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Perceived clinical comptency and associated factors of basic life support among nurses working in debre birhan referal hospital, Amhara region, northeast Ethiopia, 2020.

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ABSTRACT

Background: Basic life support is a level of medical care used to support and treat victims of life threatening illnesses or injuries until they can give full medical care. Perception of nurses will make an important contribution to reduce disability and avoidable death. Thus, nursing professionals need to have full perception to contribute more efficiently to perform cardiopulmonary resuscitation.

Objective: The study aimed to assess perceived clinical competency towards basic life support and associated factors among nurses working Debre Birhan Referral Hospital, Northeast Ethiopia.

Methods: An institutional based cross-sectional study was conducted from October to December, 2020.All nurses working from Debre Birhan Referral Hospital were considered as study subjects. Self-administered questionnaire was used for data collection. Data were entered and analyzed using SPSS version 21. Logistic regression analysis was used to assess associated factors of perceived clinical competency of nurses.

Results: From study participants (234) 135(57.7%) were female, 145(62.0%) were married and 172(73.5%) perceived themselves highly competent while 62(26.5%) had low perception towards Basic Life Support. Majority of the study participants 177(75.6%) had poor knowledge. Based on logistic regression, clinical work experience [AOR=4.98(1.35, 7.83)], duration of working in the current area [AOR=3.6(1.67, 7.84)] and participation in patients care on Basic Life Support [AOR=8.552(1.247, 58.673)] were significantly associated with nurses perceived clinical competence.

Conclusion and Recommendation: The overall perception of nurses towards Basic Life Support was high but majority of study participants were having poor knowledge. Health administrations should motivate nurses to develop their knowledge to have clinically competent.

Keywords: Basic Life Support, clinical competency, perception

INTRODUCTION

Basic Life Support refers to maintaining an airway and supporting breathing and circulation without using any equipment. Immediate provision of Basic Life Support/Cardiopulmonary resuscitation can save a precious life. Basic Life Support includes recognition of signs of sudden cardiac arrest (SCA), heart attack, stroke and foreign-body airway obstruction (FBAO), as well as performing CPR and defibrillation with an automated external defibrillator (AED) [1].

Basic Life Support (BLS) denotes to the care healthcare providers and public wellbeing professionals provide to patients who are experiencing respiratory arrest, cardiac arrest or airway obstruction. Basic life support includes psychomotor skills for acting high-quality cardiopulmonary resuscitation (CPR), using an automated external defibrillator (AED) and alleviate an obstructed airway for patients of all ages. Basic Life support also focuses on the integration of the following key skills to help rescuers achieve optimal patient outcomes[2].

Cardiovascular diseases are the major public health worry in worldwide. Survival after cardiopulmonary arrest is generally low and depends on early intervention, quality of cardiopulmonary resuscitation (CPR) and time of launching of defibrillation post cardiac arrest. Basic life support (BLS) is a vital component of chain of survival. Cardiopulmonary resuscitation is simple but effective procedure that allows almost anyone to sustain life in the early critical minutes after cardiac and respiratory arrest[3].

Statement of the problem

Clinical competency is critical for nurses to overcome today's complicated health care delivery system and to ensure patient safety[4].Therefore, the dynamic and uncertain nature of healthcare environment requires competent professional nurse to manage the rapidly changing environment[5]. But practically there is shortage of competent experienced nurses globally as a result, healthcare administrators face challenges to get competent and experienced nurses and are forced to find an option such as hiring newly graduated nurses to function independently and fill the shortage of competent and experienced nurses[6].

Patient with Abrupt cardiac arrest can survive if they obtain immediate CPR and are treated quickly with defibrillator. To be effective this treatment must be given quickly with in 3to5 minutes after collapse[7].

Pan Africa sudden cardiac death study showed that in Ethiopia 19.16 per 1000people died by sudden cardiac death in 2005. Nurses are usually the primary responders in cases of in hospital cardiac arrest. Their competence in BLS is important in improving patient outcomes. They need to be knowledgeable and skillful regarding BLS because it is a key component of the chain of survival that increases the rate of hospital discharge.[8]

CPR can be lifesaving when provided by well-trained person. In several large investigations the prompt delivery of CPR has helped as an important predictor of survival; and capacity to almost double the chance of survival. The probability of survival from cardiac arrest falls by 10-15% per minute without treatment and well performed CPR likely shifts this curve towards a higher probability of survival[9]

Individuals in the community at minimum the health care professionals must know how to perform BLS as they encounter such situation very often. Health care professionals are expected to be competent towards BLS. In the United States BLS training has been recommended for all health care professionals since 1966 especially for those who are involved in resuscitation. Demand for courses of BLS is ever increasing worldwide[10]

The practice of nursing requires good theoretical understanding of nursing knowledge and competence in technical skills, critical thinking, clinical decision making and assessment abilities. However, the definition of competency differs based on health care providers' level of professional education and educational experience. Nurses in deferent settings and departments have different perception towards their clinical competence.[11]

However, there is little or no information about how nurses in Ethiopia evaluate their clinical competence. This gap existed despite the evidence in the literature that determination of clinical competency is a central indicator of the quality of the curriculum.[12]

However, studies revealed that the clinical competence of nurses in hospitals and other functioning areas is the concern and the center of attention for the managers, professional associations, government, and society as a whole. In Ethiopia, lack of nurses' clinical competence is one of the most important reasons for the change of educational curriculum from a three-year program to a four-year program.[13]

Therefore, this study will be aimed to determine the levels of perceived clinical competency towards BLS reported by nurses and the factors associated with perceived clinical competency regarding BLS among nurses working at Debre Birhan Referral Hospital.

An American experience indicates that preventive measures can reduce the incidence of death due to cardiovascular diseases. This has been taken up by the UK government who has recently introduced a policy to try to reduce the incidence of these diseases by 40% by the year 2015. Many studies have shown that the patient's eventual outcome is very dependent on the speed of onset and efficiency to the basic and advanced life support techniques[14].

Significanceof the study

The purpose of this study was to assess the perceived clinical competency, knowledge and associated factors of basic life support among nurses working at Debre Birhan Referral Hospital.

The finding of this study was provided evidence for different concerned bodies and health administrators to know the problem and give training about Basic Life Support for nurses to increase quality of intervention for reduction of cardiac and respiratory arrest and to understanding basic life support (BLS).In addition, Hospitals managers will promote nurses to improve cardiopulmonary resuscitation service and also to disseminate awareness for the community about BLS to prevent the complication of cardiac arrest.

Conceptual frame work of bls and its associated factors

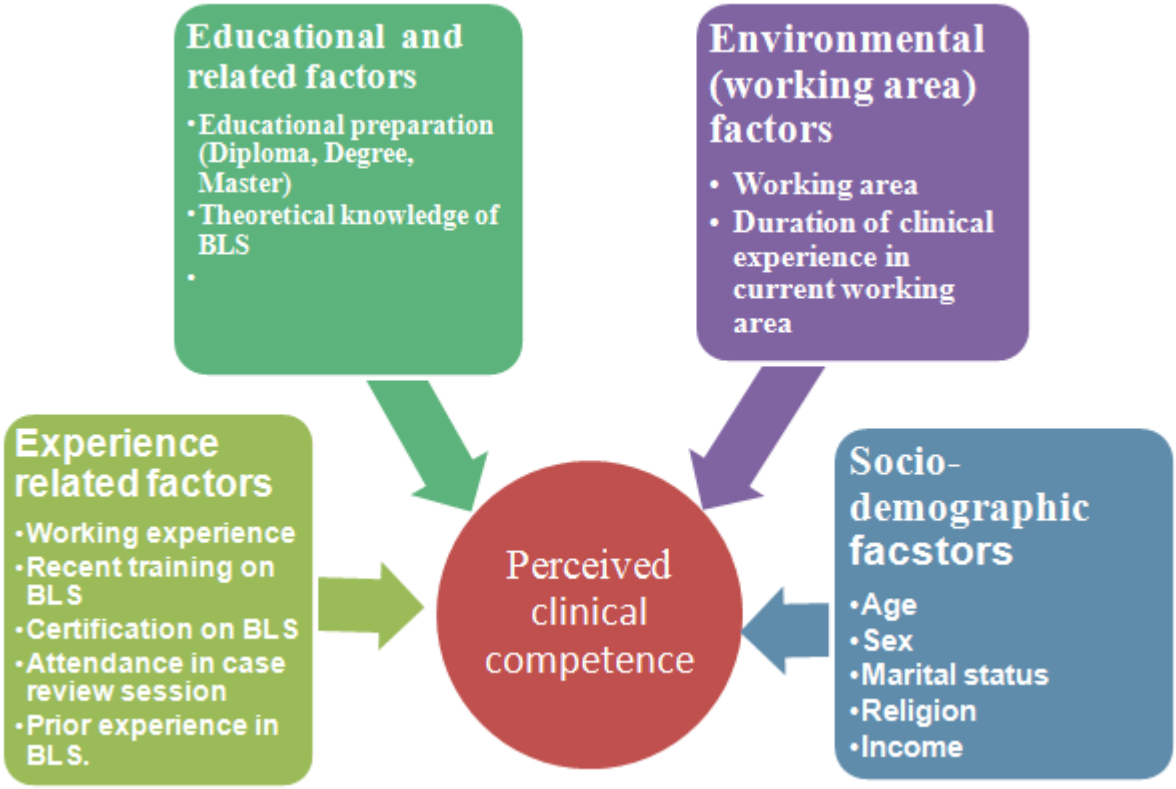

Figure 1: A conceptual framework adapted from a study conducted in Zambia Hospital for study of perceived clinical competency towards and associated factors among nurses working in Debre Birhan Referral Hospital, 2020.

Objectives

General objective

A study to assess perceived clinical competency towards basic life support and associated factors among Nurses working in Debre Birhan Referral Hospital, North East Ethiopia, 2020.

Specific objectives

1. To determine perceived clinical competency of nurses towards basic life support among Nurses working in Debre Birhan Referral Hospital, North Est Ethiopia, 2020.
2. To assess knowledge of nurses towards basic life support among Nurses working in Debre Birhan Referral Hospital, North Est Ethiopia, 2020.
3. To identify factors associated with perceived clinical competency towards basic life support among Nurses working in Debre Birhan Referral hospital, North East Ethiopia, 2020.

METHODOLOGY

Study Area and Period

The study was conducted in Debre Birhan Referral Hospital from Oct.16 to 30, 2020. The hospital is located in Debre Birhan town, Amhara regional state North East Ethiopia. Debre Birhan referral hospital is the largest of all the Hospitals in North Shewa. Debre Birhan city is 130km far from the capital city of Ethiopia, Addis Ababa, and 691km from Bahir Dar which is capital city of Amhara region. Debre Birhan Referral Hospital provides a referral treatment and is also open 24 hours for emergency services. The hospital is administered by Amhara Regional State and Debre Birhan University and providing practical teaching for medical students. According to human resource management and matron the hospital has 268 beds, with 61 doctors, anstesia10, physiotherapist2, radiographer9, pharmacist 38, laboratory30, and 241Nurses working in this hospital.

Study Design

An Institutional Based Cross-Sectional study design was conducted Oct 16thto 30th2020. STUDY

Population

Source Population

The source population of this study was all Nurses working in Debre Birhan Referral Hospital, in 2020.

Study population

The study population of this study was all selected nurses who are working at Debre Birhan Referral Hospital, in 2020

.Study unit

Each selected Nurse who is working at Debre Birhan Referral Hospital, in 2020.

Inclusion and exclusion criteria
Inclusion criteria

All nurses working in Debre Birhan Referral Hospital during the study period was included in the study.

Exclusion criteria

Those Nurses on annual leave, seriously ill to participate in the study were excluded from the study.

Sample size determination and sampling technique

Since the source population was small, we were including all nurses who are working at Debre Birhan Referral Hospital for the study which is 241nurses. So that there is no need of calculating sample size and determining sampling procedure.

Data collection method

After getting ethical approval from ethical committee of Emergency and Ophthalmic nursing department and participants consent data was collected using self-administered questionnaire prepared in English. The tool was adapted from previous studies and guidelines[17, 22, and 23].The data collection was carried out byone diploma nurse and two BSC nurses and collected from Oct 16 to 30, 2020.

Variables

Dependent variable

- Perceived clinical competency

Independent variables: The independent variables of the study were

Socio-demographic characteristics

- Age
- Sex
- Marital status
- Religion
- Income
- Type of educational preparation (Diploma, Degree, Master)

Experience and working area related factors

- Theoretical knowledge of BLS
- Working experience
- Recent training on BLS
- Prior experience in BLS.
- Certification on BLS
- Attendance in case review session
- Working area
- Duration of clinical experience in current working area

Data quality control

Data quality was controlled by giving training the data collectors for 01 day before the study to ensure consistency and to reduce variations between data collectors. A pre-test was conducted using 5 % of the questionnaire on nurses who are working in AABET Hospital. Appropriate modifications were made after analyzing the pretest result before the actual data collection. Daily communication was made by the principal investigators throughout the data collection. Collected data was checked for completeness and errors were corrected.

Data analysis

The questionnaires filled by the nurses were checked for completeness and entered and analyze by SPSS version 21. Descriptive and analytical statistics were used to describe the study population in relation to relevant variables. All Variables having p value up to 0.05 in the bivariate analysis was fitted in to the multivariable logistic regression. The 95% confidence interval and variables having p - value less than 0.05 in the forward stepwise multivariate model was considered as significantly associated with the dependent variable. Adjusted Odds Ratio (AOR) with 95% confidence interval (CI) was used to see the strength of the association between dependent and independent variables. Finally, findings of the study were displayed by using texts and tables.

Operational definition

Perceived clinical competence: is a self-perception of an individual in their capability and ability to assess clinical practice competency and associated factors to control the situation.2. High perceived clinical competency: Nurses, who scored mean and above the mean score of perception related questions regarding BLS, will be considered as having high perception of clinical competency towards basic life support.3.Low perceived clinical competency: Nurses who scored below the mean score of perceived clinical competency related questions will be considered as low perception of clinical competency towards basic life support.4. Knowledge: Nurses who scored mean and above the mean score of knowledge related questions will be considered as good knowledge and who score below the mean score will considered as poor knowledge.

Ethical consideration

Ethical clearance was obtained from Wollo University Ethical Review Committee of School of Nursing department of Emergency and Ophthalmic Nursing. A formal letter of cooperation was written to Debre Birhan Referral Hospital. After the permission of hospital the purpose and objective of the study was stated on the questionnaire and after obtaining informed consent from each study participant the study was conducted. Data was kept anonymously in the distributed questionnaire in order to keep confidentiality.

RESULTS

Socio demographic characteristics of study participants.

More than half of the study participants were female 135(57.7%) and 189(80.8%) had BSC degree. The mean (standard deviation) ages of the participants were 29.72 (5.082) years. From the participants 145 (62.0%) were married and 87(37.1%) were single in marital status. The majority of the study participants 217(92.7%) were orthodox by religion and average monthly income was 6483.58 Ethiopian birr. Regarding training and certification majority of the participants 198(84.6%) didn't participated in BLS training, 124(53.0%) attended in case review session and 156(66.7%) participated in care of patient who needs BLS. (Table 1)

Table 1: Socio-demographic characteristics of the respondents at Debre Birhan Referral Hospital, Debre Birhan, Ethiopia, 2020.

Variables	Category	Frequency N=234	Percentage %
Sex	Male	99	42.3
	Female	135	57.7
Age	18-25	15	6.4
	26-33	153	65.4
	34-41	61	26.1
	>42	5	2.1
Marital status	Married	145	62.0
	Single	87	37.1
	Divorced	2	0.9
Religion	Orthodox	217	92.7
	Muslim	14	5.9
	Protestant	3	1.4
Monthly income	3500-5000	6	2.6
	5001-6500	58	24.8
	6501-7500	100	42.7
	7501-8500	55	23.5
	>8500	15	6.4
Educational preparation	Diploma	42	17.9
	BSC	189	80.8
	MSC	3	1.3
Work experience	0-1yr	15	6.4
	2-5yrs	38	16.2
	6-10yrs	142	60.7
	>10yrs	39	16.7
Department	Medical	69	29.5
	Surgical	59	25.3
	Emergency	41	17.5
	Pediatric	27	11.5
	Others	38	16.2
Training on BLS	Yes	36	15.4
	No	198	84.6
Attended case review session	Yes	124	53.0
	No	110	47.0
Participate care of patient who Needs BLS	Yes	156	66.7
	No	78	33.3

Perception of the studyparticipants towards bls.

The overall scores of nurses perceived clinical competency towards BLS ranges from 0 (lowest self-perceived competency) to 12 (highest self-perceived competency) with the mean score of 9.39+/-3.69. From 234 study participants 172(73.5%) perceived themselves as highly competent while 62(26.5%) had low perception towards BLS (Table 2 &Figure 2).

Table-2: Frequency and percentage of Perception of nurses on BLS working at Debre Birhan Referral Hospital, Ethiopia, 2020.

Perception	Response	Number N=234	Percentage %
Understand the role of nursing regarding BLS	Yes	204	87.2
	No	30	12.8
Have necessary knowledge of BLS as a nurse	Yes	192	82.1
	No	42	17.9
Have necessary skill regarding BLS	Yes	179	76.5
	No	55	23.5
Can document client care effectively	Yes	188	80.3
	No	46	19.7
Knowledgeable on legal and ethical issues	Yes	165	69.5
	No	69	29.5
Recognize signs and symptoms of patient deterioration	Yes	204	87.2
	No	30	12.8
Can prioritize actions	Yes	216	92.3
	No	18	7.7
Can take actions based on patients condition	Yes	201	85.9
	No	33	14.1
Understand the rational for action and orders	Yes	192	82.1
	No	42	17.9
Can evaluate patients response	Yes	214	91.5
	No	20	8.5
Have succeed as a nurse regarding BLS	Yes	197	84.2
	No	37	15.8

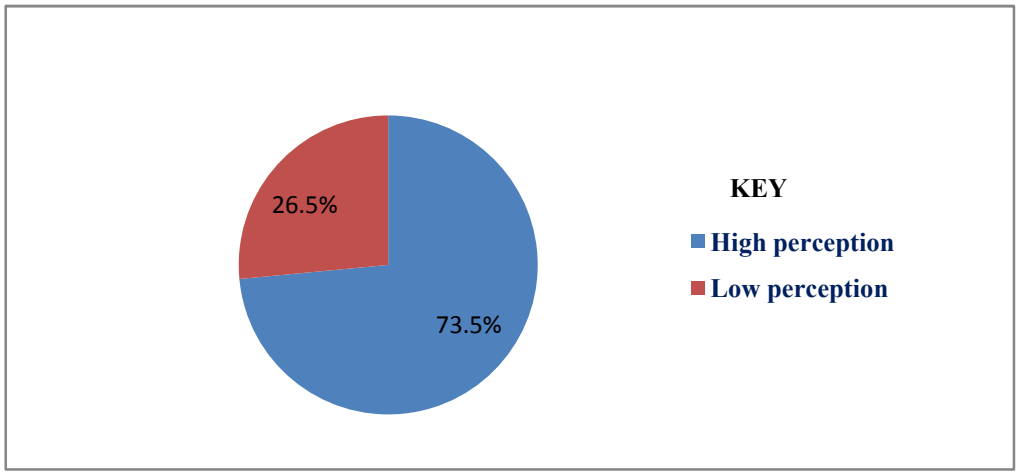

Figure 2: Perception of nurses towards BLS who are working at Debre Birhan Referral Hospital, Debre Birhan, Ethiopia, 2020.

Knowledge Statues of the Study Participants on BLS.

The knowledge scores of nurses were marked as poor and good. From 234study participants 177(75.6%) had poor knowledge while others 57(24.4%) had good knowledge about BLS. The mean score for the participants was 3.69+/-1.57(Table 3).

Table 3: Frequency and percentage of knowledge score of nurses working at Debre Birhan Referral Hospital, Debre Birhan, Ethiopia, 2020.

Aspects to assess the knowledge of nurses	No of Nurses with correct answer	Percentage %
Abbreviation of BLS	198	84.6
What is the first response for unresponsive, found in middle of the road	59	25.2
After confirming somebody is unresponsive, what is your	23	9.3

immediate action		
Location of chest compression	118	50.5
Depth of compression in adults	139	59.4
Depth of compression in children	39	16.7
Depth of compression in neonates	56	24.0
Rate of chest compression in adult	87	41.5
Abbreviation of AED	67	28.6
What is your first response for responsive patient with choking?	79	33.4

Factors Associated with Perceived Clinical Competency Of Nurses Towards BLS.

In bivariate and multivariate logistic regressions participation in patient's care on BLS [AOR=8.552(1.247, 58.673), P-value=0.029], work experience [AOR=4.98(1.35, 7.83), P-value=0.003] and duration of working in current area [AOR=3.6(1.67, 7.840), P-value=0.002] had significant association with nurses' perceived clinical competency (table 4).

Table 4: Factors associated with perceived clinical competency of nurses towards BLS. Debre Birhan Referral Hospital Northeast Ethiopia.2020

Variables	Category	Perception		COR (95% CI)	AOR (95% CI)	p-value
		High	Low			
Educational preparation	diploma	26	16	1	1	
	BSC degree	144	45	1.969(0.277-9.891)	1.771(0.546,5.746)	0.341
	MSC	2	1	1.23(0.40,9.650)	3.248(.659,16.013)	0.48
Work experience	0-1yr	6	9	1	1	
	2-5yrs	23	15	2.3(0.25,12.389)	0.8(0.26,2.590	0.456
	6-10yrs	110	32	5.156(1.989,11.935)	2.91(1.22,6.84)	0.021
	>10yrs	33	6	9.0(3.71,17.525)	4.98(1.15,7.83)	0.003
Duration of working In current area	0-1yr	79	37	1	1	
	2-3yrs	72	16	2.05(0.968,7.835)	1.2(0.60,2.40)	0.327
	4-5yrs	11	8	0.643(0.201,5.329)	0.2(0.01,1.50)	0.11
	6-10yrs	10	1	4.683(2.564,15.107)	3.6(1.67,7.840)	0.002
Participation in patient care on	Yes	115	41	1.033(0.366,4.807)	8.552(1.247,58.673)	0.029
	No	57	21	1	1	

P-value <0.05, which is significantly associated with nurse's self-perception of clinical competence.AOR < 1value, is less likely associated to nurses perceived clinical competence.

DISCUSSION

The result of this study showed that nurses in this study perceived themselves in performing basic life support is high as indicated by the most frequent score with the overall mean score of 9.3+/-5.73. The overall score of nurses' perceived clinical competency towards BLS was 73.5% as high and 26.5% as low which indicates nurses in this study feel competent regarding BLS. This finding is in line with a cross sectional study conducted among nurses in Australia that showed 78% of the respondents were perceived themselves as highly competent[17]. But lower than a study from Karlstad university hospital nurses using the Nurse Competence Scale tool which revealed that overall 83% of the nurses reported their competence as good and 16% of them reported it as very good[27]. The difference might be from different study setting, study population, educational preparation as well as study period.

A study from Zambia revealed that 60.7% of the study participants had low perceived clinical competence whereas, 43.6% perceived themselves as highly competent[21] and in Dilla University 39.3% of participants perceived them as clinically competent which is lower than the current study. Likewise, the present study is inconsistent with the study from Trivandrum which revealed that their perception was generally poor41.7%[21]. This difference might be due to

different reasons. First, it might be due to difference in study population and study period. Second, by socio-demographic characteristics of the study participants, thirdly it could be from difference in educational level of the study population.

The overall score on the aspect of taking action to manage patients changing condition indicates nurse'sself-perceived competence is high, although not as highly scored as that of prioritizing actions based on patient's condition. This finding was in line with the study conducted at of Rhode Island University hospital [20].The reason might be prioritizing the patient's condition is one of the competent health providers action.

Scores for nurse'sself-perception towards BLS were higher for those who participated in BLS training than for those who didn't participate. A study from Trivandrum university showed that no significant association between BLS training, age and knowledge with perceived clinical competence. Even though knowledge score of the respondents was above the mean, their perception towards BLS was poor(41.7%)[21]. this might be educational curriculum was theoretical rather than practical.

This study revealed that the participants had inadequate knowledge on BLS i.e. 75.6% of nurses scored below the mean whereas 24.4% of the participants answeredabove mean. This finding is lower than the study conducted in Trivandrum among cardiac nurses showed that the knowledge of BLS was 52.4%[21] and similarly in Pakistan was good 66.6%[16] but higher than study conducted in Nigeria18.6%[22].This difference might be due to training on specialty, educational curriculum and the study population difference.

Based on the multivariate regression to identify associated factors, clinical work experience, participation in patients care on BLS and duration of working in current clinical area were significantly associated with perceived clinical competence of nurses towards BLS.

This study showed that those nurses who had a clinical work experience of 6-10 years were nearly twotimes and who had over 10 years were four times more likely to perceive themselves as competent compared to those who had a work experience of 0 to 1 year. This finding is inconsistent with the study conducted in Nigeria showed that there was high perception in nurses who had less than five years' experience. This difference may be applying more practical teaching-learning curriculum.

Another association found in this study is participation in patients care on BLS of the respondents. Although the current study did not reveal any significant association between knowledge and perceived clinical competence, the study conducted indicated the associations of the two variables in Koreaanda study conducted from Rhode Island revealed that attending in case review session and recent training on BLS were predictive of the nurses' perceived clinical competence towards BLS[20]. This finding was inconsistent with in the current study. This could be due to the difference study population, study design as well as educational preparation and training of the study participants.

In the current study no association was seen between self-perceived clinical competences between training on BLS, income, theoretical knowledge and working area. This finding was inconsistent with the study from Korea which revealed that work area and theoretical knowledge of BLS were factors significantly associated with nurses' perceived clinical competence towards BLS. This could due to clean, neat working area and complete procedural materials were fulfilled.

Limitationof the study

Limitation

1. Conducted in one hospital setting. Due to this not generalized to the larger population of nurses working in other hospitals. In addition, not assess the skill and practice of the participants.
2. The study was based on self-reported information provided by nurses who may potentially lead to bias that may have occurred because of the respondents' interpretation of the questions or desire to report their feeling that may increase the prevalence of the problem.

CONCLUSION

This study provided insight about perception, knowledge and associated factors towards BLS among nurses working at Debre Birhan referral hospital.

Based on the findings of this study, we conclude that the overall score of nurses' perception towards BLS was high (73.5%). However, the knowledge status of the study participants towards Basic Life Support was generally poor 177(73.5). Generally, nurses were clinically incompetent towards Basic Life Support.

In this study showed that participation in patients care on BLS, clinical work experience and duration of working in the current area were factors significantly associated with perceived clinical competence of nurses working at Debre Birhan Hospital. However, the study showed that there is no statistically significant association between knowledge, BLS training, working area, average monthly income, educational status sex and age with perceived clinical competence of nurses.

RECOMMENDITION

- Competency in nursing perception and knowledge is vital to safe patients care. Further research is needed to identify the perception of nurses other than BLS that will facilitate the development of nursing clinical competence.
- Hospital administrators should be motivating and empower nurse's knowledge by giving training and short course education in order to improve BLS implementation.
- Nurses' clinical competency is mandatory to provide essential patient care. Therefore, we suggested that nurses should update and retained their perception to do BLS by sharing experience from their peers and by utilizing the available resource (such as internet and books)

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