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**Prevalence and Associated Factors of Pressure Ulcer among Hospitalized Adults
at Debre Markos Referral Hospital, East Gojjam Zone, Ethiopia, 2016.**

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Abbreviations/ Acronyms

AOR	Adjusted Odds Ratio
BMI	Body Mass Index
CMS	Center for Medicare and Medicaid Services
COR	Crude Odds Ratio
EPUAP	European Pressure Ulcer Advisory Panel
Gyn.ObsW	Gynecological and Obstetric Ward
HAC	Hospital-Acquired Condition
HAPU	Hospital-Acquired Pressure ulcers
MW	Medical Ward
NQF	National Quality Forum
NPUAP	National Pressure Ulcer Advisory Panel
PI	Pressure Injury
PU	Pressure ulcer
PUP	Pressure Ulcer Prevalence
RAS	Risk Assessment Scale
SOP	Standard operating procedures
SW	Surgical Ward

Abstract

Background: Pressure ulcers (PUs) occur frequently in hospitalized, community-dwelling and nursing home older adults, and serious problems that can lead to sepsis or death. Pressure ulcers are additional co-morbid threat / conditions encountered in hospitalized patients or those requiring long-term institutional care.

Objective: To assess prevalence and associated factors of pressure ulcer among hospitalized adults at Debre Markos referral hospital, East Gojjam Zone, Ethiopia, 2016.

Method: Institution- based, cross-sectional quantitative study design was conducted on a representative sample of 236 hospitalized adults in the study area from February 15/2016 to April 15/2016. Statistical software, Epi data version 3.1 and SPSS version 23 were used. Univariate, Bivariate and Multivariate logistic regression models were used identifying the association; degree of association was interpreted by using ORs with 95% confidence intervals and P-value ≤ 0.05 was considered statistically significant with the outcome variable.

Result: A total of 8 pressure ulcer was detected from 236 patients, with the prevalence rate of 3.4%. Majority of respondents 3.0% developed pressure ulcer came from the rural area and 1.3 % (3) patients developed ulcer was not educated.

Participants who had constantly moist skin were 3.2 times [95% CI: AOR, 3.202[2.050 - 16.067] more risk to develop pressure ulcer than rarely moist skin in moisture, and participants who had been very poor in nutrition were 4.9 times [95% CI: AOR, 4.9(3.837 - 23.326)] at higher risk to develop pressure ulcer than adequate in nutrition.

Conclusion and Recommendation: The prevalence of pressure ulcer was slightly high among hospitalized adult patients. They developed pressure ulcer at factors such as bed ridden, moist skin, inadequate in nutrition and who had not got frequent position change service. Therefore, frequent position change service and Braden scale PU risk assessment tool should be applied to prevent & reduce the prevalence of pressure ulcer.

Key words: Pressure ulcer, prevalence & Associated factors.

CHAPTER ONE: INTRODUCTION

1.1. Background

A pressure ulcer (PU) (also known as pressure sore, pressure injury (PI), decubitus ulcer or bed sore), has previously been defined as “an area of localized damage to the skin and underlying tissue caused by pressure, shear and or a combination of these (1–4). PU leads to ischemia, cell death & tissue necrosis, as capillaries are compressed and the blood flow is restricted, the cutaneous tissues become broken or destroyed, leading to progressive destruction and necrosis of underlying soft tissues. This process results in a painful and slow healing of pressure ulcer(5). The formation of a new pressure ulcer while hospitalized has been defined by the National Quality Forum (NQF) as a hospital-acquired condition (HAC) that is high-cost and high-volume and may be preventable with implementation of evidence-based guidelines(6). Pressure ulcers remain a significant problem in hospitals as well as domestic and community settings. They have been described by both the National Pressure Ulcer Advisory Panel (NPUAP) and the European Pressure Ulcer Advisory Panel (EPUAP) as ‘localized injury to the skin and/or underlying tissue usually over a bony prominence as a result of pressure combined with shear and it has long been recognized as a major cause of morbidity, mortality and health care burden globally(7).

Development of pressure ulcers is complex and multi-factorial. In critical care patients, pressure ulcers are an additional co-morbid threat in patients who are already physiologically compromised. In fact, pressure ulcers are one of the most underrated medical problems in critical care patients. Despite advances in medical technology and the use of formalized prevention programs based on clinical practice guidelines, the prevalence of pressure ulcers during hospitalization continues to increase(8). Therefore, enormous effort is required to find effective and reliable techniques for preventing the initiation of ulcers and eliminating them once they develop(9).

1.2. Statement of the problem

PU represents a widespread, painful, and expensive health care problem directly associated with increased morbidity, mortality, and length of hospital stay and several risk factors, including malnutrition, are associated with the development of PU, in the literature, there have been several studies assessing the prevalence of pressure ulcers, but most are restricted to specific regions and cities, and some hospitals, clinics and specific patient groups(10).

Impacts of pressure ulcer: Pressure ulcers affect millions of people worldwide, and remain a major health problem, but the burden & incidence rates of pressure ulcers vary greatly with the health care settings(7). Studies indicated that 1 to 3 million people in the US develop pressure ulcers each year, indeed according to the Joint Commission, more than 2.5 million patients in United States (US) acute- care facilities suffer from pressure ulcers, and 60,000 die from pressure ulcer complications each year(11).

Porter and Cooter have estimated that a pressure ulcer affects 60,000 people in Australia each year and in 1997, Wool ridge conservatively estimated that pressure ulcers cost in the Australian community \$350 million per annum (12).It is a serious complication fraught with pain, decreased quality of life, and the expenditure of substantial caregiver time and healthcare dollars(6).

As of October 1, 2008, the Center for Medicare and Medicaid Services (CMS) no longer will pay for the ancillary cost of care for a facility-acquired pressure ulcer; However, studies recently reported that 445,028 pressure ulcers developed in almost 14 million Medicare patients (32 cases/1,000 patients) from 2005 to 2007 and cost \$2.41 billion in excess healthcare costs, demonstrating a gap from the desired goal. Of the persons who developed ulcers, 42,213 (9.5%) died(6).

The PU in Nigeria is also a medical health problem with a prevalence of 3.22% studied in all adult hospital wards in the six university hospitals located in the south-western geopolitical zone of Nigeria(7).

In Ethiopia, the prevalence of pressure ulcer was high (16.8%) among hospitalized patients, prolonged length of stay in hospital, problem of sensory perception, and friction and shearing were more liable to develop pressure ulcer(5).Pressure ulcers can reduce overall quality of life due to pain, treatments, and increased length of institutional stay, and may also contribute to premature mortality in some patients(11).

Due to the burden and impact of pressure ulcer development on both the individual and the health service, it is accepted practice that risk assessment should be undertaken on individuals, with the aim of identifying those who are at potential risk in order that individualized preventive interventions can be planned and initiated(13). Preventing pressure ulcers has become a key focus of many healthcare institutions in the US and throughout the world. Whether all pressure ulcers are preventable is still under debate, but the actions of the NQF and the CMS have refocused pressure ulcer prevention efforts across acute care facilities(6). Any intervention that may help to prevent pressure ulcers or to treat them once they occur is important to reduce the cost of pressure ulcer care and improve quality of life for affected individuals(11). Therefore, the main aim of this study was to assess prevalence and associated factors of pressure ulcer among hospitalized adults at Debre Markos referral hospital.

1.3. Significance of the study

Pressure ulcer prevalence surveys are conducted for a variety of reasons, even though they may consume considerable time & resources and there are multiple benefits to be gained from conducting them(14).

The study might help the responsible bodies of policy makers to address health policy issues, health care providers or Caregivers and patients to take measures based on the findings of this study. And it will also help for researchers as an additional source to do further and wider research exploration on this issue.

CHAPTER TWO: LITERATURE REVIEW

2.1. Magnitude of pressure Ulcer

2.1.1. Over all of prevalence of pressure ulcer

Many studies have been explored pressure ulcer in relation to different risk factors. Institutional based, cross-sectional studies conducted in three different countries reflected that in China(at 12 hospitals), Brazil and Germany, overall prevalence of pressure ulcers were 1.58%, 16.9% and 26.5 % respectively(3,10,15). In China, the age of people with highest prevalence of pressure ulcer (7.71%) and hospital-acquired pressure ulcer prevalence (4.09%) was more than 89 years and Prevalence of Pressure ulcer (PUP) in stages, stage I, II, III & stage IV, and Unstageable were (28.68%, 35.82%, 12.68%, 12.99, and 8.48) respectively(3).Anatomical location of PUP, Sacral (60.52%), Trochanter(6.34%),Ischial Tuberosity(3.01%),Ankle(5.18%) and Elbow(0.79%);also PUP in relation to wards, MW,SW and Geriatrics Ward were 35.18%,23.61% and 12.04 respectively(3).

A Study in Brazil, due to anatomical location, Sacral (82.5%), Trochanteric 37.5%, Calcaneal(27.5%), Lumbar (6.3%) and Elbow(3.7%) regions were the most affected areas studied in Brazil. Others, such as the occipital region, neck, ankle, ear, and sides of the knee (16.2%) were also observed. Most patients presented with stage I (30.3%) and stage II (32.4%) ulcers, other stages, stage III (22.8%), and stage IV (13.9%) ulcers were also presented. And the number of ulcers studied in the same area were, single ulcer observed or developed(52.5%) ,two ulcers(21.3%),three ulcers(10.0%) and greater than four ulcers(16.3%)(10).

Another similar research in Sweden university hospital, and US shown that the overall prevalence across all facilities revealed 22.9 and 12.3% respectively(16), and overall trends of prevalence data in 2009 US acute care adult surveys in medical, medical-surgical, and surgical wards depicted that 4.4%, 4.3%, and 4.0% respectively(6).A gain in Canada, Ontario, overall pressure ulcer prevalence for all health facilities was 25.7%(17).

A facility based, cross- sectional study did in Nigeria in all adult hospital wards in the six university hospitals located in the south-western geopolitical zone of Nigeria depicted that overall prevalence was 3.22%. The mean age of patients with Stage II pressure ulcer and higher was 47.0 ± 21.2 years. Prevalence of Stages II to IV pressure ulcers ranged between 0% and 6.9% in the hospitals and Prevalence rates in male & female patients were 3.59% and 2.83% respectively. Anatomical locations accounted for Ischium/buttocks 43.6%, Sacrum/coccyx 18.0%, Greater Trochanter (10.3%), lower back (8.9%) and heels (7.7%) (7).

In 2014 a study in Ahmadu Bello University Teaching Hospital (ABUTH), Zaria- Nigeria also shown that the cumulative point prevalence of Pressure ulcer was noted to be 18.6% which is significantly high; Pressure ulcer stages were observed to be highest for Stages III (37.5%), and Stage IV (33.3%) which are the advanced stages, and then low in Stage II (20.8%) and Stage I (8.3%)(18).

A similar institution based cross-sectional study in Ethiopia, at Felegehiwot referral hospital, Bahir Dar indicated that the prevalence of pressure ulcer was 16.8% & the PUP was higher in male (9.9%) than in female (6.8%), the majority of the study participants were found in the age range of 18–32 (50.2%), and the median age was 32 years. 64.5% were married and 18.5% were single, about 36% were not educated & 12.1% respondents completed grade 10 and Overall, 57.3% were rural residents (5).

Also , 62 %, 26.8% and 2.8% patients developed stage I, II & IV pressure ulcer respectively, and most of the participants 70.4 % developed Sacral, Heel (7%), Elbow (7%), and 10 % patients developed pressure ulcer at both sacral and shoulder area(5).

2.1.2. Prevalence of pressure ulcer with Diagnosis/ Cases of patients

A survey did on Pressure ulcer prevalence rates across six countries (Italy, USA, Portugal, Belgium, UK, and Sweden) among hospital stays shown that principally for pressure ulcers related to conditions were, anemia (31.2%), urinary tract infections (30.5%), paralysis (29.2%), fluid and electrolyte disorders (26.1%), nutritional deficiencies (23.4%), diabetes without complications (20.6%), and dementia (20.4%)(16).

Pressure ulcer prevalence in patients hospitalized at the São Paulo Hospital in Brazil, 2004 was assessed and among the patients with pressure ulcers, 15 (34.9%) had urinary incontinence on study day one and 13 (37.1%) on study day two (mean 36% for both dates). Fecal incontinence was present in the majority of patients on both study days: 26 (60.5%) patients on day one and 22 (62.9%) patients on day two (mean, 61.7%)(19),and by 2013, Prevalence of pressure ulcers in the same study area with the most prevalent diagnoses were cancer (23.5%), followed by diabetes (16.3%) & infections (14.8%), and (30.4%) bedridden(10).

A retrospective, correlation design in Englewood Hospital and Medical Center shown that patients admitted to a medical-surgical intensive care unit from October 2008 through May 2009, the top 3 admitting diagnoses developed pressure ulcer were respiratory failure or distress (20.7%), sepsis or septic shock (17.3%), and neurological problems (15%) (8), and mean prevalence for urinary incontinence from 2008 to 2012 was 73.5% (95% CI 72.8–74.2) (20).

The distribution of patients with pressure ulcers according to diagnostic categorization of a study conducted among hospitalized adults in university hospitals in South-west Nigeria, each (28.21%) of the patients with pressure ulcers had quadriplegia/paraplegia, (12.8%) Medical (Retroviral disease, seizure disorder, meningitis), each (7.7%) diabetes /fracture ,each (5.1%) head injury/ Guliain Barre Syndrome and each (2.56%) had hemiplegia or burns(7), but Prevalence of pressure ulcer with diagnosis of patients had not been conducted in Ethiopia.

2.1.3. Prevalence of pressure ulcer with Braden scale risk assessment/RAS/.

A study on “Trends and associations of common care problems in German long-term care facilities” from 2008 to 2012 revealed that the mean prevalence PU for cognitive impairment was 54.1% (95% CI 53.3–54.9), for immobility 36.5% (95% CI 35.7–37.3), for risk of malnutrition 13.0% (95% CI 12.4–13.5) and the trends of the prevalence rates per year shown little variation for each of the investigated care problem. But the biggest change was observed for cognitive impairment, where prevalence PU dropped by approximately 10% from the year 2011 to 2012(20).

2.2. Factors associated with pressure ulcer

The literature identifies over 200 risk factors that may contribute to pressure ulcer development(21) .

2.2.1. Socio-Demographic and Others (Position, Length of stay in hospital, BMI, Smoking factors).

A survey in the city of Belo Horizonte, Brazil depicted that, no significant difference in pressure ulcer occurrence regarding to sex ($p = 0.27$), 40.0% among men and 30.0% among women and occurrence levels were higher among patients between 45 and 59 years (71.4%) when compared with the ranges aged 60 years or more (40.0%), 32 to 45 years (27.3%) and 18 to 31 years (20.0%), but there were no significant differences ($p = 0.45$) and Pressure ulcer occurrence according to BMI categories amounted to 50.0% in eutrophic and 16.2% in overweight patients. No pressure ulcer was found in any of the three malnourished patients ,but with regard to smoking pressure ulcer prevalence corresponded to 42.6% among smokers, 30.6% among non-smokers and 14.3% among former smokers, but no statistical association was found between these variables ($p = 0.085$) (22) .

According to the sample patients’ total hospitalization time, pressure ulcer prevalence progressively increased among patients hospitalized for more than 10 days, with statistically significant differences ($p = 0.00$) and the presence of sepsis (OR = 6.04, CI 95% = 1.09- 33.53), period of stay > 10 days (OR = 7.61, CI 95% = 2.92-19.82) and being high risk and very high-risk in the Braden scale (OR = 4.96, CI 95% = 1.50-16.50) were independent factors significantly associated with the presence of pressure ulcers. Results suggest that sepsis, length of stay, and having high and very high risk" in the

Braden scale are factors potentially associated to the development of ulcers in bedridden patients (22).

Other studies in Brazil, 2011, there was a significant association between the presence of PU & lengths of stay of more than 8 days and the other variables associated with the risk of PU were being bedridden, older, neurological disorders, cancer, perception, and malnourished(10).

Studies by Bergstrom and Braden indicated that risk factors that have been correlated with pressure ulcer development are age of 70 years and older, current smoking history and low body mass index and, 80% of pressure ulcers develop within 2 weeks of admission and 96% develop within 3 weeks of admission, hence length of stay was positively associated with PU. The Institute for Healthcare Improvement has recently recommended that in hospitalized patients, pressure ulcer risk assessment be done every 24 hours rather than the previous suggestion of every 48 hours(23).

A survey in Ethiopia, change of position and development of pressure ulcer had a correlation, depicted that among the total pressure ulcer developed, 93% have not changed their position by nurses, 67.8% changed their position every 2 to 3 hours, 10% changed their position every 4hours,and 8.6% changed their position 4 times per day, whereas 13.6% patients changed their position less than 4 times/days, (5).

Length of Stay in Hospital; almost half of admitted patients (49%) in Felegehiwot referral hospital had 7–20 days length of stay in the hospital and 42.7% patients were discharged before 7 days, whereas 8.3% patients stayed in hospital for more than 20 days, length of stay was significantly associated with occurrence of pressure ulcer. The development of pressure ulcer was strongly associated with long staying of patients in hospital, 95% CI,AOR,5.97(1.98,18.00) (5).

2.2.2. Braden Risk Assessment Scale (RAS) factors.

The most common risk scales used in the United States are the Braden Scale and the Norton Scale, these 2 pressure ulcer risk assessment scales are recommended by the Agency for Health Care Policy and Research (24).

A study has shown that mobility, friction/shear explained a major part of the variance in pressure ulcers(8). A 2007 survey conducted across 26 hospitals in Belgium, Italy, Portugal, Sweden and the UK confirmed that ,decreased activity and limitations in mobility; abnormalities in nutritional status; and, altered consciousness ,all of which are common in elderly patients are confounding factors that directly contribute to an elderly patient's increased risk of pressure ulcer formation(16). Studies in Brazil, 2011 shown that PU and their severity were directly associated with malnutrition(10).Also risk factors that have been correlated with pressure ulcer development are dry skin, impaired mobility, altered mental status (i.e., confusion), urinary and fecal incontinence, malnutrition, physical restraints(23).

Statistically significant associations with pressure ulcers were observed for the Braden Sensory Perception, Mobility, Friction/Shear and Moisture subscale scores at 24 hours and 48 hours ($p < 0.05$), a survey that was done by Richard A. Benoit, Jr. (21). Other studies implied that no statistically significant associations were found between pressure ulcers and falls, pressure ulcers and urinary incontinence, pressure ulcers and cognitive impairment, malnutrition (20).Also, other survey indicated that mobility was a significant predictors of pressure ulcers; $P=.04$; odds ratio [OR]=0.439; 95% confidence interval [CI], 0.21-0.95) (8).

In Ethiopia, a study shown that the independent variables of sensory perception, friction and shear had significant association with pressure ulcer. Participants who had slightly limited sensory perception were 3.3 times (95% CI: 1.39, 7.75) at higher risk to develop pressure ulcer than those who had no impairment in sensory perception. Those participants who had problem in friction and shearing forces were 4.5 times (95% CI: 1.56, 12.93) more likely to develop pressure ulcer than those who had no apparent problem(5).

2.3. Conceptual Framework

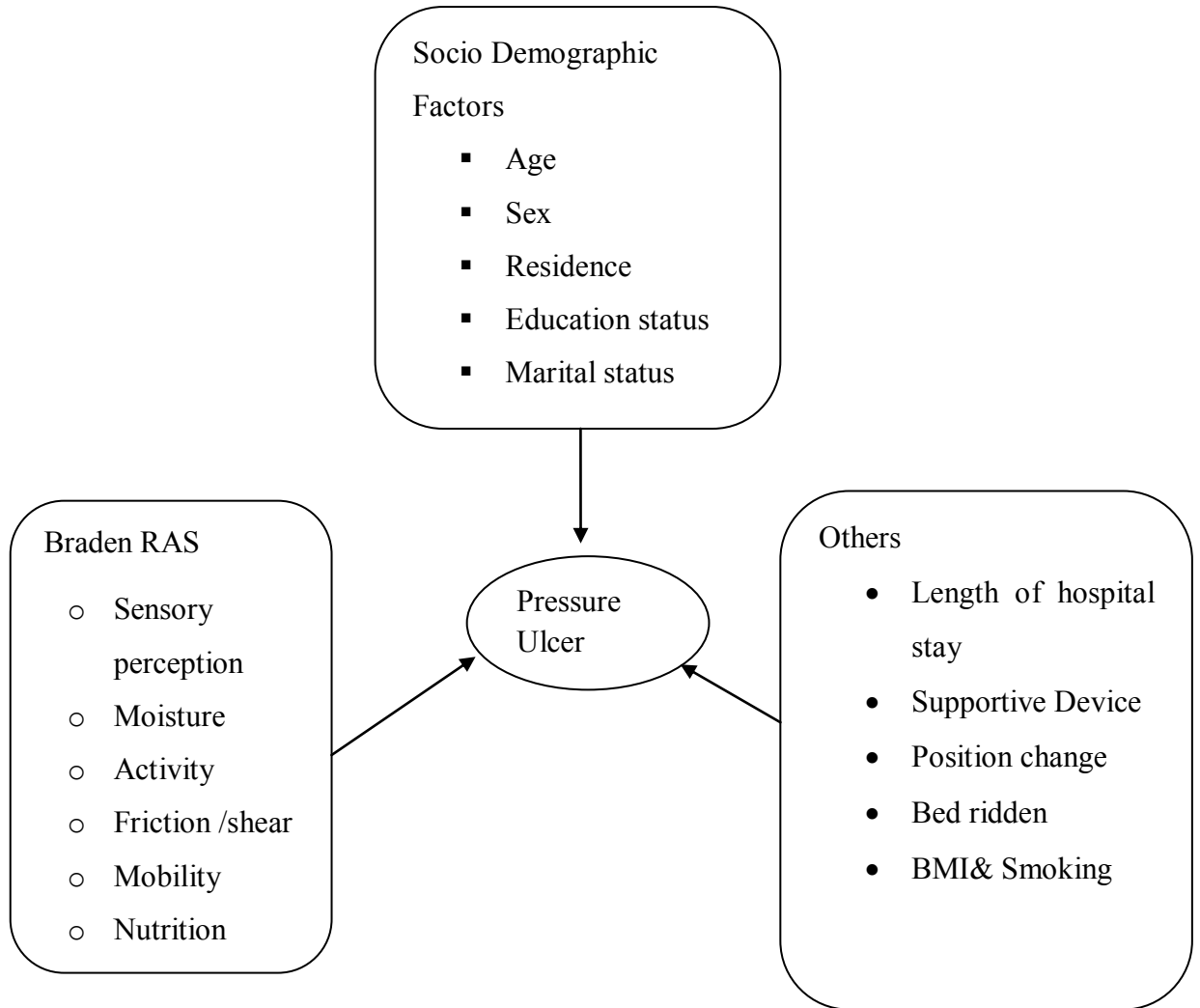


Figure 1: Diagrammatic representation of a conceptual framework, newly developed had shown the relationship between the outcome variable and independent variables.

Source: Supported by different literatures (5,8,10,16,20–23,25).

CHAPTER THREE: OBJECTIVES

3.1. General objective

To assess prevalence and associated factors of pressure ulcer among hospitalized adults at Debre Markos referral hospital, East Gojjam Zone, 2016.

3.2. Specific objectives

To describe prevalence of pressure ulcer among hospitalized adults at Debre Markos referral hospital.

To identify associated factors of pressure ulcer among hospitalized adults at Debre Markos referral hospital.

CHAPTER FOUR: METHOD

4.1. Study Area

The study was conducted at Debre Markos referral hospital, East Gojjam Zone. This Zone is found in the Amhara region that comprises eleven Woredas and 2,152,671 populations(26). Debre Markos is a zonal town which is found 300 km & 260km away from Addis Ababa and Bahir Dar respectively.

Debre Markos Referral Hospital is one of the referral hospitals in the Amhara region and it is expected to give service for about three million people for the nearby zone & woredas" people and it has different wards. In the study wards, 42 beds are in Medical, 30 in Surgical and 28 in Gyn.Obs. In the hospital, previous study had not been conducted on the issue of prevalence and associated factors of pressure ulcer among hospitalized adults.

4.2. Study Design &Period.

Institution- based, cross-sectional quantitative study design was conducted, and the study period was from February 15 to April 15, 2016.

4.3. Source of Population

All admitted patients at Debre Markos referral hospital.

4.4. Study Population

Patients who had been admitted in Medical, Surgical, and Gyn.Obs Wards at Debre Markos referral hospital during the study period.

4.5. Study Variables.

4.5.1. Dependant Variable

Pressure Ulcer.

4.5.2. Independent Variables

1. Socio demographic factors (sex, age, marital status, education status and residence)
2. Braden scales of PU risk assessment tools:
 - 2.1.Sensory perception
 - 2.2.Moisture
 - 2.3.Activity
 - 2.4. Friction /Shear
 - 2.5. Mobility
 - 2.6.Nutrition
3. Others
 - 3.1.Position change
 - 3.2.Bed ridden
 - 3.3.Length of stay in hospital
 - 3.4.BMI & Smoking.

4.6. Inclusion and Exclusion Criteria

4.6.1. Inclusion Criteria

All admitted patients who were staying in hospital greater than or equal to 1 day.

4.6.2. Exclusion criteria

- i. Patients whose ages less than 18 years old.
- ii. Patients who had been admitted for the second time during data collection period and Patients who developed pressure ulcer before admission at DebreMarkos referral hospital were excluded.

4.7. Operational definition

Braden RAS/ Braden scale scores: In this study, Patients were vulnerable to pressure ulcer development when Braden score <17 or with a pressure ulcer and **no risk** of pressure ulcer at Braden score ≥ 17 (3).

4.8 Pretest

Pretest was conducted using 10% of the study population at Lumame, a District Hospital which is located at a distance of 40 km from Debre Markos, and necessary modifications were made after analyzed and before the actual data collection was started.

4.9. Sample Size Determination

Sample size calculation was determined by the following parameters/assumptions:

- Pressure ulcer prevalence(P) is 16.8 %;
- Margin error(d) is 5 %,
- Confidence level (CI) is 95%.

Sample size was computed based on a single proportion population formula with the prevalence (p) of PU is 16.8 %, taken from previous study at Feleghiwot referral hospital, Bahir Dar(5).

A sample size (n) at a Z-value of 1.96 with 95% CI and d of 5%:

$$n = \frac{(z)^2 P(1 - P)}{d^2}$$

$$n = \frac{(1.96)^2 0.168 (1-0.168)}{(0.05)^2} = 214.78$$

Thus by adding 10% for possible non response, the final sample size was 236.

4.10. Sampling Procedures

Based on the number of patients in each wards (Medical, Surgical and Gyn.Obs), the total sample size 236 was distributed proportionally. The two months' average data (October to November, 2015) availed before actual data collection was started and then calculated proportionally to find the number of study samples in each Wards. According to the two months' average data that could be obtained from Debre Markos referral hospital, the total number of inpatients admitted in the 3 wards were 402, in MW 182, SW 156, and Gyn.Obs 64. Thus, the proportional allocation of samples, 107 samples were from MW, 91 from SW and 38 from Gyn.Obs ward. The final sample was selected on patient occupied bed numbers by systematic sampling technique from each ward with K-interval (2, 3 & 6) of MW, SW, & SW respectively and the first study unit was taken by lottery method.

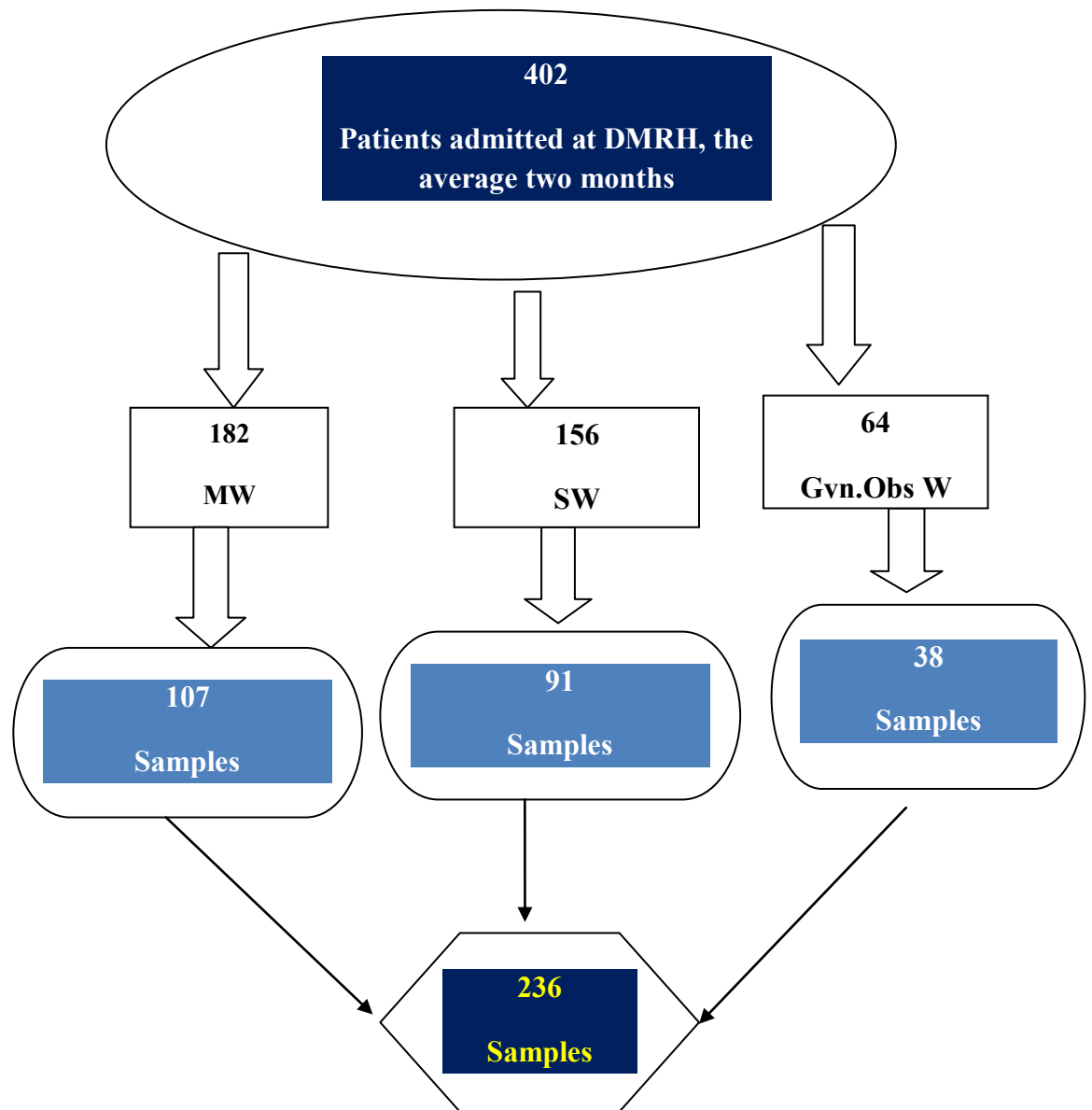


Figure 2: Schematic Presentation of Sampling Technique Assessed the Prevalence of Pressure Ulcer and Associated Factors at Debre Markos Referral Hospital, 2016.

4.11. Data Collection Procedures and Quality Control

Data concerning prevalence and determining factors of PU were collected through interview and physical examination techniques. The Braden scale risk assessment tool was used to assess the risk of PU and comprised the following items: sensory perception, skin moisture, physical activity, mobility, nutrition, and friction/shear. The Braden Scale is a summated rating scale made up of six subscales scored from 1-3 or 4, for total scores that range from 6-22. A lower Braden Scale Score indicates a lower level of functioning and, therefore, a higher level of risk for pressure ulcer development(27). The standardized questionnaire's tool had been prepared in English language and translated into local/Amharic language /in order to standardize the way questions would be asked. After translating it, retranslation back into the original language had been done by language expert.

Two Bsc nurses& one Bsc midwife nurse for data collection and three Health Officers for supervision would be selected from Debre Markos University. Training was given by the principal investigator for data collectors and supervisors. During data collection, the data collectors filled the data from each patient based on the checklists. Inspection for completeness and quality of data had been carried out by principal investigator.

4.12. Data Entry and Analysis

The questionnaires that would be filled by the data collectors were going to be checked its completeness and then cleaned, coded & entered into Epi data version 3.1 statistical software and then exported to SPSS version 23 & analyzed. Univariate for descriptive statistics and both bivariate & multivariate logistic regression models for association were used ; degree of association was interpreted by using ORs with 95% confidence intervals and P-value ≤ 0.05 was considered statistically significant with the outcome variable.

4.13. Validity and Reliability

The ability of the Braden Scale to predict the development of PUs (predictive validity) has been tested extensively. Inter-rater reliability between .83 and .99 is reported. The tool has been shown to be equally reliable with Black and White patients. Sensitivity ranges from 83-100% and specificity 64-90% depending on the cut-off score used for

predicting PU risk(28). A cut-off score of less than 17 or low subscale scores should be used identifying at risk for patients(3).

The U.S. Centers for Medicare and Medicaid Services (CMS) recommends that nurses consider all risk factors independent of the scores obtained on any validated pressure ulcer prediction scales (23). Thus, validated pressure ulcer risk assessment tool like the Braden Scale was used, given the fair research-based evidence.

4.14. Ethical consideration

Ethical clearance was obtained and a formal letter of cooperation had been written to Debre Markos referral hospital from Addis Ababa University College of Health Sciences, School of Allied Health Sciences, and Department of Nursing And Midwifery Ethical Review Board.

The purposes and the importance of the study had been explained & oral consent was obtained from each study participants. Information was given that study participants have full right not to participate in the study if they were not willing. To ensure confidentiality, anonymity was explained clearly to the participants. Nursing care was given for those patients who developed pressure ulcer during study period.

4.15. Dissemination of the Result

Findings in this study will be communicated or disseminated to Addis Ababa University, College of Allied Health Sciences, Department of Nursing and Midwifery, Debre Markos referral hospital, stake holders, and efforts will be made to publish on Journal.

CHAPTER 5: RESULT

5.1. Socio-Demographic Characteristics

A total of 236 admitted patients at Debre Markos referral hospital were included in this study with the response rate of 100%. Majority of, 82.2% (194) and 59.7% (141) respondents were rural residents and males in sex respectively, and the respondents 76.7% (81) were married. In addition, 25.4% (60) of the respondents were not educated (Table-1).

Table 1: Socio-demographic Characteristics of the respondents who were admitted at Debre Markos referral hospital, East Gojjam, Ethiopia, 2016 (N=236).

Variables	Frequency(n)	Percent (%)
Age	108	45.8
18–32	76	32.2
33–53	52	22.0
≥54		
Sex	95	40.3
Female	141	59.7
Male		
Place of residence	42	17.8
Urban	194	82.2
Rural		
Marital status		
Single	32	13.6
Married	81	76.7
Divorced	11	4.7
Widowed	12	5.1
Educational level		
Unable to read & write	60	25.4
Read & Write	41	17.4
Grade 1-4	20	8.5
Grade 5-6	49	20.8
Grade 7-8	37	15.7
Grade 9-10	29	12.3
Grade 11 and above		

The study participants were found in the age range of 18 - 32 (45.8%) and the median age of the respondents were 35 years with the mean of 38.97, standard deviation of 16.141 and shown a parametric or normal distribution (Fig.3).

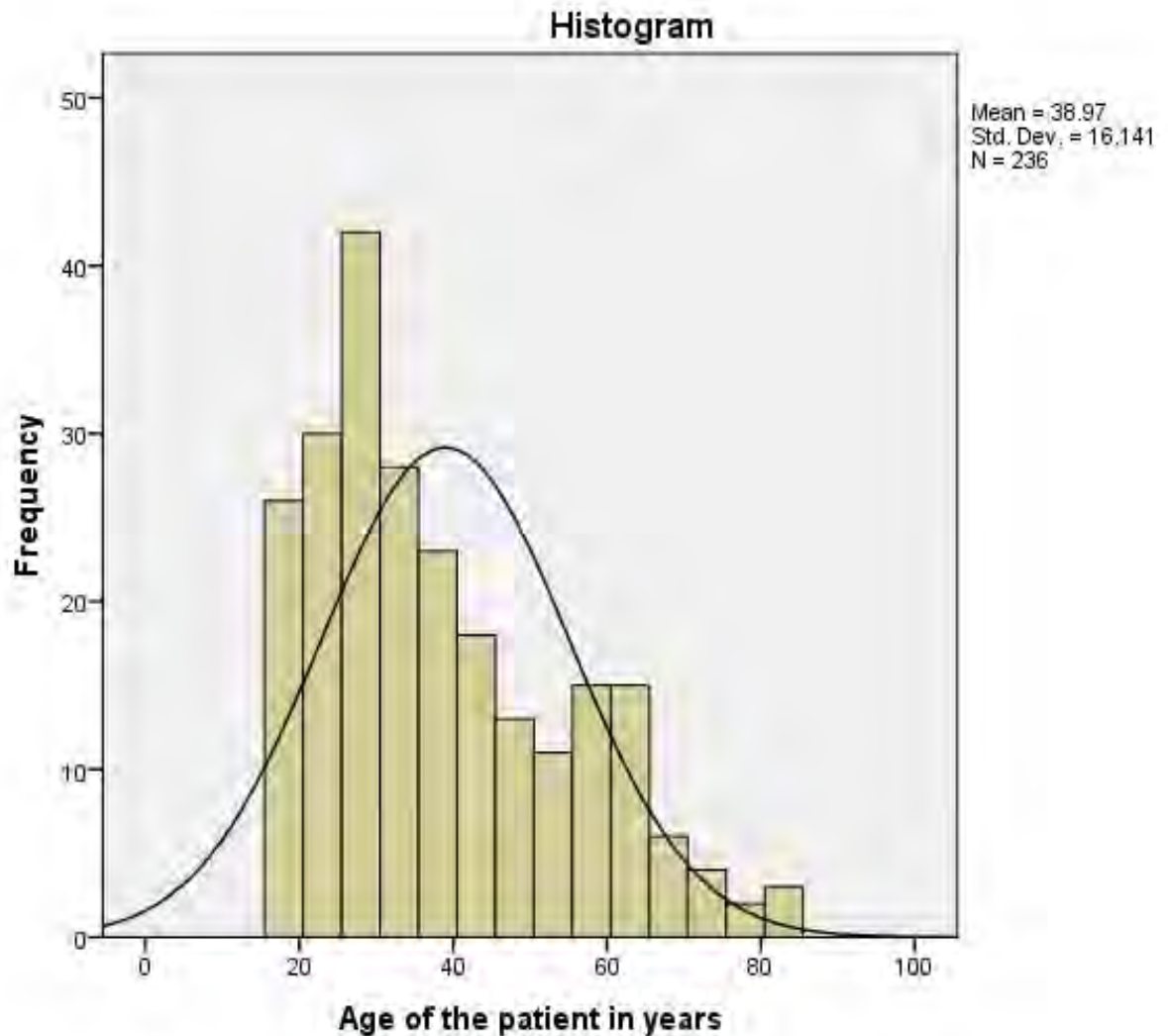
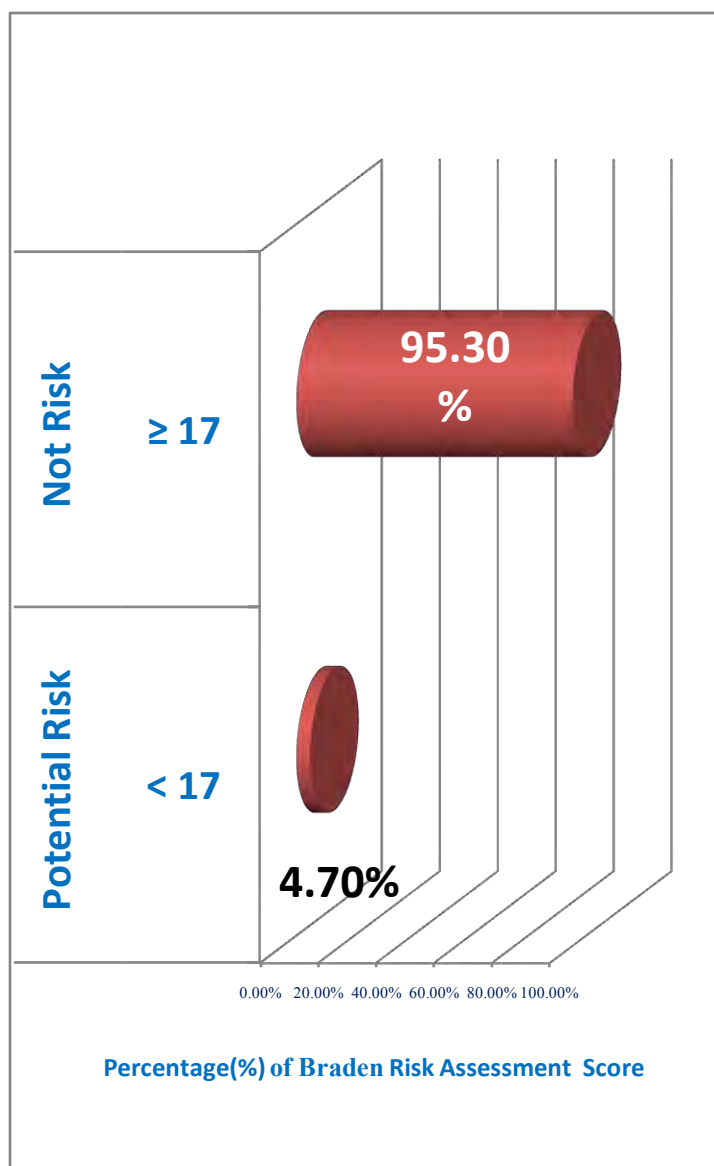


Figure 3: Age distribution of the participants in years who were admitted at Debre Markos Referral hospital, East Gojjam, 2016.



Braden Risk Assessment Scale Score.

Of the respondents 4.7 % (11) were potentially at risk to develop pressure ulcer and 95.30% (225) were not at risk in developing pressure ulcer (Fig.4).

Figure 4: Braden scale risk assessment score of the patient who were admitted at Debre Markos Referral hospital, East Gojjam, 2016.

5.2 Prevalence of pressure ulcer

5.2.1. Prevalence of pressure ulcer with socio-demographic variables

A total of 8 pressure ulcer was detected from 236 patients, with the prevalence rate of 3.4%. Majority of respondents 3.0% developed pressure ulcer came from the rural area, and 1.3 % (3) patients developed ulcer were not educated (Table 2).

Table 2: Descriptive statistics of socio-demographic variables in pressure ulcer development who were admitted at Debre Markos Referral Hospital, East Gojjam, Ethiopia, 2016 (n=236).

Variables	Pressure Ulcer			
	Yes N	%	n	No %
Over all pressure Ulcer	8	3.4	228	96.6
Age				
18–32	1	.4	107	45.3
33–53	2	.8	74	31.4
≥54	5	2.1	47	19.9
Sex				
Female	2	.8	93	39.4
Male	6	2.5	135	57.2
Place of residence				
Urban	1	.4	41	17.4
Rural	7	3.0	187	79.2
Marital status				
Single	1	.4	31	13.1
Married	5	2.1	176	74.6
Divorced	1	.4	10	4.2
widowed	1	.4	11	4.7
Educational status				
Not educated	3	1.3	57	24.2
Read and write	1	.4	40	16.9
Grade 1-4	1	.4	19	8.1
Grade 5-8	1	.4	48	20.3
Grade 9-10	1	.4	36	15.3
≥ grade 11	1	.4	28	11.9

5.2.2. Prevalence of pressure ulcer with other variables.

Almost half 48.3% (114) admitted patients at Debre Markos referral hospital had 8 -15 days length of stay in the hospital and 38.5 % (91) patients discharged less than or equal to 7 days, whereas 13.1% (31) patients stay in hospital more than 16 days. 1.7 %(4) of respondents who developed pressure ulcer were admitted ≥ 16 days. From the total participants who developed pressure ulcer, 0.8% (2) had not used pressure relieving device, 2.1 %(5) with a body mass index of 18.5-24.9 and 1.7% (4) had not been changed their position frequently by nurses (Table 3).

Table 3: Descriptive statistics of other variables in pressure ulcer development who were admitted at Debre Markos Referral Hospital, East Gojjam, Ethiopia, 2016 (n=236).

Variables	Pressure Ulcer			
	Yes N	%	No n	%
BMI				
<18.5	1	.4	9	3.8
18.5-24.9	5	2.1	206	87.3
25.0-29.9	1	.4	11	4.7
≥ 30	1	.4	2	.8
Smoking				
Currently smoking	1	.4	0	0
Previous smoking	1	.4	4	1.7
No smoking	6	2.5	224	94.9
Length of stay				
≤ 7 days	1	.4	90	38.1
8-15 days	3	1.3	111	47.0
≥ 16 days	4	1.7	27	11.4
Bed ridden				
Yes	3	1.3	2	.8
No	5	2.5	226	95.8
Change of position				
Yes	4	1.7	227	96.2
No	4	1.7	1	.4
Supportive device				
Yes	6	2.5	223	94.5
No	2	.8	5	2.5

5.2.3. Prevalence of pressure ulcer with wards

The prevalence of pressure ulcer in terms of wards was identified, surgical ward ulcer prevalence was 2.1% (5) (Fig.5).

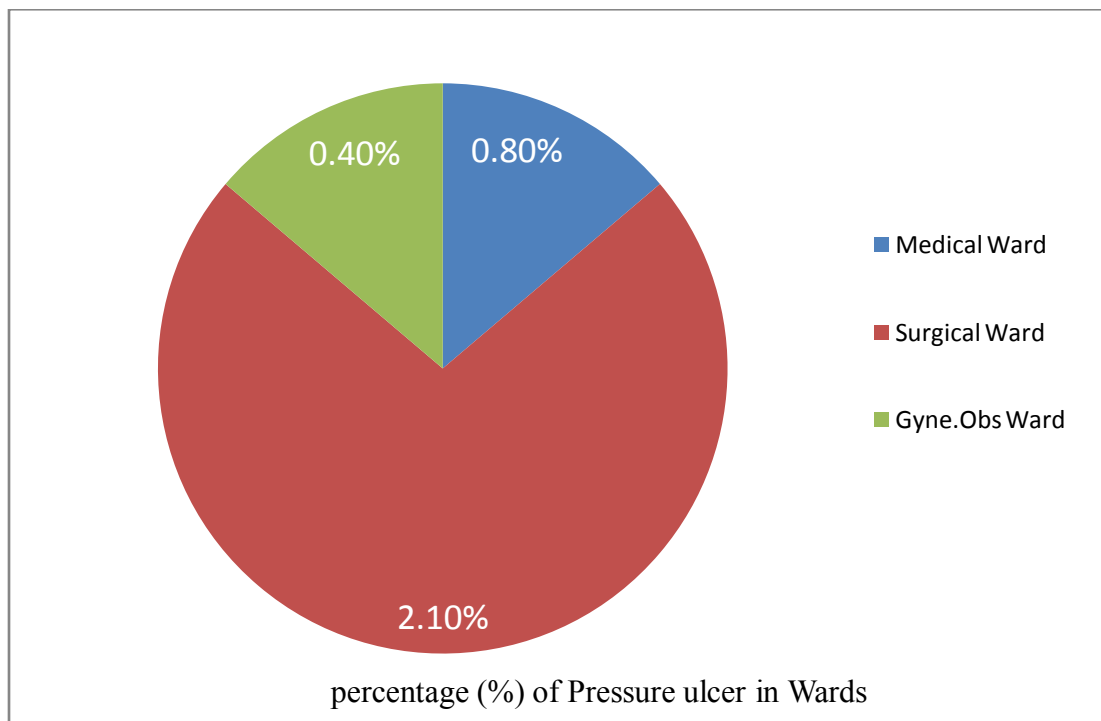
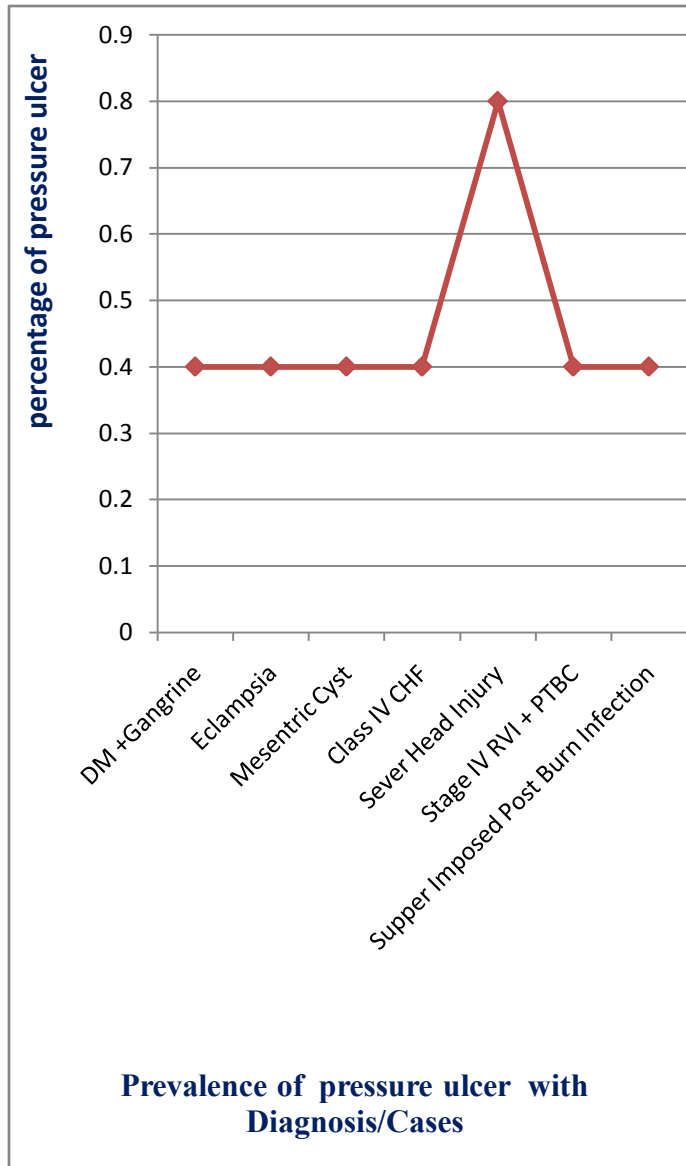


Figure 5: Pressure Ulcer with Wards of the respondents who were admitted at Debre Markos Referral Hospital, East Gojjam, Ethiopia, 2016 (n=236).



5.2.4. Prevalence of Pressure ulcer with Diagnosis/Cases

The prevalence of pressure ulcer based on the patients' cases were also identified, then from the total prevalence of pressure ulcer, the patients who had severe head injury comprised 0.8%(2), and the rest each accounted 0.4%(1)(Fig.6).

Figure 6: Pressure Ulcer based on diagnosis of the respondents who were admitted at Debre Markos Referral Hospital, East Gojjam, Ethiopia, 2016 (n=236).

5.2.5. Prevalence of pressure ulcer with Anatomical location

Of those who developed pressure ulcer, most of the participants 2.50% (5) developed ulcer on sacral area and 0.40% (1) patients developed pressure ulcer at Occipital area (Fig-7).

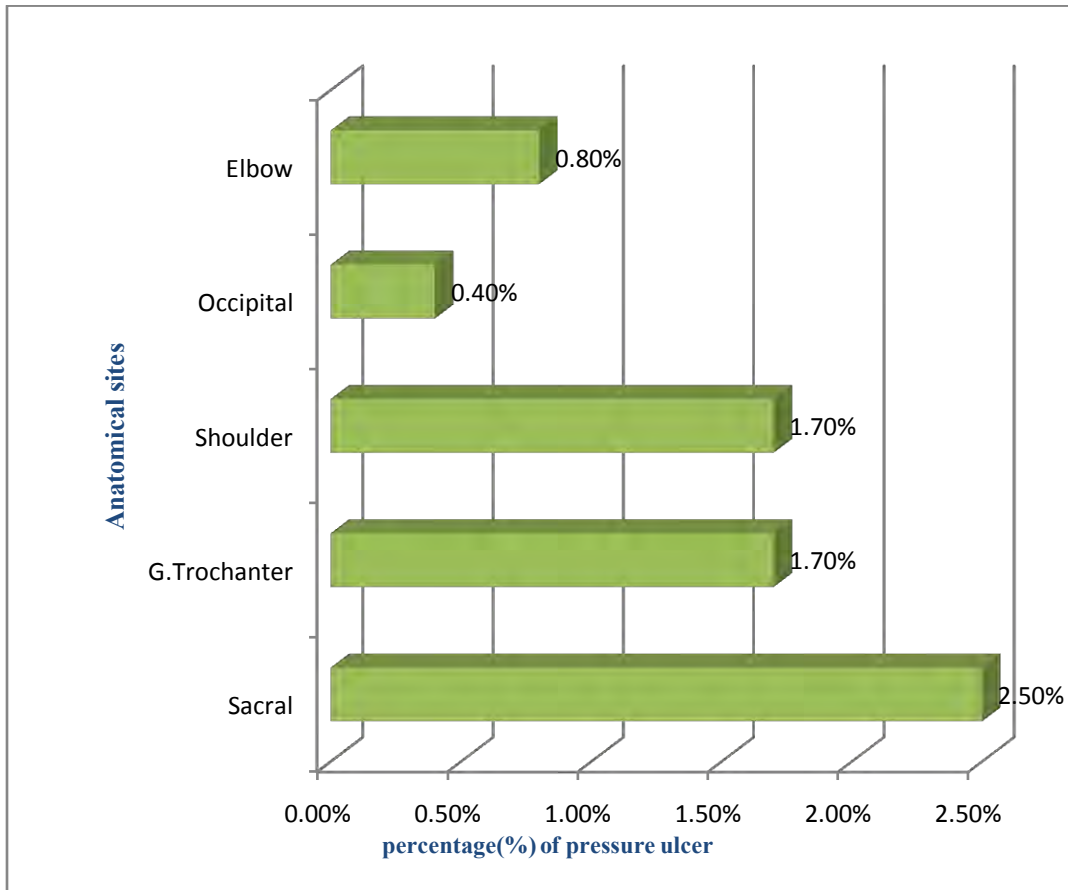


Figure 7: Anatomical location of pressure ulcer in patients who were admitted at Debre Markos Referral Hospital, East Gojjam, Ethiopia, 2016 (n=236).

5.2.6. Prevalence of pressure ulcer with EPUAP stages of ulcer

Among pressure ulcer developed participants, 0.4% (1) comprised the advanced stage (stage IV) of pressure ulcer (Fig.8).

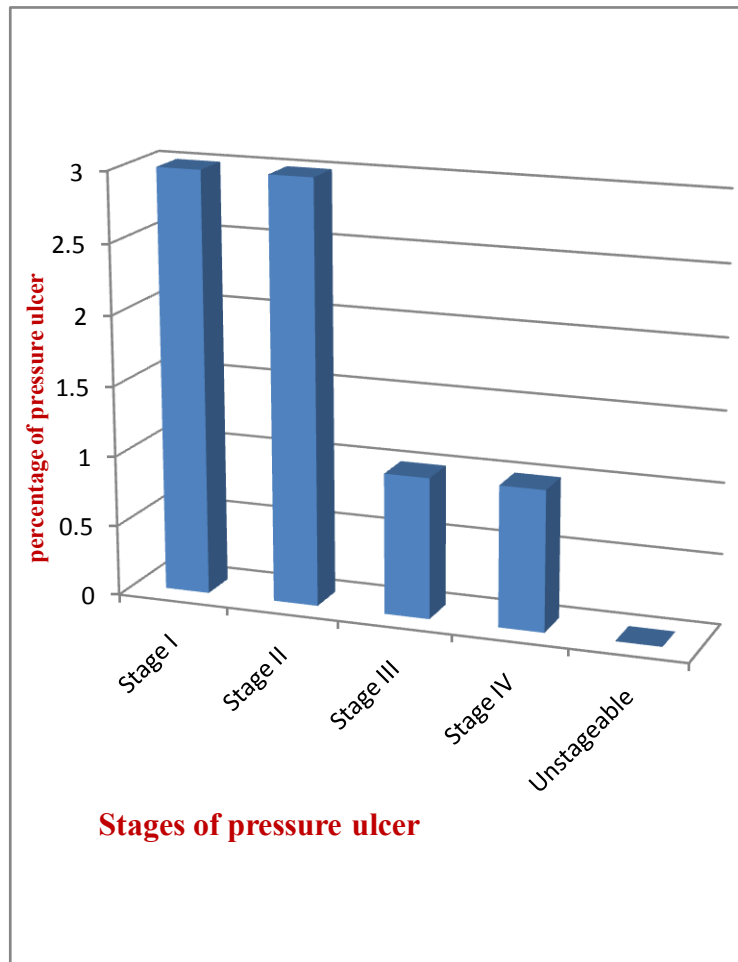


Figure 8 : Stages of pressure ulcer in patients who were admitted at Debre Markos Referral Hospital, East Gojjam, Ethiopia, 2016 (n=236).

5.3. Braden Scale Pressure Ulcer Risk Assessment

Majority of respondents 96.2% (227) had no impairment in sensory perception, and from the total respondents, 2.5 %(6) were completely immobile. 11.9 %(28) participants were probable inadequate in nutrition, and 5.1 %(12) of the patients had potential problem in Friction & Shear (Table-4).

Table 4: Braden Scale Pressure Ulcer Risk Assessment characteristics of the respondents who were admitted at Debre Markos Referral Hospital, East Gojjam, Ethiopia, 2016(N=236).

Variables	Frequency	%
1. Sensory perception		
Completely limited	2	.8
Very limited	5	2.1
Slightly limited	2	.8
No impairment	227	96.2
2. Moisture		
Constantly moist	2	.8
Very moist	5	2.1
Occasionally moist	2	.8
Rarely moist	227	96.2
3. Activity		
Bed fast	3	1.3
Chair fast	7	3.0
Walks occasionally	5	2.1
Walks frequently	221	93.6

4. Mobility Completely immobile Very limited Slightly limited No limitation	6 5 6 219	2.5 2.1 2.5 92.8
5. Nutrition Very poor Probably inadequate Adequate	6 28 202	2.5 11.9 85.6
6. Friction and shear Problem Potential problem No apparent problem	2 12 222	.8 5.1 94.1

5.4. Factors of association with pressure ulcer

5.4.1. Socio-demographic and other variables

Eleven independent variables were analyzed in logistic regression with outcome variable to know their association. Those variables which were significant at $P < 1.000$ entered into multivariate logistic regressions. This multivariate analysis had identified that patient's age, bedridden, and position change had significantly associated with pressure ulcer.

Those respondents whose age were in between 18-32 yrs had 0.45 times [95% CI: AOR, 0.451[0.008 - 0.750] less likely to develop pressure ulcer than those who age were ≥ 54 years. Patients who were bedridden had 13.8 times [95% CI: AOR, 13.844(11.480 - 31.101)] more possibly to develop pressure ulcer than those who were not bedridden, and those who had got position change service were 0.3 times [95% CI: AOR, 0.30 (0.000 - 0.906)] less likely to develop pressure ulcer than who did not get the service (Table 5).

Table 5: Factors of association variables with pressure ulcer of the respondents who were admitted at Debre Markos referral hospital, East Gojjam, Ethiopia, 2016 (n=236).

Variables	Pressure Ulcer		P-Value	COR (95%CI)	AOR (95%CI)
	Yes	NO			
Age			0.048		
18-32	1	107		0.383 (0.294 - 0.920)**	0.451[0.008 - 0.750]**
33-53	2	74		0.136(0.034 - 0.821)**	0.009[0.001 - 0.298]**
≥ 54	5	47		1	1
Sex			0.380		
Male	2	93		2.067(.408 – 10.463)	4.165[.502 -34.569]
Female	6	135		1	1
Place of residence			0.692		
Urban	1	41		1.535(.184 - 12.817)	.210[.16 – 2.689]
rural	7	187		1	1
Educational status			0.960		
Unable to read and write	3	57		2.105(.211 - 20.977)	1.706[.148 – 19.620]
Read and write	1	40		1.000(.98 - 10.196)	.207[.013 – 3.318]
Grade 1-4	1	19		2.526(.254 - 25.085)	.832[.060 – 11.632]
Grade 5-8	1	48		1.895(.190 - 18.923)	.661[.048 – 9.134]
Grade 9-10	1	36		1.474(.147 - 14.816)	.208[.011 – 3.861]
$\geq$ grade 11	1	28		1	1
Marital status			0.576		
Single	1	31		1.135(.128 - 10.052)	17.776[.366 – 857.808]
Married	5	176		.323(.018 - 5.644)	3.369[.038 – 302.106]

Divorced	1	10		.355(.020 - 6.171)	2.490[.031 – 201.588]
widowed	1	11		1	1
Length of stay			0.024		
≤ 7 days	2	105		.411(.042 - 4.020)	7.276[.400 – 132.354]
8-15 days	5	86		.075(.008 -.700)	4.211[.002 -87.213]
≥ 16 days	1	37		1	1
BMI			1.175		
<18.5	1	9		4.578(.483 – 43.363)	
18.5-24.9	5	206		1.222(.067 – 22.40)	
25.0-29.9	1	11		.222(.009 – 5.275)	
≥30	1	2		1	
Smoking			1.173		
Currently smoking	1	0		.000(.000 -.001)	
Previous smoking	1	4		.107(.010 – 1.108)	
No smoking	6	224		1	
Bed ridden			0.000		
Yes	3	2		67.8(9.207 – 99.289)**	13.844[11.480 – 31.101]**
No	5	226		1	1
Change position			0.000		
Yes	4	227		.40(.000 -0 .49)**	.30[.000 - 0.906]**
No	4	1		1	1
Supportive device			0.004		
Yes	6	223		1.067(.011 - .419)	.473[.014 – 15.456]
No	2	5		1	1

NB: * = $p < 1.000$, **= $p \leq 0.05$

Logistic Regression Method „ENTER“ Was Used For Multivariate Analysis.

5.4.2. Braden Scale Pressure Ulcer Risk Assessment

Six predictors were analyzed in logistic regression with dependent variable of pressure ulcer to know their association, and those variables which were significant at $P < 1.000$ entered in to multivariate logistic regressions. Respondents who had constantly moist skin were 3.2 times [95% CI: AOR, 3.202[2.050 -16.067] more risk to develop pressure ulcer than rarely moist skin in moisture. Those participants who had been very poor in nutrition were 4.9 times [95% CI: AOR, 4.906(3.837 - 23.326)] at higher risk to develop pressure ulcer than adequate in nutrition (Table-6).

Table 6: Factors Associated With Braden Scale Pressure Ulcer Risk Assessment Variables And Pressure Ulcer of the Respondents Who Were Admitted At Debre Markos Referral Hospital, East Gojjam, Ethiopia, 2016 (N=236).

Variables	Pressure Ulcer		P-Value	COR (95%CI)	AOR (95%CI)
	Yes	NO			
1. Sensory perception			1.00		
Completely limited	1	0		.000 [.000-.]	
Very limited	4	0		.000 [.000-.]	
Slightly limited	1	1		.045 [.003-.579]	
No impairment	2	223		1	
2. Moisture			.000		
Constantly moist	2	0		8.005[2.090 -78.074]**	3.202[2.050 - 16.067]**
Very moist	4	1		4.008[1.001 - 45.082]**	3.060[1.000 - 17 .081]**
Occasionally moist	1	1		2.009[1.000 - 39.205]**	2.021[1.001 - 22 .740]**
Rarely moist	1	226		1	1
3. Activity			1.000		
Bed fast	2	0		.000 [.000-.]	
Chair fast	4	4		.000 [.000-.]	
Walks occasionally	1	3		.000 [.000-.]	
Walks frequently	1	221		1	

4. Mobility			1.053		
Completely immobile	6	0		.000[.000 -.]	
Very limited	1	4		.023[.001 -.429]	
Slightly limited	1	5		.042[.002 -.728]	
No limitation	0	219		1	
5. Nutrition			.000		
Very poor	5	4		8.125[2.592 -56.721]**	4.906[3.837-23.326]**
Probably inadequate	2	23		4.750[2.917 -44.614]**	2.161[1.506 - 16.270]**
Adequate	1	201		1	1
6. Friction and shear			.000		
Problem	1	1		.357 [.033 – 3.916]	.495[.029-8.341]
Potential problem	4	8		10.048[.925 -109.125]	.433[.017-11.110]
No apparent problem	3	219		1	1

NB: *p<1.000, **=p≤0.05

Logistic Regression Method „ENTER“ Was Used For Multivariate Analysis.

CHAPTER 6: DISCUSSION

6.1. Prevalence of pressure ulcer

6.1.1. Overall prevalence of pressure ulcer

In this study, the overall prevalence of pressure ulcer was 3.4%. This result was slightly higher than studies conducted in China and Nigeria with prevalence of 1.58%, 3.22% respectively ^(3, 9). Higher prevalence in this study might be due to inappropriate nursing care, inadequate & very poor feeding habit and limited resource of pressure relieving devices.

It was also found that the prevalence rate was lower than a study conducted in Brazil 16.9%, Germany 26.5%, Sweden 22.9%, Canada(Ontario) 25.7%, and Felege Hiwot hospital(Bahir Dar) 16.8 % ^(12, 17,18,9, 7). This discrepancy might be due to different characteristics of participants, disease condition of patients and also the variation of study period & length of stay in hospital.

6.1.2. Prevalence of pressure ulcer with anatomical location.

In this study, prevalence of pressure ulcer due to anatomical location was lower (Sacral, G.Trochanter & Elbow 2.5%,1.7% &0.8% respectively) than a study conducted in China (Sacral, G.Trochanter & Elbow 60.52%,6.34% &0.79%),in Brazil(Sacral, G.Trochanter & Elbow 82.5%,37.5% &3.7%) in Bahir Dar(Sacral, & Elbow 70.4%,&7%). This difference might be due to the disease condition of patients and variation of study area & length of stay in hospital.

6.1.3. Prevalence of pressure ulcer with stage

In this study, prevalence of pressure ulcer in stages I, II & IV were 2.5%, 2.5% & 0.4% respectively. This finding was lower than a study conducted in China 28.68%,35.82%,12.99%, in Brazil 30.3%,32.4% 13.9% ,in Ahmadu Bello University(Nigeria),and in Bahir Dar(FelegeHiwot hospital) 62%,26.8%,2.8%(3,12,20,7). This discrepancy might be due to different characteristics of participants, disease condition of patients and sample size the participants.

6.2. Association of variables with pressure ulcer

6.2.1. Association of demographic variables with pressure ulcer.

This study depicted that pressure ulcer was significantly associated ($p < 0.048$) with age, it was in line with a study conducted by Bergstrom & Braden (25); but not supported by a survey conducted in the city of Belo Horizonte (Brazil), China, Nigeria and Bahir Dar (Felege Hiwot hospital)^(25,3,9,7). The reason not in lined to other studies might be the disease condition of patients and length of stay in hospital.

6.2.2. Association of other variables with pressure ulcer

Bed ridden and change in position were strongly associated ($p = 0.000$) with the presence of pressure ulcer as shown in this study. Bed ridden association with pressure ulcer was in line with a study conducted in Brazil (12), and change in position was also in line with a survey did in Bahir Dar, Felege Hiwot hospital (7).

6.3. Association of Braden RAS variables with pressure ulcer

The Braden RAS tool with development of pressure ulcer in this study was identified; moisture and nutrition were the major predictors for pressure ulcer development, due to the fact that constantly moist skin and very poor in nutrition predispose patients to develop pressure ulcer.

The findings indicated that moist skin and very poor in nutrition were strongly & significantly associated ($p = 0.000$) with presence of pressure ulcer. These results were consistent with previous studies or in agreement with different studies conducted across 26 hospitals in Belgium, Italy, Portugal, Sweden & UK (18), Brazil (12), and a survey that was done by Richard A. Benoit, Jr. (21), but not supported by a study conducted in Bahir Dar, Felege Hiwot hospital (7). The possible explanation that was not supported by Felege Hiwot hospital might be the disease condition, and different characteristics of participants.

CHAPTER 7: STRENGTH AND LIMITATION OF THE STUDY

7.1. Strength of the study

The use of the standardized tool (Braden RAS) & structured questionnaire to avail the data.

7.2. Limitation of the study

The study findings might be better if the design was prospective (longitudinal) study to find the incidence of pressure ulcer. The findings in this study were based on quantitative method only that lacked triangulation with other methods like FGD and in-depth interview. Lack of previous study findings limited the comparison of these study findings with other findings in similar hospitals in Ethiopia.

CHAPTER 8: CONCLUSION AND RECOMMENDATION OF THE STUDY

8.1. Conclusion

The prevalence of pressure ulcer was slightly high among hospitalized adult patients. In this study, age, bedridden, position change, moisture and nutrition were significantly associated with the presence of pressure ulcer. So, Patients were more liable to develop pressure ulcer when they were in bed ridden, moist skin & inadequate nutrition and had not been changed their position frequently.

8.2. Recommendation

For Debre Markos Referral Hospital:

- ✓ Standard operating procedures (SOP) should be available, like position change service for bed ridden patients.
- ✓ Braden RAS tool formats should be accessible.
- ✓ A short term training program should be designed /planned to all health care providers to use Braden scale RAS tool.

Health care providers:

- ✓ Health care providers should apply the Braden RAS tool to predict the risk patients for pressure ulcer.
- ✓ Health care providers should provide appropriate nursing care for hospitalized patients based on the hospital's SOP to prevent & reduce pressure ulcer.

For Health care providers:

- ✓ Researchers should better to do a research using a prospective study design and, quantitative method with triangulation like FGD and in-depth interview.

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Annexes

Annex -I: Questionnaires-English Version

Part I. Patient's Biography Data Assessment Checklists

Date of admission -----

Card No, -----

Ward -----

S. No	Interview Questions	Responses
101	Age of the patient	----- years
102	Sex,	1. Male 2. Female
103	Place of residence:	1. Urban 2. Rural
104	Educational status:	1. Not educated 2. Read and write 3. Grade 1-4 4. Grade 5-8 5. Grade 9-10 6. Greater or equal to 11th grade
105	Marital status	1. Single 2. Married 3. Divorced 4. Widowed

Part II. Pressure Ulcer Assessment Checklists

S. No	Questions.	Responses
201	Medical diagnose on admission	-----
202	Does the patient develop pressure ulcer?	1. Yes 2. No
203	If „Yes“ for question 202, where did he/she develop?	1. At Debre Markos hospital/wards 2. Out of Debre Markos hospital.
204	If the patient develops pressure ulcer, identify the stage of pressure ulcer.	1. Stage I 2. Stage II 3. Stage III. 4. Stage IV 5. Unstageable
205	If the patient develops pressure ulcer, identify the anatomical location of pressure ulcer	1. Sacral 2. Greater trochanter 3. Shoulder 4. Occipital 5. Heel 6. Elbow 7. Other: Specify _____
206	How long the patient admits in the hospital for treatment / Length of stay?	1. <=7days 2. 8-15 days 3. ≥ 16days
207	Is there any pressure ulcer supportive device?	1. Yes 2. No
208	If „Yes“ for question number 207, mention the device(s)	-----
209	Does the patient Smoke Cigarette?	1. Currently smoking 2. Previously smoke 3. No smoke
210.	Is the patient bedridden?	1. Yes 2. No
211.	Does the patient get position change service?	1. Yes 2. No
212	If „Yes' for question number 211, how often the patient gets position change service?	1. Every 2 to 3 hours 2. Every 4 hours 3. Turned 4times/day
213	Patient's Body Mass Index	_____

Part III. Pressure ulcer Braden scale of risk assessment.

S.No	Criteria	Rating scale /value			
		1	2	3	4
301	Sensory perception 1. completely limited 2. very limited 3. slightly limited 4. no impairment				
302	Moisture 1. constantly moist 2. very moist 3. occasionally moist 4. rarely moist				
303	Activity 1. bedfast 2. chair fast 3. walks occasionally 4. walks frequently				
304	Mobility 1. completely immobile 2. very limited 3. slightly limited 4. no limitation				
305	Nutrition 1. very poor 2. probably inadequate 3. adequate				
306	Friction and shear 1. problem 2. potential problem 3. no apparent problem				
				Total score (1-22)	

Annex -II: Questionnaires-Amharic Version

ክፍል I. የታካሚዉ/የህመምተኛዉ /ዋ የህይወት ታሪክን የተመለከተ መጠይቅ

የተኛበት/ችበት ቀን _____

የፋይል/ካርድ ቁጥር _____

ተ. ቁጥር	ቃለ - መጠይቅ	ምላሽ
101	የታካሚዉ/የህመምተኛ/ዋ ዕድሜ	----- ዓመት
102	ፆታ፣	1. ወንድ 2. ሴት
103	መኖሪያ ቦታ፡	1. ከተማ 2. ገጠር
104	የትምህርት ሁኔታ፡	1. ያልተማረ / ች 2. ማንበብናመጻፍ የሚችል / የምትችል 3. ከ1 - 4 ክፍል 4. ከ5 - 8 ክፍል 5. ከ9 - 10 ክፍል 6. 11ኛ ክፍል እና ከዚያ በላይ
105	የጋብቻ ሁኔታ ፡	1. ያላገባ /ች 2. ያገባ /ች 3. የፈታ /ች 4. የሞተበት/ የሞተባት

ክፍል II. የሰውነት/የአካል ቁስላትን የተመለከተ መጠይቅ

ተ. ቁጥር	ቃለ - መጠይቅ ጥያቄዎች	ምላሽ
201	የታካሚዉ/የህመምተኛዉ/ዋ የበሽታዉ ዓይነት	-----
202	የታካሚዉ/የህመምተኛዉ/ዋ የሰውነት/የአካል ቁስላት አሳይቷል/ለች ?	1. አዎ 2. አይደለም
203	ለተራ ቁጥር 202 መጠይቅ መልሱ አዎ ከሆነ የታካሚዉ/የህመምተኛዉ/ዋ የሰውነት/የአካል ቁስላት የት ተከሰተ ?	1. ደ/ማ ሆስፒታል ህመማን ተኝተዉ ከሚታከሙበት ክፍል ዉስጥ 2. ደ/ማ ሆስፒታል ህመማን ተኝተዉ ከሚታከሙበት ክፍል ዉጭ ::
204	ታካሚዉ/ህመምተኛዉ/ዋ የሰውነት/የአካል ቁስላት ካሳየ/ች የቁስላት ደረጃዉን ይልዩ::	1. ደረጃ I 2. ደረጃ II 3. ደረጃ III 4. ደረጃ IV 5. ደረጃ መስጠት የመይቻል
205	ታካሚዉ/ህመምተኛዉ/ዋ የሰውነት/የአካል ቁስላት ካሳየ/ች ቁስላቱ የተከሰተበትን አካላዊ ቦታ ይልዩ::	1. የመቀመጫ አጥንት 2. የታፋ የዉጭ ክፍል ወጣ ያለ ትልቅ አጥንት (Greater trochanter) 3. የትክሻ አጥንት 4. የጀርባ የራስ ቅል አጥንት 5. የተረከዝ አጥንት 6. የክርን አጥንት 7. ሌላ ይግለጹ
206	ታካሚዉ/ህመምተኛዉ/ዋ ለምን ያህል ጊዜ ሆስፒታል ዉስጥ ተኝተዉ ታከሙ ?	1. <= 7 ቀናት 2. 8-15 ቀናት 3. ≥ 16ቀናት
207	ቁስላት እንዳይከሰት ለመከላከል ድጋፍ/ የህክም ዜዴ ለታካሚዉ/ለህመምተኛዉ/ዋ ተደርጎለታል/ላታል ?	1. አዎ 2. አይደለም
208	ለተራ ቁጥር 207 መጠይቅ መልሱ “አዎ” ከሆነ ለታካሚዉ/ለህመምተኛዉ/ዋ የተደረገለትን/ላትን ይጥቀሱ	-----
209	ታካሚዉ/ህመምተኛዉ/ዋ ሲጋራ ያጨሳል/ታጨሳለች?	1. ባሁኑ ጊዜ ያጨሳል/ታጨሳለች 2. ቀደም ብሎ ያጨሰ/ታጨሰ ነበር 3. አያጨስም/ አታጨስም
210	ታካሚዉ/ህመምተኛዉ/ዋ የአልጋ ቁራኛ ሆኗል/ሆናለች?	1. አዎ 2. አይደለም
211	ታካሚዉ/ህመምተኛዉ/ዋ የማዛወር/የማገለበጥአገልግሎት ያገኛል / ታገኛለች ?	1. አዎ 2. አይደለም
212	ለተራ ቁጥር 211 መጠይቅ መልሱ አዎ ከሆነ ታካሚዉ/ህመምተኛዉ/ዋ በየሰንት ጊዜዉ የማዛወር/የማገለበጥ አገልግሎት ያገኛል / ታገኛለች ?	1. በየ 2-3 ሰዓት 2. በየ 4 ሰዓት 3. በቀን 4 ጊዜ
213	የታካሚዉን/የህመምተኛዉን/ዋን አካላዊ አቀም (Body Mass Index)	_____

ክፍል III. የሰውነት/የአካል ቁስለት ተጋላጭነት በብራድን(scale) ደረጃ

ተ.ቁጥር	መመዘኛ	የተሰጠው ዋጋ			
		1	2	3	4
301	ስሜት የመረዳት ችሎታ 1. ሙሉ በሙሉ የማይችል/የማትችል 2. በጣም ዉስንነት ያለበት/ባት 3. በትንሹ ዉስንነት ያለበት/ባት 4. ጉድለት የሌለበት/ባት				
302	እርጥበት 1. የመያቋርጥ እርጥበት 2. በጣም የረጠበ 3. አልፎአልፎ እርጥበት 4. እርጥበት የሌለዉ				
303	የሰውነት እንቅስቃሴ 1. በአልጋ ላይ የተወሰነ 2. በወንበር ላይ በመቀመጥ የተወሰነ 3. አልፎአልፎ መራመድ መቻል 4. እዘዉትሮ መራመድ መቻል				
304	የአካል ክፍሎች እንቅስቃሴ ሁኔታ 1. ሙሉ በሙሉ የማይንቀሳቀስ 2. በጣም ዉስንነት ያለበት 3. አልፎአልፎ ዉስንነት ያለበት 4. ለመንቀሳቀስ ችግር የሌለበትም				
305	የአመጋግብ ሁኔታ 1. በጣም በቂ ያልሆነ 2. በቂ ያልሆነ 3. በቂ				
306	ሰበቃ እና ጭነት 1. የችግሩ ምክንያት ነዉ 2. የችግሩ ምክንያት ሊሆን ይችላል 3. በዋናነት የችግሩ ምክንያት አይደለም				
			አጠቃላይ ነጥብ(1-22)		

Annex IV. Consent form

Study Subject Information Sheet

Dear hospitalized patients (participants)!

My name is _____. I am working as a data collector in the survey conducted by Addis Ababa University, College Health Sciences, Allied school of Nursing and Midwifery. The aim of this study is to assess prevalence of pressure ulcer and associated factors among hospitalized Adult at Debre Markos referral hospital, East Gojjam, Ethiopia, 2015. And all patients who fulfill the criteria during data collection period will be participating in study.

The purpose of this study is to generate information about magnitude of pressure ulcer and associated factors among hospitalized patients at Debre Markos referral hospital, East Gojjam which may help for policy makers, health workers in the health institution, and significant for others to take actions based on the findings. The study will be conduct in physical examination and private life questions. In order to effectively attain the objective of the research, we are requesting your help. Your responses and physical findings will be completely confidential. It is your full right to refuse in responding any question and attending of physical examination. However, your willingness will help us in better understanding of magnitude of pressure ulcer and associated factors. So, we are requesting you to give your honest volunteer and keep participation.

Risk and /or Discomfort

By participating in this research project you may feel that it has some discomfort and pain during physical examination and you may lose around 25minutes. So your response and findings will help as an important input to show the prevalence and means to prevent pressure ulcer. There is no risk except pain in participating in this research project.

Benefits

If you are participating in this research project, there may not be direct benefit to you but your participation is likely to help us in showing the prevalence of pressure ulcer and associated factors that help in resource allocation decision making.

Incentives/Payments for Participating

You will not be provided any incentives or payment to take part in this project.

Confidentiality

The information collected for this research project as well as information gathered from your own physical examination will be kept confidential and information about you that will be collected by this study will be stored in a file, without your name, but a code number assigned to it. And it will not be revealed to anyone except the principal investigator and supervisors.

Right to Refusal

You have full right to refuse from participating in this research and this will not affect you from getting any kind of health service. You have also the full right to leave from this study at any time you wish, without losing any of your right.

Person to contact

The research project will be reviewed and approved by the Addis Ababa University, Health Science College, Allied School of Nursing & Midwifery Ethical Review Committee. If you want to know more information & any question, you will be able to contact any of the following individuals through the address below and ask at any time you want.

1. Mr. Benalfew Lake

Mobile: +251911912799/e-mail: benalfew@gmail.com

Are you willing to participate in this study?

1. Yes sign-----
2. No

የስምምነት ቅጽ

ውድ የሆስፒታል ታካሚዎች/ የጥናቱ ተሳታፊዎች/

ስሜ ----- ይባላል። በአዲስ አበባ ዩኒቨርሲቲ የነርቪንግ እና አዋላጅ ትምህርት ክፍል የ2ኛ ዲግሪ ተማሪ ለሆነና የመመረቂያ ጽሁፍ እያዘጋጀ ላለ ሰው መረጃ በመስብሰብ ላይ እገኛለሁ። የጥናቱ ግብ የሰውነት ቁስለት የስርጭትና ተያያዥነት ያላቸውን መንስኤዎች በደብረ ማርቆስ ሪፈራል ሆስፒታል አልጋ ላይ ተኝተው በህክምና ክትትል ላይ በሚገኙ አዋቂ ታካሚዎች ያለውን ስርጭት ለመገመገም/ለማጥናት/ ነው። ስለሆነም መስፈርቱን የሚያሟሉ ሁሉም ታካሚዎች በጥናቱ ላይ ተሳታፊ ይሆናሉ።

የዚህ ጥናት ዋነኛ ዓላማ የሰውነት ቁስለቶች ችግር አሳዛኒነት ምን ያህል እንደሆነ ለማወቅ • እንዲሁም • ለፖሊሲ አውጭዎችና ጤና ባለሙያዎች በመረጃ ምንጭነት ሊያገለግል ይችላል። ጥናቱም የሚከናወነው የታካሚዎችን የሰውነት አካል በቀጥታ ምልክታ በማድረግ እና የታካሚዎችን ግላዊ መረጃዎችን በመጠየቅ ይሆናል። በመሆኑም የጥናቱን ዋነኛ ግብ በብቃት ለማሳካት የእርስዎ ክልብ የመነጨ እና ቅንነትን የተላበሰ ትብብር ወሳኝነት አለው። ስለዚህ የእርስዎ ቅንነትና ልባዊ ተባባሪነት ለእኛ የችግሩን አሳዛኒነት ለበለጠ ለመረዳት ወሳኝ ሚና አለው። በመሆኑም በጥናቱ በታማኝነትና በቀናነት እንዲሳተፉ በትህትና እንጠይቃለን።

በጥናቱ ወቅት ሊያጋጥመዎት የሚችል ጉዳት

በጥናቱ በሚሳተፉበት ወቅትና የአካል ምርመራ በሚደረግበት ወቅት መጠነኛ የሆነ የህመም ስሜት ሊኖረው ይችላል። እንዲሁም በግምት እስከ ግማሽ ሰዓት ሊቆይ ይችላል። ነገር ግን እርስዎ የሚሰጡት መረጃ የሰውነት ቁስለት ህመምን ስለበሽታው የበለጠ ለማወቅና ለመከላከል እንደ ግብዓት ሆኖ የሚያገለግል በመሆኑ የእርስዎን መረጃ ማግኘት የላቀ ጠቀሜታ ይኖረዋል። ስለሆነም ከላይ ከተገለፀው መጠነኛ ህመም በስተቀር ሌላ ምንም ዓይነት ጉዳት የሌለው መሆኑን በቅድሚያ ላረጋግጥለዎት እፈልጋለሁ።

የሚገኙ ጥቅሞች

በጥናቱ በመሳተፊዎ በቀጥታ የሚያገኙት ጥቅም ባይኖርም ነገር ግን እርስዎ በጥናቱ በመሳተፊዎ የችግሩን ስፋትና ጥልቀት ለመለየት እና አስፈላጊ የህክምና ቁሳቁሶችን ለመመደብና ውሳኔ ለማሳረፍ በጣም አስፈላጊ እንደሚሆን ይታመናል።

በመሳተፊዎ የሚያገኙት ጥቅም

በጥናቱ በመሳተፍዎት የሚያገኙት የገንዘብ ክፍያም ሆነ ሌሎች ጥቅማጥቅሞች እንደማሉ በቅድሚያ ለመግለጽ እወዳለሁ።

ሚስጥራዊነት

ከእርስዎ የሚገኙ የምርምር ውጤቶችም ሆኑ እርስዎ ለጥናቱ የሚሰጧቸው መረጃዎች ሚስጥራዊነታቸው የሚጠበቅ መሆኑንና መረጃዎችም ከጥናቱ አጥኝዎች በስተቀር ሌላ ለማንም አካል የማይገለጽና በሚስጥር የሚቀመጥ መሆኑን በቅድሚያ ላረጋግጥለዎት እፈልጋለሁ።

ያለመሳተፍ መብት

በዚህ ጥናት ያለመሳተፍ መብት መብት ያለዎት መሆኑን እየገለጽን በጥናቱ ባለመሳተፊዎች ምክንያት በሆስፒታሉ የሚያገኙትን የህክምና አገልግሎት የማያጡ መሆኑን በቅድሚያ ሊያውቁት ይገባል፡፡

በችግር ጊዜ ሊያማከሩ የሚችሉት

ይህ ጥናት በአዲስ አበባ ዩኒቨርሲቲ የነርቪንግ እና አዋላጅ ትምህርት ክፍል የምርምርና ጥናት ቡድን ታይቶ የሚረጋገጥ ይሆናል፡፡ ለማንኛውም ለሚጠይቁት ጥያቄዎች እንዲበራራላቸው ሲፈልጉ ከዚህ በታች በተቀመጠው ስልክ ቁጥር በማንኛውም ጊዜ ደውሎ መረጃ/መልስ ማግኘት ይቻላል፡፡

1ኛ/ አቶ ብናልፈዉ ላቀ

ስልክ ቁጥር 0911912799

በጥናቱ ለመሳተፍ ፈቃደኛ ነዎት?

አዎ _____

አይደለሁም _____

ፈርማ _____

Annex-V: Braden scale pressure ulcer risk assessment

Sensory perception: sensory perception measures the individual ability to feel and report discomfort.

1. **Completely limited:** unresponsive (does not moan, flinch or grasp) to painful stimuli, due to diminished level of consciousness or sedation or limited ability to feel pain over most of the body.
2. **Very limited:** responds only to painful stimuli. Cannot communicate discomfort except by moaning or restlessness or has a sensory impairment which limits the ability to feel pain or discomfort over ½ of body.
3. **Slightly limited:** respond to verbal commands, but cannot always communicate discomfort or the need to be turned or has some sensory impairment which limits ability to feel pain or discomfort in one or two extremities.
4. **No impairment:** responds to verbal commands. Has no sensory deficit which would limit ability to feel or voice pain or discomfort.

Moisture: moisture measures the degree to which the skin is exposed to moisture.

1. **Constantly moist:** skin is kept moist almost constantly by perspiration, urine, etc. dampness is detected every time patient is moved or turned.
2. **Very moist:** skin is often, but not always moist. Linen must be changed at least once a shift.
3. **Occasionally moist:** skin is occasionally moist, requiring an extra linen change approximately once a day.
4. **Rarely moist:** skin is usually dry; linen only requires changing at routine intervals.

Activity: degree of physical activity.

1. **Bed fast:** confined to bed.
2. **Chair fast:** ability to walk severely limited or non-existent. Cannot bear own weight and /or must be assisted in to chair or wheelchair.
3. **Walks occasionally:** walks occasionally during day, but for very short distances, with or without assistance. Spends majority of each shift in bed or chair.
4. **Walks frequently:** walks outside room at least twice a day and inside room at least once every 2hours during waking hours.

Mobility: ability to change and control body position.

1. **Completely immobile:** does not make even slight changes in body or extremity position without assistance.
2. **Very limited:** makes occasional slight changes in body or extremity position but unable to make frequent or significant changes independently.
3. **Slightly limited:** makes frequent through slight changes in body or extremity position independently.
4. **No limitation:** makes major and frequent changes in position without assistance.

Nutrition: nutrition reflects the food intake pattern of the assessed person, as well as liquid supplements.

1. **Very poor:** never eats a complete meal. Rarely eats more than 1/3 of any food offered. Eats 2 servings or less of protein (meat or dairy products) per day. Takes fluid poorly. Does not take a liquid dietary supplement or is NPO and / or maintained on clear liquids or IVs for more than 5 days.
2. **Probably inadequate:** rarely eats a complete meal and generally eats only about ½ of any food offered. Protein intake includes only 3 servings of meat or dairy products of per day. Occasionally will take a dietary supplement or receives less than optimum amount of liquid diet or tube feeding.
3. **Adequate:** eats over half of most meals. Eats a total of 4 servings of protein (meat, dairy products) per day. Occasionally will refuse a meal, but will usually take a supplement when offered or is on a tube feeding.

Friction /shear: friction and shear assess the person's ability to keep the skin free from contact with the wrinkle area.

1. **Problem:** requires moderate to maximum assistance in moving. Complete lifting without sliding against sheets is impossible. Frequently slides down in bed or chair, requiring frequent repositioning with maximum assistance. Spasticity, contractures or agitation leads to almost constant friction.
2. **Potential problem:** moves feebly or requires minimum assistance. During a move skin probably slides to some extent against sheets, chair, restraints or other devices. Maintains relatively good position in chair or bed most of time but occasionally slides down.
3. **No apparent problem:** moves in bed and in chair independently and has sufficient muscle strength to lift up completely during move. Maintains good position in bed or chair.

Annex-VI: Declaration

I, the undersigned, graduating class Advanced clinical nursing student declared that this thesis is my original work in partial fulfillment of the requirement for degree of Master of Science in adult health nursing .

Name: _____

Signature: _____

Place of submission: Addis Ababa University, College Health sciences, School of Allied Health Sciences, Department of Nursing and Midwifery.

Date of Submission: _____

This thesis work has been submitted for examination with my/ our approval as university advisor(s).

Advisors

Name

Signature
