ADDIS ABABA UNIVERSITY
COLLEGE OF HEALTH SCIENCES
SCHOOL OF NURSING & MIDWIFERY

ASSESSMET OF NURSES KNOWLAGE ABOUT FRUCTURE MANAGEMENT AND ASSOCIATED FACTORS IN SELECTED GOVERMENTAL HOSPITALS IN ADDIS ABEBA, ETHIOPIA, 2021.

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MASTER OF SCIENCE RESEARCH PROJECT

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Study area	Selected governmental hospitals in Addis Ababa, Ethiopia

APPROVAL BY THE BOARD OF EXAMINATION

This thesis by **Jemal Seid** is accepted in its present form by the board of examiners as satisfying thesis requirement for the degree of masters in Adult Health Nursing.

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STATEMENT OF DECLARATION

By my signature below, I declare and affirm that this thesis is my own work. I have followed all ethical principles of in the preparation, data collection, data analysis and completion of this thesis. All scholarly matter that is included in the thesis has been given recognition through citation. I affirm that I have cited and referenced all sources used in this document. Every effort has been made to avoid plagiarism in the preparation of this thesis.

This thesis is submitted in partial fulfillment of the requirement for a graduate degree from the Addis Ababa University, College of Health Sciences, School of Nursing and Midwifery. I surely declare that this thesis has not been submitted to any other institution anywhere for the award of any academic degree or diploma.

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List of Abbreviation

AAU	Addis Ababa University
ALERT	All African leprosy rehibition and training center
DC	Data collection
ETB	Ethiopian Birr
PI	Principal investigator
RTA	Road traffic accident
SPSS	Statistical package of the social sciences
TASH	Tikur Anbessa specialized hospital
FMOH	Federal Ministry of Health

Contents

STATEMENT OF DECLARATION iii

List of Abbreviation v

List of figures ix

Abstract x

Chapter one 1

Introduction 1

1. Background 1

2. Statement of the problem 3

3. Significant of the study 5

Chapter Two 6

Literature review 6

1. Over view of fracture 6

2. Fracture types 6

3. Over view of fracture management 7

3.1. Nurses' knowledge about fracture management 7

4. Conceptual frame work 10

Chapter three 11

Objective 11

1. General objective 11

2. Specific objective 11

Chapter four 12

Materials and methods 12

1. Study area 12

2. Study period 12

3. Study design 12

4. Source of population 12

5. Study population 12

6. Eligibility criteria **13**
6.1. Inclusion criteria 13
6.2. Exclusion criteria 13
7. Sample size determination **13**
8. Sampling procedures **13**
9. Measurement variables **15**
9.1. Dependent variables 15
9.2. Independent variables 15
10. Operational definition of terms **16**
11. Data collection tools **16**
12. Data Quality Assurance **16**
13. Data processing and analysis **16**
14. Ethical Consideration **17**
15. Data dissemination plan **17**
Chapter five **18**
Result **18**
Chapter six **24**
Discussion **24**
6.1. Strength and limitation **27**
7.1. Conclusion **27**
7.2. Recommendations **28**
References **29**
Consent Form **32**
Part 1. Questionnaire Socio demographic characteristics **33**
Part 2. Knowledge assessment and associated factors regarding fracture management **34**

List of tables

Table 1: Socio-demographic characteristics of the respondents in selected governmental hospitals in Addis Ababa, Ethiopia, 2021 (N=120).....18
Table 2: Background characteristics of nurses working in adult orthopedic ward of selected governmental hospitals in Addis Ababa, Ethiopia, 2021(n=120).....19
Table 3: Frequency distribution of nurse's knowledge about fracture managements of selected governmental hospitals in Addis Ababa, Ethiopia, 2021(n=120).....20
Table 4: Multiple linear regression analysis of factors associated with Nurse's knowledge about fracture managements.in Ababa, Ethiopia, 2021. (n=120) 23

List of figures

Figure1: Conceptual framework on Nurse's knowledge about fracture management and associated factors source different literature. 10

Figure 2: Schematic presentation of sampling procedure on of Nurses' knowledge and associated factors on fracture management in Addis Ababa, 2021. 14

Abstract

Introduction: Fracture is a complete or incomplete disruption in the continuity of bone structure and is defined according to its type and extent. The nursing staff plays a main role in health promotion for persons with fracture.

Objective: To assess nurse's knowledge about fracture management and associated factor in selected governmental hospitals in Addis Ababa, Ethiopia, 2021.

Method: An institution-based cross-sectional study was conducted from February to March, 2021.Questionnaires was distributed study participants enrolled using convenience method from Tikur Anbessa, ALEART and Aabet hospitals in Addis Ababa. Mean, standard deviation, and percent were used to describe the characteristics of the study participants. Liner regression analysis was used to describe the relationship dependent and independent variables. Statistical significance was declared using p value less than 0.05.

Result: In this study 120 nurses were participated with 97.6% response rate. Mean score of knowledge of fracture managements was 75% $\pm$16. Institutional factors like policy& guideline, educational status and training condition had significantly associated with knowledge of nurses. Compared participants who had access to policy guidelines those who had no access less knowledge score by 0.156 unit (β = -0.156, p = 0.02). Study participants who received training in fracture management had higher knowledge score than those who did not have the training (β = 0.400, $p < 0.001$). Compared to other educational groups (bachelor and master's degree) participants with diploma qualification had lower knowledge score (β-0.425, $p < 0.001$).

Conclusion and recommendation: Generally, the total score of participated knowledge was75% $\pm$16, the study showed that: knowledge of nurses had strong associated with educational level. training condition and lack of policy and guideline so minster of federal health and hospital manager should focus on policy and guideline, training and educational opportunity since it had strongly affected nurse's knowledge.

Keywords: Knowledge, nurse, management, Tikur Anbessa hospital, Aabet hospital, ALERT hospital.

Chapter one

Introduction

1. Background

Fracture is a complete or incomplete interruption in the continuity of bone structure and is defined according to its type and extent. Fractures happen when the bone is exposed to stress greater than it can absorb. Fractures may be caused by direct blows, crushing forces, twisting motions, and extreme muscle contractions (1).

However traumatic injuries reason for the majority of fractures, some fractures are secondary to a disease process like pathologic fractures from malignance or osteoporosis. When bone is broken, adjacent structures are affected, which might result in soft tissue edema, bleeding into the muscles and joints, ruptured tendons, nerves and blood vessels damaged. Body organs might injured by the force that caused the fracture or by fracture fragments(2).

There are many factors for incidence of fracture such as age greater than 40 years ,bone loss, cigarette smoking, comorbidities (e.g., diabetes, rheumatoid arthritis) corticosteroids, nonsteroidal anti-inflammatory drugs, Extensive local trauma and Inadequate immobilization(1).

Hip fractures are common in older adults with 90% of these fractures resulting from a fall. greater than 320,000 patients are admitted to hospitals annually due to hip fracture. By age90, approximately 33% of all women and 17% of all men will have sustained a hip fracture(3). In adults more than 65 years old, hip fracture occurs more frequently in women than in men because of osteoporosis. By age 80, one in five women have a hip fracture due to the loss of bone density speeds up dramatically after menopause, which is contributes to maintaining bone density and strength. Many older adults with a hip fracture develop disabilities that need long care(2).

Femoral shaft fracture happens with a severe direct force because the femur can bend slightly before an actual fracture occurs. Young adults have a higher incidence of this type of fracture. The force exerted to cause the fracture such as from a motor vehicle crash or gunshot wound often damages the adjacent soft tissue structures(2).

The nursing staff plays a key role in health's promotion and important for health and wellbeing of fracture patient. due to better knowledge of its determining causes, it is now possible an easy access to diagnosis and treatment options before fragility fractures occur, providing a real prevention to such complications (4).

Nurses have a great role and several responsibilities to prevent complication and while healing by constant and timely observations. Maintaining skin care needed to reduce the risk of pressure ulcers and constant and timely turning and positioning the patient's, and also teach exercise to maintain the affected side (4).

2. Statement of the problem

When fracture occurs, it can reason injury to the muscles, nerves or blood vessels in the adjacent area. The damage may be permanent if it is not discovered and treated on time. Approximately 5% to 10% of all fractures have delayed healing resulting in continued morbidity and increased utilization of health care services and significant economic consequences and adverse effects on the quality of life (5).

The causes for incidence are multifactorial and often complicated by such factors as the patient's age, sex, co-morbidities, lifestyle, physiological status, and occupation. In the United States, 5.6 million fractures occur each year, corresponding to a 2% incidence (6).

Study conducted at Addis Ababa University, Medical Faculty Tikur Anbessa Hospital (TAH) shows that from the total of 422 adult patients who presented to the emergency department of TAH and had musculoskeletal injuries, in nearly half, 49.7% (202 patients) the cause of injury was road traffic accident (RTA). The highest frequency of fractures happened in the femur (15.8%) followed by tibio-fibular (14.4%) and humerus (12.9%). Incomplete fractures comparatively accounted smaller proportions, 23(11.4%). Transverse fractures stand out the first 125 (61.9. %) followed by oblique 38 (18.8%) and comminuted 29 (14.4%) fracture(7).

The management of fracture takes up more time and resources. Surgical fixation of fracture fragment can give adequate stability and short hospital stay. External fixation is common method in open fracture treatment. Bone healing may extend for more 7 months so the patient requirements special and long-standing care for these devices (8).

Orthopedic patient has three types of complications, complications associated to bone fracture, complications related to surgery-immobility and complications related to biomaterial implant. Around 70% of patients experience complications such as infections, which can delay healing. Among these complications, pin site infection is the most common infection among patients who have undergone external fixation, and

about 20% of these suffer from major infection while 80% suffer from minor infection (9).

Fractures are common with younger people resulting from high-energy physical traumas such as motor vehicle accidents and usually occur in the absence of any underlying disease Nursing is deliberate as caring for a patient in a set of health-related situations. Completely functioning musculoskeletal system is important to optimal healthiness in the normal active human being, damage or illness involving the system can have a profound effect on an individual's ability to perform the activities of daily livings and can result in temporary and permanent disability. So, nurses play major and vital roles to prevent further injury, reduce the risk of immobility complications resulting from orthopedic devices as traction, external and internal fixators, promote healing, maximize independence and promote optimal rehabilitation. This caring also involves teaching about health and the prevention of illness(10) nurses play a main role in promoting higher standards of health(11).However, we know little about nurses' knowledge of fracture management and associated factors in Addis Ababa. Therefore, the purpose of this study was to assess nurse's knowledge about fracture management and associated factors in selected government hospitals in Addis Ababa.

3. Significant of the study

The findings of the study can serve as an input for health education program undertaken by different organization related to fracture management. And this study will have important implications for health intervention programs and with a view of adding to the existing body of knowledge as well as help for improving care in the study area in particular and as the country in general. Finally, it will help for other researchers as baseline to conduct further research related issue.

Chapter Two

Literature review

1. Over view of fracture

Bone tissue delivers compact support for the body, protectors' vital organs such as those in the cranial and thoracic cavities, and harbors cavities containing bone marrow where blood cells are formed. A typical bone ailment is the fracture, which occurs when the bone is not able to withstand outside force like direct blows, twisting injuries and falls(12).

Fractures are blows in bones and are defined as a medical condition in which there is a break in the continuity of the bone. Fractures can happen in a variety of ways, but there are three common causes: Traumatic fracture (Accidents), Osteoporosis and Stresses or over use(13).

2. Fracture types

All fractures can be broadly described as closed or open. Simple fractures (more recently called "closed") are not obvious as the skin has not been ruptured and remains intact. Compound fractures (now commonly called "open") break the skin, exposing bone and causing additional soft tissue injury and possible infection. A single fracture means that one fracture only has occurred and multiple fractures refer to more than one fracture occurring in the same bone. Fractures are termed complete if the break is completely through the bone and described as incomplete or "greenstick" if the fracture occurs partly across a bone shaft. this latter type of fracture is often the result of bending or crushing forces applied to a bone. A complicated fracture is a fracture of the bone combined with a lesion of an organ, artery, nerve bundle, or joint(14).

Osteoporotic fractures mostly affect the spine and the hip, less frequently the wrist, pelvis, and proximal humerus. Some of these fractures are associated with a significant morbidity, but the hip and spine fractures are also associated with an increased mortality, with an incidence of around 24% in the first year after a hip fracture.

In addition, these fractures cause significant problems in terms of economic resources. In most European Countries, the annual costs associated with hospitalization for fractures (in terms of length of the hospitalization) were higher than those due to other chronic illnesses such as chronic obstructive bronchial pulmonary disease, stroke, myocardial infarction(4).

Fracture is the most common traumatic large-organ injuries in humans. Successful healing depends on a complex biological process that results in fracture union(5).

Cross sectional study in India showed that fracture was the commonest injury among the victims of nonfatal road traffic accidents, and common of the sufferers were in the productive age group of 18–37 years(15).

3. Over view of fracture management

The management of orthopedic settings clarification for a variety of factors that includes; casts, and supports, braces medications, surgery, and rehabilitation therapy. Orthopedic medical devices have been extremely successful in restoring mobility, reducing pain, and improving the quality of life for millions of individuals. Fracture management modalities include a wide variety of devices including wires, pins, screws, plates, spinal fixation devices and artificial ligaments(16).

Nursing management is a service based on scientific knowledge and skill, as well as trust, that the nurse will do what is right, what is needed and what will benefit the patient and their well-being(17).

3.1. Nurses' knowledge about fracture management

A cross sectional study showed that at University of Baghdad the orthopedics nurses have inadequate or deficit knowledge in aspects related to postoperative care for patient undergoing external fixation surgery in orthopedic wards(9).

The other study conducted in Iraq revealed that 70% of nurse's had poor knowledge about fracture management and also in another study conducted in Medial city there is inadequate nurses' knowledge in the orthopedic wards regarding nursing management of patients with multiple fracture(18).

A descriptive study in Iran indicated that the orthopedic nurses have in adequate or deficit knowledge of wound management in orthopedic wards. No significant relationship was found between orthopedic nurses' practice and their gender, years of employment in nursing field, years of experience in orthopedic wards and duration of the training session, while a significant relationship was found between orthopedic nurses practice and their age, marital status, level of education, sharing in training session and the number of training session that orthopedic nurses were engaged it (19).

In another study done Iran 2013 on 68 nurses 57 participated in this study (response rate of 84%). rate of correct answer by was 70.1%. nurses had the highest level of knowledge in part of pressure ulcer prevention and lowest in part of pressure ulcer onset. no relationship was found between level of knowledge with nurses' years of experiences (20).

According to study conducted in China nurses has low knowledge regarding osteoporosis in orthopedic ward and there is significant variation on educational level factor association with a better knowledge included age (36–45 years) marital status (married) and education (bachelor degree or above) (21).

A quasi-experimental research done in Egypt shows that unsatisfactory knowledge about skin traction and their complication according to the result, principles of highest percent of nurses didn't attain any training, before the implementation of the educational protocol. While there was an improvement in the level of knowledge post implementation of the protocol which observed that the majority of the nurses have a satisfactory level of knowledge in follow up. Therefore there was high significant statistical difference in total nurses' knowledge about skin traction (11).

In Egypt descriptive design study was conducted on orthopedic nurses who were dealing with patient who experienced femur fracture revealed that there was no significant between nurse's knowledge and their nursing care, years of employment, years of experience and training courses, but there was significant relationship between their knowledge and education only. The study concluded that there was no significant relationship between the nurse's practices and their years of employment, education,

and training courses, but, significant relationship was found between their practices and years of experience (22).

In South Africa Stellenbosch University study showed that knowledge and clinical practice of nurses for adult post-operative orthopedic pain management. The majority of respondents were experienced, permanently employed nurses on day duty, with more than five years' experience after their basic qualification. Their years of experience should demonstrate high clinical skills and knowledge of pain management. However, few respondents had obtained the diploma in orthopedic nursing science which could impact on optimal pain management in orthopedic wards (23).

In Ethiopia there is no literature on nurse's knowledge fracture management but there is related article in surgical ward about nurse's knowledge on palliative care and it showed that majority of nurses have poor knowledge about palliative care in orthopedic ward (24).

According to the study conducted in southern Ethiopia Hawassa showed that there is low nurses' knowledge about post-operative pain management (25).

Study conducted in north west Ethiopia by 2021 on nurse's knowledge surgical site infection show that there is good or satisfactory knowledge(26).

There is no direct literature related associated factor that affect nurse's knowledge about fracture management, but there is associated factors that affect nurse's knowledge to ward pressure ulcer management in surgical ward. Cross sectional Study conducted in Addis Ababa Ethiopia by 2015 showed that there is negative effect on nurse's knowledge due to the absence standard guide line, nurses who work in settings lacking specific policies and guidelines towards pressure ulcer prevention has poor knowledge(27).

Study conducted in Egypt showed that nurses has un satisfactory total knowledge score which was 62% and there was statistically significant relationship between nurses' level of knowledge and their training courses (28).

4. Conceptual frame work

After reviewing different literature((18),19,21). the conceptual frame work had developed based on the objective of the study. The negative change on the independent variables will cause the lower in the level of nurses' knowledge.

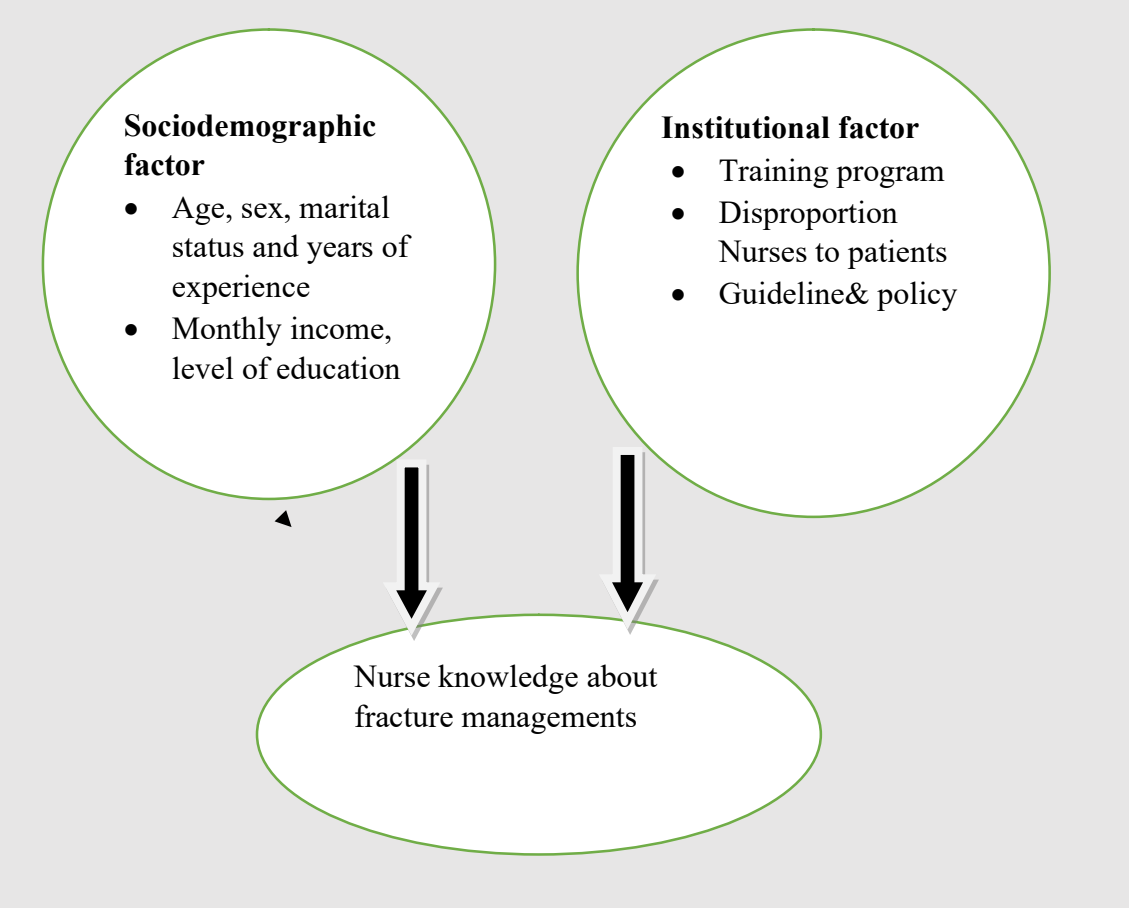

Figure1: Conceptual framework on Nurse's knowledge about fracture management and associated factors source different literature.

Chapter three

Objective

1. General objective

- To assess nurses' knowledge about fractures management and associated factors in selected governmental hospitals in Addis Ababa, Ethiopia, 2021.

2. Specific objective

- To determine nurses' knowledge about fractures management in selected governmental hospitals in Addis Ababa, Ethiopia, 2021.
- To identify factors related to nurses' knowledge on fracture management,2021.

Chapter four

Materials and methods

1. Study area

Addis Ababa is the capital city of the Federal Democratic Republic of Ethiopia. It is also home to the African Union, the Economic Commission for Africa and other international organizations. According to Ethiopia Demographics Profile 2017, Addis Ababa has a total of 54,000 hectares and 3.238 million populations. It also represents about 26% of the urban population of Ethiopia**.** Addis Ababa has an aggregate population density of 4,847.8 persons per square kilometer. The city has ten sub city and 116 woreda. There are 51 hospitals of which 6 are owned by Addis Ababa City Administration Health Bureau, 4 by Federal Ministry of Health, 1 by Addis Ababa University, 3 by Non-governmental organization, 3 by defense Force and Police and 34 by private owners. The study was conducted in orthopedics wards of three public hospitals in Addis Ababa, Ethiopia; Tikur Anbessa Specialized Hospital, Abet referral hospital and Alert Referral Hospital. All these hospitals serve as a teaching hospitals and referral centers both at city administration and federal level.

2. Study period

This study was conducted from February to March, 2021.

3. **Study design**

Institutional based cross sectional design study was to assess nurses' knowledge about fractures management and associated factor in selected governmental hospitals in Addis Ababa, Ethiopia, 2021

4. Sources of population

All Nurses working in orthopedic unit in governmental hospital

5. Study population

All nurses work in orthopedic unit in governmental hospital in Addis Ababa.

6. Eligibility criteria

6.1. Inclusion criteria

- ✓ All employ of nurses currently assigned and working in the orthopedic unit of these three hospitals
- ✓ Working in the orthopedic unit for at least 6 months.
- ✓ Nurses who voluntary to participate in the study.

6.2. Exclusion criteria

- ✓ All nurses who were not at the work place during the data collection period.

7. Sample size determination

convenience was used, the sample size of the study is equal to the total population of nurses who are working in three selected hospital of orthopedic unit and there was no need of calculation because study population was small in number (for small populations e.g., 200 or less. Used a convenience for Small Populations). Since the number of nurses found in orthopedic unit at three selected hospitals where 130.

8. Sampling procedures

The sample included all nurses working in orthopedic units of Tikur Anbessa Specialized Teaching, Alert referral and Aabet referral hospitals in the city of Addis Ababa. Questionnaires was distributed among all.

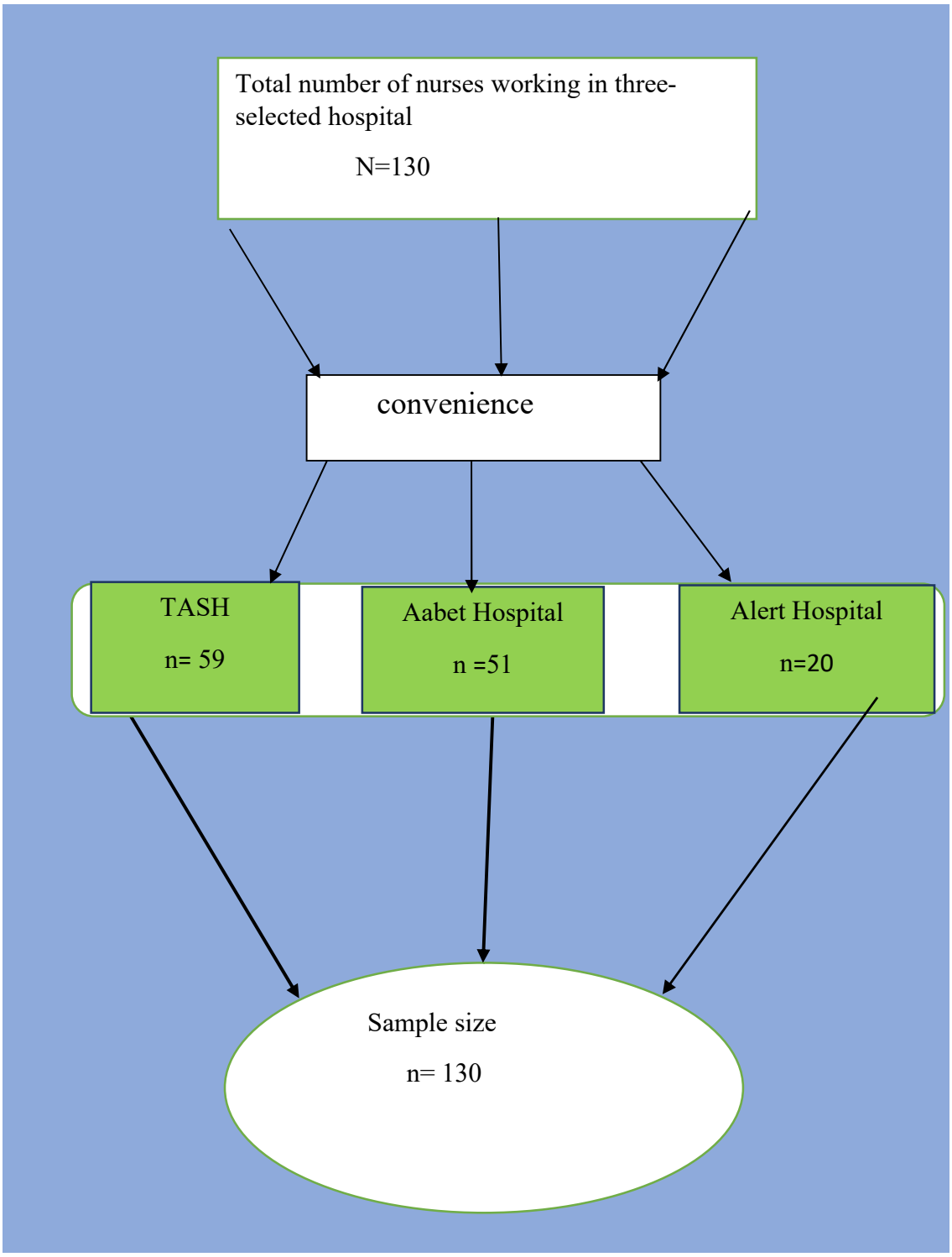

Figure 2: Schematic presentation of sampling procedure on of Nurses' knowledge and associated factors on fracture management in Addis Ababa, 2021.

9. Measurement variables

9.1. Dependent variables

- Knowledge about fracture management

9.2. Independent variables

➢ Socio demographic characteristics

✓ Age

✓ Sex

✓ Marital status

✓ Educational level

✓ Monthly income

✓ Year of work experience

➢ **Institutional factors**

- Training program
- Disproportion Nurses to patients
- Guideline& policy

10. Operational definition of terms

Fracture management: - In this study fracture management. Fracture site wound care, traction care, immobilization. position. pain management.

Knowledge: - Refer to respondents understanding fracture managements. Respondent understanding was measured by 26 yes or no measuring items. Knowledge will be scored by the proportion of correctly answered items. The total knowledge score ranges from 0 to 100.

11. Data collection tools

Data were collected by using a structured self-administered questionnaire. The questionnaire is adopted from validated tool. Validity of the study instrument conducted through a group of experts who have more than 10 years of experience in nursing field(18). The questionnaire had two sections. Demographic data includes age, sex, marital status, religion, year of experiences, monthly income and educational level. Nurses' knowledge about fracture management and associated factors contains 29 with yes/no response.

12. Data Quality Assurance

Pilot-test was made on 5 % of sample size in Menelik Referral Hospital before three weeks of the actual data collection time, Necessary correction were made based on the pilot result. Data were collected by trained nurses. In order to prevent biases during data collection the data collectors were selected from out of study population. After obtaining informed consent from participant based on the inclusion criteria data collection was conducted. The data were checked daily by principal investigator for completeness, missed values and consistency before entry and analysis. The incomplete data were rejected.

13. Data processing and analysis

Data were entered, cleaned and analyzed using statistical package of for social science (SPSS) statistical software version 25. Descriptive statistics including mean, standard deviation, frequencies and percentages were employed to summarize the characteristics of the study samples. Patterns of quantitative values presented using tables.

Relationship between an independent variable and a dependent variable were computed using liner regression analysis. Statistical significance was declared using p-value $\leq$ 0.05.

14. Ethical Consideration

The project was approved by the School of Nursing and Midwifery of the College of Health Science, Addis Ababa University. Written informed consent was obtained from the study participant. Official permission letters were secured from respective hospitals. The purpose and procedure of data collection were clearly stated and confidentiality and privacy were ensured. There was no risks or hazards for the participants.

15. Data dissemination plan

After the commencement of the project data defended and submitted to Addis Ababa University, College of health science, school of nursing and midwifery. The data made known to the scientific community through conference presentations and publication in reputable journals.

Chapter five

Result

5.1 Socio-demographic characteristics of the respondents

The response rate of this study was 120(97.6%). A total of 40 (33.3%) male and 80 (66.7%) females participated in this study. The mean age of the participants was 34 ± 8.4 years old with the range from20 to 60 years. Most of the participants 81(67.5%) were married and 57 (45.5%) of the participants bachelor degree holders. and The Mean work Experience was 6.4 ± 4.6years, the mean monthly income was =Birr 7554±1579 (table 1).

Table1: Socio-demographic characteristics of the respondents in selected governmental hospitals in Addis Ababa, Ethiopia, 2021 (N=120)

Variable	Characteristics	Frequency	Percent (%)
Age of participant		Mean =34.4	SD = (±8.4)
Sex	Female	80	66.7
	Male	40	33.3
Marital status	Single	35	29.2
	Married	81	67.5
	Divorced	4	3.3
Educational level	Diploma	22	18.3
	Degree	61	50.8
	Masters in nursing	37	30.8
Working Experience in Year		Mean =6.4	SD = (±4.6)
Monthly income of participants in Birr		Mean =7554	SD = (±1579)

5.2 Other background characteristics of the nurses participated in the study

As shown in table 2 less than half, 49(40.8%) of the respondents had taken training about fracture managements. From total nurse respondents,73(60.8%) of them had worked in disproportionate nurse to patient ratio while 79(65.5%) had not guidelines in their ward about fracture managements.

Table 2: Background characteristics of nurses working in adult orthopedic ward of selected governmental hospitals in Addis Ababa, Ethiopia, 2021(n=120)

Variable	Frequency	Percentage (%)
Do you take training about fracture managements?		
Yes	49	40.8
No	71	59.2
Disproportionate nurse to patient ratio		
Yes	73	60.8
No	47	39.2
Lack of policies and guidelines in your ward		
Yes	79	65.8
No	41	34.2

5.3: Frequency distribution of nurse's knowledge about fracture managements

Table 3 illustrated highest percentage of nurses who answered items correctly and incorrectly regarding nurses' knowledge about fracture managements. Those items the highest percentage of nurses answered correctly includes: Cast used in a fracture to keep the bones in position while the fracture heals (91.7%%). The nurse is caring for an elderly female patient who has osteoporosis. When teaching her, the nurse should include information about which major complication is Bone fracture (86.7%). Discoloration, deformity, and pain at the site of injury are considered signs and symptoms of a fracture? &

Pussy discharge from wound site is sign of the infection for patient with fracture (85.8%). On the other hand, those items the percentage of nurses answered incorrectly includes:

Elderly patients can tolerate opioids for pain relief, the lowest percentage of correct answers (< 50%), (49.3%). It is not important to massage osseous(boney) prominences if they are reddish (58.3%). Nonsteroidal anti-inflammatory agents are not effective analgesics for fracture (61.7%) Benzodiazepines are not effective pain relievers unless the pain is due to muscle spasm (68.3%).

Table 3: Frequency distribution of nurse's knowledge about fracture managements of selected governmental hospitals in Addis Ababa, Ethiopia, 2021(n=120)

	Yes		No	
	frequency	Percent	frequency	Percent
fracture is breaking in the continuity of a bone	84	70%	36	30%
Open fracture is a fracture that involves when a broken bone through the skin	96	80%	24	20%
complete fracture type of fracture breaks the bone into several fragments?	88	73.3%	32	26.7%
compound fracture type of bone fracture occurs as an incomplete break in the bone	86	71.7%	34	28.3%
Discoloration, deformity, and pain at the site of injury are considered signs and symptoms of a fracture?	103	85.8%	17	14.2%
Cast used in a fracture to keep the bones in position while the fracture heals	110	91.7%	10	8.3%
The nurse is caring for an elderly female patient who has osteoporosis. When teaching her, the nurse should include information about which major complication is Bone fracture	104	86.7%	16	13.3%
Vital signs are reliable indicators of pain	95	79.2%	25	20.8%

Patients may not sleep in spite of pain	86	71.7%	34	28.3%
Analgesic medication considered to be drug of choice for fracture	99	82.5%	21	17.5%
Duration of analgesia of 1-2 mg morphine IV is 4-5 hours	94	78.3%	26	21.7%
Nonsteroidal anti-inflammatory agents are effective analgesics for fracture	74	61.7%	46	38.3%
The time to peak effect of morphine is oral rout	87	72.5%	33	27.5%
Respiratory depression rarely occurs in patients who have been receiving stable doses of opioids over a period	94	78.3%	26	21.7%
Opioids should not be used in patients with a history of substance abuse	97	80.8%	23	19.2%
Compartment Syndrome is Neurovascular disorder characterized by persistent pain	92	76.7%	28	23.3%
Nonunion and mal union are late complication of fracture	100	83.3%	20	16.7%
Fat embolism and hypovolemic shock are not late complication of fracture	76	63.3%	44	36.7%
pussy discharge from wound site is sign of the infection for patient with fracture	103	85.8%	17	14.2%
The recommended opioid analgesics for patients with severe pain of sudden onset of fracture is intravenous route	95	79.2%	25	20.8%
Elderly patients can tolerate opioids for pain relief.	59	49.2%	61	50.8%
Benzodiazepines are not effective pain relievers unless the pain is due to muscle spasm	82	68.3%	38	31.7%
It is not important to massage osseous(boney) prominences if they are reddish	70	58.3%	50	41.7%
Stage I pressure ulcer is defined as an erythema that does not whiten	93	77.5%	27	22.5%
Bedridden patient should be repositioned every 2 hours	90	75%	30	25%

5.4. **Knowledge of fracture managements**

Knowledge fracture managements score which is calculated from 26 fracture managements questioner. The overall nurses' knowledge score regarding fracture managements was obtained by recoding every correct answer in to 1 and every incorrect answer into 0. The mean score of knowledge of fracture managements was 75% $\pm$16.

5.5 Factors associated with Knowledge of fracture managements

In simple linear regression socio demographic factors such as age and educational level, income, and years of experience from associated factors such as lack of policy and guideline, Training condition and disproportion nurse to patient ratio had significantly associated with knowledge of fracture managements. However, in multiple linear regressions Training condition, educational level, lack of policy and guideline had significantly associated with nurse's knowledge of fracture managements.

Compared participants who had access to policy guidelines those who had no access less knowledge score by 0.156 unit (β = -0.156, p = 0.02). Study participants who received training in fracture management had higher knowledge score than those who did not have the training (β = 0.400, p < 0.001). Compared to other educational groups (bachelor and master's degree) participants with diploma qualification had lower knowledge score (β-0.425, p < 0.001).

Table 4: Multiple linear regression analysis of factors associated with Nurse's knowledge about fracture managements.in Ababa, Ethiopia, 2021. (n=120)

Variables	**B**	**St. Error of B**	**β**	**t-test**	**P-value**	**Collinearity statistics**	
						Tolerance	**VIF**
Lack of policy and guideline – yes	-4.930	2.079	0.156	-2.371	**0.020**	0.743	1.345
Did you take training -yes	13.04	2.375	0.400	5.475	**0.000**	0.562	1.780
Age of respondent	0.019	0.238	0.238	0.079	0.937	0.191	5.236
Monthly income	.001	.001	.089	1.065	0.289	0.192	5.220
Female sex	-1.314	1.951	-0.039	-0.674	0.502	0.905	1.105
Work experience in years	0.039	0.428	0.011	0.091	0.928	0.429	2.330
Disproportionate nurse-patient ratio	1.812	1.854	0.055	0.977	0.331	0.934	1.070
Diploma educational level	-17.527	3.494	-0.425	-5.017	**0.000**	0.419	2.387
Degree educational level	-0.954	2.326	-0.030	-0.410	0.683	0.566	1.767
Marital status -single	-0.973	1.986	-0.028	-0.490	0.625	0.939	1.065
Marital status-divorced	-0.453	5.123	-0.005	-0.088	0.930	0.905	1.105
Constant	69.673	8.439		8.256	0.000		

Chapter six
Discussion

This chapter presents discussion of major findings of the study. This study aimed at assessing Nurse's knowledge about fracture managements and associated factors among nurses working in selected governmental hospitals in Addis Ababa. In this study the mean knowledge was75% ±16.

This study had grater knowledge when compare to study conducted in Iraq revealed that 70% of nurse's has poor knowledge about fracture management and also in another study conducted in Medial city there is inadequate nurses' knowledge in the orthopedic wards concerning nursing management of patients with multiple or compound fracture(18).

In this study item ,Stage I pressure ulcer is defined as an erythema that does not whiten respondents had 93(77.5%), this higher than when compare to Cross sectional Study showed in Addis Ababa Ethiopia by 2015 that there is inadequate nurse's knowledge due to the absence standard guide line, nurses who work in settings lacking specific policies and guidelines towards pressure ulcer care orthopedic ward has poor knowledge(27). in this study also there was negative effect due to lack of policy and guide line.

In contrast, the finding of this study is higher than the study done on Iran (22) which revealed that it is important to massage the osseous prominences if they are reddish 11(19%), Bedridden people should be repositioned every 2 hours (70%), rehabilitation measures should be instituted if the general status of the patient permits (68%) .This may due to sample size.

This finding compare with study done among nurses in Iran, rehabilitation measures should be instituted if the general status of the patient permits 56(98%),higher than in this study 88 (73%),Stage I pressure ulcer is defined as an erythema that does not whiten item was less respond 93(25.5%) when compare to study done Iran 2013 on 68 nurses 57 participated in this study 54 (95%), (20).This might be due to sampling size difference.

The finding of this study showed that level of education was significantly associated with knowledge about fracture managements (p-value, 0.000). Nurse participants who were level of education diploma level decreased their knowledge by 0.425 times were P value .000. This might be due to participants who are in higher level educational had chance for update them self. And those participants who had hold diploma if they got opportunity for higher education program their knowledge might be improved.

Regarding age, income, year of experience, sex, marital status, disproportion nurses to patients' others associated factors had significant on nurse's knowledge fracture managements in case of simple liner regression but they did not significant in multiple liner regression

The finding of this study showed that total score knowledge was 75% comparable with study conducted In Egypt, nurse's had unsatisfactory total knowledge(62%).(28).

In multiple regression statistically significant relationship between nurses' level of knowledge and their attendance of training courses, this result was in accordance with study conducted in Egypt, who mentioned that there was a significant similarity association between nurses' knowledge and training courses in the field of orthopedic care(29).

In this study participants who had access to policy guidelines had better knowledge when compare to those who had no access and their knowledge increased by 0.156-unit (β = -0.156, p = 0.02). And also, nurse who take training had 0.400 times knowledgeable than who did not take training P value where 0.000. So, this implies that nurse knowledge can improve if they can access training opportunity in another word quality of care for fracture patient might be increased.

In this study the most responded item was cast used in a fracture to keep the bones in position while the fracture heals (91.7%%). followed by the nurse is caring for an elderly female patient who has osteoporosis major complication is bone fracture (86.7%)

In contrast the lowest percentage of correct answered elder patient can tolerate opioid (49.3%), it is not important to massage boney prominences if they are reddish (58.3%).

Nonsteroidal anti-inflammatory agents are not effective analgesics for fracture (61.7%) Benzodiazepines are not effective pain relievers unless the pain is due to muscle spasm (68.3%). The finding of this study showed that total score knowledge was 75% comparable with study conducted In Egypt, nurse's had unsatisfactory total knowledge(62%) (28) .

6.1. Strength and limitation

6.1.1. **Strength of the Study**

The study could be said the first in assessing nurses' knowledge about fracture managements and associated factors in Ethiopia. The questionnaire used to collect data was up-to-date. Questionnaire was pretested and corrected accordingly to make the tool easily understandable.

6.1.2. Limitation

The study was conducted in only in three selected hospitals. This means that there may not be much room for generalization because nurses in other institutions may have different knowledge on the care of fracture patient. Also only focused on nursing professions were considered therefore the knowledge of health workers in other disciplines of health were left out. The fact that no study was conducted so far in Ethiopia on this topic, no enough literature was available. Since self-administered questionnaires were used to collect data; the study may be subjected to response bias from each respondent.

7.1. Conclusion

This study was conducted to assess level of nurses' knowledge about fracture managements and associated factors. Generally, the study showed that: Mean score of nurse's knowledges regarding fracture management was 75$\pm$16.From sociodemographic, age, sex, marital status, level of education, work experience monthly income and ratio patient to nurses had no significant association with nurses' knowledge fracture management. Lack of guideline and policy, educational status and training had significant association with nurses' Knowledge of fracture managements but others had no significant association with nurses' knowledge fracture management.

7.2. Recommendations

To Federal Ministry of Health

The federal minster of health should deliver trainings for nurses to improve their knowledge. Policy makers should prepare policies and guidelines to improve nurse's knowledge fracture managements.

To hospital managers

Hospital managers should recruit nurses who have experience on care fracture patient and should increase educational level for good care fractured patients. Development of training programs should be conducted to improve knowledge to ward fracture managements.

To nursing department

Design curriculum regarding fracture managements. Access new knowledge related to care of fractured patients. Teach students how to manage fractured patients. Nursing department should provide orthopedic nursing as one of specialty track.

To researcher

Future research needs to explore the effects of additional variables that were not measured in this study, which can also directly or indirectly influence nurse's knowledge and practice toward fracture managements. Future researches also needed to focus on nurses' practice toward fracture managements.

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ANNEX:

Consent Form

This questionnaire is prepared to assess Nurse's knowledge about fracture management and associated factors in Tikur Anbessa, Aabet and Alert Hospitals; Addis Ababa, Ethiopia." This study is very helpful to assess Nurse's knowledge about fracture management and associated factor among nurses working orthopedic unit in Tikur Anbessa, Aabet and Alert hospitals. The assessment is made for the partial fulfillment of a Master's Degree in Adult Nursing. The information you provide is confidential and is used only for the purpose of this study. If you have any questions, don 't hesitates to ask the data collector. Your cooperation and participation until the completion of the questionnaire is very necessary for the successful completion of the assessment. We, therefore, ask your genuine willingness.

Risk and Benefits

By participating in this research project, you may feel that it has some discomfort especially on wasting time. But we hope you will participate in the study by considering the benefit of the research result. There is no risk or hazard in participating in this research project. If you participate in this research project, there may not be a direct benefit to you. But the findings of this study will help us to identify the gap and take the appropriate intervention by the authorized stakeholder.

Incentives and right to refuse or withdraw

You will not be provided any incentives or payment to take part in this project. You have the full right to refuse from participating in this research. You can choose not to respond to some or all questions if you do not want to give you response. You have also the full right to withdraw from this study at any time you wish, without losing any of your rights.

Persons to contact: If you have any question to ask, please contact

Jemal Seid Tel:+251944363322 , Email: sjemal286@gmail.com

Thank you in advance for your cooperation!!!!

Part 1. Questionnaire Socio demographic characteristics

S no	Variable	
1	Age (in years)	
2	Sex	Male
		Female
3	Marital status	Single
		Married
		Divorced
4	Educational status	Diploma
		Degree
		Master
5	Work experience	_____ In years/moths
6	Monthly income	_____In ETB

Part 2. Knowledge assessment and associated factors regarding fracture management

S no	Variables	Yes	No
1	fracture is breaking in the continuity of a bone		
2	Open fracture is a fracture that involves when a broken bone through the skin		
3	Complete fracture type of fracture breaks the bone completely broken into separate pieces. into several fragments?		
4	Compound fracture type of bone fracture occurs as a break in the skin, causing the broken ends of bone to come into contact with the outside environment.		
5	Discoloration, deformity, and pain at the site of injury are considered signs and symptoms of a fracture?		
6	Cast used in a fracture to keep the bones in position while the fracture heals		
7	The nurse is caring for an elderly female patient who has osteoporosis. When teaching her, the nurse should include information about which major complication is Bone fracture		
8	Vital signs are reliable indicators of pain		
9	Patients may not sleep in spite of severe pain		
10	Analgesic medication considered to be drug of choice for fracture		
11	Duration of analgesia of 1-2 mg morphine IV is 4-5 hours		
12	Nonsteroidal anti-inflammatory agents are effective analgesics for fracture		
13	The time to peak effect of morphine is given iv rout		
14	Respiratory depression rarely occurs in patients who have been receiving stable doses of opioids over a period		
15	Opioids should not be used in patients with a history of substance abuse.		
16	Compartment Syndrome Neurovascular disorder characterized by persistent pain		
17	Nonunion and mal union are late complication of fracture		
18	Fat embolism and hypovolemic shock are not late complication of fracture		
19	pussy discharge from wound site is sign of the infection for patient with fracture		
20	The recommended opioid analgesics for patients with severe pain of sudden onset		

	of fracture is intravenous route		
21	Elderly patients can tolerate recommended dose opioids for pain relief.		
22	Benzodiazepines are not effective pain relievers unless the pain is due to muscle spasm		
23	It is not important to massage the osseous(boney) prominences if they are reddish		
24	Stage I pressure ulcer is defined as an erythema that does not whiten		
25	Bedridden patient should be repositioned every 2 hours		
26	Rehabilitation measures should be instituted if the general status of the patient permits		
27	Do you take training on fracture management?		
28	Disproportionate nurse to patient ratio		
29	Lack of policies and guidelines		