

**ADDIS ABABA UNIVERSITY COLLEGE OF HEALTH SCIENCES, SCHOOL  
OF MEDICINE DEPARTMENT OF EMERGENCY MEDICINE**



**ASSESSMENT OF KNOWLEDGE, ATTITUDE AND PRACTICE OF NURSES  
TOWARDS PHYSICAL ASSESSMENT ON CRITICAL ILL PATIENTS IN  
INTENSIVE CARE UNIT AT SELECTED PUBLIC HOSPITALS, ADDIS  
ABABA, ETHIOPIA**

**BY: -DEREJE NIGUSSIE (BSc NURSE)**

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**ADDIS ABABA, ETHIOPIA**

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## **Abbreviations and Acronyms**

|            |  |
|------------|--|
| AA.....    | Addis Ababa                            |
| AaBET..... | Addis Ababa Burn, Emergency and Trauma |
| AAU.....   | Addis Ababa University                 |
| AOR.....   | Adjusted Odd Ratio                     |
| BP.....    | Blood Pressure                         |
| BLS.....   | Basic Life Support                     |
| BSc.....   | Bachelor of Science                    |
| CI.....    | Confidence Interval                    |
| COPD.....  | Chronic Obstructive Pulmonary Disease  |
| COR.....   | Crude Odd Ratio                        |
| Dx.....    | Diagnosis                              |
| EMCC.....  | Emergency Medicine and Critical Care   |
| ECG.....   | Electrocardiograph                     |
| GCS.....   | Glasgow Coma Scale                     |
| ICU.....   | Intensive Care Unit                    |
| KAP.....   | Knowledge, Attitude and Practice       |
| MD.....    | Medicine of Doctor                     |
| MSc.....   | Masters of Science                     |
| NGO.....   | Non-governmental Organization          |
| NGT.....   | Nasogastric Tube                       |
| PE.....    | Physical Examination                   |

PR.....Pulse Rate  
RR.....Respiratory Rate  
SaO<sub>2</sub>.....Saturation of Oxygen  
SPSS.....Statistical Package for Social Science  
Std.....Standard deviation  
T<sup>o</sup>.....Temperature  
USA.....United States of America  
WHO.....World Health Organization  
Yrs.....Years

## **Abstract**

**Background:** In Intensive care unit, the patients need special consideration and monitor frequently with physical assessments. To examine critical ill patients in intensive care unit, which require skillfully practice, knowledgeable and positive attitude toward patients cares. Physical assessment is the direction to identification of actually and potential problems of individual patients. However, still now many literature review shown that most of nurses not consider physical assessment as their jobs. Therefore, this study was aimed to assess knowledge, attitude and practice of nurses towards physical evaluation on critical ill patients.

**Objectives:** To assess knowledge, attitude and practice of nurses towards physical evaluation.

**Methods:** A descriptive institutional based cross-sectional study was conducted from February 19 to March 31, 2018 at selected public hospitals in Addis Ababa. Well-structured check list for socio-demographic, attitude and practice related tools and some knowledge questioner were adopted from previous study with little modification. The data was collected by data collectors using checklist formats through self-administered response method. The collected date was checked its consistence and clarity by data collectors and supervisor before data analysis. The data was entered into epi-data, version 3.1 and then analyzed by using Statistical Package for Social Science Version 20 Software. Final result was computed descriptive statistical including frequency, mean and media with displaced by graph, tabulation, texts and pie-chart. Association between variables analyzed by using logistic regression and Pearson correlation at  $p < 0.05$  consider as significant.

**Result:-** From total study participants the response rate was 151(97.4%) with 28.51years mean age of study participants. Around 87(57.6%) of study respondents were male in sex. About 147 (97.4%) respondents were less than 10-years work experience whereas 142(94%) of nurses had less than 5-years work experience in Intensive Care Unit. There were significantly positive relationships between skill of practice and knowledge, work experience and work experience in Intensive Care Unit. A less work experience in Intensive Care Unit had two times negative believe than more work experienced in Intensive Care Unit. The degree holder Intensive Care Unit Nurses found three and five times had greater poor of knowledge and poor of skill practice than Masters Holder Intensive Care Unit Nurses respectively.

**Conclusion and recommendation:-** The knowledge of study respondents found to be as poor while the attitude response was also as found to be negative perception. The skill practice of study respondents is better performance response. So that, better to build capacity of Intensive Care Unit nurses on physical assessments was recommended for responsible body.

# 1. Introduction

## 1.1. Back ground

Physical assessment is an organized systemic process of collecting objective and subjective data based upon a health history and head-to-toe or general body systems examination. The main purposes of Physical assessment are, help the nurses to: - obtain baseline physical data, establish nursing diagnoses and action plan for patient care, evaluate the appropriateness of the nursing interventions and care outcomes [1].

A history of nurse's profession, from Florence Nightingale to the present, nurses have been carry out gathering basic data like vital sign assessment (Blood Pressure (BP), Pulse Rate (PR), Respirator Rate (RR), weight and Temperatures( $T^0$ )), physical assessment including general body system examine from head to toe to plan for actual and potential problems of patients. However, some nurses do not consider physical assessment as part of their work. Today's multiple changes in health care system, Physical assessment is an important part of the definition of the physician's job, but it is also become an integral part of the definite job of nurse's [2].

Intensive care started 1953 in Denmark, which is a young specialty that give chance to save a life, come to live, restart and survive live, not to die which needs mending and care. Today, a population of increasing age and with a significant co-morbidity can be offered intensive care. The Swedish Society of Anesthesia defines as "intensive care is to prevent and treat failure in one or more organ systems so that continued life can be meaningful from the patients' point of view" [ 3, 4, 5].

Nurses are integral members of a multi-disciplinary healthcare team. In intensive care unit, nurses often have the responsibility and privilege of performing a focused physical assessment for each of their patients to provide an important opportunity to evaluate and formulate a plan of care that is best suited to meet patients' needs. Performing a focused physical examination will allow the nurse to detect obvious and subtle changes in a patients' health status depend on the evaluator's level of expertise and knowledge of normal anatomy and physiology. Systematic physical assessment remains one of the most vital components of patient care within a time frame that is practical and should never be dismissed due to time constraints [6, 7].

Nurses must critically analyze all of the data that collected from patients and must be synthesized into relevant problem focuses and a plan for care with reassessments and as needed basis to provide the best quality care. The majorities of acute illnesses develops gradually over many hours and are associated

with the early presence of abnormal vital signs in the patient. These abnormalities reflect failing cardiovascular, respiratory and neurological systems which are known precursors to a critical event. If physiological abnormalities are not recognized, corrected quickly or supported sufficiently, the patient's condition may progress further to critical illness or death [8, 9, 10].

Therefore critical care nurses should have sound knowledge and strict adherence to physical assessment. All standards of care provide a guide to the knowledge, skills, judgment and attitudes that are needed to practice safely. They describe what each nurse is accountable and responsible for in practice. Knowledge is the condition of knowing something with familiarity gained through experience. Adequate knowledge and awareness about physical assessments plays a major role in early diagnosis, appropriate management and reduction of adverse consequences resulting critical problems [11, 12, 13].

Attitude also influences individual's choice of action and responses to challenges, incentives and rewards. Attitude may be affective relating to emotions or feelings linked to an object, cognitive relating to beliefs, thoughts and attributes that is associate with an object. Positive attitude of nurses help in successful nursing practice. Nursing practice is an act of providing care to patients and doing nurses implement nursing care plan which is based on the conditions of the patient [14].

## 1.2. Statement of the problem

Today health is considered more than a basic human right; it has become a matter of public concern, national priority and political action. People are less willing to tolerate ill health and are insisting on radically improved health services. Intensive Care Unit (ICU) care demands a high level of expertise in many aspects because critically ill patients are patients who are at high risk for actual or potential life-threatening health problems. All cares by nurses will give depends on the finding from the physical assessment. Despite, some nurses physical assessment is not consider as their duties, which result serious problem on quality of care. In addition, inexperience ICU nursing staff will definitely has a negative impact on the quality of care on critically ill patients [15].

The World Health Organization(WHO) has stated that “stronger emphasis should be placed on translating knowledge into action to improve public health by bridging the gap of what is known and what is actually done”[16]. However, Different literature reports that 30% to 40% of patients do not receive health care based on current relevant knowledge and 20% to 25% of patients receive unnecessary care. Critical care nurses need to possess theoretical knowledge, advanced skills and competencies and capabilities to care for critically ill patients [17].

Metrics of health in Ethiopia are among the world's is the worst. According to the USA, Ethiopia's health care system is wholly inadequate, even after recent improvements. The major health problems of the country remain largely preventable communicable diseases and nutritional disorders. Major progresses have been made to improve health status of the population in the last one and half decades. Despite, Ethiopia’s populations still face a high rate of morbidity and mortality. Nurses are the key caregivers in hospitals; they can significantly influence the quality of care and ultimately, treatment and patient outcomes through physical assessment. Despite, physical assessment, many nurses have stated that this is not part of their job, and perceived negatively [18]. This lack of enthusiasm may be related to the fact that specific physical examination maneuvers are poor. Conducting physical examination in the modern ICU is challenged due to repositioning patients, clinical instability, the presence of bulky dressings, lines and tubes, Electrocardiograph (ECG) monitors, and high levels of ambient ICU noise represent common barriers [19, 20]. Since there is no study in Addis Ababa hospitals undertaken to assess the knowledge, attitude and practice among nurses working in ICU and their concern is with patient safety issues and providing highest quality of care, it is necessary to assess Knowledge, Attitude and Practice (KAP) of ICU Nurses. Therefore, this study was aimed at assessing KAP of ICU nurses toward physical examination at selected public hospitals in AA, Ethiopia.

### **1.3. Significance of the study**

Critical ill patients need advanced modern approach care depend finding on physical assessments of individuals. Knowledgeable skill and experienced practice with positive attitude to guide correct nursing action plan based physical examine finding.

Therefore, to assess knowledge, attitude and practice of nursing toward physical examine on critical ill patients primary used to improve quality care in ICU patients. In addition, this study to identify the gap of knowledge and skill of practice among nurses towards physical examine of critical ill patients and also to improve the attitude of nurses toward handle ICU patients.

The study finding will be encourage physical assessment at bedside is perform routinely in ICU by nurses. This paper will be used for peer review journal online website. Final the study result will be used as baseline and reference for other studies.

## 2. Literature review

### 2.1. General overview of physical assessment

ICU bedside physical assessment not only assessment of patient's body, but also all implanted devices, access sites, surgical incisions, patients monitors machine, ventilator machine and telemetry, presence or absence of family and visitors at the bedside, their mood, and countenances. Assessing the critically ill patient and family begins from the moment the nurse is made aware of the pending admission of the patient and continues until transiting to the next phase of care. Crucial to developing competence in assessing critically ill patient and their families is a consistent and systematic approach to assessment without this approach, it would be easy to miss subtle or details that may identify an actual or potential problems and also indicate a patient's changing status [21,18].

The findings of a nursing assessment do sometimes contribute to the identification of a medical diagnosis; the unique focus of a nursing assessment is on the patient's responses to actual or potential problems. Assessment should focus first on the patient, then on the technology. The patient needs to be the focal point of the critical care practitioner's attentive with the technology augmenting the information obtained from the direct assessment [18].

ICU is the heart and main component of a clinical care setting. Due to the urgent conditions of patients who are hospitalized in ICUs, critical care nurses need to have great professional knowledge and experience, high-quality critical care, high-technical equipment, great clinical competence staff, and great abilities in working with group decision making facilitate critically-ill patients' recovery [22].

Different studies showed that high-quality critical care can reduce mortality rate in ICUs by 28% to 30% [23]. Nurses who base their practice on the scientific evidence and documents, make wiser decisions, provide care services with higher quality, shorten patients' hospital stay, lower their healthcare costs, and improve care and organizational effectiveness. Thiel and Ghosh found that although nurses had positive attitudes toward evidence based practice [23, 24, 25].

### 2.2. KAP related literature reviews

There is knowledge about what intensive care patients experience as strengthening and empowering when being cared for in ICU, but there is still a lack of knowledge about how patients rate the importance of physical assessment practices, i.e., what is experienced to be of the greatest importance and what is

not that important. A combination of patient-rated importance and actual experiences could serve as a basis for reflections and tailored improvement activities [26].

This is due to different barriers to affect patient assessments include nurses' perceived lack of knowledge, a lack of confidence in skills and lack of experience. Knowledgeable and skillful critical care staff is a key component to high-quality critical care delivery. Critical care staff, particularly nurses, need to manage unpredictable critical situations and thus, they need to have adequate professional knowledge and skills. Other study also reported that more experienced nurses less frequently used the theoretical academic knowledge. In other words, the use of theoretical knowledge was negatively correlated with the work experience [27, 28].

Some literature finding shown that more experienced nurses were more likely knowledgeable about physical assessment skills. Physical assessment skills were cited as more difficult to carry out by respondents with less experience in nursing. The group with more clinical practice experience had more knowledge of physical assessment skills, used the skills more frequently and had less difficulty in using them. The use of evidence based nursing practice is not only a duty, but also a professional responsibility and practice. Evidence based practice helps nurses have the best clinical practice and thereby, improves the quality and effectiveness of nursing care services [18, 29, 30].

A study done in Australian to investigate physical assessment skills taught in undergraduate baccalaureate nursing programs and the physical assessment skills used by practicing nurses. Twelve educators teaching physical assessment and 51 practicing nurses were surveyed on 120 physical assessment skills listed in standard nursing textbooks. Median scores were computed on all skills. The educators taught all of the skills, 92.5% of skills were taught and practiced in class and 7.5% were taught but not practiced [31].

On other hand, online survey to explore the use of physical assessment skills by Australian nurses. Data were extracted from 1220 completed questionnaires returned by nurses who were mostly employed in New South Wales; Respondents indicated that they used only 34% of skills routinely physical assessment is performed. Results reinforce evidence found in the literature that many of the skills taught to nurses are either not used at all (35.5%) or are used rarely (31%). For the practicing nurses, 37% of the skill were never used, 29% were used on a daily/weekly basis, with 34% used on a monthly/occasional basis [5, 31].

Most early warning systems and rapid response teams are based upon vital signs observations and the recognition of abnormal vital signs to trigger the response. Clinical frontline nurses play an essential role in detecting changes in patients' health status through ongoing health assessment and timely, appropriate action in response to changes, or deterioration, in health status [32]. Despite, the centrality of health assessment in nursing education, previous research in Australia suggests that only 11–29% of the physical assessment skills taught in nursing practice [33]. Similar result find in Argentina that ICU nurse's performed skill that could not be a significant way of patient assessment practice is only (20.3%) [34].

Study in Australia indicated that the large number of skills practice on average identified as never learned 69 (51.9%) and never performed 24(18%). These shown physical assessment skills across a range of body systems, including skills of percussion, auscultation and special techniques, or those requiring specialized equipment not performed. About 12(9%) skills were identified as performed auscultation of lung sounds, inspection of jugular venous pulse and abdominal palpation for tenderness and distension while 10 (7.5%) skills of practice performed by nurses regularly on vital signs observation, oxygen saturation, and assess mental status, skin inspection and inspection of wounds whereas additional 8(6%) were on cardiovascular and neurological assessment with 10(7.5%) were assessment of selected musculoskeletal and gastrointestinal assessments and gross inspection of hearing [35].

Study in Australia found that as years of clinical area experience increased, utilization of core skills decreased. Nurses with greater than 10 years' experience used significantly less skills compared to other groups. However, Nurses' who have a higher level of education have been shown to provide better nursing care, with higher levels of safety for their patients. Such competent performance requires integration of nursing knowledge and skills accounting for better decision making and improved clinical reasoning and performance [35, 36].

Study conducted in Italia reported that, 'Inspection of overall skin color', 'Evaluation of breathing effort', 'Assessment of mental status and level of consciousness', 'Inspection of wounds', 'Inspection of skin lesions', 'Inspection of extremities for skin color and hair growth', 'Evaluation of speech' and 'Evaluation of the face for movement and sensation' regular performed skill practice of physical assessment by nurses while Palpation and inspection of capillary refill', 'Palpation of extremities for tenderness', 'Assessment of muscle strength', 'Inspection of muscles and extremities for size and symmetry', 'Assessment for Pupils Equal, Round, Reactive to Light and Accommodation', and

‘Assessment of Glasgow Coma Scale performed rarely’ or ‘occasionally’. However, Auscultation of lung sounds’, ‘Auscultation of heart sounds’, ‘Auscultation of the abdomen for bowel sounds’ and ‘Inspection of the spine’ almost never performed by more than 60% of the study participants and were not considered as part of the typical nursing practice [37]. Similarly different literatures suggested that one-third of the selected procedures are not routinely applied in clinical practice by nurses [38, 39]. When the results were stratified by length of employment, no significant differences were found in the quality and quantity of items routinely performed between newly qualified and a longer experience nurses. Also, a few techniques were more likely to be performed by younger nurses [37].

### 2.3. Conceptual frame work

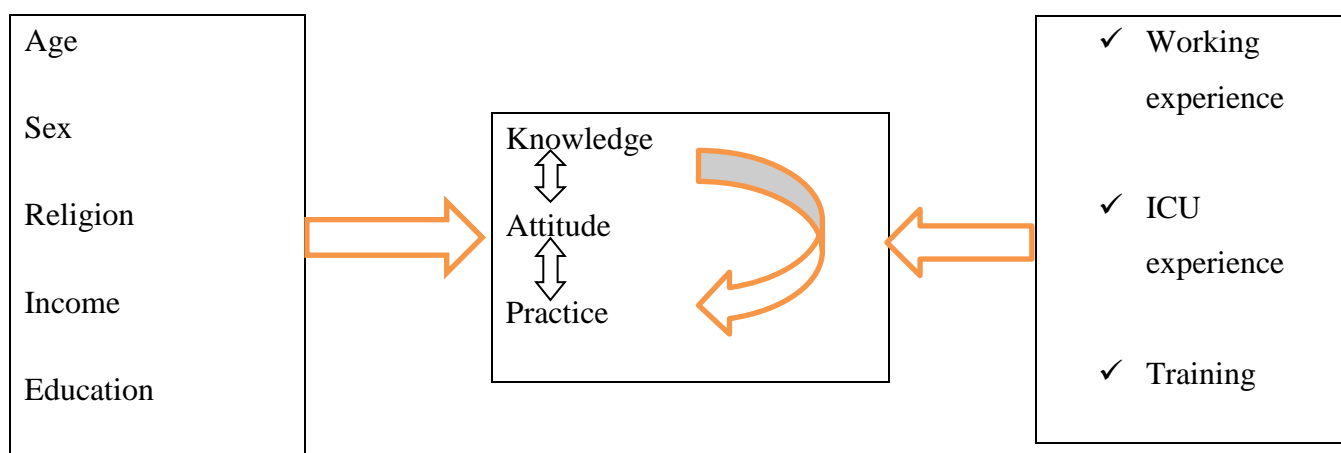


Figure1:- **Conceptual frame work logical model.**

The different literature review shown that working of experience, ICU experience, age, sex and education level of individual affect the KAP of ICU Nurses [18, 29, 30, 35, 36, 37]. The skill of practice related the knowledge individual of ICU Nurses. Perception attitude of ICU Nurses also affect the potential skill of practice and level of knowledge [26, 27, 28].

### **3. Objectives**

#### **3.1. General objective**

To assess the knowledge, attitude and practice of nurses towards physical assessment for critically ill patients in ICU at selected public hospital in Addis Ababa, Ethiopia.

#### **3.2. Specific objectives**

- ✓ To assess the knowledge of nurses, towards physical assessment for critical ill patients in ICU.
- ✓ To determine attitude of nurses, towards physical assessment on critical ill patients in ICU
- ✓ To identify the practice of nurses, towards physical assessment on critical ill patients in ICU
- ✓ To identify associated factors affect KAP of ICU Nurses

## **4. Methodology**

### **4.1. Study area:**

The study was conducted at selected public hospital in AA city. Addis Ababa is the capital city of Ethiopia and Africa. Addis Ababa is the largest city in Ethiopia, with a population of 3,475,952 according to the 2007 population census with annual growth rate of 2.7 %. Its area is estimated to be 530Km<sup>2</sup> with altitudes ranging from 2200 to 3000m above sea level, average temperature of 22.8C° and average rainfall of 1,180.4mm [40].

Addis Ababa has 41 hospitals (14 public and 28 NGO and private) [40]. Out of 14 public hospitals: Tikur-Anbessa Specialized hospital(TASH), St. paul's hospital, Zewuditu memory hospital, Yekatit 12 hospital, Addis Ababa Burn, Emergency and Trauma hospital, Rasdasta hospital, Tirunesh bejing hospital, Miliniki II hospital, St. peteros hospital and Alert hospital were selected for this study because of to provide ICU service. From the remains four public hospitals in Addis Ababa, Federal Police referral hospital and Arm defense hospital excluded due to ethical issue whereas Ghand mommory hospital and Amanuel hospital provide specific service that is Obstetrics and gynecology case and psychiatric cases respectively. The rest ten hospitals were provide general ICU service in their ICU department.

### **4.2. Study period:**

The study was conducted from February 19 to March 31, 2018.

### **4.3. Study design:**

Institutional based cross-sectional study was conducted at selected public hospitals, AA, Ethiopia.

## **4.4. Source & Study population**

### **4.4.1. Source population:**

All number of nurses works in ICU at selected public hospitals, AA, Ethiopia.

### **4.4.2. Study Population:**

All number of nurse's works in ICU was simple randomly by lottery method at selected public hospitals, AA, Ethiopia.

## 4.5. Eligibility criteria:

### 4.5.1. Inclusion criteria:

The study was included all nurses working in ICU at selected public hospitals in AA with willing to participate a study.

### 4.5.2. Exclusion criteria:

Those nurses on annually leave and sick leave during data collection, student nurses, and other health care providers were not included in this study.

## 4.6. Sample size determination and procedure

### 4.6.1. Sample size determination

The Sampling technique of this study carries out a single population proportion formula was used to estimate the sample size of KAP amongst nurses toward physical assessment of critical ill patients and the following assumptions was made:-

$$n = \frac{(Z \alpha/2)^2 P (1-P)}{d^2}$$

Where n = sample size

p = proportion of KAP amongst nurses toward physical assessment of critical ill patients (50%)

Z = standard normal distribution curve value for the 95% confidence interval (1.96)

d = the margin of error or accepted error (0.05)

$$n = \frac{(1.96)^2 * 0.5(1-0.5)}{(0.05)^2} = \underline{384} \text{ ICU nurses}$$

The source populations of the study area were 222 ICU nurses. Since total source of study population were less than 10,000, then sample size correction formula was made to get the actual sample size (N=222)

$$nf = n/(1+n/N)$$

Where, nf = Final sample size

n = first calculated sample size

N = Source of study population

$$nf = 384/(1 + 384/222) = \underline{141} \text{ nurses working in ICU from selected hospitals.}$$

Adding a 10% (141) non-response rate = 14.1 = 14, **Total sample size = 14 + 141 = 155**

#### 4.6.2. Sampling procedure

There were 14 public/governmental hospitals in Addis Ababa. All hospitals included except Mahatma Ghand memorial hospital and St. Amanuel specialized psychiatric hospital which provides specific service of gynecologic and psychiatric cases respectively while armed force hospital and Federal Police Referral Hospital excluded due to ethical issue. List of public a hospital that was included in the study with number of ICU nurses working in ICU department.

| <b><u>Name of hospital</u></b>  | <b><u>Number of ICU Nurses</u></b> |
|---------------------------------|------------------------------------|
| Black lion Specialized Hospital | (49)                               |
| St. Paul's Specialized Hospital | (36)                               |
| Yekatit 12 Hospital             | (21)                               |
| Zewuditu Memorial Hospital      | (16)                               |
| Menilik II Hospital             | (17)                               |
| St. Peters Hospital             | (12)                               |
| Alert Hospital                  | (12)                               |
| Tirunesh Bejing Hospital        | (11)                               |
| Ras Dasta Hospital              | (14)                               |
| <u>AaBET Hospital</u>           | <u>(34)</u>                        |
| Total                           | 222 ICU nurses                     |

The number of study participant for each Hospital were proportionally allocated and those who had been part of the final sample size were selected using Simple random sampling, lottery method from those found in ICU department during data collection seasons. Totally, about 155 ICU nurses were selected by simple lottery method during data collection and involved in this study.

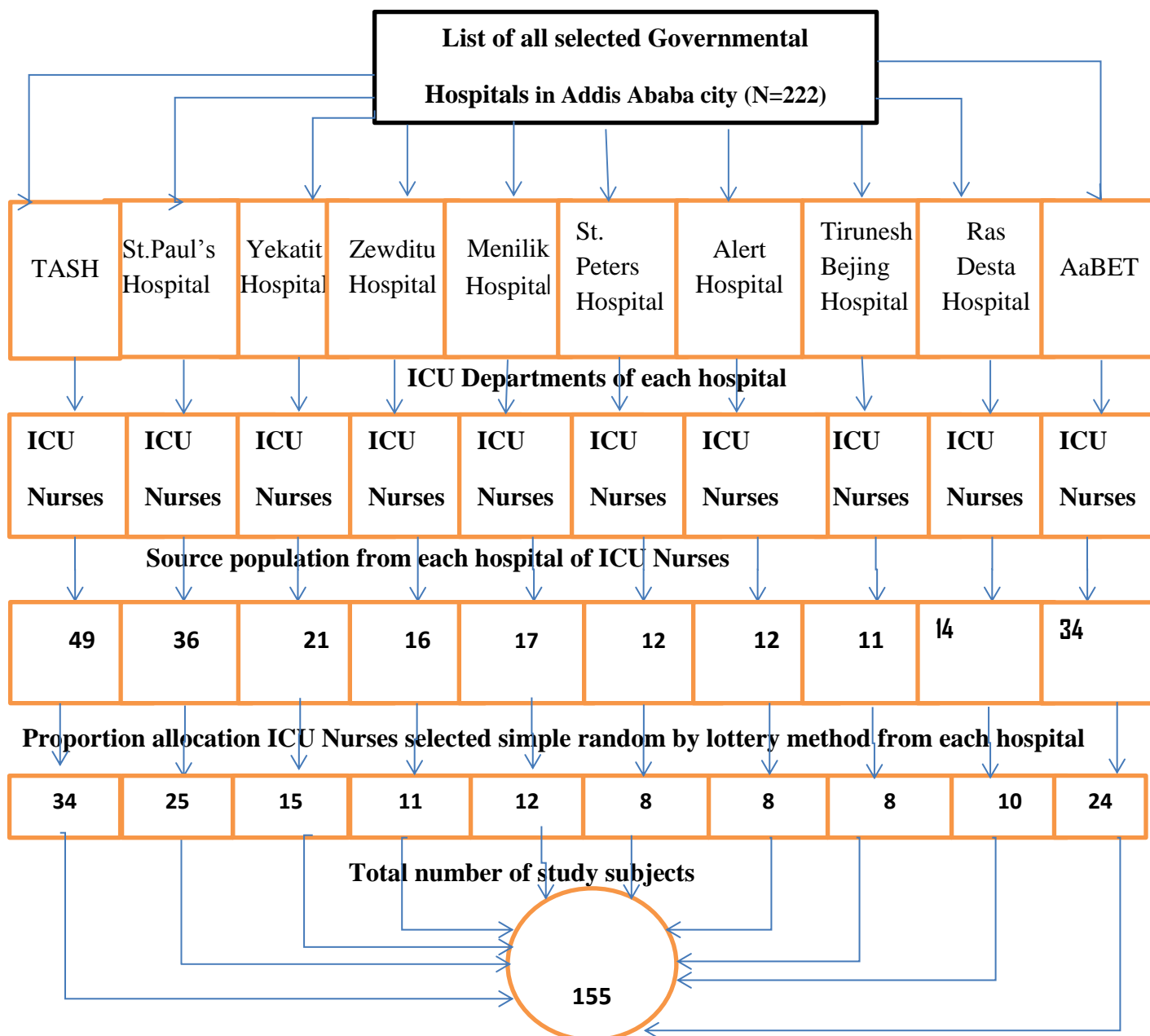


Figure 2:- Sample size determination procedure frame diagram.

## 4.7. Study Variables

### 4.7.1. Dependent variable

- Knowledge, Attitude and Practice of nurses toward physical assessment of critical ill patients

### 4.7.2. Independent variable

- Age and sex of respondents
- Education level, Marital status and Monthly incomes
- Experience of ICU work and Training

#### 4.8. Operational definitions

**Attitude of Physical assessment:** - indicate that believe of nurses toward physical examine on critical ill patients.

**Good knowledge:** - refers as all ICU nurses, who score more than mean of knowledge related questioners toward physical assessment.

**Good practice:** - refers as all ICU nurses, who score more than mean of skill practice questioners toward physical assessment.

**ICU:-** is refers as a care unit that admit very critical ill patients for better investigation and intervention with special consideration.

**ICU nurses:** - Nurses regular assign and work in ICU as governmental employer.

**Knowledge of Physical assessment;** -It is measured by the Knowledge of nurses toward Physical examine by quiz Questionnaire.

**Negative attitude:** - All ICU nurses, who scores less than mean of attitude questioners

**Physical assessment:** - Evaluation of body system from head to toe for critical ill patients in ICU.

**Practice of physical assessment;** referred to the level of nurses' ability in making skill of practice accurately and timely in ICU admitted patients.

**Poor knowledge:** -refers as all ICU nurses, who score less than mean of knowledge questioners toward physical assessment.

**Poor practice:** - refers as all ICU nurses, who score less than mean of skill practice questioners toward physical assessment.

**Positive attitude:** - all ICU nurses, who scores more than mean on attitude related questioners toward physical assessment.

#### 4.9. Data collection tools and procedure

The study tools were adopted by English language with little modification from the different previous studies to assess KAP of nurses toward physical assessment of critical ill patients. These tools have four parts such as socio-demographic characteristic of study respondents, Knowledge, Attitude and Practice of nurses toward physical assessment of critical ill patients using well-structured and organized questioners through self-administered response method.

**Section one:** Socio-demographic characteristic study respondents were involved Age, Sex, Religion, and Ethnicity, Education level, marital status, Monthly incomes, Experience of ICU work and physical assessment related training.

**Section two:** The physical assessment Knowledge Questionnaires were used to measure knowledge of ICU nurses toward physical assessment, which consisted of 15 Multiple Choose Questioners, and taken from physical assessment quiz questioners. Each question has four choices. The correct answer of each item was scored as 1 and incorrect answer scored as 0. The possible range of total score of knowledge on physical assessment was 0-15 and final changed into percentage. The higher scores indicated that the better knowledge.

**Section three:** The attitude was measure through the original questionnaire with little modification from previous literature which consists of 10 items. Five of the items were worded positively, and five were worded as negatively. The tool has a 5 point Likert scale. This was used to represent nurses attitudes to a topic scored on 5 point scale, i.e. 1 (Strongly disagree), 2 (Disagree), 3 (Uncertain), 4 (Agree) and 5 (Strongly agree). Thus, possible score range were 10 to 50 and final changed into percentage. Final for purpose of result analysis broken into parts, 1 for agree (strongly agree and agree responses) and 0 for disagree (uncertain, strongly disagree and disagree responses).

**Section four:** The physical examination skills Practice questioner adopted from practicing nurses in Italian Bachelor degree requirements, around 30 items routinely taught and performed tools was selected. The possible ranges of total score of practice skill on physical assessment were 30-180 and converted into percentage. The average frequency with which each skill performed were measured using a six-point Likert scale, as follows: 0 = I do not know how to do, then not to do this technique, 1 = I know how to do this technique, but it is not part of my clinical practice, 2 = I perform this technique rarely (a few times), 3 = I perform this technique occasionally (a few times per year), 4 = I perform this technique frequently in my clinical practice (every 2–5 times I work), 5 = I perform this technique regularly in my clinical practice (every time I work) [38]. Final for reason of result analysis grouped as **0= Not perform** (I do not know how to do, then not to do this technique, I know how to do this technique, but it is not part of my clinical practice to do), **1= Perform sometimes** (I perform this technique rarely (a few times), I perform this technique occasionally (a few times per year), I perform this technique frequently in my clinical practice (every 2–5 times I work)) and **3= Perform regular**. Finally the data was collected by five Ethiopian research assistants and collectors with four BSc nursing qualifications (three for data collection and one for supervisor) and one for data encoder. The collection of data was completed within one month through only working days.

#### **4.10. Data quality assurances**

To assure quality of the data the following measures were undertaken; Two weeks prior to the actual data collection, questionnaire were pre tested on 5%(8) of the estimated sample at Bishoftu general Hospital which was out of sampled population for its clarity, understandability, and completeness. Also for data assistance, collector and supervisor at least for one day short training was given because of to enhance the quality of data and to ensure that all the data collectors and assistances should have been the same information about the study tools, to follow the same survey procedures. In addition, during the actual data collection process, supervisor was cross checked consistency completeness and well Filled of data. The data was cleaned for inconsistencies and missing values and amendment was considered as needed before data analysis.

#### **4.11. Data processing and analysis**

The collected data were entered into epi-data version 3.1 and analyzed by SPSS version 20. Simple descriptive statically distribution were computed by frequencies, percentages, mean, standard deviation, rate and proportion. Correlation and binary logistic regression were used to determine the association between different variables and the outcomes variables. A value of  $P < 0.05$  was taken as significant at CI 95%. The finally result were present by text, Pie-chart, table and Graph.

#### **4.12. Ethical consideration**

Ethical clearance and approval was obtained from the Ethical Committee of college of health science, AAU. Official letters were obtained from department of Emergency medicine to all concern body and selected hospitals. After explain about the purpose and possible benefit of the study, written consent was obtained from study participants before joining the study. The confidentiality was maintained in each level of the response.

#### **4.13. Dissemination of results**

The study result will be presented to AAU, Faculty of Medicine, Department of emergency medicine and documents will be disseminated to all hospitals involved in study, federal Minister of health, Furthermore the manuscript will be submitted to national and international peer review journals for possible publication.

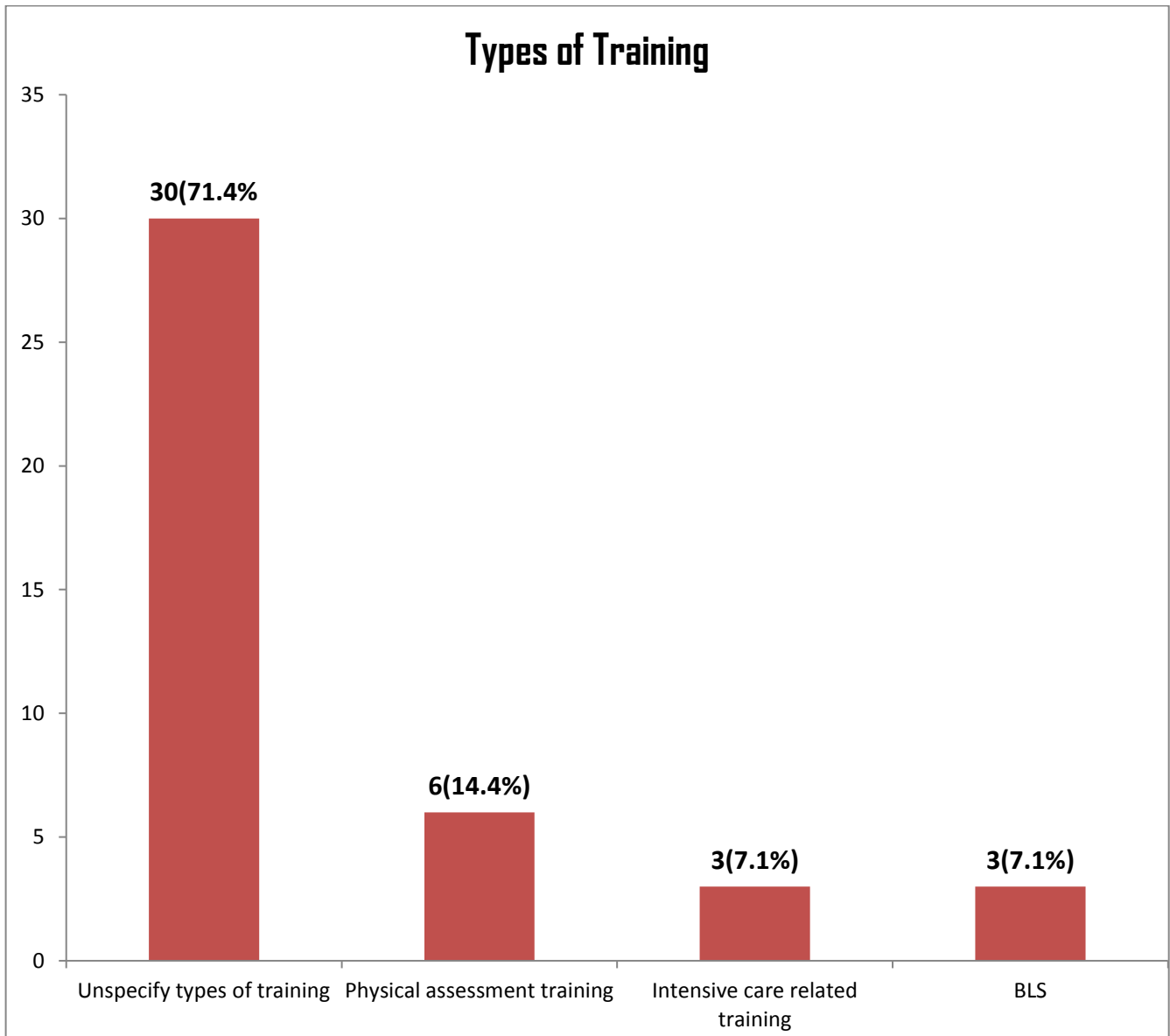
## 5. RESULT

### 5.1. Socio-demographic characteristics of study participants

A total study participants, about 151(97.4%) involved in this study as response rate while 4(2.6%) were non- response rate due to incompleteness of data. More of 118(78.1%) study participants were under or less than 30yrs old with (mean=28.51 and Std. =4.105) average age of participants. Around 87(57.6%) of study respondents were male with male to female ratio 1:1.4, 89(58.9%) respondents were unmarried and 146(96.7%) educational level respondents were BSc holder with 147(97.4%) less than 10yrs working experience. About 142(94%) of nurses had less than 5yrs ICU experience and 110(72.8%) nurses were not taken any physical assessment related training during ICU working. Mean average monthly incomes of study participants were 5293.40 birr.

**Table 1:- Socio-demographic characteristics of study participants at selected hospitals in AA.**

|   | <b>Variables</b>           | <b>N (%)</b> |
|---|----------------------------|--------------|
| Age (mean=28.51,Std. =4.105)                            | ≤ 30                       | 118(78.1)    |
|   | >30                        | 33(29.9)     |
| Sex of study participants                               | Male                       | 87(57.6)     |
|   | Female                     | 64(42.4)     |
| Marital status  | Married                    | 62(41.1)     |
|   | Unmarried                  | 89(58.9)     |
| Educational level                                       | BSc                        | 146(96.7)    |
|   | MSc                        | 5(3.3)       |
| Monthly incomes in birr<br>(Mean=5293.4, Std.=1385.664) | ≤5000                      | 69(45.7)     |
|   | ≥5001                      | 82(54.3)     |
|   | Mean (51.80), Std.(37.336) |              |
| Year of experience by months                            | ≤120months (≤ 10yrs)       | 147(97.4)    |
|   | ≥121months (>10yrs)        | 4(2.6)       |
|   | Mean (26.14), Std.(22.099) |              |
| Year of experience by months at<br>ICU                  | ≤60months (≤5yrs)          | 142(94)      |
|   | ≥61months (>5yrs)          | 9(6)         |
| Taken training related to physical<br>Assessment        | No                         | 109(72.2)    |
|   | Yes                        | 42(27.8)     |



**Figure 3:- Types of training taken by study participants during ICU working at selected hospitals AA.**

From total of study participants, About 42(27.8%) ICU Nurses were taken any physical assessment relating training for critical ill patients during work in ICU, out of those trained around 30(71.4%) ICU Nurses taken training, but could not specify the types of training that related with physical assessments. The remains 6(14.4%), 3(7.1%) and 3(7.1%) were trained with physical assessment, Intensive care related (like mechanical ventilation, NGT insertion and Endotracheal tube intubation) and BLS respectively.

## 5.2. Knowledge of ICU Nurses

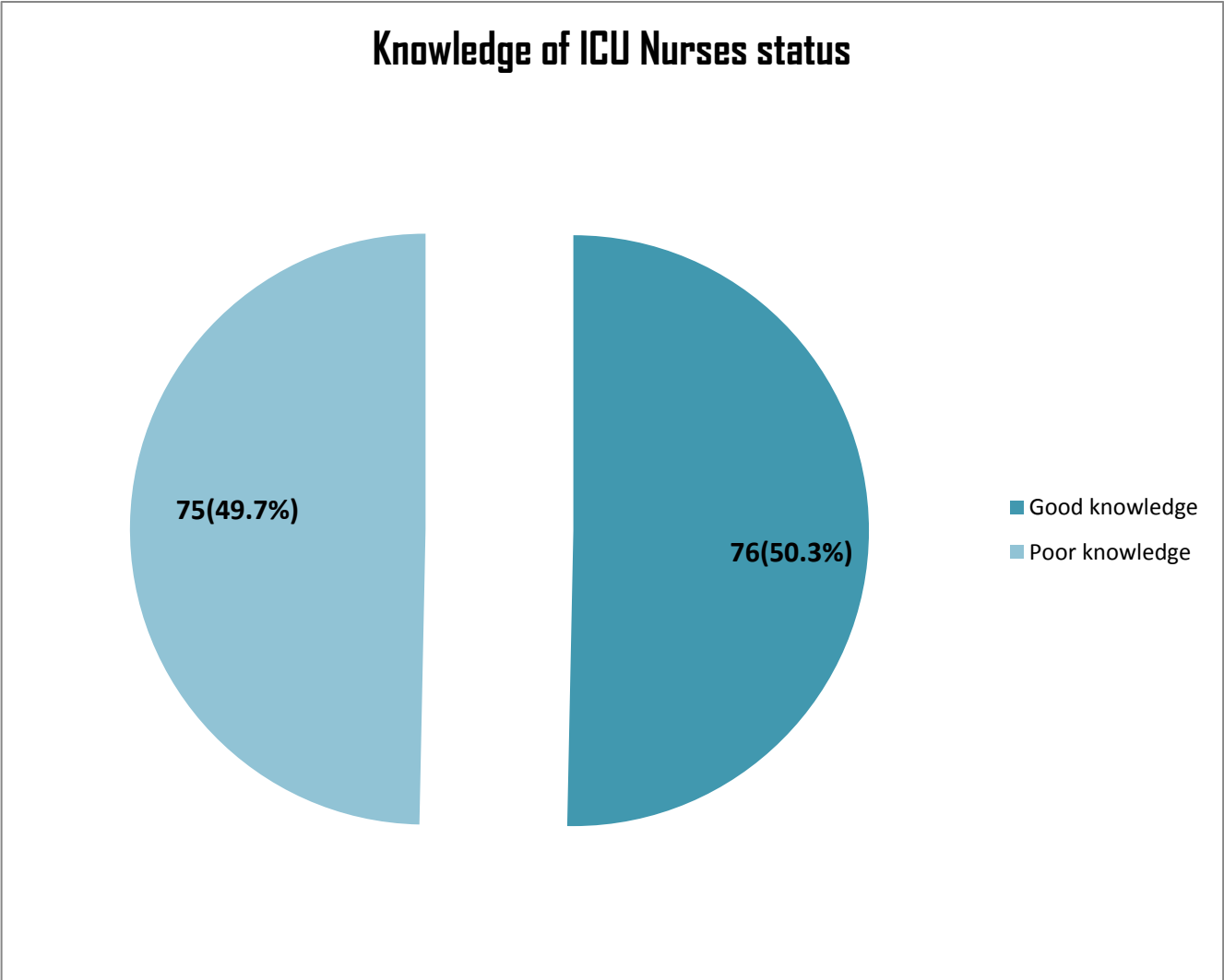
**Table 2:- Assessment of study participant's Knowledge at selected hospitals in AA, 2018.**

| Knowledge questioner items   | Response         |                    |
|--|------------------|--------------------|
|  | Correct<br>N (%) | Incorrect<br>N (%) |
| RR should be assessed in relation to:-                                   | 38(25.2)         | 113(74.8)          |
| The presence of bruits in the carotid artery may suggest                 | 31(20.5)         | 120(79.5)          |
| Normal breathing sound includes  | 109(72.2)        | 42(27.8)           |
| S3 heart sound can be heard when   | 54(35.8)         | 97(64.2)           |
| Breast tissue does not change with aging                                 | 41(27.2)         | 110(72.8)          |
| Pitting edema that disappears within few seconds considered as           | 31(20.5)         | 120(79.5)          |
| Stage 3 pressure ulcer injuries involves                                 | 39(25.8)         | 112(74.2)          |
| Normal body temperature Varies throughout the day.                       | 104(68.9)        | 47(31.1)           |
| Usually blood pressure in left and right arm differs by more than 15mmhg | 48(31.8)         | 103(68.2)          |
| The most common sign and symptom of respiratory dysfunction is           | 78(51.7)         | 73(48.3)           |
| The definition of orthopnea is need to sit or stand to breath normally   | 77(51.0)         | 74(49.0)           |
| Addition breathing sound like wheeze and stridor are common on :-        | 79(52.3)         | 72(47.7)           |
| What further data gather needed for the above case (Aortic areusim)?     | 105(69.5)        | 46(30.5)           |
| What complication will be happen for the above case (Aortic areusim)?    | 41(27.2)         | 110(72.8)          |
| Which one is mismatched about normal breathing sound with location       | 24(15.9)         | 127(84.1)          |

**Note:** - N (Frequencies), % (Percentage)

More of the ICU nurse's response incorrect answers 113(74.8%) react on relation of RR assessments. The presence of bruits in the carotid artery may suggest turbulent blood flow or stenosis answered only by 31(20.5%) ICU nurse's from total study participants. A 109(72.2%) study respondents to identify the types of normal and abnormal breathing sound, however, about 127(84.1%) ICU Nurses could not identify the location of those normal breathing sound find during chest auscultation. Additional heart sound S3 can be heard during Ventricles are resistant to fill correctly answered only by 54(35.8%) of ICU nurses. From total ICU Nurses of selected hospitals in AA only about 31(20.5%) and 39(25.8%) had known types of pitting edema and stage of pressure ulcer respectively.

The nearly half of study respondents had known common sign and symptom of respiratory dysfunction during respiratory complains of critical ill patients.



**Figure 4:- Mean score of knowledge of ICU Nurses status.**

General physical assessment for critical ill patients related knowledge questioners, those score less than mean of knowledge questioners considered as poor knowledge whereas those score greater than mean categorized as good knowledge. The mean score of knowledge questioners answered correctly by study respondents were 43.07. From total of study participants around half of ICU Nurses had poor knowledge while the remains 76(50.3%) score more than the mean termed as good knowledge.

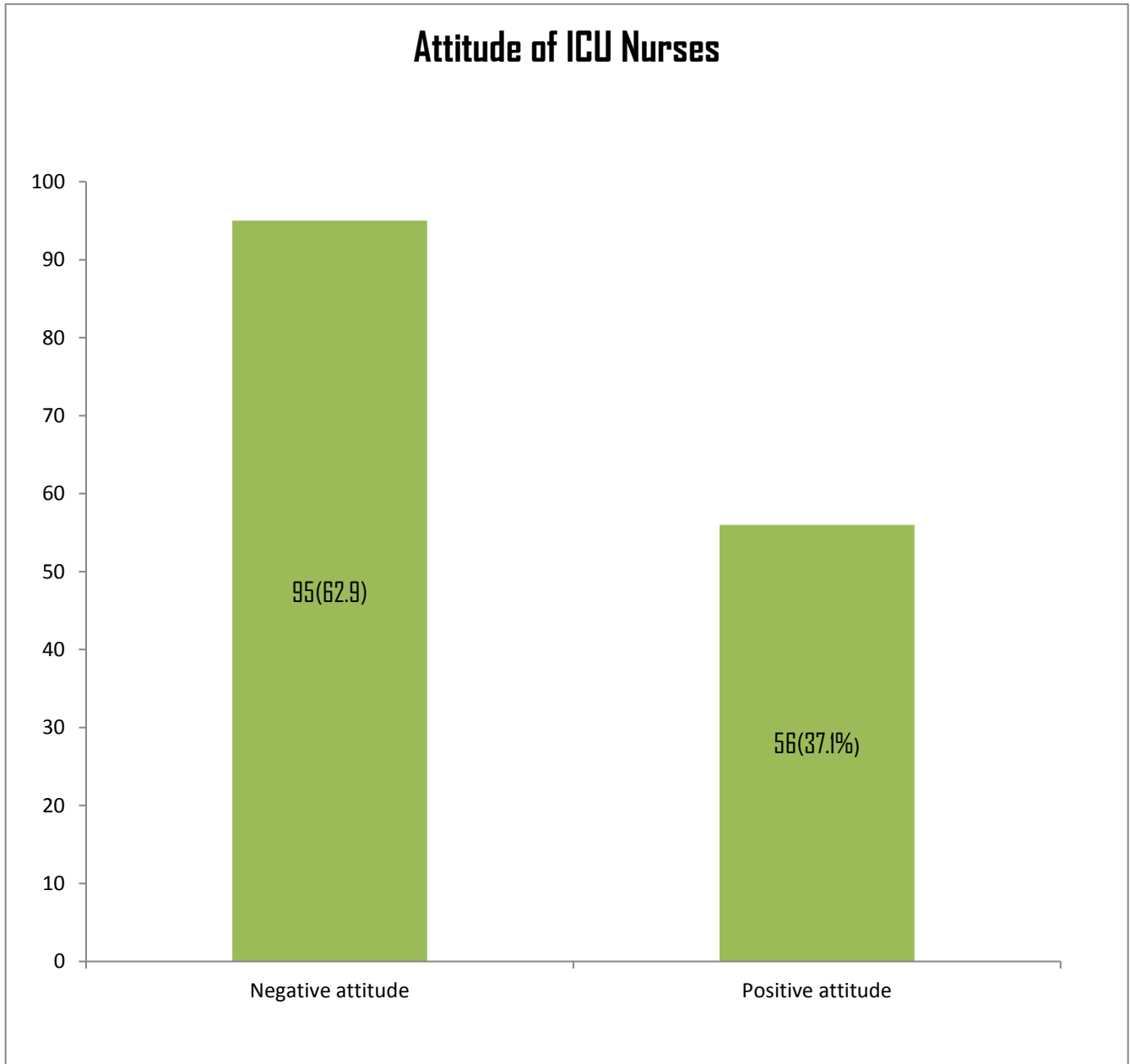
### 5.3. Attitude of study participants

**Table 3:- Attitude of study respondent's assessment at selected hospitals, 2018.**

| Attitude related questioner items                                   | Response  |           |
|---|-----------|-----------|
|   | Agree     | Disagree  |
|   | N (%)     | N (%)     |
| Head to toe PE for critical ill patients is important               | 132(87.5) | 19(12.5)  |
| Critical ill patients on mechanical ventilation PE is difficulty    | 57(37.8)  | 94(62.2)  |
| Physical assessment always performed by physician                   | 32(21.2)  | 119(78.8) |
| Routine PE for critical ill patients is responsibility of nurses    | 92(60.9)  | 59(39.1)  |
| In ICU daily PE to result new Dx, this may change Dx and treatments | 118(78.1) | 33(21.9)  |
| Physical assessment is not nursing jobs                             | 26(17.2)  | 125(82.8) |
| Critical ill patients has less outcome then daily PE is unnecessary | 27(17.8)  | 124(82.2) |
| Physical assessment for critical ill patients to take a long time.  | 23(15.2)  | 128(84.8) |
| In ICU, there is work over load, Then PE is not more important.     | 31(20.6)  | 120(79.4) |
| Always PE for critical ill patients is not needed daily.            | 23(15.2)  | 128(84.8) |

**Note:-** N (Frequencies), % (Percentage)

Table 3 shown that about 132(87.5%) ICU nurses agree with head to toe PE for critical ill patients is very important. A 57(37.8%) study participants agree with physical assessment for critical ill patients on mechanical ventilation is very difficult. Around 32(21.2%) study respondents agree on physical assessment always performed by physician as a trained experience. A 59(39.1%) ICU Nurses of selected hospitals in AA disagree ideas on routine physical assessments for critical ill patients are responsibility of nurses. About 118(78.1%) of respondents agree with in ICU daily physical assessment to result new diagnosis, this may change diagnosis and treatments of individual on critical ill patients. Around 26(17.2%) ICU nurses believe that physical assessment is not a nursing job. A 128(84.8%) ICU nurses were disagree with always PE for critical ill patients is not needed daily.



**Figure 5:- Mean score of attitude of study participants at selected hospitals in AA, 2018.**

The mean of attitude believe of ICU Nurses toward physical examination of critical ill patients were 52.57. About 95(62.9%) of study participants were record below the mean that is termed as negative attitude while 56(37.1%) considered as positive attitude toward physical examination of critical ill patients.

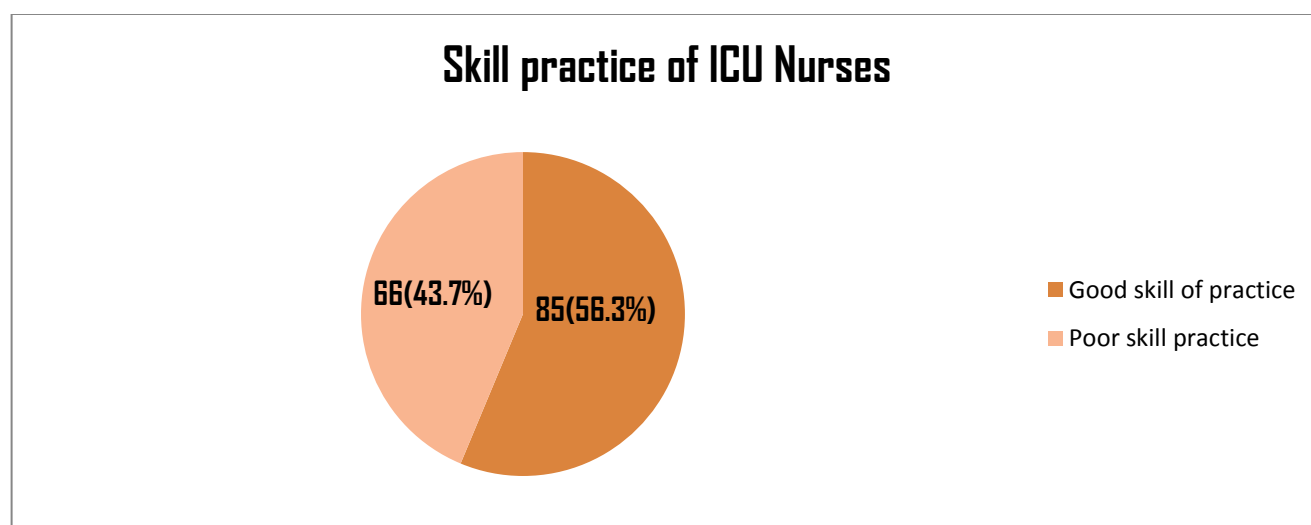
## 5.4. Skill practice of ICU Nurses

**Table 4:- Skill practice performance study respondents at selected public hospitals in AA, 2018.**

| Practice related questioner items                              | Responses     |                   |                 |
|--|---------------|-------------------|-----------------|
|  | Never perform | Sometimes perform | Regular perform |
|  | N (%)         | N (%)             | N (%)           |
| Inspect external eyes and hair growth                          | 54(35.7)      | 62(41.1)          | 35(23.2)        |
| Assess for pupil equal size, shape And relative to react light | 41(27.1)      | 55(36.5)          | 55(36.4)        |
| Inspect oral cavity  | 34(22.5)      | 64(42.4)          | 53(35.1)        |
| Inspect chest shape  | 33(21.9)      | 59(39.0)          | 59(39.1)        |
| Inspect abdominal area   | 32(21.2)      | 46(30.5)          | 73(48.3)        |
| Inspect genital area   | 36(23.9)      | 61(40.3)          | 54(35.8)        |
| Inspect extremities  | 33(21.8)      | 45(29.9)          | 73(48.3)        |
| Inspect muscle and limbs sizes                                 | 42(27.8)      | 62(41.1)          | 47(31.1)        |
| Inspect the spine  | 42(27.8)      | 73(48.4)          | 36(23.8)        |
| Inspect skin lesion and wound                                  | 28(18.5)      | 46(30.5)          | 77(51.0)        |
| Inspect overall skin integrity and color                       | 30(19.8)      | 43(28.5)          | 78(51.7)        |
| Inspect and palpate extremities for Edema                      | 30(19.9)      | 42(27.8)          | 79(52.3)        |
| Observe range of motion of joints                              | 38(25.1)      | 57(37.8)          | 56(37.1)        |
| Evaluate face for movements and Sensation                      | 30(19.9)      | 59(39.0)          | 62(41.1)        |
| Evaluate breathing effort                                      | 19(12.6)      | 53(35.1)          | 79(52.3)        |
| Assessment mental status and GCS                               | 22(14.5)      | 54(35.7)          | 75(49.7)        |
| Palpate and inspect capillary refill                           | 25(16.6)      | 59(39.0)          | 67(44.4)        |
| Palpate distal pulse for circulation                           | 17(11.2)      | 64(42.4)          | 70(46.4)        |
| Auscultate lung sound  | 22(14.6)      | 56(37.1)          | 73(48.3)        |
| Auscultate for heart sound                                     | 15(9.9)       | 68(45.1)          | 68(45.0)        |
| Auscultate abdomen for bowel sounds                            | 28(18.6)      | 65(43.0)          | 58(38.4)        |
| Palpate abdomen for tenderness and distension                  | 30(19.8)      | 61(40.5)          | 60(39.7)        |
| Palpate extremities for tenderness                             | 33(21.3)      | 64(43.4)          | 54(35.3)        |
| Assess muscle strength   | 40(26.5)      | 65(43.0)          | 46(30.5)        |

|  |          |          |           |
|--|----------|----------|-----------|
| Evaluate speech pattern                                | 29(19.3) | 66(43.6) | 56(37.1)  |
| Assess hearing on basis of conversation                | 27(17.9) | 64(42.4) | 60(39.7)  |
| Measure BP using sphygmomanometer                      | 17(11.2) | 50(33.2) | 84(55.6)  |
| Measure body temperature                               | 14(9.2)  | 35(23.3) | 102(67.5) |
| Measure oxygen saturation using pulse-ox meter         | 14(9.2)  | 36(23.9) | 101(66.9) |
| Assess NGT and patients monitoring machines            | 12(7.9)  | 35(23.2) | 104(68.9) |
| Total score of practice skill with related performance | 867(19)  | 1669(37) | 1994(44)  |

This above table 4 revealed that only about 44% ICU Nurses perform regular skill of practice whereas around 37% and 19% of ICU Nurses perform sometimes and never perform skill of practice for critical ill patients respectively on different physical examination tools like inspection, palpation and auscultation methods . Inspect (external eyes and hair growth, oral cavity, genital area, muscle and limbs sizes, spine area), Auscultate (for heart sound and abdomen for bowel sounds), Palpate (extremities for tenderness, abdomen for tenderness and distension), Assess muscle strength, Evaluate speech pattern and Assess hearing on basis of conversation were performed sometimes by a number or more number of study participants. Some number of ICU Nurses never perform the following physical examination area like to inspect external eyes and hair growth 54(35.7%), assess for pupil equal size, shape and relative to react light 41(27.1%), inspect genital area 41(27.1%), inspect muscle and limbs sizes 42(27.8%), inspect the spine 42(27.8%), observe range of motion of joints 38(25.1%), palpate extremities for tenderness 33(21.3%) and assess muscle strength 40(26.5%) for critical ill patients.



**Figure 6:- Mean score of ICU Nurses on skill of practice toward physical assessments.**

The mean skill practice of ICU Nurses is 75.44. Nearly more than half of study participants score as good practice whereas 66(43.7%) poor practice.

## 5.5. Associated factors between independents and dependents variables.

### 5.5.1. Associated Factor analysis of Attitude, knowledge and practice using Pearson correlation among ICU Nurses at selected hospital in AA. 2018

Strong association and moderate positive relationships were found to exist between skill of practice and knowledge ( $r = 0.311$ ,  $p < 0.01$ ) while mild positive relationship exists between practice and the four other factors: Attitude, Monthly Incomes, Service experience and ICU experience. The knowledge had strong association and moderate positive relationship with skill of practice ( $r = 0.311$ ,  $p < 0.01$ ) and mild positive relationship with Service experience and ICU experience. In addition, knowledge of ICU Nurses strongly negative relationship with age and monthly incomes. The Attitude had negative correlation with knowledge and Service experience.

**Table 5:- Associated Factor of Attitude, knowledge and practice among nurses working in ICU**

| Variables        | Tests       | Attitude | Knowledge | Practice | Age    | Monthly Incomes | Service experience | ICU experience |
|------------------|-------------|----------|-----------|----------|--------|-----------------|--------------------|----------------|
|                  | Pearson (r) | 1        | -0.147    | 0.085    | 0.037  | 0.107           | -0.110             | 0.081          |
|                  | P-values    |          | 0.072     | 0.297    | 0.651  | 0.190           | 0.177              | 0.324          |
| <b>Attitude</b>  | N           | 151      | 151       | 151      | 151    | 151             | 151                | 151            |
|                  | Pearson (r) | -0.147   | 1         | 0.311**  | -0.090 | -0.043          | 0.098              | 0.015          |
|                  | P-values    | 0.072    |           | 0.000    | 0.273  | 0.604           | 0.233              | 0.859          |
| <b>Knowledge</b> | N           | 151      | 151       | 151      | 151    | 151             | 151                | 151            |
|                  | Pearson (r) | 0.085    | 0.311**   | 1        | -0.028 | 0.032           | 0.058              | 0.114          |
|                  | P-values    | 0.297    | 0.000     |          | 0.734  | 0.695           | 0.483              | 0.165          |
| <b>Practice</b>  | N           | 151      | 151       | 151      | 151    | 151             | 151                | 151            |

Note: - \*\* (Correlation is significant at the 0.01 level (2-tailed)).

- Pearson (r) (Pearson correlation coefficient)
- N (Frequency)

### 5.5. 2. Associated Factor analysis of ICU Nurses Attitude using binary logistic regressions

Bivariate logistic regression was conducted to assess those variables which had influence over attitude of nurses working in ICU. From bivariate logistic regression analysis factors only the Sex, of study participants had been seen at  $p$ -value  $< 20\%$ . The Service experience and ICU experience had been risk of exposure on attitude of ICU Nurses with (COR=1.793, CI= 0.182-17.670, P= 0.617) and (COR= 2.148, CI=0.430-10.719, P= 0.351) respectively by bivariate logistic regression analysis. This indicated

that less experience in ICU working nurses had two times negative believe than more experienced in ICU working nurses.

**Table 6:-Associated Factor of attitude among nurses working in ICU of AA hospitals, 2018.**

| Variables                                     | Attitude  |           | COR<br>(CI, 95%)   | P-value | AOR<br>(CI, 95%)  | P-value |
|---|-----------|-----------|--------------------|---------|-------------------|---------|
|   | Negative  | Positive  |                    |         |                   |         |
|   | N (%)     | N (%)     |                    |         |                   |         |
| Age of study participants by years            |           |           |                    |         |                   |         |
| ≤ 30  | 75(78.9%) | 43(76.8%) | 0.882[.399-1.948]  | 0.756   |                   |         |
| > 30  | 20(21.1%) | 13(23.2%) | 1                  |         |                   |         |
| Sex   |           |           |                    |         |                   |         |
| Male  | 58(61.1%) | 29(51.8%) | 0.685[.352-1.335]  | 0.201   | 0.685[.352-1.335] | 0.201   |
| Female  | 37(38.9%) | 27(48.2%) | 1                  |         | 1                 |         |
| Monthly incomes by birr                       |           |           |                    |         |                   |         |
| 2600-5000                                     | 45(47.4%) | 24(42.9%) | 0.833[.429-1.621]  | 0.591   |                   |         |
| 5001-9028                                     | 50(52.6%) | 32(57.1%) | 1                  |         |                   |         |
| Taken of physical assessment related training |           |           |                    |         |                   |         |
| No  | 69(72.6%) | 40(71.4%) | 0.942[.452-1.964]  | 0.873   |                   |         |
| Yes   | 26(27.4%) | 16(28.6%) | 1                  |         |                   |         |
| Service experience years                      |           |           |                    |         |                   |         |
| ≤ 10 years                                    | 92(96.8%) | 55(98.2%) | 1.793[.182-17.670] | 0.617   |                   |         |
| >10 years                                     | 3(3.2%)   | 1(1.8%)   | 1                  |         |                   |         |
| ICU experience years                          |           |           |                    |         |                   |         |
| ≤ 5 years                                     | 88(92.6%) | 54(96.4%) | 2.148[.430-10.719] | 0.351   |                   |         |
| >5 years                                      | 7(7.4%)   | 2(3.6%)   | 1                  |         |                   |         |

Note:- \*\* (strongly association )

-\* (moderate association)

### 5.5. 3. Associated Factor analysis of ICU Nurses knowledge using Logistic regressions

From seven variables analyzed and conducted by bivariate logistic regression to assess, those variables which had influence over knowledge of nurses working in ICU only about two variables were entered together to multivariate logistic regression to control confounding factor at p-values less than 20%. All

variables had p-value greater than 5%. BSc holder ICU nurses found around 3.94 times greater had poor knowledge (AOR= 3.94, CI= 0.424-36.547, P= 0.228) than MSc holder ICU Nurses. Not taken of physical assessment related training during ICU working affect knowledge of ICU Nurses by 2.85 times when compare with those taken training on physical assessments (AOR= 2.85, CI= 0.512-19.346 , P=0.321)

**Table 7:- Associated Factor of knowledge among nurses working in ICU of AA hospitals.**

| Variables                                     | Knowledge |           | COR<br>(CI, 95%)  | P-value | AOR<br>(CI, 95%)  | P-value |
|---|-----------|-----------|-------------------|---------|-------------------|---------|
|   | Poor      | Good      |                   |         |                   |         |
|   | N (%)     | N (%)     |                   |         |                   |         |
| Age of study participants in years            |           |           |                   |         |                   |         |
| ≤ 30  | 57(76.0%) | 61(80.3%) | 1.284[.592-2.786] | 0.527   |                   |         |
| >30   | 18(24.0%) | 15(19.7%) | 1                 |         |                   |         |
| Sex   |           |           |                   |         |                   |         |
| Male  | 42(56.0%) | 45(59.2%) | 1.141[.598-2.176] | 0.690   |                   |         |
| Female  | 33(44.0%) | 31(40.8%) | 1                 |         |                   |         |
| Monthly incomes by birr                       |           |           |                   |         |                   |         |
| 2600-5000                                     | 32(42.7%) | 37(48.7%) | 1.275[.671-2.422] | 0.458   |                   |         |
| 5001-9028                                     | 43(57.3%) | 39(51.3%) | 1                 |         |                   |         |
| Education level                               |           |           |                   |         |                   |         |
| BSc   | 71(94.7%) | 75(98.7%) | 4.23[.461-38.718] | 0.201   | 3.94[.424-36.547] | 0.228   |
| MSc   | 4(5.3%)   | 1(1.3%)   | 1                 |         | 1                 |         |
| Taken of physical assessment related training |           |           |                   |         |                   |         |
| No  | 52(69.3%) | 57(75.0%) | 3.327[.549-30.71] | 0.203   | 2.85[.512-19.346] | 0.321   |
| Yes   | 23(30.7%) | 19(25.0%) | 1                 |         | 1                 |         |
| Service experience years                      |           |           |                   |         |                   |         |
| ≤ 10 years                                    | 74(98.7%) | 73(96.1%) | 0.329[.033-3.235] | 0.340   |                   |         |
| >10 years                                     | 1(1.3%)   | 3(3.9%)   | 1                 |         |                   |         |
| ICU experience years                          |           |           |                   |         |                   |         |
| ≤ 5 years                                     | 72(96.0%) | 70(92.1%) | 0.486[.117-2.020] | 0.321   |                   |         |
| >5 years                                      | 3(4.0%)   | 6(7.9%)   | 1                 |         |                   |         |

#### 5.5.4. Associated Factor analysis of ICU Nurses practice using logistic regressions

Out of seven variables conducted by bivariate logistic regression to determine that factor which have significant influence over skill of practice about four variables entered together for multivariate logistic regression. The output of multivariate logistic regression shown all variables had p- values > 0.05. However, Education level, Types of training, ICU experience and Service experience had positive risk of exposures on skill of practice. Education level shows BSc degree holders of study participants were found about 5.431 times had greater poor skill of practice when compared to MSc holder nurses working in ICU. The study respondents had < 10 years of working experience found around 9.884 times had more poor skill of practice than those >10 years of working experience in service.

**Table 8:- Associated Factor of skill practice among nurses working in ICU of AA hospitals.**

| Variables                                     | Practice  |           | COR<br>(CI, 95%)   | P-value | AOR<br>(CI, 95%)   | P-value |
|---|-----------|-----------|--------------------|---------|--------------------|---------|
|   | Poor      | Good      |                    |         |                    |         |
|   | N (%)     | N (%)     |                    |         |                    |         |
| Age of study participants by years            |           |           |                    |         |                    |         |
| ≤ 30  | 53(80.3%) | 65(76.5%) | 0.797[.363-1.751]  | 0.572   |                    |         |
| >30   | 13(19.7%) | 20(23.5%) | 1                  |         |                    |         |
| Sex   |           |           |                    |         |                    |         |
| Male  | 38(57.6%) | 49(57.6%) | 1.003[.523-1.922]  | 0.993   |                    |         |
| Female  | 28(42.4%) | 36(42.4%) | 1                  |         |                    |         |
| Education level                               |           |           |                    |         |                    |         |
| BSc   | 63(95.5%) | 83(97.6%) | 1.976[.321-12.184] | 0.102   | 5.431[.235-15.39]  | 0.291   |
| MSc   | 3(4.5%)   | 2(2.4%)   | 1                  |         | 1                  |         |
| Service experience years                      |           |           |                    |         |                    |         |
| ≤ 10 years                                    | 65(98.5%) | 82(96.5%) | 0.421[.043-4.138]  | 0.105   | 9.884[.262-373.04] | 0.216   |
| > 10 years                                    | 1(1.5%)   | 3(3.5%)   | 1                  |         | 1                  |         |
| ICU experience years                          |           |           |                    |         |                    |         |
| ≤ 5 year                                      | 65(98.5%) | 77(90.6%) | 0.148[.018-1.215]  | 0.075*  | 1.106[.004-2.659]  | 0.172   |
| > 5 years                                     | 1(1.5%)   | 8(9.4%)   | 1                  |         | 1                  |         |
| Taken of physical assessment related training |           |           |                    |         |                    |         |
| No  | 49(74.2%) | 60(70.6%) | 0.833[.404-1.715]  | 0.619   |                    |         |
| Yes   | 17(25.8%) | 25(29.4%) | 1                  |         |                    |         |
| Types of training taken by ICU Nurses         |           |           |                    |         |                    |         |
| PE training                                   | 1(5.9%)   | 5(20.0%)  | 4.375[.455-42.080] | 0.201   | 8.340[.505-137.77] | 0.138   |
| BLS   | 1(5.9%)   | 2(8.0%)   | 1.750[.143-21.433] | 0.662   | 1.792[.143-22.469] | 0.651   |
| ICU   | 1(5.9%)   | 2(8.0%)   | 1.750[.143-21.433] | 0.662   | 1.792[.143-22.469] | 0.651   |
| Unspecified                                   | 14(82.4%) | 16(64.0%) | 1                  |         | 1                  |         |

## 6. DISCUSSION

This study was carry out institutional based cross-sectional study design to assess Knowledge, Attitude, practice and Associated factors among ICU nurses toward physical assessment for critical ill patients at selected hospitals in Addis Ababa. In this study, from 155 ICU Nurses, only about 151(97.4%) study participants involved, those fulfill investigator principles. From total of study respondents around 49.7%, 62.9% and 43.7% of ICU Nurses had poor knowledge, negative attitude and poor skill of practice response toward physical assessment for critical ill patients respectively.

Our study shown that about 95(62.9%) of ICU Nurses had negative attitude toward physical examination for critical ill patients. This result a line with others study. Most of the ICU Nurses perceived negative attitude toward physical assessment for critical ill patients because of, physical assessment state as not their jobs [18].

A study conducted in Australian indicated that only about 29% and 34% of skills practice respondents routinely or regular and sometimes physical assessment was performed, which is nearly similar (44% and 37%) with our study result respectively. [5, 31] In addition, around 19% of ICU Nurses never perform skill of practice for critical ill patients on physical examinations in this study. About 37% of ICU nurses never perform physical assessment for critical ill patients [5, 31]. The difference between above studies may be related with training level and other factors influence performance of practice skill in ICU. Similarly different literatures suggested that one-third of the selected procedures are not routinely applied in clinical practice area by nurses [38, 39]. However, more far from our study result, the study conducted in Argentina among ICU nurses found that about 79.3% of respondents never perform skill of practice toward physical assessment for critical ill patients [34].

This study indicated that through inspection (external eyes and hair growth, oral cavity, genital area, muscle and limbs sizes, spine area), palpate (extremities for tenderness, abdomen for tenderness and distension), assess muscle strength, evaluate speech pattern and assess hearing on basis of conversation were performed sometimes by more number of study participants. This is also similar with study conducted in Italia. [37]

The study in Australia aimed to identify physical assessment skills used regularly in practice performed by nurses 10 (7.5%) predominantly vital signs observation while additional skills 8(6%) were on cardiovascular skills, and neurological assessment skills 10(7.5%) respectively [35]. Similar in this study assessing cardiovascular system, neurological assessment, vital sign and assess the skin lesion and wound and extremities scored by more number of nurses performed regularly day to day. The similarity

may be due to these area is very critical emergency areas which need more attention and early detection and aggressive intervention.

Our study result found that some number of ICU Nurses never perform to inspect external eyes and hair growth 54(35.7%), assess for pupil equal size, shape and relative to react light 41(27.1%), inspect genital area 41(27.1%), inspect muscle and limbs sizes 42(27.8%), inspect the spine 42(27.8%), observe range of motion of joints 38(25.1%), palpate extremities for tenderness 33(21.3%) and assess muscle strength 40(26.5%) for critical ill patients. This shown that more than 2/3 of study participants never performs skill of practice on the above area. However, study in Italia found that ‘Auscultation of heart sounds’, lung sounds’, abdomen for bowel sounds’ and ‘Inspection of the spine’ almost never performed by more than 60% of the study participants [37]. The difference on this area may be due to the assessment and identify normal and abnormal finding, to need special attention and skill of practice than the others body parts.

Physical assessment by nurses have stated that this is not part of their job, and among some nurses, skill of practice related with negative attitude, which perceived negative attitude related with poor skill of practice [18], However, other study conducted by Thiel and Ghosh found that although nurses had positive attitudes toward evidence based practice [23, 24, 25]. This line with our result, the attitude of ICU nurses positive correlation ( $r = 0.085$ ,  $p = 0.297$ ) toward skill of practice on physical assessment for critical ill patients. Addition, as a literature review shown that, the use of theoretical knowledge among nurses was negatively correlated with the work experience [27, 28]. But in this study the knowledge of study participants positive relation at ( $r = 0.098$ ,  $p = 0.233$ ) with the work experience services. Also in this study result shown that, strong association and positive correlation were found to exist between skill of practice and knowledge ( $r = 0.311$ ,  $p < 0.01$ ) among ICU Nurses.

Some literature finding shown that more experienced nurses were more likely knowledgeable about physical assessment skills. Physical assessment skills were cited as more difficult to carry out by respondents with less experience in nursing. The group with more clinical practice experience had more knowledge of physical assessment skills, used the skills more frequently and had less difficulty in using them [18, 29, 30]. This study revealed that more experienced nurses had more knowledgeable than less experienced. Although, other study reported that more experienced nurses less frequently used the theoretical academic knowledge on physical assessments [27, 28]. This is due to different barriers to affect patient assessments include nurses’ perceived lack of knowledge, a lack of confidence in skills and lack of experience. Knowledgeable and skillful critical care staff is a key component to high-quality

critical care delivery. Critical care staff, particularly nurses, need to manage unpredictable critical situations and thus, they need to have adequate professional knowledge and skills [27, 28].

In this study result BSc degree holder ICU nurses found around three times greater had poor knowledge than MSc holder ICU Nurses. This the same with other study, which elaborate as Nurses' who have a higher level of education have been shown to provide better nursing care, with higher levels of safety for their patients. Such competent performance requires integration of nursing knowledge and skills accounting for better decision making and improved clinical reasoning and performance [36].

Study in Australia showed that as years of clinical experience increased, utilization of core skills of practice on physical assessment become decreased. Nurses with greater than 10 years' experience used significantly less skills of practice compared to other groups [35]. Inversely from the above study result, our study found that, the study respondents, those had less than 10 years of working experience found around 9.884 times more poor skill of practice than those more than 10 years of working experience in service. This shown that less experienced in service, less skill of practice. In addition, on education level BSc degree holders of study participants were found about 5.431 times had greater poor skill of practice when compared to MSc holder nurses working in ICU. The difference between the above study results, in Australia as the service experience increases the attention given for the patients decrease, may be related with negligence and careless.

## **7. Strength and Limitation of study**

### **7.1. Strength of the study**

- ✓ Using multivariate logistic regression analysis to control the effect of possible confounding factor.
- ✓ Participation of nurses was also generally satisfactory with 97.4% response rate.

### **7.2. Limitation of the study**

- One limitation of this study was that skill of practice was measured using self-administered questioners.
- Some variables had less significant of association due to miss of variables and self-reporting.

## **8. Conclusion and Recommendation**

### **8.1. Conclusion**

The findings provide some understanding of KAP among nurses working in ICU of Addis Ababa, Ethiopia. The knowledge of study respondents found to be as poor while the attitude response was also as found to be negative perception. The skill practice of study respondents is slightly better performance response, which is near more than the mean of skill practice. There were positive correlation between skill of practice and knowledge with working experience and ICU experience.

### **8.2. Recommendation**

#### **To FMOH and Federal Ministry of Education**

- Better to more emphasize on skill of practice on physical assessment in ICU at federal hospitals.
- The frequently giving updates training for ICU nursing on physical assessment.
- Better to make police and procedure on job description for ICU nurses.

#### **To hospitals found in Addis Ababa**

- To assign ICU more experienced nurses very important.
- Better to give train for ICU nurses on physical assessment

#### **To professional nurses**

- The nurses better to enhance their level of knowledge and skill of practice on physical assessment.
- Nurses, who had better knowledge and skill, should also teach their respective colleagues.

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## ANNEX'S

### QUESTIONER SHEET

#### ADDIS ABABA UNIVERSITY COLLEGE OF HEALTH SCIENCES, SCHOOL OF MEDICINE DEPARTMENT OF EMERGENCY MEDICINE INFORMATION SHEET

How are you? My name is Dereje Nigussie. I am from AAU. I will be conducting a study on KAP of Nurses towards physical assessments on critical ill patients in ICU at selected public hospitals in AA for a partial fulfillment requirement of MSc degree in Emergency Medicine and Critical Care Nursing. I am here to assess KAP of Nurses towards physical assessments on critical ill patients in ICU with associated factors between variables. I would very much appreciate your participation in this study and selected to participate in this study. So you are kindly requested to respond to all statements or questions based on the instruction given. Your information is used only for research purpose and is kept confidential. The following are some general information about the study.

**Objectives of the study:** This study aim to assess Knowledge, Attitude and Practice of Nurses towards physical examination on critical ill patients in ICU at selected public hospitals in Addis Ababa, Ethiopia, 2017/2018.

**Participants to be included:** Participants to will be included in this study, all Nurse Staffs, permanently governmental employer work in ICU at selected hospitals in Addis Ababa. **Confidentiality:** All information taken from you will be kept confidential and won't be accessible to any third party; your name won't be registered on the question sheet, So that you will not be identified for any reason.

**Benefits of the study:** For your participation in the study no payment will be granted or has no any special privilege to you, but participating in the study and giving your genuine information will provide great input to bring change on Knowledge, Attitude and Practice of Nurses towards physical examination on critical ill patients.

**Risks of the study:** The study procedure does not bear any physical or psychological trauma. Furthermore, you will not be forced to respond or give information that you do not know.

**Consent:** Your participation in the study will be totally based on your willingness. You have the right not to participate from the beginning, or you may stop participating at any time after starting the participation.

**Rights as a participant:** If you have any questions about the study please be free to ask and contact me. Your participation in this study is voluntary and you can answer any individual questions or all of the questions concerning about your knowledge and attitude toward physical assessment on critical ill patients without confuse. In addition, I hope that you will be participating in this survey since your views are very important.

**Informed consent**

Are you voluntary to participate in this study?      Yes:       No:

If Yes, I understand all conditions that stated above. Therefore, I am willing to participate in this study from starting to complements by my name is \_\_\_\_\_ Signature \_\_\_\_\_

Name of investigator: Dereje Nigussie

Address: Tell \_\_\_\_\_ E-mail \_\_\_\_\_

Name of data collector \_\_\_\_\_ Signature \_\_\_\_\_

Date of data collection \_\_\_\_\_ Started time \_\_\_\_\_ Completed time \_\_\_\_\_

Result of interview questionnaire:

1. Completed    2. Refuse    3. Partially completed

Checked by: Supervisor, Name \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_

If no, skip to the next participant by writing reasons for his/her refusal.

**Part I: Socio-demographic characteristic of study participant questioner's.**

**Instruction:** Fill the following questioners for your own socio-demographic characteristic.

| S.no  | Variables  | response  | Remark |
|-------|--|---|--------|
| SD001 | Age  | -----   |        |
| SD002 | Sex  | Male <input type="checkbox"/> Female <input type="checkbox"/>       |        |
| SD003 | Marital status   | Married <input type="checkbox"/> Unmarried <input type="checkbox"/> |        |
| SD004 | Education level  | BSc <input type="checkbox"/> MSc <input type="checkbox"/>           |        |
| SD005 | Monthly incomes  | -----   |        |
| SD006 | Year of experience                                     | -----   |        |
| SD007 | Year of experience in ICU                              | -----   |        |
| SD08  | Do take any training that related physical assessment? | Yes <input type="checkbox"/> No <input type="checkbox"/>            |        |
| SD09  | If yes question no 010, specify?                       | -----   |        |

**Part II. Items to measure attitude of study respondents**

**Instruction:** Please assess your own attitude toward physical assessment of critical ill patients by check list the number on scale 1 to 5 following each statement below. There are five options available to select only one: 1 (Strongly Disagree), 2 (Disagree), 3 (Uncertain), 4 (Agree) and 5 (Strongly Agree).

| S.no | Variable  | Response                 |                          |                          |                          |                          | Remark |
|------|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------|
|      |   | 1                        | 2                        | 3                        | 4                        | 5                        |        |
| A001 | I think that for critically ill patient doing head-to-toe physical assessment in regular bases is very important. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |        |

|       |   |                          |                          |                          |                          |                          |  |
|-------|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--|
| A002  | I think that critical ill patients, that are on mechanical ventilation physical assessment is very difficult. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| A002  | Physical assessment always performed by physician.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| A004  | For critical ill patients routinely physical assessment is responsibility of nursing.                         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| A005  | In ICU daily physical assessment new finding may be occurs, this may change diagnosis and treatments.         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| A006  | I believe that physical examine is not nurses jobs.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| A007  | I believe that critical ill patients less outcomes, so that daily physical examine is unnecessary.            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| A008  | Daily physical assessment for critical ill patient not important, due to taken a long period of time.         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| A009  | In ICU there is a work over load, so that daily physical assessment is not more necessary.                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| A0010 | I believe that always physical assessment for critical ill patients is no more important.                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |

**Part III. Items to measure knowledge of study respondents**

**Instruction:** The questionnaire provides 15 questions regarding to knowledge on physical assessment of critical ill patients. Please choice the correct one by putting mark or circle in the available options A, B, C, and D.

K001. Respiratory rates should be assessed in relation to: A. Other patients B. The patient's own baseline rate C. Standard respiratory rates by age group D. All

K002. The presence of bruits in the carotid artery may suggest: A. Stenosis B. Turbulent blood flow C. All D. None

K003. Normal breath sounds include: A. Bronchial sounds B. Occasional crackles

C. Intermittent stridor D. None

K004. An S3 heart sound can be heard when the: A. Atria fill B. Semilunar valves close

C. Ventricles are resistant to filling D. None

K005. Breast tissue does not change with age. A. True B. False C. All D. None

K006. Your patient has pitting edema that disappears within a few seconds. This is considered:

Material protected by copyright. A. 1+ B. 2+ C. 3+ D. 4+

K007. A Stage 3 pressure ulcer will involve injury to: A. Muscle and bone B. Subcutaneous tissue C. The epidermal and dermal layers D. None

K008. Normal body temperature varies throughout the day. A. True B. False C. All D. None

K009. Usually blood pressure in the left and right arm differs by more than 15 mm Hg.

A. True B. False C. All D. A& B

K0010. What are the most common signs and symptoms of respiratory dysfunction?

A. Cough B. Dyspnea C. Sputum production D. All

K0011. The definition of orthopnea is the need to sit or stand to breathe normally.

A. True B. False C. A& B D. None

K0012. Adventitious breath sounds, such as wheezes and stridor are common in certain pulmonary conditions. Which condition is the identified adventitious sounds can be heard?

A, COPD B. Asthma C. A& B D. All

Mr. Hampton, an 86-year-old resident living with an inoperable aortic aneurysm is among your assigned patients. While carrying out hourly rounds on night shift you find Mr. Hampton profusely diaphoretic, shivering, confused and anxious. Upon further investigation it is noted Mr. Hampton was incontinent of a small amount of urine. This is atypical for the usually independent Nurse. Mr. Hampton expresses his

frustration at not being able to get to the bathroom in time and indicates this is the fourth time this night he has had urgency.

K0013. What further data will the nurse gather related to this recent development? A. Take vital signs B. Assess patient’s abdomen for bladder distention C. Assesses the urine for color, quantity, odor D. All

K0014. The nurse is analyzing the data. What might the nurse be considering as potentially responsible for Mr. Hampton’s recently developed problem?

A. Urinary tract infection with an associated obstruction B. Urinary tract infection without an associated obstruction C. A& B D. None

K0015. Which one is mismatched? A. Bronchial -Over the trachea B. Bronchovesicular - Under the clavicles anteriorly, between the scapulae posteriorly C. Vesicular- Over peripheral lung fields D. None

**Part IV. Items to measure skill experience practices of study participant’s.**

**Instruction:** Please assess your own skill of practice toward physical assessment of critical ill patients by check list the number on scale 0 to 5 following each statement below. There are six options available select only one: 0 = I do not know how to do this technique, 1 = I know how to do this technique, but it is not part of my clinical practice, 2 = I perform this technique rarely (a few times), 3 = I perform this technique occasionally (a few times per year), 4 = I perform this technique frequently in my clinical practice (every 2–5 times I work), 5 = I perform this technique regularly in my clinical practice (every time I work)

| S,no | Variables  | Response                 |                          |                          |                          |                          |                          | Remark |
|------|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------|
|      |  | 0                        | 1                        | 2                        | 3                        | 4                        | 5                        |        |
| P001 | Inspect external eyes and hair growth              |                          |                          |                          |                          |                          |                          |        |
| P002 | Assess for Pupils equal, round & reactive to light | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |        |
| P003 | Inspect the oral cavity                            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |        |
| P004 | Inspect chest shape                                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |        |
| P005 | Inspect abdomen                                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |        |

|       |   |                          |                          |                          |                          |                          |                          |  |
|-------|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--|
| P006  | Inspect genital area                            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| P007  | Inspect extremities                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| P008  | Inspect muscles and limp for size and symmetry  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| P009  | Inspect the spine                               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| P0010 | Inspect skin lesions & wounds                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| P0011 | Inspect overall skin integrity & color          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| P0012 | Inspect and palpate extremities for edema       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| P0013 | Observe range of motion of joints               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| P0014 | Evaluate face for movement and sensation        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| P0015 | Evaluate breathing effort                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| P0016 | Assessment mental status and Glasgow Coma Scale | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| P0017 | Palpate and inspect capillary refill            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| P0018 | Palpate distal pulses for circulation           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| P0019 | Auscultate lung sounds                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| P0020 | Auscultate heart sounds                         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| P0021 | Auscultate abdomen for bowel sounds             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| P0022 | Palpate abdomen for tenderness and distension   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| P0023 | Palpate extremities for tenderness              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| P0024 | Assess muscle strength                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| P0025 | Evaluate speech                                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| P0026 | Assess hearing on the basis of conversation     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| P0027 | Measure BP using sphygmomanometer               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| P0028 | Measure body temperature                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| P0029 | Measure SaO2 using a pulse ox meter             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| P0030 | Assess NGT and patient monitoring machines      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |