ADDIS ABABA UNIVERSTY

COLLEGE OF HEALTH SCIENCE

DEPARTMENT OF EMERGRNCY MEDICINE

A STUDY ON ASSESSMENT OF KNOWLODGE, ATTITUDE AND PRACTICES ON THE PREVENTION OF VENTILATOR ASSOCIATED PNUEMONIA AMONG NURSES WORKING IN FIVE SELECTED ADULT INTESIVE CARE UNITS OF GOVERNMENT HOSPITALS, ADDIS ABABA, ETHIOPIA.

BY: Belete Sisay (BSC)

A THESIS SUBMITTED TO ADDIS ABABA UNIVERSITY, COLLEGE OF HEALTH SCIENCESC, DEPARTMENT OF EMERGENCY MEDICINE IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR MASTERS OF SCIENCE DEGREE IN EMERGENCY MEDICINE AND CRITICAL CARE NURSING

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APPROVED BY THE BOARD OF EXAMINERS

This thesis by belete sisay is accepted in its present form by the board of examiners as Satisfying thesis requirement for the degree of Masters of Science emergency medicine and critical care

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June 2017

Addis Ababa Ethiopia

ACKNOWLEDGMENT

First, thanks are to God, to whom I relate any success in achieving any work in my Life Next I would like to acknowledge my Advisor KIBATU GEBRE for him unreserved and constructive comments for writing from the stage of the research proposal up to thesis write-up. Very special thanks also go to my friends and colleagues who have supported me in any way during my studies. My heartfelt appreciation also goes to Addis Ababa University Collage of Health science, Department of Emergency Medicine and critical care for support financial assistance and for giving me this chance to undertake this study

Also I would like to highly acknowledge the Tikur Anbessa specialized hospitals ,yekatit 12 MC, AaBET hospital, st.pawolse hospital and zwditu memorial hospital department for providing relevant information and cooperation for my research proposal development up to the whole process of data collection.

Finally, I would like to the study participants and data collectors and I will extend my thanks to my families, friends and colleagues.

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Acronyms

CAUTI	Catheter associated urinary tract infection
CRBSIS	catheter-related bloods stream infections
EMCN	Emergency medicine and critical care nurse
ETT	Endotracheal tube
FMOH	Federal Ministry of Health
HCU	high-care units
HDU	high-density units
LOS	lengths of stays
ICU	intensive care unit
IHI	institute for health care improvement
SPSS	statistical package for social sciences
TASRH	Tikur Anbesa specialize referral hospital
VAP	ventilator-associated pneumonia
WHO	world health organization

ABSTRACT

Background: Ventilator associated pneumonia is the most common nosocomial infection occurs in people who are on intubation and mechanical ventilation. The gaps between knowledge, attitude and actual clinical practices on its' prevention have not been sufficiently studied and needs further research which may contribute to the quality of care and improvement of critical patient's out come. Besides, nurse professionals who are providing services in a high risk critical care setting should be competent to assess, monitor and effectively respond to the needs of critically ill patients.

Objectives: The general objective of the study is to assess knowledge, attitude and practices on the prevention of ventilator-associated pneumonia among nurses working in adult intensive Care unit of five selected government hospitals, Addis Ababa.

Methodology: Across sectional descriptive study, design was employ. Data collected from AICU nurses of five selected government hospitals. It was enter using SPSS version 21. For windows and then analyzed. The study was analyzed using table and graph the study was conduct from DEC/ 2016 - June 2017

RESULTS: Out 120 respondents, the respondent rate of study participant was 95.5%, majority 76.7% were aged between 20-29 yrs, the mean and ± SD of age were 27.58 and 6.5 respectively. 56.7% were females, 80.8% had degree, Majority of Adult Intensive Care nurses 55.5 % had been working in the ICU for less than 2yrs, qualification majority of respondents 57.5% junior nurses, 60% were single.

59.5% had good knowledge on VAP prevention where as 39.7% poor knowledge, 69 (57%) good practice and 42.5% poor practice on VAP prevention and 54.5% positive attitude where as 44.6% negative attitude VAP prevention of VAP. There was a significant difference in knowledge between respondents with ICU work experience ($p = 0.015$) and there was no significant deference on the age and educational level and concerning attitude and practice there was significant deference age with practice ($p=0.044$) and work experience with attitude ($p= 0.043$) respectively.

CONCLUSIONS: The present study assessed the current knowledge attitudes and practices of health professionals regarding VAP prevention in adult intensive care unit majority of respondents had good knowledge 68(59.50%), attitudes and practice towards VAP prevention. Increased health Professional's awareness may improve their attitudes towards VAP prevention.

RECOMMENDATIONS: TO Addis Ababa University and Addis Ababa health bureau to encourage nurses to follow strict acceptable evidence based practice protocol in service training or education. Similar study recommended including large sample size in other hospitals, which provide care for critically ill patients, further research on factors affecting implementation of VAP prevention strategies was recommend.

Key words: knowledge, attitude, practice, KAPs, VAP, and ICU

1. NTRODUCTION

1.2. BACKGROUND

Ventilator-associated pneumonia (VAP) is a sub-type of hospital-acquired pneumonia which occurs in people who are on intubation or mechanical ventilation that was not present at the time of admission to hospital or that occurs 48-72 hours after intubation and mechanical ventilation through an endotracheal or tracheostomy . It is the most common nosocomial infection, with the prevalence rates ranging from 10% to 70% in critical care units **.**Characterized by the presence of progressive in filtrate, signs of systemic infection (fever, altered white blood cell count), changes in sputum characteristics, and detection of a causative agent .VAP contributes to approximately half of all cases of hospital-acquired pneumonia [1].

Ventilator-associated pneumonia accounts for 47% of infections in patients in intensive care units. Adherence to the best nursing practices recommended in the 2003 guidelines for the prevention of ventilator-associated pneumonia from the Centers for Disease Control and Prevention should reduce the risk of VAP. The Centers for Disease Control and Prevention (CDC) Study of the Efficacy of Nosocomial Infection Control (SENIC) have shows the efficacy of surveillance to help to prevent health care acquired infections (HAIs). Different literature shows that HAIs are the major cause of patient morbidity and mortality in developed countries [2].

Infectious bacteria obtain direct access to the lower respiratory tract via (1) micro aspiration, which can occur during intubation itself, (2) (typically Gram-negative bacteria and fungal species) with in the endotracheal tube; (3) pooling and trickling of secretions around the cuff; and (4) impairment of mucociliary clearance of secretions with gravity dependence of mucus flow within the airways. [3]

Whereas re-intubation following extubation increases VAP rates the use of non-invasive positive pressure Ventilation has been associated with significantly lower VAP rates. Host factors such as the severities of underlying disease, previous surgery and have all be immune suppress implicated as risk factors for development of VAP [4].

The organisms recovered have an impact on outcome, high mortality rate screening VAP caused by *Pseudomonas aeruginosa*, *Acinetobacter* and *Stenotrophomonasmaltophilia* [5] Beyond mortality, the economics of VAP include increased ICU lengths of stays (LOS) (from 4 to 13

days), and incremental costs associated with VAP have been estimated at between $5,000 and $20,000 per diagnosis [6].

Nevertheless, nurses need to have an awareness of the problem as well as knowledge on the VAP prevention strategies to stick on to such practices. Skilled and knowledgeable nurses are extremely important and needed to make right decisions in patient care and minimize risks to patients. ICU Nurses knowledge should bring confidence to make appropriative decisions and prevent poor outcomes in the recovery of mechanically ventilated patients (7)

1.3 Statement of the problem

A 2003 study, which was conducted in Israel shows, VAP is the most common hospital acquired infection in ICUs and represents 25% of all ICU infections [8] the study conducted in Belgium 2005 Patients in intensive care units (ICUs), is identified as target for quality-of-care and patient-safety improvement strategies. Approximately 1.7 errors per patient occur in the ICU daily, and nearly half of these errors were attributable to ICU nursing staff [9].

With an incidence of 6-68%, and a 10-70% morbidity-mortality rate and an increase in health care costs. When VAP occurs, it prolongs the ICU length of stay, ultimately increasing hospital stay and the risk of death in critically ill patients. The studies indicate that in Virginia 2006 VAP

Was, also associated with an increased duration of mechanical ventilation and increased health care costs due to an increased ICU and hospital length of stay VAP cost is reported to be as high as $10 billion per year [10-13]

A2003 study done in Argentina, VAP prolongs the length of stay by up to 50 days, and increase the duration of mechanical ventilation by 5 to 7 days, which generates substantial extra cost of care. Similarly, since ventilator support directly related to critical care and its outcomes improvements in ventilator support were required to understood in order to improve Emergency and Critical Care. [14]

Doctors and Nurses in intensive care units usually concentrate on life threatening issues, but they have a little concern about less emergency issue like oral care, suctioning technique, bed

elevation and respiratory therapy etc... It is very important to reduce the probability of infection and provide comfort and satisfaction. However in people how can't make it independently they need assistance , Although VAP is a serious problem found in ICU in developed countries, the exact magnitude as well as intensity in developing countries is not clear.

2014 and 2015, Study done on VAP prevention in Addis Ababa Ethiopia shows that (most nurses had performed good practices and have an adequate knowledge level on prevention of VAP. However, it was also shown that 39.3% and 46.7%of subjects lacked performances as well as knowledge respectively) and (the study discovered that nurses lacked of knowledge and practice in some areas. Practice areas was 3.3% washing their Hands before oral care, 10% before patient contact 13.3% before suctioning and 25% after patient contact, 20% wear sterile gloves during suctioning from ETT and the knowledge gaps was 36.8% knew that head of bed elevation ranged from 30 - 45degree,

37.6% knew that prolonged use of stress ulcer prophylaxis might increase colonization density of aero digestive tract. 28.2% and 31.6% knew that closed suction system and change in humidifiers every 2-7days/when ever needed recommended respectively. **[15]**

However, deferent studies conducted in developed country well equipped AICU like USA, Israel, Argentina, and limited recourse country Tanzania, Sudan and Kenya revealed as knowledge and practice gap existed among ICU nurses on VAP.

So, the present study by adding the attitude variables that is not include on the Ethiopian studies aimed to on this study the researcher was try to get the problem of on prevention of VAP among nurses working in five selected adult intensive care units of government hospital.

1.4. SIGNIFICANCE OF THE STUDY

The purpose of this study to have knowledge, attitude and preventive practice toward VAP. This study assess knowledge, attitude and practice on the prevention of ventilator associated pneumonia among nurses working in five selected adult intensive care units of government hospitals, .That entails important contribution for nursing practice, education and further research which will contribute to the quality of care and improvement of critical patient’s outcome.

To make the highest standards of nursing care, nursing practice must base on scientific knowledge. This can achieved through adherence to the evidence based guidelines for prevention of ventilator-associated pneumonia, at the end improving patient's outcomes. The Improved outcomes will shorten patient's ICU length of stay, hospitalization as well as advantage of the patient financially with decreased hospital costs.

Hospitals also gain advantage as they were constantly face with the challenge of providing cost effective services to patients and communities. As VAP was link with higher morbidity, mortality and costs, preventing ventilated patients from developing VAP is an important patient safety objective.

This study is meant to contribute in assessing of VAP prevention and control of VAP among ICU nurses Though, the exact magnitude as well as intensity in developing countries is not clear, VAP is a serious problem found in ICU in developed countries [10, 16]. Overall, the findings have important suggestions for policy and decision making in health care planning, in allocating resources (human, financial…etc).

2. LITERATURE REVIEW

The review of different literature on knowledge, attitude and practice of VAP Begin with the entail description of the primary concepts in the intended categories of characteristics of the population, knowledge, attitude and practice for the prevention of VAP.

A 2011, which was, conducted in Turkish studies shows; a country with the Netherlands, in Pneumonia was classifie as community-acquired (CAP), health care-associated (HCAP), and VAP. VAP is a sub-classification of HAP, in hospitalized and mechanically ventilated patients. CAP was defining as pneumonia for which the first positive bacterial culture obtained within 48 hours of admission to the hospital and the patient does not have risk factors for HAP [17].

2.1. Characteristics of the Population

The prevention and control of VAP in ICU are dependent on the education and sensitization of ICU staff members towards the problem and on the availability of equipment necessary for controlling cross infection between environment, health provider and patients. The questionnaire distributed to 855 nurses during the annual congress of study for Critical Care Nurses. Of the 855 participants, 638 completed the questionnaire. Most respondents were females (n = 472; 74.0%); about one quarter 9 (n = 153; 24.0%) had < 1 year of ICU experience, 111 (17.4%) 1 -5 years, 100 (15.7%) 6 – 10 years, and 274 (43.0%) > 10 years. A degree in emergency and critical care was held by 68% (n = 437) of respondents. The average score was 3.7 on nine questions. No substantial differences found between males and females Nurses holding the degree had significantly better scores than those not holding it [18].

A 2012 which was conducted in dare- salaam Tanzania, studies shows One hundred and eighteen ICU nurses were recruited and all completed the study, about 64(54.2%) had either diploma or Advanced diploma in nursing, majority of ICU nurses 105 (88.9%) had no intensive care training, and 80 (67.8 %) were working in ICU for less than 10 years [19]

A 2015 Study was shows in Addis Ababa Ethiopia, Out of one hundred twenty nine respondents 78 (60.5%) were females, about 73 (56.6%) had Diploma. Majority of Adult Intensive care nurses 79 (61.2%) have no intensive care training, and 87 (67.5 %) are working in the ICU for

Less than 6 years Majority of them 77 (59.7%) were orthodox in religion and 70 (54.3%) were single. [20]

2.2. Oral hygiene and hand washing

A1992 the study was shows in Germany, Poor oral health is a risk factor for pneumonia in critically ill patients. Although oral rinse with chlorhexidine has generally accepted as an effective measure to reduce the risk of VAP [21]

The study shows on developing country 2003 in this study twice-daily electric tooth brushing combined with chlorhexidine-based oral rinse vs. Oral rinse without dental brushing did not result in a reduction of the risk of either suspected VAP While brushing teeth may not necessarily lead to reduced VAP rates, It contributes to the prevention of dental plaque, stomatitis, gingivitis, subgingivitis, and periodontitis. An additional problem is that oral care perceived as a difficult and unpleasant task; moreover, most nurses give to understand they lack of training to care for the oral cavity [22].

Study was which done in Tanzania found that 30 nurses observe none washes hands before entering the intensive care unit. 5(16.7%), had washed their hands before and, 10(33.3%) after contacting a patient and, 20(66.7%) of these nurses washed their hands after contacting with a source of microorganism like body fluid, 9(30%) used antiseptic solution (chlorhexidine) alcohol-based hand hygiene products after washing their hand [23]

2.3. STRATEGIES NECESSARY TO PREVENT VAP:

A 2008, Canadian study shows that there are 21 strategies for prevention of VAP, three positional strategies and 8 pharmacological strategies. The physical strategies include (1) Route of endotracheal intubation, (2) Systematic search for maxillary sinusitis, (3) frequency of ventilator circuit changes, (4) type of humidifier, airway humidification (5) frequency of humidifier changes, (6) endotracheal suctioning system: (7) closed vs. open endotracheal suctioning system (8) frequency of change, subglottic secretion drainage, (9) Timing of tracheostomy and (10) Use of bacterial filters. The positional strategies include (1) Kinetic bed therapy, (2) Semi recumbent positioning and (3) prone positioning.

The pharmacological strategies are: (1) Prophylactic aerosolized antibiotics (2) Prophylacti

Antibiotics,(3) Prophylactic intravenous antibiotics, (4) Prophylactic topical/ topical plus intravenous antibiotics, (5) Oral decontamination with chlorhexidine, (6) Oral decontamination with povidone iodine, (7) Oral decontamination with iseganan and (8) Prevention of maxillary sinusitis.

The guidelines, which incorporate all the above strategies, were created by a multidisciplinary panel composed of intensivists, infectious disease specialists, intensive care nurses, infection control nurses, ICU pharmacists and respiratory therapists as well as representatives from the Canadian Patient Safety Institute [24, 25]

A 2015 the study was conduct in Saudi Arabia, the questionnaire distributed to 93 ICU nurses with a response rate of 100%. Of the 93 nurses, 65 (69.9%) were females, and 48.4% of all participants had a Bachelor of Nursing (BSN) degree while 35 (37.6%) had Diploma degrees. More than half of nurses (53.4%) had 1- 5 years of experience in ICU and 46.6% of the nurses had more than 6 years of clinical experience; the majority (57%) was working in hospitals with more than 30 ICU beds. VAP courses had been attended by 56% of nurses and 83 % believed that their hospitals had VAP policies and guidelines. In this study, 86.5% of respondents recognized the importance of recumbent position for prevention of VAP. Of respondents, 85.6% knew the importance of closed system suctioning for prevention of VAP [26]

A 2005, which was conduct in America, during these studies 276 patient days, mean time of continuous monitoring of backrest elevation per study day, was 16.2 hours (range 1.7-23.9). Reduction in monitoring time per day was primarily related to transport of patients out of the unit, patients being out of bed, room changes (until equipment was reconnected by study personnel), and endotracheal estuation. Mean overall backrest elevation during the entire study period was 21.7º (range 0º-88º). During all study days, patients were at backrest Elevations less than 30º -72% of the time and less than 10º 39% of the time Changes in backrest elevations during the study were not significant [27]

2.4. AICU NURSES' KAP ON PREVENTION OF VAP

Another study shows in Colombia America 2005 done nurses need to have an awareness of the problem as well as knowledge, attitude to adhere to such practices.

To prevent VAP have been reported in the literature, however there are very few data concerning nurses' knowledge, attitude on VAP prevention and the level of their practice, as well as factors that may influence their application at the bedside, lack of knowledge and poor attitude may be a barrier to practice.[28]

In Ethiopia study revealed that, nurses had adequate level of knowledge (60.7%) and practice (53.3%) towards the prevention of VAP. This study also revealed that nurses lacked knowledge and practice. Like practice areas were: 3.3% washing their Hands before oral care, 10% before patient contact, 13.3% before suctioning, and 25% after patient contact, 20% wear sterile gloves during suctioning from ETT, and of the study subject, 100% missed practicing hand washing before entering ICU, not discarding suction tube immediately after single use and no documentation of the procedures.

In addition, the knowledge gaps were: 36.8% knew that head of bed elevation ranged from 30 to 45 degree, 37.6% knew that prolonged use of stress ulcer prophylaxis may increase colonization density of aero digestive tract, 28.2% and 31.6% knew that closed suction system and change in humidifiers every 2-7days/when ever needed were recommended respectively. Sex and educational levels have a statistical significant association with knowledge the association between the two dependant variables is not determined; these findings indicated that most nurses had performed good practices and have an adequate knowledge level. However, it was also shown that 39.3% and 46.7%of subjects lack of performances as well as knowledge respectively. This indicated that a significant number of nurses in the Current study areas have in adequate knowledge and practice prevention of VAP [16, 29 -33]

3. OBJECTIVES

3.1 GENERAL OBJECTIVE

The general objective of the study was to assess knowledge, attitude and practices on the prevention of ventilator-associated pneumonia among nurse working in adult intensive care units of five selected governmental Hospitals, at Addis Ababa from Dec/2016 - Jun/2017

3.2. SPECIFIC OBJECTIVES

I. To determine level of knowledge of Adult Intensive Care nurses about prevention of VAP.

II. To describe practice of nurses' on prevention VAP working in the Adult Intensive Care Unit.

III. To determine the existing attitude of nurses 'to words prevention of VAP working in intensive care units

4. METHODOLOGY AND MATERIALS

4.1. Study design

The study design was conduct using a descriptive cross-sectional study.

4.2. Study area

The study was conduct at five selected hospitals in Addis Ababa, which is capital city of Ethiopia. The city consists a total of 79 health facilities including Hospitals out of which 5 hospitals owned by Addis Ababa Health Bureau, 4 hospitals owned by Federal MOH (Central), 1 Addis Ababa University, 2 Ministry of defense, 1police force hospitals which provide different health services. In addition, there are about 23 health center, 9 clinic, and 34 health posts. Among these 13 Hospitals; the study was conducted at Tkuire Anbesa specialized hospital, Yekatit 12MC, Aabet, Zewiditu memorial and st.paulose hospitals in Addis Ababa city where they provide intensive care unit.

Tkuire Anbesa hospital is under the umbrella of Addis Ababa City Ministry of health. It is Located in Lideta Sub City, Keble 07. This hospital is established in 1956 E.C and under Addis Ababa University's School of Medicine which is a center for training practical and research hospital for under graduate and post graduate medical students, dentists, nurses, pharmacists, laboratory technicians and emergence medicine & critical care nurses Msc also others training gives. It is large public hospital and faces the problems you would expect in a sprawling African city with a high rate of traffic accidents. This hospital receives those trauma and non-trauma patients and serves as a referral hospital from all regions of Ethiopia. This hospital has many departments and staffs have much service experience and give health care service assigned in shifts. It has totally 600 beds, 627 nursing staff and 202 staff physician. In intensive care unit 16 beds, 12 with MV and without MV all bed are functional for ICU patient as bed and 39 staff nurses and 3 Emergency Medicine Msc nurse ,7 anestalogest and two pulmunrylogist staff specialist.

Yekatit 12 MC Hospital Medical College is located at Arada sub city Woreda 6 around six kilo campus of Addis Ababa University. The Hospital was established in 1915 (E.C) and has different

Departments. It is one of the known Hospitals in Addis Ababa under the Addis Ababa health Bureau. It has 420 beds, 1134 staffs (including 36 specialist medical doctor, 62 GP medical doctors, 342 nurses, 36-laboratory technologists/technician, 33 Pharmacists). The intensive care unit is one of the special departments of the Hospital staffed with 2 Anestalogest, and 1EMCN and 20 nurses, and has 12 beds 4- beds with mechanical ventilator and 8 are without MV provides for ICU patients.

Zewditu memorial hospital is located in kirkose Sub City woreda 08 Addis Ababa, Ethiopia Today Zewditu Hospital is operated by Federal Ministry of Health (FMOH) under Addis Ababa health biro. It has totally 182 beds, 277 nursing staff and 62 staff physician. This hospital receives those trauma and non-trauma patients, and serves as a referral hospital Critical Emergency cases referred from other hospitals and health institution.

The intensive care unit is one of the special departments of the Hospital staffed with 2 Anestalogest, and 15 nurses, and has 12 beds 3- beds with mechanical ventilator and 9 are without MV provides for ICU patients.

AaBET hospital is an affiliate of St. Paul's hospital& It is established on 15, july, 2015 G.C and located in Arada Sub City, AaBET hospital is also a referral teaching hospital which is managed By the Federal Ministry of Health (FMOH), It has totally 158 beds, 257 nursing staff this hospital receives those trauma, non-trauma& burn injury patients, and serves as a referral hospital Critical Emergency cases referred from other hospitals and health institution. The intensive care unit is one of the special departments of the Hospital staffed with, 40 15 nurses, and has 12 beds 6-beds with mechanical ventilator and 6 are without MV provides for ICU patients and **st.paulose hospitals** are the study area. The above five G. hospital selected judgmental because they have a good ICU setup with mechanical ventilator the study conducted in these five Intensive care units at Addis Ababa selected governmental hospitals,

4.3. Study period

The study was conduct in five selected governmental hospitals in Addis Ababa from Dec 2016 - Jun. 2017.

4.4. Source population

All Nurses working in five selected governmental hospitals, Addis Ababa, Ethiopia

4.5. Study population

All Nurses working in AICU of five-selected government hospitals, at Addis Ababa

4.6 Eligibility criteria

4.6.1. Inclusion criteria

I. All Government employ of Nurses currently assigned and working in intensive care unit of these five hospitals.

II. Working experience in ICU for 6 months and above as probation period was over and an ICU nurse was fully responsible to care for patients.

III. Trained nurses who consented to participate in the study.

4.6.2. Exclusion criteria

I. Trained nurses who did not consented to participate in the study.

II. All nurses who were not at work place during data collection period like those in full time school schedule and those on leave.

III. Nurses with less than 6 months of work experience.

4.7. Sample size determination

The selection of sampling techniques for the study is based on the representativeness and resourcefulness of the, using purposive selection method, the sample size of the study is the total population of nurses who are working in five-selected governmental hospital of AICU and there is no need of calculation because they are small in number.

4.8. Sampling procedures

A total of 13 Governmental hospitals identified in Addis Ababa city, of those, four of which owned by federal ministry of health, five by Addis Ababa regional health bureau, one owned

by Addis Ababa University ,two by Ministry of defense and one owned by the Federal police force.

Among these 13 Hospitals; the study was conducted at Tkuire Anbesa specialized hospital, Yekatit-12 MC, Aabet, Zewditu memorial and st.paulose hospitals At Addis Ababa city where they provide AICU selected using based on availability of well equipped ICU, mechanical ventilator setup and human power (number of AICN) purposive selection method in Addis Ababa city where they provide intensive care unit.

4.9. Measurement variables

4.9.1. Dependent variables

- *Knowledge*
- *Practice*
- *Attitude*

4.9.2**.** Independent variables

- *Socio demographic characteristics*
- Age
- Sex
- Educational level
- Year of work experience

4.10. OPERATIONAL DEFINITIONS

Knowledge Score [29]

4.10.1. Knowledge- **I**n this study it refers to the correct question of response of the subject Regarding the prevention of ventilator associated pneumonia.

Good knowledge: Refers for those study participants who scored point more than mean of knowledge questions correctly.

Poor knowledge: Refers for those study participants who score less than or equal mean point knowledge questions correctly.

4.10.2. Attitude: Are the Perception/feeling that nurses have who are working in AICU of five-selected government hospitals towards the prevention of VAP of attitude question

Positive attitude: Refers to those study participants who scored point greater than the mean of attitude questions.

Negative attitude: Refers to those study participants who scored point equal to and less than the mean of attitude questions.

Practice Score [29]

4.10.3, Practice**,** in this study it refers to the actions done by the nurses on the subject regarding the prevention of ventilator associated pneumonia.

Good Practice: Refers to those study participants who correctly respond to practice questions and score above the mean value

Poor practice: Refers to those study participants who correctly respond to practice questions and score mean value and below mean value or equal to the mean value

4.10.4 ,Adult Intensive care unit**,** A special area in a hospital, where critically ill patients or highly dependent patient, who need close and frequent observation, can be cared for by qualified and special trained staff working under the best possible condition.

4.10.5 Ventilator associated pneumonia**: is** a type of pneumonia that occurs in the patient's on mechanical ventilator support by endotracheal tube or tracheostomy for more than 48 hrs with signs and symptoms of pneumonia.

4.10.6 Year of experience, -In this study it refers to the time duration of the nurses working in the ICU which is categorized in to 6 month-2yrs,3-6yrs, 7-10yrs and >10yrs.

4.10.7 Educational level**,** - In this study it refers to the educational level which the nurse currently have , which is categorized in to Diploma ,BSC , MSC and Other.

4. 11 Data collection:-

Before data collection, a pilot study done to one AICU nurses in Minilike **II** hospital on items in a questionnaire to identify practical or local problems that might potentially affect the research process. Data was collected from 26th April - 25th may 2017 where good rapport was maintained in the whole period of data collection.

Five research assistants handed out a close-ended questionnaire with information letter and a consent form attached to it to ICU nurses. A Participant was told to sign the consent form. The questionnaires were in English because all nurses in Ethiopia are trained using English language. Even if some of the items in the questionnaire were not clear to few participants,

Questionnaires filled in the presence of five well-trained researcher assistants and participants were free to ask questions or clarification. Researcher assistants all are BSC nurse and Consent forms and filled questionnaires placed into sealed envelopes by the researcher assistant and taken from each unit daily. Data collected based on the inclusion criteria and checked by principals for its completeness and consistency.

4.12 Data entry and analysis procedure

The Data was coded entered by one people and cleaning was undertaken using Epi-7info -and SPSS .21 software for windows for analysis. The first step before analysis was data exploration to visualize the general feature of the data to analyze. Descriptive statistics was used to describe the study population by independent variables in terms of frequencies and percentage the strength of an association between dependent and independent variables and its significance was compute using odds ratio with 95% confidence interval.

Logistic regression analysis technique employed to evaluate independent effect exposure variables on the outcome variable. Results were present in tables, graphs and participants cycled texts correct choices; participants who selected a correct choice from a certain item were considered to have knowledge on that item. Participants who selected wrong choice from a certain item were considering having no knowledge on that item.

The findings of the study were present in tables, charts and figures. Data quality control during data collection principal investigator checked data for its completeness and missing information at each point. To ensure accuracy, Validity of the self-administered questionnaire and the standard checklists guide for the assessment was adopt and edited by my supervisor, pre-test was done the questionnaire was pre tested for the relevance of dependent and independent variables to avoid any confusion during actual data collection period.

4.13 Ethical considerations

Ethical clearance was obtain from departmental research ethical review board of Addis Ababa University College of health science, school of medicine, department of emergency medicine prior to beginning of the study. Official letter of permission from the department was submitted to Tikur Anbesa specialized hospital, st.paulose, Yekatit 12 MC, Zewditu memorial and Aabet Hospital in order to conduct the research. Information was given to study participants about the purpose and procedure of study and they were observed, informed consent was obtained All the

collected data was keep confidential and no one except the members of the research team have been accessed to the collected information.

4.14 Dissemination of the result

The findings of this study communicated to the hospitals where the study were conduct and disseminated in each unit. Which participated in this study to Addis Ababa Health Bureau to strengthening nurses level of knowledge, attitude and practice through training and education to Addis Ababa University, Collage of Health Science, School of emergency, medicine, Post Graduate Program through soft and hard copy after presentation. The findings will be present and or submitted to conferences. Example Ethiopian Nursing Association, Symposium or Workshops Further, the results will be publisher for access to other users.

5. RESULTS

5.1 GENERAL CHARACTERISTICS OF THE STUDY POPULATION

All statistics calculated using the Statistical Package for Social Sciences (SPSS 21.version). Descriptive data together with, significant and non-significant findings of independent test, analysis of variance have been report.

Out of the total 126 who were invited to responded the questionnaires, 6 respondents returned questionnaires with incomplete and inconsistent response After excluding incomplete and inconsistent questionnaires, and who are the analysis was done based on the 120 remaining Questionnaires making the overall response rate of 120 (95.23%) interested participants have responded the questionnaire properly. For convenience, it divided in to four sections.

SECTION ONE

Socio-demographic characteristics of the respondents (N=120)

The overall socio demographic characteristics of sampling population were as follows From TASH 35 (29.2%), From Yekatite -12MC hospital 21 (17.5%), ZMH 13 (10.8%) , st. Pawlose hospital 23 (19.2%) and AaBET hospital 28 (23.3%).(Table 1).

120 AICU nurses working from selected five governmental hospitals were included in this study. The response rate of the study participants was 95.5%. Of those 120 participants, majority 92 (76.7%) were aged between 20- 29yrs, and 21 (17.5%) between 30-39yrs, 5 (4.1%) between 40-49yrs and 2 (1.7%) were >50yrs. The mean age, median age and standard deviation were 27.58, 27 and 6.5 respectively.

Sex distribution of the respondents (N=120)

68(56.7%) of the study participants were female and the remaining 52 (43.3%) were male. According to this result indicate majority Of AICU nurses were young and female nurse's still dominates than male nurses.

Work experience of the respondents (N=120)

Concerning to work experience in AICUs 66 (55.0%) of the respondents had ICU experience of 6 months - 2 yrs, 45 (37.5%) 3-6yrs, 1 (0.8%) 7-10yrs and 8 (6.7%) >10yr of work experience

2Educational level of the respondents (N=120)

Regarding to educational level of the nurses, majority 97 (80.8%) were graduated in Bachelor of Science in nursing, 21 (17.5%) were Diploma the remaining 2 (1.7%) were master graduate and concerning Qualification majority 69 (57.5%) junior nurse, 38 (31. 7%) Senior nurse, 9 (7.5%) Expert nurse and the remaining 4 (3.5%) Chief Nurse. **D**ata on this study shows majority of ICU nurse were Bachelor of Science in nursing and regarding their qualification majority of ICU nurse were junior nurse.

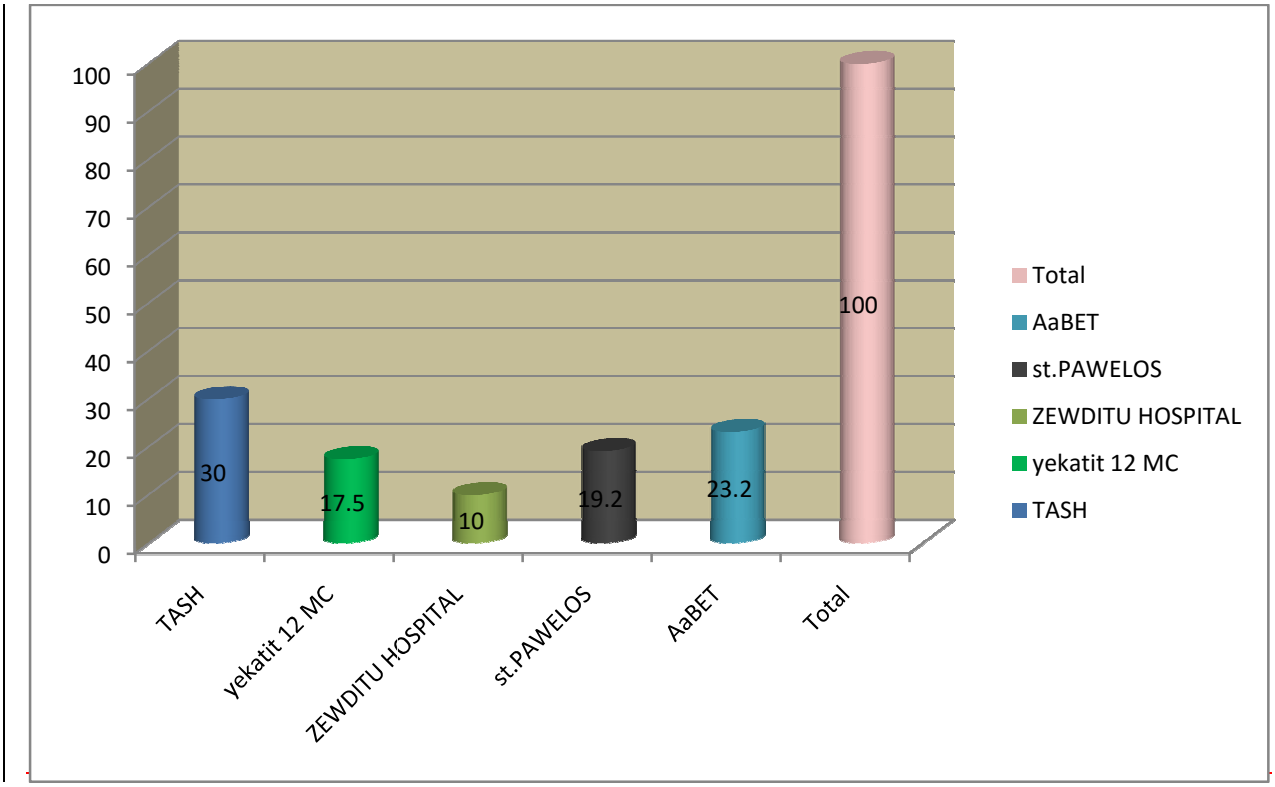
Marital status of the respondents (N=120)

Data on marital status reveals that from 120 participant 41 (34.2) married, 3(2.5%), Divorce 6 (5%), Windowed and 72 (60%) Single as indicated below

Table1 5.1: Proportion of Adult Intensive Care nurses according to their demographic characteristics in five selected governmental hospitals in Addis Ababa, 2017 (N=120)

Variables	Frequency (N)	Percentage (%)
Name of health institution		
TASH	35	29.2
Yekatit 12 MC Hospital	21	17.5
ZMH	13	10.8
St Paul's Hospital	23	19.2
AeBET Hospital	28	23.3
Total	**120**	**100**
Sex		
Female	68	56.7
Male	52	43.3
Total	**120**	**100**
Age (yrs.)		
20-29	92	76.7
30-39	21	17.5
40-49	5	4.1
50-59	2	1.7
Total	**120**	**100**
Educational level		
Diploma	21	17.5
Degree	97	80.8
Master	2	1.7
Total	**120**	**100**
Qualification		
Junior nurse	69	57.5
Senior nurse	38	31.7
Expert nurse	9	7.5
Chief Nurse	4	3.3
Total	**120**	**100**
Work experience		
6months- 2 yrs.	66	55
3-6 yrs.	45	37.5
7-10 yrs.	1	0.8
>10 yrs.	8	6.7
Total	**120**	**100**

Marital status		
Married	41	34.2
Divorced	6	5
Widowed	1	0.2
Single	72	60
Total	**120**	**100**



Finger5. 1 characteristics in five selected governmental hospitals in Addis Ababa, 2017 (N=120)

SECTION TWO

Knowledge of the respondents in preventing VAP (120)

5.2. KNOWLEDGE OF ADULT INTENSIVE CARE NURSES IN PREVENTING VENTILATOR ASSOCIATED PNEUMONIA

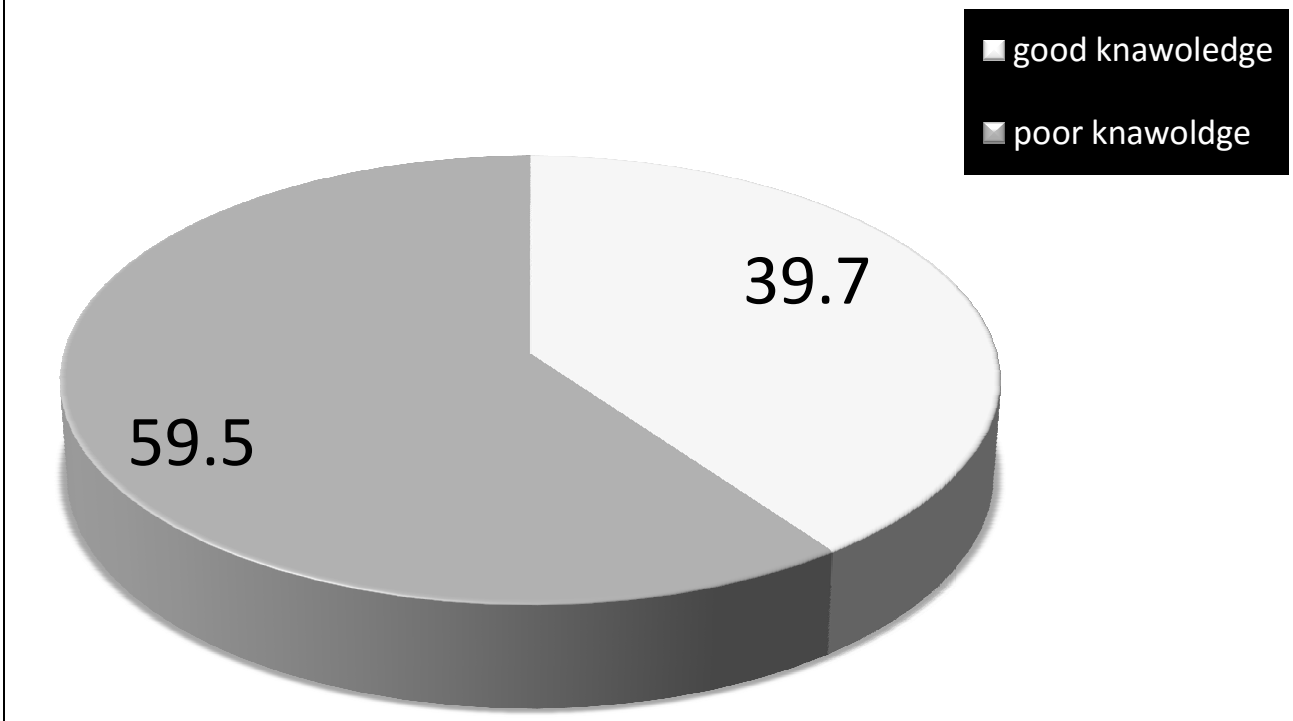
The mean score and standard deviation Mean value was used to classify ICU nurses knowledge about ventilator associated pneumonia. The level of Nurses knowledge was ranked in to two levels score above the mean value was 6.92 (53.23%) were taken as having good knowledge score and those who below the score (≤53.23%) are considered as having poor level of knowledge .

There were 13 knowledge related questions about the prevention of VAP and level of Knowledge of nurses calculated out of 100%. Accordingly the result 72 (59.5%) are good knowledge on prevention of VAP, whereas 48 (39.7%) are poor Knowledge about prevention of VAP in the AICU setting.

The highest number of respondents 95 (78.5%) and 93 (75.9%) answered good knowledge item number 4 and 9 unless contraindication head of the bed elevation should be ranging from - 30 - 45 degree. It is recommended to perform chest physiotherapy due to the following reason- chest physiotherapy reduce the risk for VAP while the minimal responded 7(5.8%) to item 6 which was about a nurse caring a ventilate patient is required to wash hands - before and after after-oral/ ETT suctioning.

Tables5.2.1: Factors associated with knowledge of Adult Intensive Care nurses in selected hospitals governmental hospital in Addis Ababa, 2007

Variable	**frequency**	Percentage
The need to dispose suction catheter immediately after single use		
Correct response(	50	41.7
Incorrect response	70	58.3
Recommended time for Changing humidifier tubes to be everyday /whenever necessary		
Correct response	34	28.3
Incorrect response	86	71.7
Sterile technique is used while inserting suction catheter to ETT		
Correct response	75	62.5
Incorrect response	45	37.5
HOB should be elevated 30-45 degree unless contraindicated		
Correct response	95	79.2
Incorrect response	25	20.8
A nurse caring a ventilated patient should wear sterile glove during ETT suctioning		
Correct response	88	73.3
Incorrect response	32	26.7
A nurse caring a ventilated patient is required to wash hands before and after oral / ETT suctioning		
Correct response	7	5.8
Incorrect response	113	94.2
It is recommended to perform oral care by using a swab moistened with mouth wash and water every 4-6 hrs whenever necessary		
Correct response	42	35
Incorrect response	78	65
Continuous education to ICU nurse on privation of infection is associated with decreased rates of VAP		
Correct response	78	65
Incorrect response	42	35
It is recommended to perform chest physiotherapy since it reduces the risk for VAP		
Correct response	93	77.5
Incorrect response	27	22.5
Adjustable beds reduce the risk of VAP		
Correct response	83	69.2
Incorrect response	37	30.8
Early weaning reduce the risk for VAP		
Correct response	90	75
Incorrect response	30	25
Over feeding a ventilated patient is associated with increased the risk		
Correct response	18	15
Incorrect response	102	85
During the care of ventilation maintenance of adequate cuff pressure is important because it decrease the risk for VAP		
Correct response	77	64.2
Incorrect response	43	35.8
Total	**120**	**100**



Figur5. 2.Showing Levels of Knowledge of Adult Intensive Care nurses in preventing VAP in five selected governmental hospitals in Addis Ababa, 2017

5.3. FACTORS ASSOCIATED WITH KNOWLEDGE OF RESPONDENTS (N=120)

Adjusting for education level, years of experience and age in binary logistic regression model reveal the following results; Correlation between level of education, age, and knowledge of ICU nurses. No significant difference in knowledge between participants with different educational level and age as found (p -value = 0.103, COR=2.457, 95% CI (0.834-7.235) and p-value=0.102, COR=0.246, 95% (0.046-1.323) respectively. There is a significant difference in Knowledge between respondents with ICU work experience as found p-value = 0.015, COR= 1.574, 95%CI (0.99-2.504) work experience of nurses working in the ICU 6month-6 year had good knowledge compared to the wok experience >7years.

Tables 5.3: Factors associated with knowledge of Adult Intensive Care nurses in selected hospitals governmental hospital in Addis Ababa, 2017 G.c.

Variable	Category	Good. K	Poor. K	Chi-squ.	Df	P-value	COR (95%CI)	p-valu	AOR (97%CI)	
									Lower	Upper
Education level	Diploid Degree	12.6 59.4	8.4 39.6	2.780	1	0.103	2.457	0.103	0.834	7.235
Work experience	6month-6year 7-10year	69 3	42 6	1.808	1	0.055	1.574	**0.015** *	0.990	2.504
Age	**20-39** 40-59	68.8 4.2	45.2 2.8	3.059	1	0,102	0.246	0.273	0.046	1.323

(*)= significant at p-value <0.05 Adjusted for ICU age, yrs of Experience and Edu. Level

Good. k= knowledge and Poor. K=poor knowledge

SECTION THREE

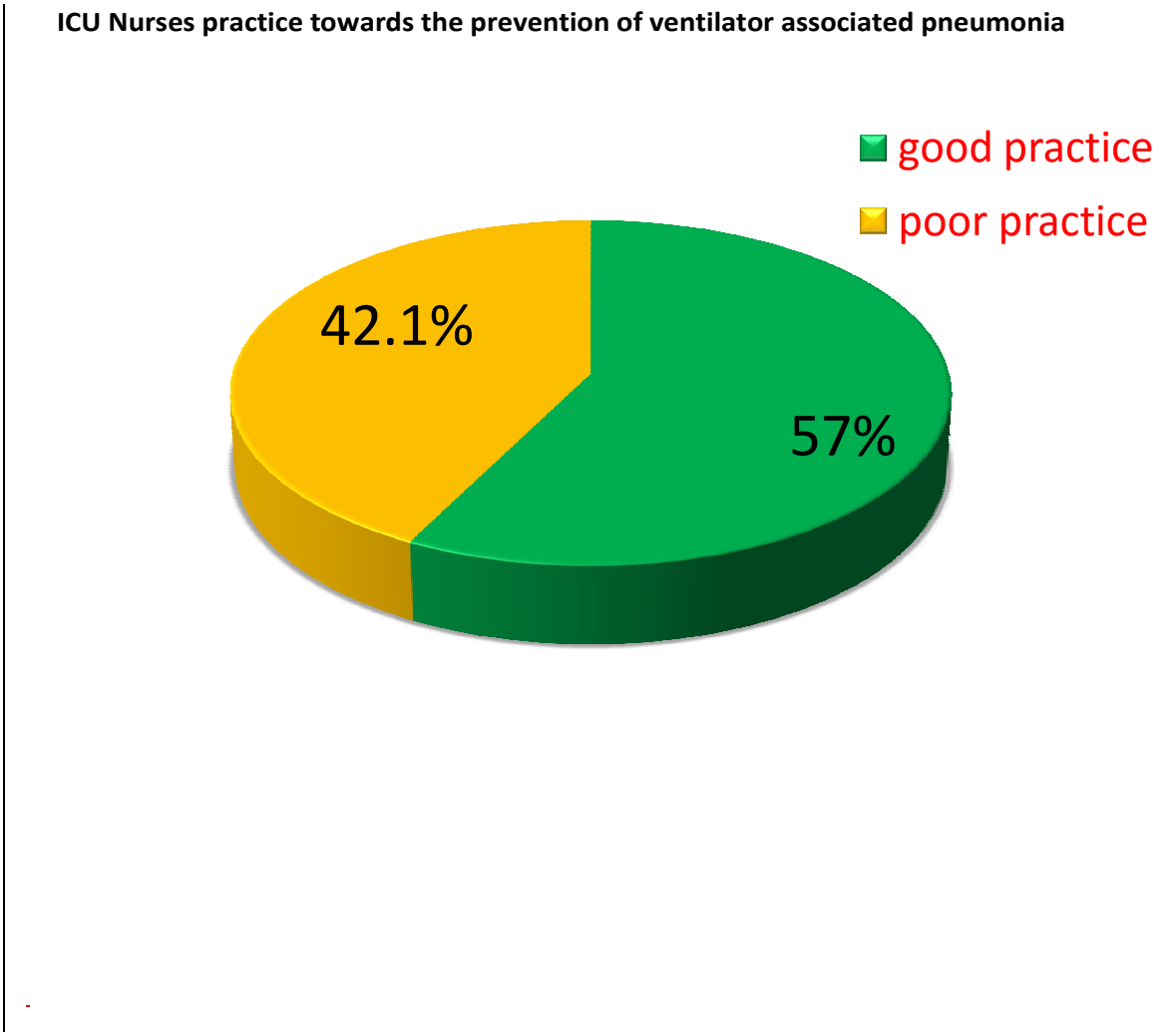
5.4. ICU Nurses practice towards the prevention of ventilator associated pneumonia

Nurses were evaluating based on practice checklist. Mean value was used to classify ICU nurses practice ,a score above the mean value 13.47 (79.24%) were taken as having Good level of practice and those who score equal and below the mean are considered as having poor level of practice.

The mean score and standard deviation of practice of nurses were 13.47±2.602 with the minimum 6 and maximum 16 out of 17 questions. Based on the results presented in table below, which there were seven items of practice that highest percentage of nurse's practiced they are: 115(95.%) of participant After contact with a source of microorganisms, 113 (93.4%) were Hand washing after patient contact, 111 (91.7%) wear gloves, 110(90.9%) Use of alcohol rub, 110(90.9%) clean mouth using tooth brush or gauze moistened mouth, 105 (91.7%) -Cuffed endotracheal-tube used 99(81.8%) endotracheal tube cuff pressure maintained

and 100 (82.6%) Percentage of Nurses practiced, of the 75(62.0%), measure and characteristics of secretion and Prepare sterile equipments required during suctioning, 83 (68.6%).

Concerning hand washing before entering ICU, none of the subjects were practiced correctly and participants discard suction tube immediately after single use Practice of participants towards the prevention of VAP. The result showed that, 69 (57%) of the respondents are found to be Good level of performance, while the remaining 51 (42.1%) of the respondents are inadequate or poor performance about prevention of VAP in the ICU setting.



Finger5. 3 ICU Nurses practice towards the prevention of ventilator associated pneumonia

Practice of hand washing among AICU nurses (N=120)

According to the respondent result shows that Large proportion 120 (100%) of nurses not wash their hands before entering ICU, 80.8% wash their hands before and 94.2% after patient contact. Large proportions of nurses (95.8%) wash their hands after contact with a source of microorganism it also found that the use of alcohol rubs was (91.7%),

Table 5.5: Practice of hand washing among Adult intensive care unit nurses on preventing VAP in five selected governmental hospitals of Addis Ababa, 2017

Variable	Frequency(N) (N=120)	Percentage (%)
Hand washing before entering ICU		
Performed	0	0
Not performed	120	100
Hand washing before patient contact		
Performed	96	80
Not performed	24	20
Hand washing after patient contact		
Performed	113	94
Not performed	7	26
Hand washing after contact with a source of microorganisms		
Performed	115	96
Not performed	5	24
Rubbing hands with alcohol		
Performed	110	92
Not performed	10	28

- **Performed=good practice, not performed= poor practice**

Practice on suctioning of ETT/ tracheostomy (N=120)

Large proportion 111(92.5%) of nurses worn clean gloves though small proportion of them didn't wear .75(62.5%), 83(69%),and 87(72.5%) of the nurses measured and characterized the secretion**,** prepared sterile equipments required during suctioning and washed their hand before suctioning.

Table5.6.1. Practice on suctioning of ETT / tracheostomy tube among Adult intensive Care Unit nurses for the prevention of VAP in five selected government hospitals of Addis Ababa, 2017

Variable	Frequency(N)	Percentage (%)
Cuffed endotracheal tube used		
Performed	**105**	**91.7**
Not performed	**9**	**7.4**
Endotracheal tube cuff pressure maintained	**99**	**81.8**
Performed	**21**	**17.4**
Not performed		
Hand washing before suctioning	**87**	**71.9**
Performed	**33**	**27.3**
Not performed		
Wear clean gloves		
Performed	**111**	**91.7**
Not performed	**9**	**7.4**
Prepare sterile equipments required during suctioning	**83**	**68.6**
Performed	**37**	**30.6**
Not performed		
Insert the catheter into the ETT gently by using aseptic technique activity and early mobilization done on patient		
Performed	**100**	**82.6**
Not performed	**20**	**16.6**
Measure and characteristics of secretion		
Performed	**75**	**62**
Not performed	**45**	**37.2**

5.5 ORAL CARE PRACTICE (N=120)

Large proportion 105 (87.5%) of nurses clean a patient mouth using tooth brush or gauze moistened mouth wash and water with chlorhexidine, 103(85.8%) Cuffed endotracheal tube used and 102 (85%) Hand washing after oral care while small proportion 86 (71.7%) of nurses washing Hand before oral.

Table 5.6.2: Oral care practice among Adult intensive Care Unit nurses for the prevention of VAP in five selected government hospitals of Addis Ababa, 2017

Variable	Frequency(N=120)	Percentage (%)
Washing Hand before oral care procedure		
Performed	86	72
Not performed	34	28
Assurance of of cuffed endotracheal tube		
Performed	103	89
Not performed	17	11
Cleaning mouth using tooth brush or gauze moistened mouth wash and water with Chlorhexidine/ povidon	105	87.5
Performed	15	12.5
Not performed		
Usage of face mask during suction	85	71
Performed	34	29
Not performed		
Hand washing after oral care	102	85
Performed	18	15
Not performed		

5.6ASSOCIATED WITH PRACTICE

Chi-square test Adjusting for level of education, age and years of working experience as in binary logistic regression results reveals the following results, Correlation between level of education, years of working experience and practice of nurses working in the Adult Intensive

care unit on prevention of VAP, there were statistical significant association between age and practice chi-square(1 5.) 681; p-value = 0.044.and COR 3.011(1.028-8.824) Concerning there educational level, and work experience, the Chi-square value indicated that there were no statistical significant association with practice toward the prevention of VAP among nurses worked in ICU with a chi-square(1) = 2.021; p-value = 0.161, chi-square (1) = 1.403; p-value= 0.248, respectively.

Table5.6.3: Association between practice and socio-demographic characteristics Of Adult Intensive Care nurses in selected hospitals in Addis Ababa, 2017**.**

Variable	Category	Good.p	Poor.p	Chi-squ.	Df	P-value	COR (95%CI)	P-VALU	AOR (97%C Lower
Educational level	Diploma	15	6	2.021	1	0.161	0.480	0.161	0.172
	degree	54	45						
Work experience	6mth-6y	66	46	1.403	1	0.248	0.418	0.248	0.095
	7-10y	3	5						
Age	20-39yr	68	45	5.681	1	0.044*	3.011	0.044*	1.028
	40-59yrs	1	6						

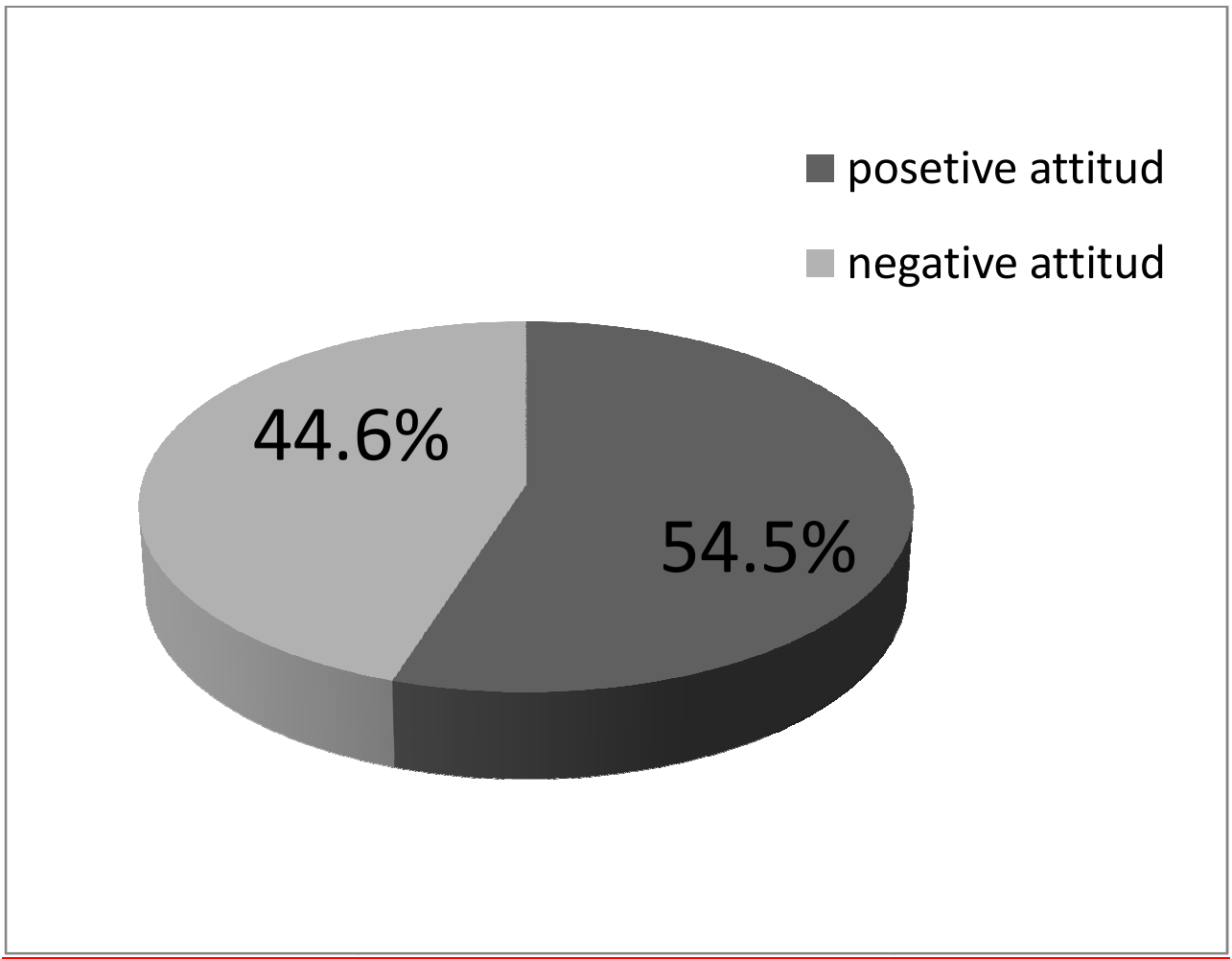
(*)= significant at p-value <0.05 by adjusted for ICU age, yrs of Experience and Edu.Level

Good. p= good practice and Poor. p=poor practice

5.7. Attitude of respondent about prevention of VAP (N=120)

Five questions put on Likert's scale to assess the attitude VAP prevention in their practices. While, 63 (52.5%) participants reported that VAP prevention is a time consuming procedure. Furthermore, Only 28 (23.3%) participants showed less interest in VAP prevention than other aspects of care., 91(75.8%) participants disagreed that in my opinion ,patient tend not to get as many ventilator associated pneumonia in my job and of participants towards prevention of VAP. The results presented in Table 6 shows that 91 (75.8%) Participants are concerned about

97(80.8%) participant disagree patients are at potential risk of developing ventilation associated pneumonia.



Figr5.4 Graph showing Responses of the participants to the attitude of Adult Intensive Care nurses in preventing VAP selected governmental hospitals in Addis Ababa, 2017.

Table 5.7.1 Responses of the participants to the attitude of Adult Intensive Care Nurses in preventing VAP in five selected government hospitals of Addis Ababa, 2017

Variable	Frequency(N)	Percentage (%)
Patients are at potential risk of developing ventilation associated pneumonia		
Agree	23	19
Disagree	97	101
Ventilation associated pneumonia prevention is time consuming for a nurse to carry out		
Agree	63	52.5
Disagree	56	47.5
In my opinion, patient tend not to get as many ventilator associated pneumonia in my job		
Agree	47	39
Disagree	73	61
I don't need to concern myself with ventilator associated pneumonia prevention in my job		
Agree	29	24
Disagree	81	76
I am less interested in prevention of ventilator associated pneumonia than aspects of care		
Agree	28	23
Disagree	92	77

Agree= positive attitude, disagree =negative attitude

Factors associated with Attitude (N=120)

Chi-square test Adjusting for level of education, age and years of working experience as in binary logistic regression results reveals the following results Correlation between levels of education, years of working experience and practice of nurses working in the Adult Intensive care unit on prevention of VAP. There were statistical significant association between work of experience and attitude chi-square (1) = 1.85; p-value = 0.043.and COR 2.600(0.503-13.441) concerning, there educational level, and age, the binary logistic regression indicated that there were no statistical significant association with attitude toward the prevention of VAP among nurses working in ICU.

Table 5.4.1: Association of attitude and Socio-demographic variables among AICU nurses in five selected government hospitals of Addis Ababa.2017

Variable	Category	Negative attitude	Positive Attitude	Chi-squ.	Df	P-value	COR (95%CI)	p-valu	AOR (95%CI)	
									Lower	Upper
Educational level	**Diploma**	8	13	**2.939**	**1**	**0.092**	**2.299**	**0.092**	**0.874**	**6.048**
	degree	58	41							
Work experience	6mth-6y	60	42	**1.385**	**1**	**0.254**	**2.600**	**0.043***	**0.503**	**13.441**
	7-10y	6	2							
Age	20-39yr	60	53	**2.833**	**1**	**0.128**	**0.434**	**0.128**	**0.148**	**1.272**
	40-59yrs	6	1							

(*)= significant at p-value <0.05 by adjusted for ICU age, yrs of Experience and Edu.Level

6. DISCUSSION

6.1. Characteristics of the respondents

The main objective of this study was to assess the knowledge, attitude and practice of nurses working in the ICUs towards prevention of VAP at selected governmental hospitals in Addis Ababa. Association between independent and outcome variables also examined. The results of this study based on the primary data gathered from nurses who had been working the five-selected governmental hospital AICUs in Addis Ababa. 126 Participants invited for the self-administered questionnaires, which responded 120 of respondents filled completely.

This study Assessed knowledge, attitude and practice for the prevention of VAP. There were 13 Items containing self-administered questionnaires, and the total score Obtainable. Participants consider having good knowledge when their Score is above the mean or present of mean value 6.92 (53.23%) and 17 items containing practice questions through checklist which evaluates practice and Participants. were consider good practice when their score is above the mean value 13.47 (79.24%) and attitude also containing 5 attitude question which evaluates the attitude and participants were consider as positive attitude when their score was above mean score value. >7.92.

One hundred twenty six AICU nurses were recruited and 120 completed responded the study about 21 (17.5%) had diploma in Nursing, majority of ICU nurses 97(80.8%) had Bachelor of Science and the smallest number were MSC in nursing 2(1.7%).

this study shows all most majority of nurses were working in ICU had bachelor of science and regarding work experience majority of ICU nurse 66(55%) were working in ICU for 6month - 2year , 45(37.5%), 6-7year and 1(0.8%)> 7years it indicates that the number of experienced nurses working in AICU was very lows.

A descriptive study was done in kartum in 2015 Females outnumbered males 5 times, most nurses are holders of BSC the mean age of nurses was 27.95 ± 4.51yrs, their working experience as nurse was 4yrs, the median of their working experience in the ICU were 13 months and the ratio of nurse to bed was 3:1 per days. [31]

The current study shows nearly similar it might be do you to sample size and majority of ICU nurse were BSC holder. In addition, female nurse dominate than male nurse.

The descriptive cross -sectional study in Kenya the highest percentage having over 10 years of experience yet degree level nurses constituted 13.4 % (n=11) and only 1.2% (n=1) had masters level of nursing education could mean that, the majority were not motivated in 2013 further their nursing studies. This study established that the majority of nurses working in CCU, KNH were females aged 30 -49 years and married. The majority had diploma as their highest level of education which could be explained by the high percentage 93% (n=77) of nursing specialization in critical care nursing. The fact that majority of nurses had worked in CCU for more than 5 years. [32] This deference was majority of ICU worker diploma holder and the nursing profession in our study was not found critical nursing grouted.

A 2015 Study in Addis Ababa Ethiopia, Out of one hundred twenty nine respondents 78 (60.5%) were females, about 73 (56.6%) had Diploma. Majority of Adult Intensive care nurses 79 (61.2%) have no intensive care training, and 87 (67.5 %) are working in the ICU for less than 6 years. Majority of them 77 (59.7%) and 70 (54.3%) were single. [20] it shows that similar result with our study it might be the sample size, methodology and the score method.

6.2. Nurses' Knowledge toward the Prevention of VAP (N=120)

On this study, the mean score was used to classify ICU nurses knowledge about ventilator-associated pneumonia. The level of Nurses knowledge was ranked in to two levels score above the mean value was 6.92 (53.23%) were taken as having good knowledge score and those who below the score ($\leq$53.23%) are considered as having poor level of knowledge . There were 13 knowledge related questions about the prevention of VAP and level of Knowledge of nurses calculated out of 100%. Accordingly to this study result shows 72 (59.5%) hade good knowledge on prevention of VAP, whereas 48 (39.7%) hade poor Knowledge about prevention of VAP in the AICU setting.

According to this study, Majority 68(56.7%) was female critical care providers and the male was 52(43.3%). It was believe that females dominate the nursing profession.

Among the participants 92 (76.7%) belonged to the age group of 20-29years, 97(80.8%) degree holder and 66(55.0%) were 6month -2years the total working experience. Which might indicates that nurses were majority nurse they had less than 2year experience it might be majority of our study area was new ICU or moved across wards and might not have adequate time to gain specific knowledge and practice in that areas or nurses might change their profession or left the hospital shortly.

The current Finding of knowledge on VAP prevention is congruent with a cross sectional study done in Dar-salaam, Tanzania 2012, majority of the study subject of 118 subjects 54.2% of participants have an excellent knowledge scores [23]. In other study which was done in Cairo, Egyptian 2013 where the study conducted at three critical care units with a convenience sample of 45 critical care nurses at Cairo university Hospitals where 90% had unsatisfactory knowledge Score. [32] These differences might be because majority of the study subjects in the Egyptian study were diploma holders and 44.4% were internship nurses who had less than 2 years of experience in nursing or may be due to the smaller sample size in the Egypt's study.

The study findings show that, 2014 in Kenya most of the nurses 54.9% had adequate knowledge on VAP and its prevention. This shows that quite a large percentage (45.1%) was less knowledgeable and this could lead to prevalence of VAP in the unit. [33]. Similar to our study it might be the sample size and the score methods.

In other study which was conducted in India, of the 138 critical care providers 71(51.4%) were diploma and 67(48.8%) degree holders, among all participants, 55.8% had adequate knowledge and 44.20% had inadequate knowledge indicating the proportion of study subjects with inadequate knowledge is less in the context of the current study. the variation between the two studies possibly due to most of the study participant in the current study are degree holders 80.8%, where as majority in Indian study were diploma holders.[34]

According to findings in these study participants, demonstrated good knowledge in the areas of recognizing educating ICU nurse on prevention of nosocomial infection can help decrease the risk of VAP. The need of ETT suctioning to ventilated patient as needed, performing hand washing for reducing the risk of VAP, Similarly, most nurses knew that Factors contributing to bacterial colonization of the aero-digestive tract were Contaminated hand of health workers

,Contaminated respiratory therapy equipment and Aspiration of contaminated secretion in to the lower airway

The study finding shows that nurses had knowledge of VAP prevention in areas of general infection control, which may be gain this general knowledge from their VAP prevention information from the formal education and/or ICU work experiences. However, the study subjects lack knowledge in areas of VAP prevention including type of suction systems recommended for intubated patients, frequency recommended to change humidifiers, range of head of the bed elevation, and. This might be due to limitation of the study participants on evidence-based practice of VAP and gaps in the curriculum that might not be incorporating in the Diploma and bachelor program or lack consistently working area training.

6.3. FACTORS ASSOCIATED KNOWLEDGE WITH SOCIO DEMOGRAPHIC

Adjusting for education level, years of experience and age in binary logistic regression model reveal the following on this results; Correlation between level of education, age, and knowledge of ICU nurses. No significant difference in knowledge between participants with educational level and age as found (p value = 0.103, COR=2.457, 95% CI (0.834-7.235) and p-value=0.102, COR=0.246, 95% (0.046-1.323) respectively.

There is a significant difference in Knowledge between respondents with ICU work experience as found p-value = 0.015, COR= 1.574, 95%CI (0.99-2.504) work experience of nurses working in the ICU 6month-6 year had good knowledge compared to the wok experience >7years.

This is in line with a study done in Finland adult general ICU 2010 (n = 101) in a single academic centre the finding indicates that More experienced nurses performed significantly better than their less-experienced colleagues[34] The deference might be due to failure of getting training through time decrease knowledge and problem solving ability at the specific setting. Unlike other studies this study found an association between knowledge with sex and Age, which implies females and age group between 28 to32 are more knowledgeable than male and age group 23 to 27, with a X2 (1) = 5.156,p value 0.023 and X2 (1) = 7.101,p value 0.008 respectively.

6.4. PRACTICE OF ADULT INTENSIVE CARE NURSES HAND WASHING PRACTICE

Nurses were evaluating based on practice checklist. Mean value was used to classify ICU nurses practice ,a score above the mean value 13.47 (79.24%) were taken as having Good level of practice and those who score equal and below the mean are considered as having poor level of practice. Accordingly, this study result showed that, 79.24% had Good performance and equal &below (79.24%) had poor level of performance about prevention of VAP in the ICU setting.

Based on the results presented in table(4), which there were seven items of practice that highest percentage of nurse's practiced they are: 115(95.%) of participant After contact with a source of microorganisms, 113 (93.4%) were Hand washing after patient contact, 111 (91.7%) wear gloves, 110(90.9%) Use of alcohol rub, 105(87.8%) clean mouth using tooth brush or gauze moistened mouth, 104(86.7% also showed endotracheal tube cuff pressure maintained and 100 (82.6%) that two Practice questions that the lowest Percentage of Nurses practiced, of the 75(62.0%) , measure and characteristics of secretion and Prepare sterile equipments required during suctioning, 83 (68.6%)

This result revealed that concerning hand washing before entering ICU none of the respondents were practice correctly and participants discard suction tube immediately after single use Practice of participants towards the prevention of VAP.

The result showed that, 69 (57%) of the respondents found to be Good level of performance while the remaining 51 (42.1%) of the respondent inadequate or poor performance about prevention of VAP in the ICU setting.

According to the respondent result shows that Large proportion 120 (100%) of nurses not wash their hands before entering ICU, even there is no hand washing place in five selected study areas, 80.8% wash their hands before and 94.2% after patient contact. Large proportions of nurses (95.8%) wash their hands after contact with a source of microorganism it was also found that the use of alcohol rubs (91.7%).

The current Finding of knowledge on VAP prevention was similar with a cross sectional study done in Tanzania 2015 found that 30 nurses observed.

None washed hands before entering the intensive care unit only 16.7% had washed their hands before and 33.3% after contacting a patient and 66.7% of these nurses, washed their hands after contacting with a source of microorganism like body fluid, 30% used antiseptic solution alcohol-based hand hygiene

products after washing their hands [23]. This similarity may be the sample size or and the respondents the same as our respondent majority was working in limited rescores country in Africa.

Another study the cross sectional studies was done in Addis Ababa 2014 large proportion of Adult Intensive Care nurses 42.6% observed are not wash their hands before entering ICU, 50.4% wash their hands before and 44.2% after patient contact. Large proportion of nurses 86.8% were observed to wash their hands after contact with a source of microorganism and also found that the use of alcohol rub is minimal about 36.4%.[16] The deference of these result might be the sample size and during collection of data for respondent not properly trend to file the questioner properly.

This study report not all respondent of nurses practical was washes their hands before entering ICU. While it was, recommend for health care workers including nurses to wash hands before entering intensive care unit, researcher perceives that dryness, irritation and fissures caused by soap or alcohol-based products may contribute to poor compliance to hand washing. It therefore suggested that the use of waterless alcohol gels may improve the hand hygiene of health care workers because these gels are less damaging to the skin and they efficiently and effectively remove transient flora from the hands. Hands should wash soon after and before every contact with patients.

Materials around them and the secretions from the patient, and before and after invasive procedures either or not gloves are used or changed. Findings observed in this study shows that hand washing before patient contact was 80.8% and 94.2 % after patient contact. With the application of multimodal intervention practices on nosocomial infection to the health workers, hand hygiene compliance was report to increase from 40% to 53% before patient contact and from 39% to 59% after patient contact.

Hand washing hygiene is a cheap and primary infection control procedure therefore the researcher is suggesting the measure for improvement by continuous education during hand over of the shifts, seminar and posters, ensuring the availability of adequate hand washing utilities like soap, water taps, drying tissues and reducing work load by improving nurse to patient ratio.

6.5. SUCTIONING FROM THE ETT / TRACHEOSTOMY

On this study result shows out of one hundred twenty Adult Intensive Care nurses, large proportion 111 (91.1%) of nurses worn clean gloves though small proportion of wearing sterile glove19 (9.2%), 87 (71.7%) practice hand washing before and (34.9%) prepare sterile equipment during suctioning , **83(68.6%)** Cuffed endotracheal tube used, **102 (85%)** Hand washing after oral care while small proportion **86 (71.7%)** of nurses washing Hand before oral. (Table-5) this result shows that for AICU nurses need continence training to improve prevention of VAP in ICU setting.

Other studies shows Use of oro-tracheal over noso-tracheal intubation was recommended because it may cause According to Munro and Ruggiero, (2014), all patients receiving mechanical ventilation or nursed in semi recumbent position with head of bed elevated at 30^{o} to 45^{o} to prevent aspiration. Contrary to Munro and Ruggiero, only 43 % (n=36) respondents knew 42 that semi recumbent is the recommended position for nursing these patients, a few chose supine position and some were not sure of the recommended position. [14]

This may promote VAP prevalence in the unit. Very few nurses 25.6% (n=21) knew the recommended cuff pressures to be maintained; most of the nurses said it should be lower and a few said it should be higher than 30mmHg. This could definitely contribute to prevalence of VAP as supported by Curtin (2011) saying that.

The cuff pressure maintained above 20 cm H2O to prevent aspiration but below 30 cm H2O to prevent injury to the tracheal mucosa. [17] This study shows majority of nurses 99(81.8%) they recommend cuff pressure to be maintain and a few nurse said they did not maintain the cuffed pressure. this difference might be educational level majority of nurse were diploma in our study bachelor degree holder.

6.7. ORAL CARE PRACTICE (N=120)

Large proportion 105 (87.5%) of nurses clean a patient mouth using tooth brush or gauze moistened mouth wash and water with chlohexidine, 103(85.8%) Cuffed endotracheal tube used and 102 (85%) Hand washing after oral care while small proportion 86 (71.7%) of nurses washing Hand before oral care. (Table-5)

The study was done In Addis Ababa 2014 91.5% can suction the secretion as they accumulate where as 38% of nurses wash their hands before oral care, and 98.4% wash their hands after oral care and 91.5 % of nurses were fail to wear clean gloves during oral care procedures. 43.4% rinse mouth with clean swab and 18.6% clean patient's mouth using toothbrush or gauze moistened with mouthwash, 47.3% apply water-soluble jelly to patient's lips and 41.1% position the patient in the semi recumbent position. [20]

Another study, which was done in Tanzania muhimbili National Hospital (43, 44) reveals that oral care practice observed, 33.3% nurses were their hands before and 43.3% wash their after oral care to a patient, 10% nurses fail to wear clean gloves during oral care, 30% nurses position a patient in a semi recumbent position during oral care. 80% use tooth brush or gauze moistened with either tooth paste or mouth wash antiseptics solution, 60% rinse patient mouth with clean swab, 50% do suctioning of secretions as they accumulate during the oral care, 26.7% apply water soluble jelly and 73.3%. [23]

Other study, which was conduct in Sudan kartum in 2015The majority of nurses 97.4%, stated that provision of oral care in ICU is important for infection prevention, while 1.3% of them related its importance to patient comfort, 1.3% did not know why mouth care is important for ICU patient. [33]

Although the American Dental Association has no standards for the orally intubated patient, tooth brushing with toothpaste is recommended twice a day and swabbing the mouth every 2 to 4 hours, and this practice is now included in the oral care protocol. However in the current study observer find using a toothbrush can be inadequate due to time-consuming and difficultness in manipulation of the endotracheal tube which limits access to the oral cavity and causes fear of potential dislodgement of the tube. [1]

Oral suctioning and rinsing indicated to prevent aspiration of oral care solutions during oral care. [14] This study 91.5% of the nurses did suctioning of the oral cavity after toothbrush and 43.4% rinse patient mouth with clean swab while a patient positioned in a semi recumbent position to prevent back flow of oral secretion. Oral suctioning and semi recumbent positioning of the patient prevent aspiration which can cause VAP therefore nurses are expected to apply these measures to patients if no contraindication like in patients with head injury. In the study

observations, the researcher is in thought that the use of gloves replaced hand-washing process this resulted in high expenditure of glove. It also create a sense of internal stigma to patients as some nurses observed to wear gloves during feeding a patient this couldn‘t be a case if nurses adhere to proper hand washing practice.

6.8. FACTORS ASSOCIATED WITH PRACTICE (N=1200

According to this study result Chi-square test Adjusting for level of education, age and years of working experience as in binary logistic regression model results reveals the following results; Correlation between level of education, years of working experience and practice of nurses. Working adult intensive care unit on prevention of VAP was the statistical significant association between age and practice. chi-square(1)= 5.681, p-value = 0.044.and AOR 3.011(1.028-8.824) Concerning , there educational level, and work experience, the Chi-square value indicated that there were no statistical significant association with practice toward the prevention of VAP among nurses worked in AICU with a chi-square(1) = 2.021; p-value = 0.161, chi-square (1) = 1.403; p-value=0.248, respectively.

Which means the nurses socio- demographics characteristics except work experience X2(1) = 6.563(p =0.010) are not significantly affect the practice of nurses. This is implied that the performance level is Influenced by other factors need more analysis But females have better practical skill than males this might be the presence of highest numbers of female nurses at the study area.

Despite the availability of some studies in the developed countries, studies investigating level of nurses' practices regarding prevention of VAP are very limited, and finding of the practice can not be broadly discussed in comparison to other similar studies. Therefore, it needs farther investigation and can used as base line for future studies. Finally, the study finding revealed that nurses were performed good practices However; a significant number (43.3%) of subjects
Lacked performances this indicated that nurses have some limited practice; therefore, it is to provide update information to the Nurses in these areas.

6.9. ATTITUDE ADULT INTENSIVE CARE NURSES OF RESPONDENT ABOUT PREVENTION OF VAP. (N=120)

Five questions put on Likert's scale to assess the attitude of participants towards prevention of VAP. The results shows that 91 (75.8%) Participants are concerned about VAP prevention in their practices. While, 63 (52.5%) participants reported that VAP prevention is a time consuming procedure. Furthermore, Only 28 (23.3%) participants showed less interest in VAP prevention than other aspects of care., 91(75.8%) participants disagreed that in my opinion ,patient tend not to get as many ventilator associated pneumonia in my job and 97(80.8%) participant disagree patients are at potential risk of developing AP.

The study which was do in Sudan kartum Nurses who had negative attitude towards mouth care for ICU patients were in the minority (2.6%), while the majority (97.4%) of ICU nurses perceived oral care as a high nursing priority nearly similar to our study it might be the sample size or score methods.

6.10 FACTORS ASSOCIATED WITH PRACTICE

Chi-square test Adjusting for level of education, age and years of working experience as in binary logistic regression model results reveals the following results; Correlation between level of education, years of working experience and practice of nurses working in the Adult Intensive care unit on prevention of VAP.

There were statistical significant association between work of experience and attitude chi-square (1) = 1.85; p-value = 0.043.and COR 2.600(0.503-13.441) concerning, there educational level, and age, the binary logistic regression indicated that there were no statistical significant association with attitude toward the prevention of VAP among nurses worked in ICU with. (Table .9)

Another study was done in Sudan in 2015 the finding in that no significant correlation between ICU nurses experience and their e, attitude Towards mouth care was in contrast with European countries [33] where the more experienced the Nurses, the more, attitude about oral care was performed to prevent VAP[.24]

6.11. STRENGTH AND LIMITATION OF THE STUDY

6.11.1 Strength of the study

- ✓ Withstand a lots of challenges (such as: repetitive appointment, plead and disregard as well as difficulty in contacting all organizational hierarchy, Identifying those hospital those had well-equipped ICU and those do not...etc)
- ✓ The data was collected using structured questionnaires and check list
- ✓ adapted and modified from other researches question
- ✓ Practicality and feasibility of administered approach
- ✓ In an attempt to keep the validity and reliability; a pre- testing was done
- ✓ Data collators were health professionals

6.11.2. Limitations of the study

- ✓ Time constraint
- ✓ Misreporting by respondents cannot be ruled out
- ✓ The main limitation of this study was the relatively Small sample size
- ✓ Since standard questionnaire was use, it maximizes Validity.
- ✓ The study is limited to ICU nurses working in the five selected hospitals.

6.12. CONCLUSION AND RECOMMANDATIONS

6.13.1 CONCLUSIONS

This study found out that:

- ❖ Majority of Adult intensive Care nurses have good knowledge (59.50%).
- ❖ Nurses who had high educational level had good knowledge than those nurses who had more years of experience.
- ❖ Those experienced nurse were practicing more adequately than those nurses who had high level of education.

- Nurses who hold their first degree were practically less likely than those experienced diploma nurses.
- The current study revealed that ICU nurses' good knowledge on VAP preventive strategies but through checklist of their practice result in to different findings. No significant association found between level of education, aged and knowledge. However, there was knowledge of ICU nurses on prevention of VAP was found to be statistically associated with working experience.
- Practice of ICU nurses on prevention of VAP found to be statistically associated with age but not statistically associated with ICU educational level and years of working experience and the attitude of ICU nurses on prevention of VAP found to be statistically associated with working experience.
- This study revealed that ICU nurses' had good knowledge practice and positive attitude on VAP preventive strategies but it reflect in their knowledge, practice and attitude nearly half number of respondent were poor knowledge, practice and negative attitude. Like in the area of Hand washing, environment and equipment cleanness during ETS and oral car observed to be inadequate therefore knowledge of the ICU nurses on VAP preventive strategies does not necessarily reflect adequate practical skills, but knowledge remains the first step toward the implementation of the VAP preventive strategies.

6.14. RECOMMENDATIONS

I would like to recommend:

- **TO AAU:-** College of Health Sciences School of medicine and critical care nurse to open a specialty track in Intensive and Critical Care nursing. In Bachelor of Science (if possible, within the coming 2-4 years) by formulating its own curriculum because, there is no specialty field on which they specialize which may have a major contribution to good knowledge, attitude and practice of the AICU nurse.

- **TO Addis Ababa Health Bureau**: to encourage nurses to follow strict acceptable evidence based practice protocol/ guidelines and provide them with guidebook, in service training and or education.

- **TO Hospitals on which the study was conducted**:- To make on ICU environment enable nurses to translate knowledge attitude into practice. By ensuring availability of facilities like there is no hand washing sinks before entering ICU except st. pawolose hospital, of hand washing soap and disinfectants for cleaning and disinfecting equipments, adoption of acceptable guidelines based on evidence based practice protocol was recommended.

- **Managers and Head nurse(s) of the unit**:-To motivate of opinion leaders amongst nurses in the units which promote unified and wormed interaction within the nurses. That ease way to put guidelines for prevention of VAP into- practice within in themselves Besides, Learning resources such as articles, journals and electronic resources such as computers and internet should be made accessible in the units for staff members.

- **Similar study is recommended** to include large sample size in other hospitals, which provide care for critically ill patients, further research on factors affecting implementation of VAP prevention strategies was recommend.

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8.1 ANNEXES

I INFORMATION

8.2. ANNEX FORM

My name is Belete Sisay a student at the, Addis Ababa university, college of health science school of medicine, department of emergence medicine undertaking masters in emergency medicine and critical care nurse. I take this opportunity to invite you to participate in this study entitled '' assessment of knowledge, attitude and practices on the prevention of ventilator associated pneumonia among nurses working in five selected adult intensive care units of government hospitals, Addis Ababa

Significance: This study will be identifies knowledge, attitude and practice on the prevention of VAP among nurses working in five selected in adult intensive care units at Addis Ababa city governmental hospital. That entails a significant contribution for nursing practice, education and further research, which will contribute to the quality of care and improvement of critical patient's outcome.

Procedures: You will be given a questionnaire to fill by the researcher/ research assistant, which will take you approximately 20 minutes to fill, and the filled questionnaire form will be collected; He will then proceed to observe you as you take care of your patients and fill in an observational checklist.

Risks: There are minimal risks for your participation in this study. There is a possibility that, you may feel uncomfortable to be observed as you work or that some questions may make you uncomfortable. Should this occur, just inform the researcher or omit the question.

Benefits: There may be no direct benefits like monetary gains, tokens or gifts but given will aid enhance elimination of lung infections and complications Following mechanical ventilation this will reduce mortality and morbidity of patients nursed under mechanical ventilation hence quality specialized care to the patients.

Voluntary Participation and Withdrawal:

Your participation is entirely voluntary and you have the right to withdraw participation at Anytime

Confidentiality: The information given will be kept confidential; you will neither write any of your identification information in the questionnaire nor will the researcher identify you or use

any information that would make it possible for anyone to identify you in any written reports about this study. After analysis, the questionnaires will be kept under lock and key. Electronic files will be saved on password and firewall protected computers.

Contact Persons: In case of questions or concerns about the content of this study or about your rights as a participant, please feel free to contact the following;

The Principal Investigator:- Belete Sisay

- ✓ Cell phone - 0920094465
- ✓ Email belebeci2009@yahoo.com

THE LEAD ADVISOR:

- ❖ Kibatu Gebre (MSC, Lecturer)

7.3 ANNEX II CONSENT FOR THE PARTICIPANT

I have read all the process and the objective of the study and understood the same as written that includes informed about the purpose, advantage, and disadvantage of this study. I also understood that the research imposes no risk and no complication to would be provided to my family and me. I have been told that if I fill discomfort to respond to any of the question, I fill free to drop it any time I wish to do so. I have understood the information given and the participation is voluntary based. I have been told that my answers to the questions will not be given to anyone and not expect to write my name. Now I am giving my consent to participate in the study voluntarily.

_____ Yes, I want to participate in the study (Please go to the next page).

_____ No, I don't participate in the study (Thank you very much!).

Witness: Signature_____ Date _____

Data facilitator

Name_____Signature_____Date____/_____/____

Result: 1. Questionnaire completed _____

2. Questionnaire partially completed _____

3. Participant refused _____

4. Others (please Specify) _____

Checked by Supervisor:

Name_____Signature_____Date____/____/___

7.4 ANNEX III: QUESTIONAIRE

Questionnaire Serial Number_____

INSTRUCTIONS

1. Do not write your name(s) or any identification on the Questionnaire
2. Kindly answer all questions as appropriate
3. Answer by ticking (√) in the boxes or filling the spaces provided

SOCIO-DEMOGRAPHIC INFORMATION

1. **Name of hospital----------**
2. sex **:** Female ☐ Male ☐
3. What is your age bracket?

- 20-29 yrs ☐
- 30-39 yrs. ☐
- 40-49 yrs ☐
- 50-59yrs ☐
- Above59yrs ☐

4. What is your marital status?

- Married ☐
- Separated ☐
- Divorced ☐
- Widowed ☐
- Single ☐

5. What is your Education level?

- Certificate ☐
- Diploma ☐
- Degree ☐
- Masters ☐

5. What is your Specialty in nursing?

- Gunner nurse ☐
- chief nurse ☐
- professional nurse ☐
- Senior Nurse ☐
- Others Specify……
- expert Nurse ☐

7. **Years of work experience as a critical care nurse** ☐

a) 6month -2year
b) 3 -6years ☐
c) 7-10 years ☐
d) More than 10yr ☐

I. Knowledge on prevention of ventilator associated pneumonia circle the correct choice.

1. A nurse is required to dispose a suction catheter

a. immediately after one single use

b. can be cleaned and used twice

c. can be used without being cleaned

d. I do not know

2. It is recommended to change humidifiers

a. Every 2-7 days (whenever necessary).

c. Every month (whenever necessary).

b. Every day (whenever necessary).

d. I do not know.

3. Insertion of the suction catheter into the endotracheal tube

a. Is a sterile procedure

c. Can be a clean or a sterile procedure

b. Is a clean procedure

d. I do not know

4. Head of the bed elevation should be ranging from

a. 0-15 degree

c. 30 -45 degrees.

b. 16 -30 degrees.

d. I do not know

5. A nurse caring a ventilated patient is required to wear sterile gloves during

a. oral suctioning

c. Oral and ETT suctioning

b. ETT suctioning

d. I do not know.

6. A nurse caring a ventilated patient is required to wash hands

a. Before oral and ETT suctioning

c. Before and after oral / ETT suctioning

b. After oral and ETT suctioning

d. I don't know.

7. It is recommended to perform Oral care by using a swab moistened with mouth wash and water

a. once in a shift

c. every 4 to 6 hours and whenever necessary

b whenever necessary

d. I do not know.

8. Continuous education to ICU nurses on prevention of nosocomial infection is associated with

a. Increased rates of VAP

c. Does not influence the rates VAP

b. Decreased rates of VAP

d. I don't know

9. It is recommended to perform chest physiotherapy due to the following reason

a. Chest physiotherapy reduce the risk for VAP

c. Does not influence the risk for VAP

d. I do not know

b. Chest physiotherapy increase the risk for VAP

10. Adjustable vs. non-adjustable beds

a. Adjustable beds increase the risk for VAP

c. Adjustable beds have no influence upon the risk for VAP

b. Adjustable beds reduce the risk for VAP

d. I don't know

11. Early weaning

a. Early weaning reduce the risk for VAP

c. Early weaning do not influence the risk for VAP

b. Early weaning increase the risk for VAP

d. I don't know

1 2.every feeding a ventilated patient is associated with

a. increased the risk for VAP

b. decreased the risk for VAP

c. do not influence the risk for VAP

d. I don't know

3. during the care of ventilated patient maintenance of adequate cuff pressure

a. Is important because it decrease the risk for VAP

b. Can increase the risk for VA

c. Do not influence the risk for VAP

d. I don't know

I. Mark using (x) 'or (√) in the box provided

II. 7.4.2 Table 5 checklist for nurse's prevention practices on vap.

No	PREVENTION PRACTICE	YES	NO
	Hand washing		
1	Hand washing before entering ICU		
2	Hand washing Before patient contact		
3	Hand washing After patient contact		
4	After contact with a source of microorganisms		
5	Use of alcohol rub		
	Suctioning from the ETT/tracheotomy		
6	Cuffed Endotracheal tube used		
7	Endotracheal tube cuff pressure maintained		
8	Hand washing before suctioning		
9	Wear gloves		
10	Prepare sterile equipments required during suctioning		
11	Insert the catheter into the ETT gently by using aseptic technique Activity and early mobilization done on patient		
12	Measure the amount and characteristics of secretion		
	Oral care done		
13	Hand washing before oral care		
14	Position a patient in a semi recumbent		
15	Clean mouth using tooth brush or gauze moistened , mouth wash and water with chlorhexidine/povidone		

16	Use of facemask during suctioning
17	Hand washing after oral care

	TOTAL SCORE / 100

Attitude test questions on ventilator associated pneumonia

Read each statement carefully and tick the mark sign**"√"** in the corresponding column that most likely reflects your answer to the following questions. Use number: **5** for **"strongly agree", 4** for **"Agree", 3** for **"neither agree nor disagree", 2** for**"disagree", and 1** for **"strongly disagree."**

S/No-	**Statements**	5	4	3	2	1
1	All patients are at potential risk of developing Ventilator associated pneumonia.					
2	Ventilator associated pneumonia prevention is time consuming for me To carry out.					
3	In my opinion, patients tend not to get as many Ventilator associated pneumonia now days.					
4	I do not need to concern myself with Ventilator associated pneumonia Prevention in my job.					
5	I am less interested in Ventilator associated pneumonia prevention than Other aspects of care.					

8. DECLARATION

I, the undersigned, declared that this thesis is my original work and has not been presented for a degree in this or any other university, and all source materials used for the proposal thesis have been fully acknowledged

. Name of the student: Belete sisay (Bsc N)

Signature----------date----------

Approval of primary advisor

: Name of the primary advisor Mr. KIBATU GEBIRE (Lecturer)

Signature _____Date _____