of the preceptors 62 (46.0%) reported that they usually have about 6-10 students per day with only one 1 (1.0%) reporting g that they usually have more than 20 students per shift Furthermore from the table above the results demonstrated that the number of student nurses in the ward per day ($F(20,113) = 0.761, p=0.753$) had no statistically significant association with effective preceptorship. From the table 8 below, majority of the preceptors were in agreement that nursing students are willing to help staff and others to get things done and that nursing students are eager to learn. These two factors were critical in ensuring the success of preceptorship.

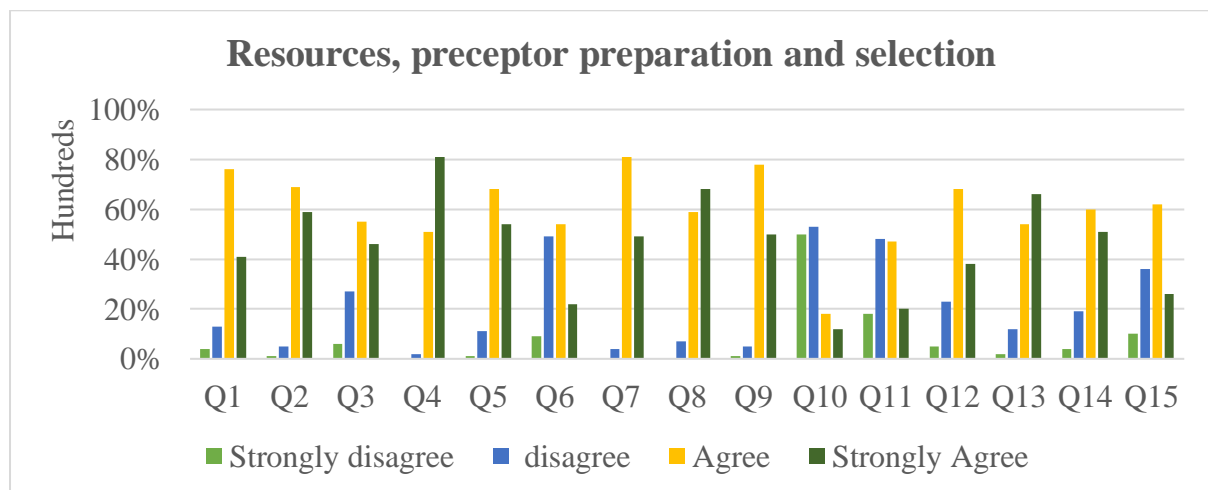
Structure: Resources, preceptor preparation and selection

To establish the degree to which Resources, preceptor preparation and selection influence preceptorship. Participants' opinions were rated using a scale of 1 to 5, where 1 is strongly agree and five is strongly disagree. (Strongly Disagree, Disagree, Neutral, Agree, and Strongly Agree)

15 constructs of Resources, preceptor preparation and selection were used. Generally, from the scale used, larger mean implies a greater agreement; the larger the extent of agreement, smaller deviation implied a narrow difference in the responses.

The results (15-item scale, mean=3.86, SD=0.9961) indicate that the participants generally inclined towards agreement with the fact that the resources, preceptor’s preparation and selections are important factors to preceptorship. There was statistically significant association (Friedman test $X(14) = 496.399, p=0.001$) between the resources, preceptor’s preparation as well as selections and Preceptorship.

Figure 2: Below is a graph showing Structure: Resources, preceptor preparation and selection graphically there is strong evidence that the most of the participants were in agreement that resources, preceptor’s preparation as well as selections influences effective Preceptorship.



Key: A Structure: Resources, preceptor preparation and selection

Q1	I have adequate preparation/ training for my role as preceptor.
Q2	I can confidently conduct students assessments and evaluation in clinical placement
Q3	There is a clear preceptorship model to guide students in nursing education
Q4	There is a need to develop a preceptorship model specific to the Tenwek Hospital
Q5	I understand my role as preceptor
Q6	There is adequate time available for me to discuss objective with each student on daily basis
Q7	Nursing students are willing to help staff and others get done
Q8	I consider student as part of patient care team
Q9	Nursing students are eager to learn
Q10	Nurses should not do teaching that the clinical instructors are paid to do
Q11	Nursing students do only what they are assigned
Q12	There is strong commitment and support of preceptorship from the supervisors and managers

Q13	Students are provided with clear learning objectives and expectation by the nurse educators
Q14	There are adequate resources in the clinical arrears to support preceptorship.
Q15	The time I have to provide patient care as well as preceptorship is adequate.

Table 6: Resources, Preceptor and selection

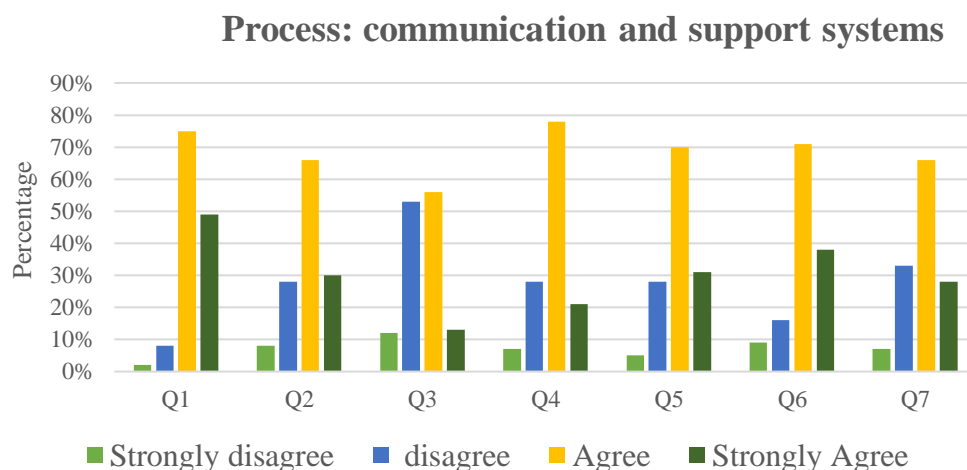
Item	N	Min	Max	Mean	Std. Dev
I have adequate preparation/ training for my role as preceptor.	134	1.00	5.00	4.0224	0.9846
I can confidently conduct students assessments and evaluation in clinical placement	134	1.00	5.00	4.3433	0.7368
There is a clear preceptorship model to gain students in nursing education	134	1.00	5.00	3.8059	1.2353
There is a need to develop a preceptorship model specific to the Tenwek Hospital	134	1.00	5.00	4.5746	0.5801
I understand my role as preceptor	134	1.00	5.00	4.2164	0.8702
There is adequate time available for me to discuss objective with each student on daily basis	134	1.00	5.00	3.2313	1.2856
Nursing students are willing to help staff and others get done	134	1.00	5.00	4.3059	0.6280
I consider student as part of patient care team	134	1.00	5.00	4.4029	0.7471
Nursing students are eager to learn	134	1.00	5.00	4.2761	0.7192
Nurses should not do teaching that the clinical instructors are paid to do	134	1.00	5.00	2.1654	1.3095
Nursing students do only what they are assigned	134	1.00	5.00	3.0225	1.3677
There is strong commitment and support of preceptorship from the supervisors and managers	134	1.00	5.00	3.8284	1.1341
Students are provided with clear learning objectives and expectation by the nurse educators	134	1.00	5.00	4.2687	0.9590
There are adequate resources in the clinical arrears to support preceptorship.	134	1.00	5.00	4.0075	1.1070
The time I have to provide patient care as well as preceptorship is adequate.	134	1.00	5.00	3.4328	1.2770
Overall Mean				3.8603	0.9961

Process: communication and support systems

To establish the level communication and support system impact on preceptorship. The participants’ opinions were rated using a scale of 1 to five (Strongly Disagree, Disagree, Neutral, Agree, and Strongly Agree).

The seven constructs that was used for communication and support revealed that participants moderately agreed (7-item, mean=3.6495, SD=1.140), that communication and support systems has impact on preceptorship. There was statistically significant association (Friedman test $X(6) = 123.763, p=0.001$) between the communication & Support system and Preceptorship

Figure 1: A graph showing communication and support system affect preceptorship graphically there is a strong evidence that the majority of the participants were in agreement that communication & Support system influences effective Preceptorship



Key: Process: communication and support systems

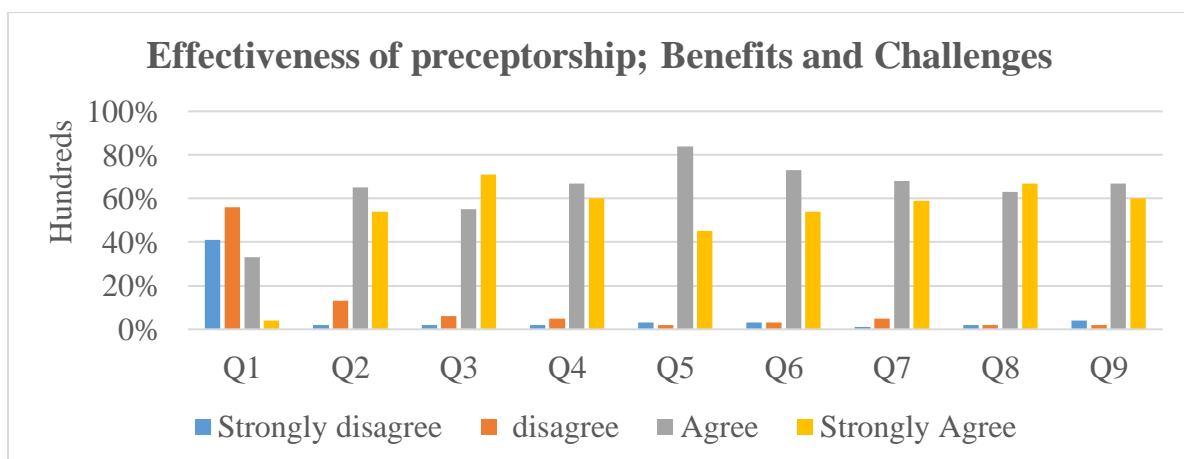
Q1	There is a strong support of preceptorship by my colleagues and managers
Q2	The visit by nurse educators in the clinical sites are adequate to offer me the necessary support
Q3	The workload I have is appropriate so as to allow me function as a preceptor.
Q4	The number students in each placement are adequate to allow for good student-preceptor interaction.
Q5	The managers support is adequate to enable me be effective in preceptorship.
Q6	The communication between the nurse educators and preceptors is always effective.
Q7	Nurse educators are always available for me to share information on my experiences during preceptorship

Table 7: Communication and support systems

Item	N	Min	Max	Mean	Std. Dev
There is a strong support of preceptorship by my colleagues and managers	134	1.00	5.00	4.2015	0.8387
The visit by nurse educators in the clinical sites are adequate to offer me the necessary support	132	1.00	5.00	3.6212	1.2203
The workload I have is appropriate so as to allow me function as a preceptor.	134	1.00	5.00	3.0373	1.2530
The number student in each placement is adequate to allow for good student-preceptor interaction.	134	1.00	5.00	3.5821	1.1392
The managers support is adequate to enable me be effective in preceptorship.	134	1.00	5.00	3.7014	1.1505
The communication between the nurse educators and preceptors is always effective.	134	1.00	5.00	3.8433	1.1624
Nurse educators are always available for me to share information on my experiences during preceptorship	134	1.00	5.00	3.5597	1.2171
Overall Mean				3.6495	1.140

Effectiveness of preceptorship; Benefits and Challenges

To establish the extent to which participants agree on benefits and challenges of preceptorship, respondent’s opinion were rated using a scale of 1 to 5 (Strongly Disagree, Disagree, Neutral, Agree, and Strongly Agree). Nine constructs used for benefit and challenges of preceptorship showed there was a greater agreement with the statements about effective preceptorship (7-item, mean=4.6474, SD=0.8448) which was statistically significant (Friedman test $X(8) = 329.481, p=0.001$) as shown in **Figure2 below: A graph showing Effective preceptorship; benefits and challenges**



Key: **Outcome: effectiveness of preceptorship; Benefits and Challenges**

Q1	The roles of a preceptor is still not clear to me
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Q2	Through preceptorship students complete the clinical placement intended objectives
Q3	Preceptorship has improved nursing practice and patient care
Q4	Students have gained adequate clinical competencies as a result of preceptorship.
Q5	Preceptorship facilitates preceptor-preceptee interaction
Q6	Preceptorship has motivated me to be up to date and grow in the profession.
Q7	Preceptorship has made me to gain personal satisfaction of my work.
Q8	Students perform well in their clinical assessments as a result of preceptorship
Q9	I have improved on my leadership skills as a result of preceptorship.

Table 8: Outcome; Effective preceptorship; Benefits and challenges

	N	Min	Max	Mean	Std. Dev
The roles of a preceptor is still not clear to me	134	1.00	5.00	2.2761	1.2225
Through preceptorship students complete the clinical placement intended objectives	134	1.00	5.00	4.1641	0.9514
Preceptorship has improved nursing practice and patient care	134	1.00	5.00	4.3955	0.8319
Students has gained clinical competence and proficiency in clinical skills during preceptorship	134	1.00	5.00	4.3284	0.7925
Preceptorship facilitates preceptor-preceptee interaction	134	1.00	5.00	4.2388	0.7376
Preceptorship has motivated me to be up to date and grow in the profession.	133	1.00	5.00	4.2932	0.7861
Preceptorship has made me to gain personal satisfaction of my work.	133	1.00	5.00	4.3459	0.7390
Students perform well in their clinical assessments as a result of preceptorship	134	1.00	5.00	4.4254	0.7189
I have improved on my leadership skills as a result of preceptorship.	133	1.00	5.00	4.3308	0.8232
Overall Mean				4.6474	0.8448

Multivariate Analysis

A multiple linear regression analysis was performed to predict effective preceptorship based on preceptors characteristics, work place factors against an aggregate score for outcome (effective preceptorship)

4.10.1 Model Summary

This table below provides the R , R^2 , adjusted R^2 , and the standard error of the estimate, which was used to determine how well a regression model, fits the data:

Table 9: Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.598 ^a	.357	.304	3.930

a. Predictors: (Constant), Process: communication and support systems, What is your highest level of education?, Roughly how many student nurses do you usually have in your ward per day?, How many nurses are on duty at each shift?, What is your marital status?, What is your gender?, What is your age?, How many patients do you usually have in your ward/unit per day?, What is your working experience? , Structure: Resources, preceptor preparation and selection?

The value of R represents the **multiple correlation coefficient** which measure of the quality of the prediction of the dependent variable (effective preceptorship). The value of 0.598 indicates a moderately good level of prediction. **R Square** (R)² (Coefficient of determination) is the proportion of variance in the dependent variable that can be explained by the independent variables (proportion of variation accounted for by the regression model above and beyond the mean model). The value 0.357 suggests that the independent variables explain 35.7% of the variability of the dependent variable which is effective preceptorship.

4.10.2 Statistical Significance

The F -value in the ANOVA table below tests whether the overall regression model is a good fit for the data. From the table below the independent variables statistically significantly predict the dependent variable, F (10,120) = 6.667, p =0.0001 (the regression model is a good fit of the data).

Table 10: ANOVA

ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1029.678	10	102.968	6.667	.000 ^b
	Residual	1853.208	120	15.443		
	Total	2882.885	130			

a. Dependent Variable: Effectiveness of preceptorship; Benefits and Challenges

b. Predictors: (Constant), Process: communication and support systems, What is your highest level of education?, Roughly how many student nurses do you usually have in your ward per day?, How many nurses are on duty at each shift?, What is your marital status?, What is your gender?, What is your age?, How many patients do you usually have in your ward/unit per day?, What is your working experience? , Structure: Resources, preceptor preparation and selection

4.10.3 Estimated model coefficients

The general form of the equation to predict effective preceptorship from structures and process is

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7 + \beta_8X_8 + \beta_9X_9 + \beta_{10}X_{10} + \epsilon$$

Y=Predicted (effective preceptorship)

X₁- Gender, X₂- Age, X₃ - Level of education, X₄ - Marital status, X₅ - work experience

X₆ - Number of Nurses per shift, X₇ - Number of patients in the wards per day

X₈ - Number of nurse students per day, X₉-Structure: Resources, preceptor preparation and selection, X₁₀ - Process: communication and support systems

$$\text{Effective preceptorship} = 17.409 - 0.380X_1 + 0.595X_2 - 0.143X_3 - 0.885X_4 - 0.297X_5 + 0.004X_6 + 0.144X_7 + 0.957X_8 + 0.185X_9 + 0.243X_{10}$$

From the model above a unit increase in the independent variable and a positive impact in effective preceptorship (17.832)

Among independent variable tested Age, education level, marital status and work experience had a negative impact on effective preceptorship. However Gender, Number of nurses, Number of patients, Number of students, structure and Process has a positive influence on preceptorship

This is obtained from the **Coefficients** table, as shown below:

Table 11: Model coefficients

		Coefficients				
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	17.409	3.906		4.457	.000
	What is your gender?	-.380	.738	-.040	-.515	.608
	What is your age?	.595	.755	.070	.787	.433
	What is your highest level of education?	-.143	.456	-.024	-.313	.755
	What is your marital status?	-.885	.810	-.088	-1.092	.277
	What is your working experience?	-.297	.648	-.042	-.459	.647
	How many nurses are on duty at each shift?	.004	.382	.001	.010	.992
	How many patients do you usually have in your ward/unit per day?	.144	.356	.032	.405	.686
	Roughly how many student nurses do you usually have in your ward per day?	.957	.474	.158	2.017	.046
	Structure: Resources, preceptor preparation and selection	.185	.085	.237	2.181	.031
	Process: communication and support systems	.243	.066	.387	3.688	.000

a. Dependent Variable: Effectiveness of preceptorship; Benefits and Challenges

Statistical significance of the independent variable

The t-value and corresponding p-value in the coefficients table above test the statistical significance of each independent variables (This test whether the unstandardized (or standardized) coefficients are equal to 0 (zero) in this population). Seven variables had p-value greater than 0.05 these were Age, Gender, Level of education, marital status, work experience, Number of Nurses per shift and Number of patients in the wards per day

The remaining three variables had p-value less than 0.05 these were Number of nurse students per day, Structure: Resources, preceptor preparation and selection, and Process: communication and support systems hence their coefficient statistically significant.

Regression Analysis Summary

From the multiple regression performed to predict effective preceptorship from communication & support systems and Resources, preceptor preparation & selection found that from communication & support systems and Resources, preceptor preparation & selection statistically significantly predicted effective preceptorship, $F(10,120) = 6.667, p = 0.0001, R^2 = 0.598$, Only three variables (Number of students, structures and processes) among ten variables added a statistically significantly to the prediction < 0.05

Qualitative Suggestion how preceptorship can be improved to facilitate effective clinical teaching for students

One hundred and twelve suggestion were analyzed, most (28/112) nurses suggested matching number of students to available preceptors, (25/112) suggesting provision of incentives to nurses to enhance participation on preceptorship. (16/112) said objectives to meet by students should be provided to guide preceptorship. Other suggestions included (11/112) more contact time between the students and preceptors, (8/112) provision of CME on effective preceptorship and (7/112), Student's cooperation with nurses will enhance preceptorship.

V. Discussion

Introduction

The discussion of the result obtained from data collected is divided into three parts; Personal factors, Work related factors and Preceptee related factors. This section also include importance of these research and future research suggestions

Discussion of the Results

Preceptors' Personal factors influencing in clinical teaching of nursing students

This study found no statistically significant association between preceptor's characteristics i.e. gender, age, marital status, level of education and years of experience and effective preceptorship which is contrary to findings of Margetts (2016) study that suggested preceptors with older age were strongly associated with increase participation in clinical teaching of nursing students and were effective. Similarly, Phuma-Ngaiyaye, Bvumbwe and Chipeta, 2017 found that Female preceptors tend to participate more than male counterparts in mentoring student nurses in the clinical areas. However, its finding was not conclusive since it could have been influence by the fact that there were more female health care workers than the male who were working in the health facility at the time.

Workplace related factors

One of the aims of the study was to assess how workplace related factors influences on preceptorship. The results showed numbers of nurses per shift were mostly between 3 to 4 and numbers of patients were mostly less than 31 per day. Similarly numbers of students in Ward was mostly 6-10 per shift. The study found no statistically significant association with effective preceptorship. This is contrary to the findings of a study done by Asifiri et al. (2017), in a study of preceptorship as a clinical teaching model done in Ghana; it was observed that the main challenge for health professional training institutions is the high number of student compared to the preceptor ratio as well as inadequate support from the faculty.

Other workplaces related factors that were assessed were the structure i.e. resources, preceptor preparation and selection as well as the processes mainly communication and support system

Structure: Resources, preceptor preparation and selection

The vast majority of the Participants had agreement that resources, preceptor's preparation and selection are important factors in effective preceptorship, moreover a statistically significant association between effective Preceptorship and resources, preceptor's preparation and selections. These findings are in line with Aktas & Karabulut (2016) who observed that learning environment leaning environment contribute critically in the development of student clinical competencies. Asirifi et al., (2019) further indicated that, a positive clinical learning environment, help promote and facilitate learning of students.

Process: communication and support systems

Seven constructs used for communication and support revealed that participants moderately agreed that communication and support systems have impact on preceptorship. Communication & Support system was statistically significant associated with Preceptorship. Studies reviewed (Lienert-Brown et al., 2018) suggest that there has to be a very good harmonious relationship between the students and preceptors; this is an important ingredient of success to ensure successful teaching and achievement of learning objectives. Similar views are shared by Serrano-Gallardo et al., 2016 that lack of trust between the students and the supervisor, poor Negative attitude amongst students hinders learning process in the clinical placement site.

Furthermore other researchers have indicated that, students who are given adequate support in the clinical areas to learn are committed and then to do well in their clinical experiences (Gopalan, Bakar, Zulkifili, Alwi, & Mat, 2017).

Preceptee related factors

Number of students' nurses, structures and processes are significant predictors of effective preceptorship; however, there were no association found between effective preceptorship and Age, Gender, Level of education, Marital status, work experience, Number of Nurses per shift and Number of patients in the wards per day, According to Serrano-Gallardo et al (2016), Preceptorship model, play a key role in clinical teaching as it helps the students to develop the necessary professional attributes and help them apply theory in real practice.

Importance of the study and societal impact

The results of this research study would be important to all stakeholders responsible in the training of health professionals including health facilities, training institutions, preceptors, students as well as for the scientific community.

VI. Summary, Conclusions and Recommendation

Introduction

The study sought to explore Preceptorship of nursing students in teaching hospital more importantly assessing its effectiveness; strength, challenges, advantages and disadvantages as well as predictors of effective preceptorship.

Summary

Objective one sought to investigate the preceptors' personal factors that influence preceptorship and clinical teaching hospital. In conclusion, among personal factors investigated namely gender, age, marital status, level of education and years of experience, none had a close association with effective preceptorship based on the data collected

Objective two sought to determine the work place related factors that influences preceptorship and clinical teaching at hospital, Factors assessed were structures and processes. This research concludes that adequate resources together with preceptor's preparation and selection are important factors in effective preceptorship, similarly effective communication and strong support systems have a significant impact on effective preceptorship. Furthermore structures and processes are significant predictors of effective preceptorship based on the model tests

Objective three assessed preceptee related factors that influences preceptorship and clinical teaching at hospital, conclusion drawn is that number of students' nurses, student attitudes are significant predictors of effective preceptorship based on the model tests

Conclusion

Based on the study findings, a conclusion can be made that, Tenwek hospital nurses who act as preceptors; Have a positive attitude towards their role as preceptors despite not having a formal preparation in their role.

About 55% of the preceptors reported that there is a clear model of teaching students in clinical setting with quite a high percentage (80%) recommending the development of formal preceptorship model that is being utilized in the hospital.

Face various problems which may affect their commitment to preceptorship namely; heavy workload (percentage), Increase number of student nurses (percentage)

Majority of preceptor's are between 20-30 years of age and the a high percentage (52%) have a working experience less than 5 years

Findings of this study have responded exhaustively to all questions asked by the researcher and it underlines the importance of enhancing preceptor role in order to promote and sustain clinical teaching of students in the clinical areas.

Recommendations

From the study the researcher suggests these succeeding measures should be done:

- Hospitals should frequently organize preceptorship trainings for nurses for capacity building through workshops, continuous medical education on preceptorship
- Both the health facility and the training institution should give preceptors the necessary support, motivation including incentives to motivate them so as to enhance their role.
- Preceptorship model should be established that stipulates clearly the responsibilities of the preceptors and other important stakeholders in clinical teaching.
- Training institutions should find out ways of promoting preceptorship in order to improve the quality of clinical teaching in the clinical placement sites.
- Clinical instructor should ensure proper follow up of students and encourage them to meet their objectives in clinical areas working in collaboration with the preceptors.
- Teaching hospitals should increase the number of preceptors in the clinical areas so as to reduce work load, hence improving preceptor-preceptee interactions
- Teaching hospitals should come up with appropriate guidelines on preceptorship and implement them

accordingly

Suggestion for further research

This research was done with an aim of looking at the effectiveness of preceptorship in the lens of a preceptor; another research can be done in future to be able to ascertain student's experience on the preceptorship while learning in the clinical setting.

Conflict of interest

The authors declare no conflict of interest in the publication of this paper.

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