NURSES' PAIN MANAGEMENT COMPETENCY AND ASSOCIATED FACTORS AMONG NURSES WORKING IN PUBLIC HOSPITALS, JIMMA ZONE, OROMIA REGIONAL STATE, SOUTHWEST ETHIOPIA

BY: ABIRU NEME (BSC)

A THESIS SUBMITTED TO JIMMA UNIVERSITY, SCHOOL OF GRADUATE STUDIES OF JIMMA UNIVERSITY, INSTITUTE OF HEALTH, FACULTY OF HEALTH SCIENCE, SCHOOL OF NURSING AND MIDWIFERY, IN PARTIAL FULFILLMENT FOR THE REQUIREMENTS OF MASTERS DEGREE IN ADULT HEALTH NURSING

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BY: ABIRU NEME (BSC)

ADVISORS:

1. GUGSA NEMERA (RN, BSc, MSc, Asst.Professor, PhD fellow)

2. FANTAHUN AYALEW(RN, BSc, MSc)

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Abstract

Background: Pain management for hospitalized patient requires nurses' pain management competency. However; there is paucity of information on nurse's pain management competency in Jimma Zone public hospitals.

Objective: To assess nurses' pain management competency and associated factors among nurses working in public Hospitals, Jimma zone, Oromia Regional State, South west Ethiopia.

Methods: Institutional based cross- sectional study design was conducted on 310 nurses working in public hospitals, Jimma zone, from March 1–28, 2017. The study subjects were selected by simple random sampling technique using of lottery method. Data was collected using standardized self-administered questionnaire. SPSS 20.0 version for windows was used for data entry and analysis. Descriptive analyses were performed on all study variables. Binary logistic regression analyses used to see the strength of association between independent variables and dependent variable. Variables with $p \leq 0.25$ in the bivariate analyses were entered into a multivariable regression analysis to identify the independent factors associated with nurses' competency. Significant factors reported at $P<0.05$.

Results: Atotal of 298 respondents completely returned questionnaire producing response rate of 96.0%. Majority 205(68.8%) were in age range of 36 to 55 years, 177(59.4%) were males, 236(79.2%) of them were working at referral hospital and 213(71.4%) served less than 5years. One hundred nine (36.6%) were competent on pain management Respondents who were working at medical with **[**AOR=2.05(1,02,4.12)],Nurses' who were working at surgical ward with **[**AOR=0.19(0.05,0.64)]and Nurse-Physician work relationship with **[**AOR=2.36(95%CI:1.36,4.08)] significantly associated with nurses' pain management competency.

Conclusion and Recommendation: The overall nurses' pain management competency level in Jimma zone, Public hospital is very low. Among many factors contributed to the nurses' patient pain management competency were nurse-physician work relationship, presence of protocol and working unit. Those show that Jimma public hospitals should design strategy to improve pain management competency. Nurses' pain management competency enhances utilization of protocols, that specifies pain management by unit and promote nurse-physician relation.

Key words: Competency, Pain Management, Nurses', Jimma Zone, Public Hospitals

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Declaration

I hereby certify that, I have read and evaluate this thesis entitled pain management competency and associated factors among nurses working in public hospitals, jimma zone, Oromia regional sate, southwest Ethiopia

. Prepared under my guidance by Abiru Neme, I recommend that it be submitted as fulfilling the thesis requirement.

Name: Abiru Neme

Sign_____ Date_____

APPROVED BY:

First Advisor: Mr. Gugsa Nemera (RN, BScN, MSc, Ass Professor, PhD Fellow)

Sign_____ Date_____

Second Advisor: Mr. Fantahun Ayalew (RN, BscN,MSc)

Sign_____ Date_____

As a member of Board of Examiners of MPH/MSc. thesis open defense Examination, I certify that I have read and evaluate the thesis prepared by Abiru Neme and examined the candidate. I recommended that the thesis be accepted as fulfilling the thesis requirement for the degree of Masters of Science in Adult Health Nursing

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External Examiner	Signature	Date

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Acronyms

AOD: Adjusted Odd Ratio

IASP- International Association Study of Pain

JU: Jimma University

JUMC: Jimma University Medical Center

IRB- Institutional Review Board

MOH- Ministry Of Health

WHO- World Health Organization

CHAPTER ONE: Introduction

1.1. Background

Even though pain is defined in many ways the most popular one is IASP definition which is an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage (1,2). Based on duration pain classified as acute or chronic or breakthrough (pain in controlled pain). Acute pain is rapid but diminishes under treatment.Chronic pain becomes progressively worst and reoccur intermittently.

Clinical manifestation of pain is a highly subjective and deeply personal experience. Patient may have as difficulty of concentrating, lack of energy, lost productivity, decreased quality of life and inability to complete everyday tasks(3).

Pain management is the alleviation of pain or a reduction in pain to a level that is acceptable to the client. It includes two basic types of nursing interventions: pharmacologic and non-pharmacologic. Also pain management is an important aspect of nursing care to promote healing, prevent complications and reduce suffering (4). The level of pain relief depends on health care providers competency to manage pain. To investigate this there need to assess pain management competency and associated Factors. Pain management competency refers to the understanding and practices of pain management domains:-multidimensional nature of pain, pain assessment and measurement, pain management and clinical condition of pain (5). These domains of pain management competencies address the fundamental concepts and complexity of pain management competency and aligned with the outline categories of the International Association for the Study of Pain management (6,7).

No studies have been conducted to identify pain management competency of nurses' regarding pain management in Jimma public hospitals, Oromia. This has left a large gap in the area of research investigating the nurses' pain management competency. The purpose of this study is therefore to describe nurses' level of pain management competency and associated factors at Jimma public hospitals, jimma zone, Oromia, Ethiopia.

1.2 Statement of Problem

Pain is a direct or indirect consequence of several diseases. Acute pain is a type of pain which occurs in a sudden onset as a result of tissue injury due to trauma, surgery, childbirth, and acute medical illness. Acute pain usually accompanied by physiological and behavioral responses. Its intensity may range from mild to moderate and accounts for more than two-thirds of visits to the emergency department (8). Chronic pain is constant or intermittent pain that persists beyond the expected healing time and that can seldom be attributed to a specific cause or injury. It may have a poorly defined onset, and it is often difficult to treat because the cause or origin may be unclear (9).

Unrelieved or undertreated pain can negatively affect an array of person's quality of life, including increasing functional impairment and disability, psychological distress (anxiety, depression) and sleep deprivation (8). Approximately 116 million Americans suffer from chronic pain alone (10). Likewise more than 25 million people experience acute pain as a result of injury or surgery.

In Australia, it is estimated that one in five people (about 3.2 Million Australians) including children and adolescents, was suffer chronic pain in their lifetime (11). In Ethiopia, a study conducted by the Ethiopian Public Health Association in 2013 showed that health care providers believe that pain was unmanaged due to lack of training and education, adequate absence of medications, poor knowledge and attitude among professionals lead to unreasonable fear of side-effects or addiction(12),

Factors affecting management of pain competency include: lack of nurse-physician collaboration, nurse related factors, organizational factors and nurse pain management domain. Nurses' pain management competency concerns how nurses manage pain.

There was increased focus on pain management programs and the development of new standards for pain assessment and management. But pain management competency is the most important need for patients. Ward nurses have a central role in pain management competency. It is ward nurses who spend more time with patients and have the responsibility for assessing patient's pain intensity, administering prescribed analgesic treatments and monitoring side effect of drugs (13). This needs pain management competency.

Pain management competency is the most fundamental part of the nurses' responsibility (14).To indicate gap, there is no such study done on pain management competency in Ethiopia.

CHAPTER TWO

2.1 Literature Review

Pain is a universal human experience and the most common cause of patient seeking medical care.

The literature review examines selected studies with nursing pain management competency and associated factor on pain management**.** According to the American Nurses Association (ANA), the nurses' role in pain management includes the entire nursing process, assessment of pain, plan of pharmacologic and non-pharmacologic pain management strategies, implementation and evaluation of the response of the patient to the interventions [15]. When examining the literature, no previous studies regarding pain management competency and factors associated with competency were found . Currently, lack of nurses' pain management competency s one of the most important issues in effective pain management**.** In this study pain management competencies are a combination of several factors like Nurse related factor, Nurse-physician work relationship , organizational factors and pain management competency domains.

Pain management competency refers to an inclusion of the nurses' ability to linkage attributes of particular situations in the domains of pain management competency**:** multidimensional nature of pain, pain assessment and measurement, pain management and clinical condition of pain(6, 7). The competencies address the fundamental concepts and complexity of pain; how pain is observed; collaborative approaches to treatment options and application of competencies in the context of various settings, populations and care teams (16). Competency of nurses' pain management measured by such domains. The tool to assess pain management competency has been used at ever and developed from year to year for other research related to pain. It wasn't used directly on pain management competency of nurses'. But it can measure pain management competency of nurses'.

For example, on multidimensional nature of pain: This domain focuses on the fundamental concepts of pain including the science, nomenclature and experience of pain and pain's impact on the individual and society. For example .the study conducted in Bangladesh indicated that, around 80.9% said that patient's spiritual beliefs may lead them to think pain and suffering are necessary .The same study also conducted on multidimensional nature of pain, in Bangladesh indicated that 23.7% nurses reported that patients who can be distracted from pain usually do not have severe pain. Also the study

indicated in Bangladesh reported that almost every respondent 98.9% of respondents correctly answered 'false' to 'patients should be encouraged to endure as much pain as possible before using an opioid'(17). Another study conducted on multidimensional nature of pain management competency in Gardner-Webb hospital University among nursing; indicated that 90.2% respondents correctly answered that elderly patients cannot tolerate opioids for pain relief (18).

Pain assessment and measurement domain of pain management competency: This domain relates to how pain is assessed, quantified and communicated, in addition to how the individual, the health system and society affect these activities. For example, the study conducted in Bangladesh indicated that 26.9% of nurses said that Vital signs are always reliable indicators of the intensity of a patient's pain**.** This study also reported that 53.2% gave correct answer for "If the source of the patient's pain is unknown, opioids should not be used during the pain evaluation period, as this could mask the ability to diagnose the cause of pain"(17). Another study conducted in Hong Kong indicated that the most accurate judge of the intensity of the patient's pain is the patient 63.8%(19).Similarly the study in this area also indicated that Children less than 11 years old cannot reliably report pain so nurses should rely solely on the parent's assessment of the child's pain intensity(19).

Pain management domain of pain management competency**:** This domain focuses on collaborative approaches to decision-making, diversity of treatment options, the importance of patient agency, risk management, flexibility in care and treatment based on appropriate understanding of the clinical condition. For example, the study conducted in Bangladesh indicated that 34% of respondents agree that the usual duration of analgesia of 1-2mg of morphine intravenous IV is 4-5 hourly and almost 81.9% did not support giving patients sterile water by injection (placebo) to determine if the pain is real(17). Another study conducted in Hong Kong indicated that Benzodiazepines are not effective pain relievers unless the pain is due to muscle spasm 36.3 %(19).

Clinical condition domain of pain management competency: It describes the unique pain assessment and management needs of patient for pain management. It explains how to assess and manage pain across settings and transitions of care. For example, the study conducted in Gardner-Webb hospital among nursing working at hospital identified that likelihood of patient developing respiratory depression (12.7%) and the study conducted in Bangladesh indicated that 54.3% believed that respiratory depression would occur in patients receiving long-term opioid therapy (17,18).

Another study was conducted in Jordanian on nurses; the two patient case studies were used to determine nurses' ability to make decisions correctly about pain assessment data and interventions. The study revealed that nurses relied on patient's appearance in assessing the pain and not depending on patients' statements. Unfortunately, only 6.7% of nurses in the **fi**rst case study and 10% in the second case study indicated they would administer the recommended amount of morphine on the basis of the assessment data(20).

Staff work relationship among Nurse-Physician is the important part of pain management competency. Nurse-Physician pain management competency described as "actions related to sharing information about pain management, participating in decision-making concerning pain management and providing comprehensive care to patients from a patient-centered pain(21). Lack of collaboration on pain management was the most that affect pain management competency of nurses'. From the study conducted in Japan indicated that, three factors on pain management between nurse-physician: sharing of patient information on pain management, joint participation on pain management and cooperativeness on pain management (22).

Nurses identified building relationships with physician as important. As a means of support, nurses valued regular contact with at least one physician in order to discuss clinical issues relevant to their specialist work for pain management competency. Nurses' had the opportunity to discuss matters with a physician as they arose, arrangements for formal, regular clinical supervision sessions were not always in focused on pain management competency (23). There have been no specific studies regarding Nurse-physician relationship on pain management competency in Ethiopia.

Some personal factors of nurses often contribute to nurse pain management competency. A nurses' past personal experience of pain and medication use has been found to be an important factor in changing their attitude towards pain management. This helps nurse to achieve optimal pain management outcome in their pain management competency. For example, study conducted in North-eastern United States indicated that 64.5% who answered yes to having had past personal pain experience that required medication or treatment **(**24**).**

Age, Sex, working unit, area of institution education may affect nurses' pain management competency. Nurses' who obtained their education from government have high competency on pain

management than private institution. Working unit affect nurses' competency of pain management: Due to their severity of pain that affect nurses' competency of pain management.

Nurse related factor affect pain management competency among nurses'.For example, Nurse related factor for pain management competency include: Reading Journal or book**,** in service training on pain management and pre-service training on pain management**.** Those who read Journal or book can appropriately manage pain. This enhances their competency of pain management.. For example, quantitative descriptive study conducted in Bangladesh indicated that two thirds (63.4%) of the nurses never read nursing journals, 26.8% did yearly, 5.4% did quarterly and 3.2% did it monthly. The nurses' pre-service training on pain management have led to improve pain relief for patients (25). Also the study conducted at Bangladesh indicates that around only 16.1% had taken in-service-training on pain management competency. The study conducted in Bangladesh indicated that, majority of the nurses had never had training on; pain assessment methods and tools(72.9%)(26**).**

Organizational factor is the most need for pain management competency of nurses. Organizational factors can affect pain management competency These are presence of Protocol and guidelines, medication availability, support and feedback on pain management. For example, the study conducted in Ireland, it was determined that more than half (57.4%) of the nurse always used a pain assessment tool for pain management for their pain management competency (27). Another study done in Ireland indicated that 38.3% respondent reported that they used a pain assessment tool frequently, with the remaining 4.3% of respondents rarely used pain assessment tool for their pain management competency (28).

For pain management, having pain protocol is most important. For example the study conducted in Bangladesh revealed that majority of the nurses (59.1%) stated that there was no pain management standard or protocol used as a basis in the hospital. On the other hand, 18.3% of the nurses stated that there was a pain management standard or protocol in their hospital (29). Pain management guidelines are essential regardless of the availability of well-defined guidelines to help nurses understand management of pain, postoperative pain is not relieved in most patients (30). Medication availability is the most important for nurses' pain management competency. For example World Health Organization (WHO) uses morphine consumption statistics as a broad indicator of progress to

improve pain relief. In 2003 Ethiopia had one of the lowest morphine /capita consumption 0.0005mg compared with the global mean of 5.85mg.Again in 2006, the consumption was reported as 0.0002mg/capita; Uganda 0.3136mg/capita; Mali 0.0181mg /capita; Sudan 0.0230 Kenya; 0.1292mg/capita(31).

For pain management competency having guidelines is very important. The study conducted at Uganda, it indicates that majority of respondents have /guidelines (78.8%).Not only having guideline is important for pain management competency reading is also important. The study conducted in Bangladesh most of the participants, 91.1% had not read any guidelines for pain management competency (19). The study conducted on perceived clinical competency among nursing in Gondar referral hospital indicated that 48.7 % of the respondents clinically competent on management of patient(32).

The reasons for this study in generally, may lie in the scant interest and attention of nurses regarding pain management competency and factors affecting pain management competency of nurses'

2.2. Significance of the study

Nurses are an essential component of pain management across all health care settings. To improve both the quality of care and healthcare outcomes or quality of life of patients, there is need to investigate the level of nurses' pain management competency as well as factors affecting pain management competency.

Based on the this findings, jimma Public hospitals will improve pain management competency among nurses'. They will make design, implement and evaluate nurses' competency of pain management.

Results from this study also enable hospitals to know nurses' competency of pain management and planning, evaluating competency of nurses' pain management development.

This study also will serve as a baseline data for further development of research on issues related to pain management competency for nurses' and researcher.

2.3. Conceptual Frame Work

This conceptual frame work developed after reviewing different relevant literature (18, 22, 23, 25, 26, 28,30). All boxes considered as factors and bring out pain management competency with given arrow Nurse related factor, staff work relationship and perception of organizational factors affect nurses' pain management competency. As it will be shown by figure below

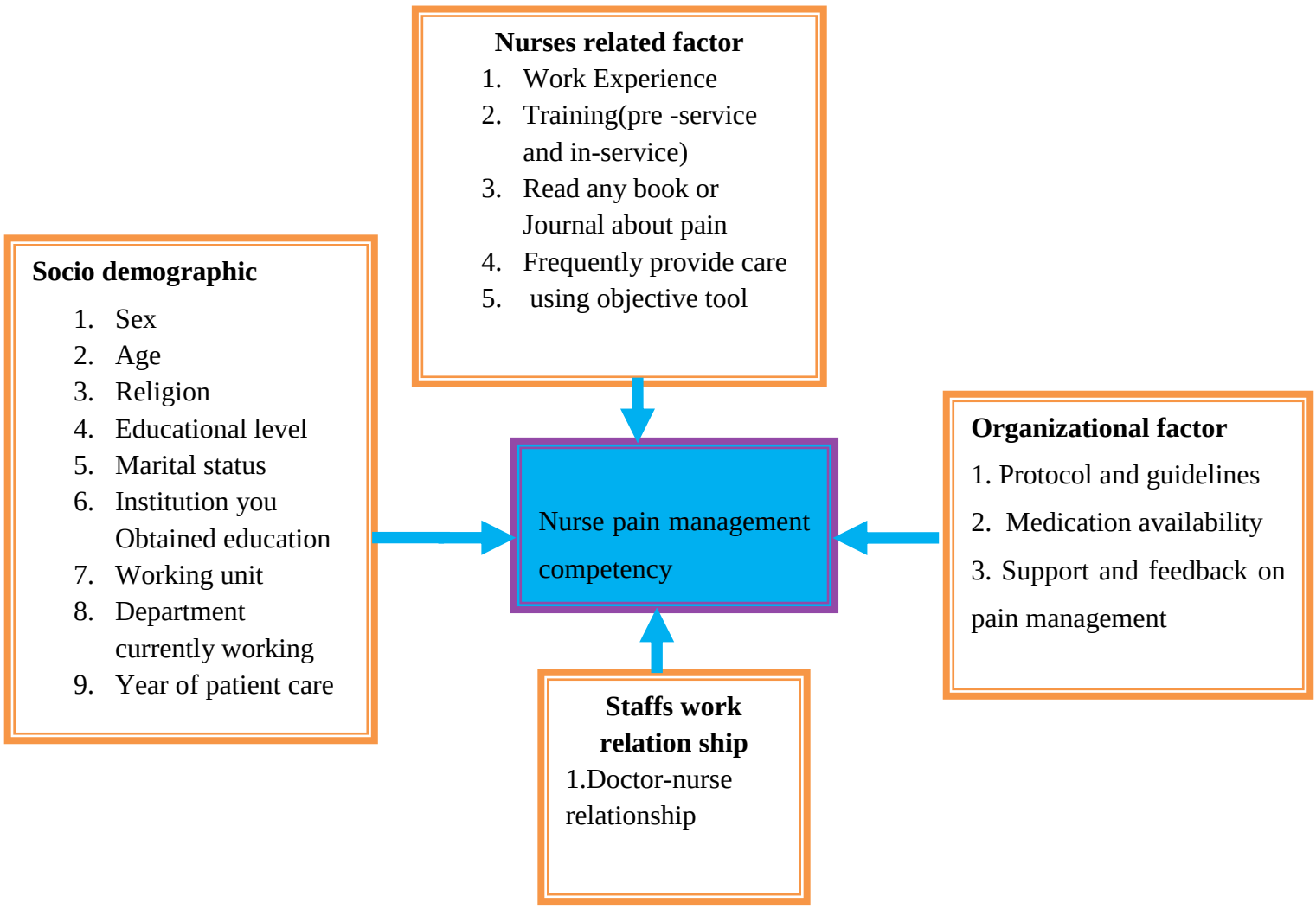

Figure 1: Conceptual framework on Nurses' pain management competency and associated factors on pain management competency (developed by investigator after reviewing literature)

CHAPTER THREE

Objectives of the Study

3.1 General Objective

To assess nurses' pain management competency and associated factors among nurses working in Public Hospitals, Jimma Zone , 2017.

3.2 Specific Objectives

1. To determine pain management competency level among nurses working in public Hospitals ,Jimma Zone,
2. To identify factors affecting pain management competency among nurses working in public Hospitals ,Jimma Zone

CHAPTER FOUR

Methods and Materials

4.1 Study area and period

The study was conducted in public Hospitals, in Jimma zone, Oromia Regional state. Jimma Zone consists of 24 woreda and one special woreda, Jimma town. Jimma is found 352 Km south west of Addis Ababa. The geographical location of Jimma 70 14' 31" to 80 54' 54" North and 350 52' 48" to 370 36' 14" East, Altitude ranges from 754 meter (m) to 3342 m above sea level. The total population of Jimma Zone including Jimma Town is around 3,296,018 from adjusted 2015 population projection. Rural population accounts 87.33%from the total population. Jimma is named after the former Kingdom of Jimma, which was absorbed into the former province of Kefa in 1932(34).

In this Jimma zone there are five public hospitals namely, Jimma University Medical center, Shenen Gibe, Limmu Genet, seka chekorsa and Agaro hospital. Jimma university medical center and Shenen Gibe hospitals are situated in Jimma town & the later three is in Limmu, seka & Agaro town. Limmu is 72 km. Agaro is a 45 km and seka chekorsa 20 km far from Jimma town. Except Jimma University Medical center all are district level. There were 703 nurses in those five public hospitals. Jimma University Medical center plays a pivotal role in this zone and it is the only teaching and referral hospital in the Southwestern part of the country and provides specialized clinical services to about 15 million people. It provides generalized service to in-patients and outpatients on a referral system in South-West part of the country. The study was conducted from March 1- March 28, 2017.

4.2. Study Design

Institutional based cross sectional study was conducted among nurses working in public hospitals, Jimma zone, (JUMC, Agaro, Seka Chekorsa, Limu Genet and Shenen gibe). This study design was preferred due to the fact that there was limited time to accomplish the study. Wards were selected in cooperation with nursing head of each hospital. The following hospital departments were included: Medical unit, surgical unit, ICU unit, Emergency, Gynecology and obstetrics ward, pediatric ward, Psychiatric ward and other wards (neonatology, NICU, Stroke, OR).

4.3 Population

4.3.1 Source population

The source populations were all nurses in public hospitals, Jimma zone.

4.3.2 Study population

The study population sampled nurses who were working in public hospitals, Jimma zone.

4.4. Inclusion and Exclusion Criteria

4.4.1. Inclusion Criteria

Nurses' who were working in wards and available during data collection time.

4.4.2. Exclusion Criteria

1. Nurses who were on annual leave
2. Sick leave during data collection period

4.5. Sample size and sampling technique/sampling procedure

4.5.1. Sample Size Determination

Sample size was determined using single population proportion formula by considering, 95 % confidence level and 0.05 margin of error. p=0.5 (in the absence of a similar previous study and to achieve the maximum possible sample size.

$\boldsymbol{n} = \left(\frac{z\ \alpha}{2}\right)^2$ $0.5(1-0.5)/(0.05)^2 = 384$

Since the total population was less than 10000, Correction formula was used and minimum sample size was obtained.

Nf=N*n/n+N=703*384/384+703=248

Considering 25% non-response rate=248*25%=62

nf=248+62=310

Finally =310 nurses' were included in the study.

4.5.2 Sampling technique and Sampling procedure

The total numbers of nurses (703) in the hospitals were considered and taken. First, total sample size (310) were estimated based on the total number of nurses' who were working in Jimma public hospitals. Next the determined sample was proportionally allocated to each hospital. The proportional allocation for each hospital are as follow: JUMC (558), Agaro (32),Seka chekorsa(32),Limmu Genet(35) and Shenen Gibe(46).Then the sample proportionally allocated to each hospitals. Finally nurses' who were working during study period and fulfill the inclusion criteria were selected by simple sampling technique, lottery method was used to select. Proportion allocation will be shown Figure 2:

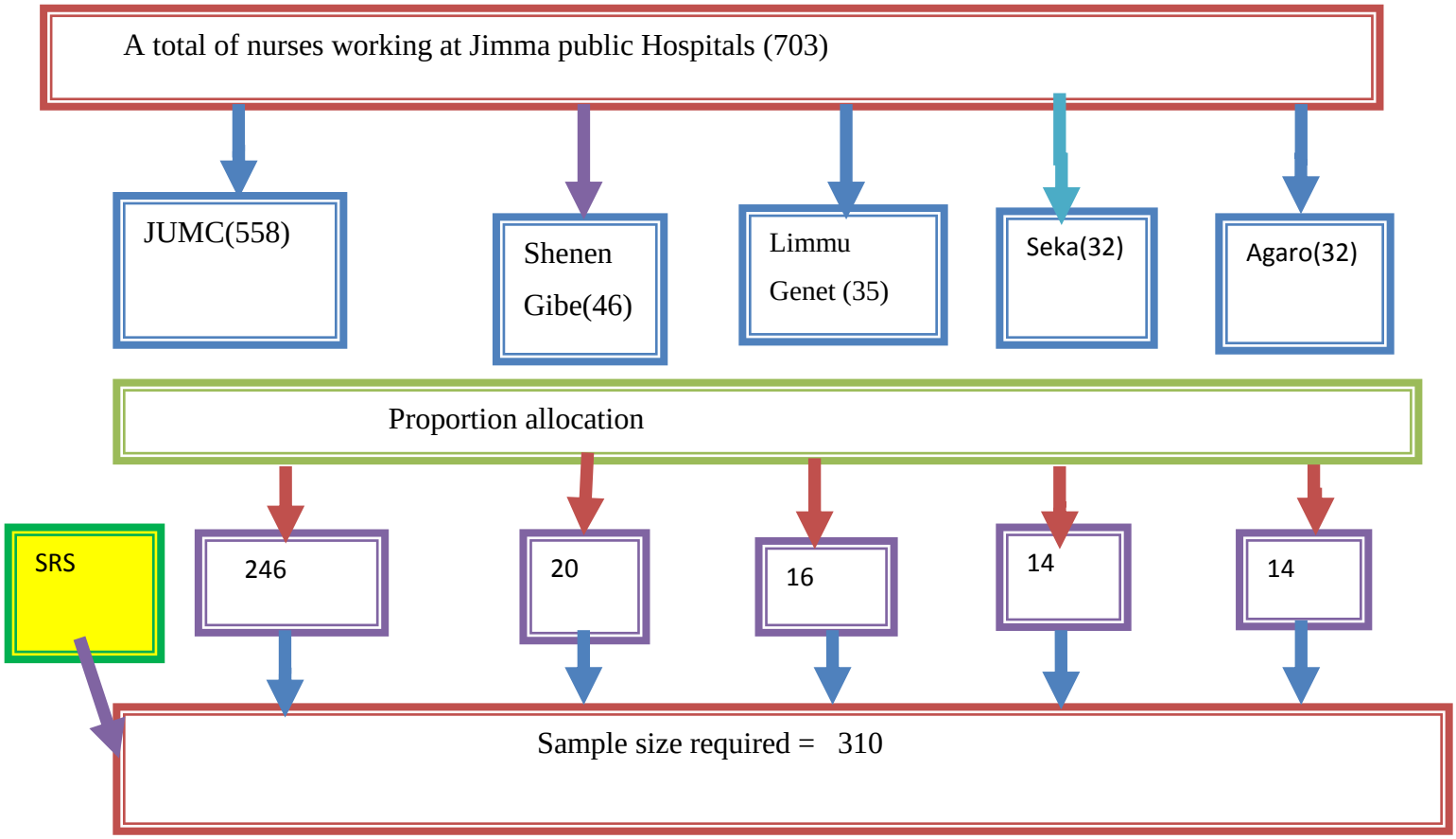

Figure 2: Schematic sampling procedure of selected Nurses under Jimma Public Hospitals, 2017.

4.6. Study Variables

4.6.1. Dependent Variable

Nurses' Pain management Competency

4.6.2. Independent Variables

1. **Socio demographic variables** (sex, age, marital status, Religion, Educational status, Experience, working area
2. **Nurse related factor** (frequently using of objective tool, personal pain experience)
3. **Organizational factor**(Hospital provide continuous support, have protocol, guidelines)
4. **Staff work relationship(**Nurse-Physician relationship**)**

4.7. Operational Definition

Pain management Competency: Nursing competency score of pain management assessed using 39 questions developed by Margo McCaffery (33). Each correct answer recorded as 1 and the incorrect answer recorde as 0 and entered into computer. Total score computed and converted to 100%.Those study subjects who scored 50% and above are regarded as competent, whereas those who scored below 50% are regarded as in competent.

4.8. Instruments and Data collection procedures

The data was collected by self-administered structured questionnaire which have five parts.

Part I: Socio demographic variables, **Part two :** Nurse Related Factor's questions, **Part three:** Staff Work Relationship (Nurse-Physician) questions, **Part four:** questions related to Organizational Factor, **Part Five:** Nurse Pain Management Competency Associated Factors

The tools were developed and taken after intensive review of literature and American Pain Society, the World Health Organization and the National Comprehensive Cancer Network Pain Guidelines (22, 23,33). The tool was developed in 1987 and has been used extensively from 1987 – present(33). The tool has been revised over the years to reflect changes in pain management practice. Content and construct validity have been established. The content of the KASRP was derived from pain management guidelines and standards including those of American Pain Society, The World Health

Organization (WHO) and the U.S. Agency for Health Care Policy and Research. The KASRP has well established psychometric properties. It has been recommended to avoid distinguish items a measuring either knowledge or attitudes due to the overlap in some item and to report the percentage of correct responses. This tool also used by different country and Ethiopia on pain management (24).

Training was given for data facilitator by the principal investigator to make them familiar with the data collection tool. After that based on their willingness to participate, questionnaire was distributed among nurses and clarification for any difficulty was the duty of the data facilitator and principal investigator. Principal investigator was assisted and the data facilitator as well as the participant nurses during data collection. Data was collected from nurses who were working in Jimma public hospitals. Finally completed questionnaire was returned to the supervisor.

4.9. Data Processing &Analysis

Data cleaned &checked for its completeness. SPSS 20.0 version for windows was used for data entry and analysis .Descriptive analyses were performed on all study variables. Binary logistic regression analyses used to see the strength of association between independent variables and dependent variable. Variables with $p \leq 0.25$ in the bivariate analyses were entered into a multivariable logistic regression analysis to identify the independent factors associated with nurses' competency. Significant factors reported at $P<0.05$. Results were presented in frequency, tables and charts.

4.10. Data Quality Control

The questionnaires were pre tested and data facilitators were trained for two day on the objectives of the study, sampling procedure and checking the completeness of questionnaires. The data were facilitated by 8 Bsc nurses having previous experience in data supervision. Continuous follow-up and supervision was performed by principal investigator throughout the data collection period. The collected data was checked for completeness before data entry.

4.11. Ethical Consideration

Before data collection, ethical clearance was obtained from IRB committee , Jimma University. Formal letter of cooperation was written to respective administrators. Confidentiality maintained at all levels of the study by not writing the respondents name. Respondent's involvement in the study

was on a voluntary basis; respondents who are unwilling to participate in the study and those who wish to quit their participation at any stage informed to do so without any restriction.

4.12. Dissemination of the Study Result

The study result copies will be given to Jimma university, School of Post graduate, School of nursing and Midwifery. In addition, dissemination could facilitated through public outreach like presentation in association, different conference and to those who are in need of these results and accordingly will advocate for those who can implement it, example to the Ministry of Health, Hospitals and health centre administration for the arrangement of some training for their particular staffs. Finally the manuscript will be submitted to scientific journals for possible publication.

CHAPTER FIVE

Results

5.1.Socio demographic characteristics

Two hundred and ninety eighty respondents completely responded, producing a response rate of (96%). Of total respondents 177(59.2%) were male,205(68.8%) were in age range of 36 -55 years, 128(42.8%) orthodox by religion, 181(61.5%) were bachelor degree holders,146 (48.8%) of them were single, 146(48.8%) married regarding their marital status, 236(79.2%) respondents were working at referral hospital, 73(24.5%) of them were working in Surgical ward, 213(71.4%) of respondents served less than 5years and more than three fourth of 226(75.6%) respondents attended their education at government institution**(Table1).**

Table 1: Socio demographic characteristics of respondents in Public hospitals Jimma zone, Oromia, South west Ethiopia, March, 2017

Variables	Category	Frequency (n=298)	Percentage (%)
Sex	Male	177	59.2
	Female	121	40.8
Age	18 – 35	57	19.0
	36-55	205	68.8
	≥ 55	36	12.2
Religion	Orthodox	128	42.8
	Muslim	81	27.3
	Protestant	77	25.9
	Catholic	5	1.7
	Wakefata	7	2.3

Continued.....

Educational level	Diploma	115	38.3
	Degree	181	61.2
	Master	2	.7
Marital status	Single	146	48.8
	Married	146	48.8
	Divorced/separated	4	1.3
	Widowed	2	.7
Health facility	Referral hospital	236	79.2
	District hospitals	62	20.8
	Total	298	100
Working unit	Medical	64	21.5
	Surgical	73	24.5
	ICU	21	7.2
	Emergency	33	11.1
	Gynecology and Obstetrics	17	5.8
	Pediatrics	38	12.8
	Psychiatrics	9	3.1
	Other(Stroke,OR,NICU)	42	14.0
	Total	298	100
Years of experience	<5	213	71.4
	5-10	72	24.2
	>10	13	4.4
	Total	298	100
Training institution	Government	226	75.6
	Private	72	24.4
	Total	298	100

5.2: Pain Management Competency respondents related factor

One hundred eighty eight (63.1%) have taken pre-service training. Only 138(46.3%) of respondents reported that they attended in-service training in the last six months. One hundred eighty eight (63.1%) read book or journal on pain management and applied the knowledge they gained on pain management. Most of them 228(76.5%) had personally experienced pain which required to take medication and most of them 101(44.3%) had mild pain at that times. Only 130(43.1%) of respondents reported that they had orientation on pain management as new staff during their starting patient pain management **(Table2).**

Table 2 :Distribution of Respondent Related Factor on Pain Management Competency in Public hospitals Jimma zone, Oromia, South west Ethiopia, March, 2017

Characteristics		Frequency	Percent
Pre-service training on pain management	Yes	188	63.1
	No	110	36.9
In service training on pain management	Yes	138	46.3
	No	160	53.7
Time when training taken	In the last six month	88	29.5
	One year ago	28	9.4
	Before one year	22	7.4
Read journal or book about pain management	Yes	188	63.1
	No	110	36.9
Application of knowledge about pain in daily practice	Yes	160	53.4
	No	28	9.7
provide care to patients' experiencing pain	every1-2 hour	103	34.6
	each shift	145	48.6
	At least once week	30	10.1
	Once month	11	3.7
	Never	9	3.0
Frequently using of objective tool while managing pain	Never	58	19.5
	Seldom	63	21.1
	Some times	119	39.9
	Always	58	19.5

Continued.....

Personally Experienced pain which required to take medication	Yes	228	76.5
	No	70	23.5
Perceived severity of experienced pain	Mild	101	44.30
	Moderate	98	43.00
	Severe	29	12.70
Orientation on pain management as new staff	Yes	130	43.10
	No	168	56.90

5.3 Nurse-Physician relationship on pain management competency

Three constructs of Nurse–physician collaboration on pain management were identified: sharing of patient information on pain management, joint participation on pain management competency and degree of cooperation on pain management competency .Regarding joint participation on pain management competency 179(60.1%) respondents reported that had poor relationship on pain management competency. One hundred sixty four (55.1%) respondents reported that on sharing of patient information on pain management competency there was poor relationship between nurse-physician. One hundred ninety five (65.43%) respondents reported that had poor relationship on pain management competency between nurse-physician **(Table3).**

Table 3: Distribution of Respondent relationship on Pain Management Competency in Public hospitals , Jimma zone, Oromia, South west Ethiopia, March, 2017

Nurse-Physician relationship item

Joint participation on pain management competency	Rarely(n%)	Sometimes(n%)	Usually(n%)	Always (n%)
The nurses and the physicians have a mutual understanding of the reasons for the change of pain management.	60(20.1%)	159(53.4%)	46(15.4%)	33(11.1%)
The nurses and the physicians check with each other concerning whether a patient has any signs of side effects or complications on pain management.	58(19.5	131(44.0%)	71(23.80)	38(23.80%)
The nurses and the physicians share information about a patient's reaction to explanations of his/her disease status and treatment methods.	55(18.50%)	107(35.90%)	94(31.50%)	42(14.10%)
The nurses, the physicians, and the patient have the same understanding of the patient's wish for cure and care.	75(25.20%)	122(40.90%)	79(26.50%)	22(7.40%)
Over all Joint participation on pain management competency	**Good**		**Poor**	
	119(39.9%)		179(60.1%)	
Sharing of patient information on pain management	Rarely(n%)	Sometimes(n%)	Usually(n%)	Always (n%)
The nurses and the physicians all know what has been explained to a patient about his/her condition or treatment of pain.	44(14.80%)	144(48.30%)	73(24.50%)	35(12.40%)
The nurses and the physicians share information to verify the effect of pain management.	53(17.80%)	124(41.60%)	88(29.50%)	33(11.10%)
The nurses and the physicians have the same understanding of the future direction of the patient's pain management.	75(25.20%)	122(40.90%)	79(26.50%)	22(7.40%)
The nurses and the physicians identify the key person in pain management.	67(22.60%)	109(36.70%)	82(27.60%)	39(13.10%)

Table Continued.....

Over all **Sharing of patient information on pain management**	Good		Poor	
	134(44.9%)		164(55.1%)	
Cooperativeness on pain management	Rarely(n%)	Sometimes(n%)	Usually(n%)	Always(n %)
The nurses and the physicians can easily talk about topics other than topic related to pain management.	89(30.10%)	127(42.90%)	56(18.90%)	24(8.10%)
The nurses and the physicians can freely exchange information or opinions about matters related to pain management.	74(24.90%)	138(46.50%)	63(21.20%)	22(7.40%)
The nurses and the physicians show concern for each other when they are very tired on pain management.	72(24.20%)	125(41.90%)	82(27.50%)	19(6.40%)
The nurses and the physicians help each other on pain management.	60(20.10%)	124(41.60%)	77(25.80%)	37(12.40%)
Overall Cooperativeness on pain management	Good		Poor	
	141(47.3%)		157(52.7%)	
Over all nurse-physician relationship	Good		Poor	
	103(34.57%)		195(65.43%)	

5.4. Organizational Factor on pain management

One hundred twenty nine (43.3%) of respondents reported that hospitals provide continuous support and feedback on pain management at the hospital. Also one hundred fifty nine (53.4%) respondents reported that the hospitals have pain management protocols. Only (46.0%) of respondents reported that hospitals have guidelines on pain management at the hospital. Regarding frequency of read guidelines majority of them 95(32.2%) read always. More than half of 179(60.1%) of participants reported that pain medications are available at hospitals **(Table4).**

Table 4: Characteristics of organizational factor affecting respondents on pain management competency in Public hospitals Jimma zone, Oromia, March ,2017

Organizational factors		Frequency	Percent (%)
Hospitals provide continuous support and feedback	Yes	**129**	**43.3**
	No	169	56.7
Hospitals have pain management protocols	Yes	**159**	**53.4**
	No	139	46.6
Have Guidelines in Hospital	Yes	**137**	**46.0**
	No	161	54.0
Frequency of Read guidelines	Always	95	32.2
	Monthly	94	31.9
	Quarterly	17	5.8
	Yearly	89	30.2
Pain medications are available	**Yes**	**179**	**60.3**
	No	119	39.7

5.5. Proportion of respondents who correctly and in correctly respond to questions regarding nurses' pain management competency

Interpreting each specific item separately enabled the researcher to identify and to know areas where nurses' are not competent on pain management competency**.** Regarding multidimensional nature of pain 192 (64.8%) respondents correctly identified that patients' spiritual beliefs may lead them to think pain and suffering are necessary. Only seventeen (5.7%) respondents correctly answered on multidimensional nature of pain. From pain assessment and measurement only 112 (37.6%) respondents correctly reported that Vital signs are always reliable indicators of the intensity of a patient's acute pain. Only 15(5.10%) respondents correctly answered on pain assessment and measurement. From clinical manifestation of pain one hundred sixty three (54.7%) respondents correctly reported that respiratory depression rarely occurs in patients who have been receiving stable doses of opioids over a period of months. From the study it was indicated that on pain management

majority 226 (76.1%) of respondents correctly identified that the term 'equianalgesia' means approximately equal analgesia and is used when referring to the doses of various analgesics that provide approximately the same amount of pain relief and only 23.9% of respondents incorrectly**(Table5).**

Table 5: Proportion of respondents who correctly and in correctly respond to questions regarding pain management competency in Public hospitals Jimma Zone, Oromia, South west Ethiopia, March ,2017.

Variables		Frequency	Percent
Multidimensional nature of pain			
Because their nervous system is underdeveloped, children under two years of age have decreased pain sensitivity and limited memory of painful experiences.	Correct	157	52.7
	Incorrect	141	47.3
Patients who can be distracted from pain usually do not have **severe pain.**	Correct	164	55.0
	Incorrect	134	45.0
Patients may sleep in spite of **severe pain.**	Correct	142	**47.7**
	Incorrect	156	52.3
Patients' spiritual beliefs may lead them to think pain and **suffering** are necessary.	Correct	192	64.4
	Incorrect	**106**	**35.6**
Narcotic/opioid addiction is defined as a chronic neuro biologic disease, characterized by behaviors that include one or more of the following: impaired control over drug use, compulsive use, continued **use despite harm, and craving**.	Correct	187	62.8
	Incorrect	111	37.2
Overall Multidimensional nature of pain	Correct	17	5.7
	Incorrect	281	94.3
Pain assessment and measurement		**Frequency**	**Percent**
The best approach for cultural considerations in caring for patients in pain **Patients should be individually assessed to determine cultural influences.**	Correct	126	42.4
	Incorrect	172	57.6
Vital signs are always **reliable indicators** of the intensity of a patient's acute pain.	Correct	112	**37.6**
	Incorrect	186	62.4

Giving patients sterile water by injection (placebo) is a **useful tes**t to determine **if the pain is real.**	Correct	121	40.6
	Incorrect	177	59.4
If the source of the patient's pain is unknown, opioids should not be used during the pain evaluation period, as this could mask the ability to **correctly diagnose the cause of pain.**	Correct	124	41.6
	Incorrect	174	58.4
The most accurate judge of the intensity of the patient's pain is **the patient.**	Correct	138	45.6
	Incorrect	160	54.4
Sedation assessment is recommended during opioid pain management because excessive sedation precedes **opioid-induced respiratory depression.**	Correct	211	71.0
	Incorrect	87	29.0
Children less than 11 years old cannot reliably report pain so clinicians should rely solely on the parent's assessment of the **child's pain intensity.**	Correct	140	47.1
	Incorrect	158	52.9
Patient A: Andrew is 25 years old and this is his first day following abdominal surgery. As you enter his room, he smiles at you and continues talking and joking with his visitor. Your assessment reveals the following information: BP = 120/80; HR = 80; R = 18; on a scale of 0 to 10 (0 = no pain/discomfort, 10 = worst pain/discomfort) he rates his pain as 8. A. On the patient's record you must mark his pain on the scale below. Circle the number that represents your assessment of Andrew's pain(8).	**Correct**	**72**	**23.7**
	Incorrect	226	75.3
Patient B: Robert is 25 years old and this is his first day following abdominal surgery. As you enter his room, he is lying quietly in bed and gri-maces as he turns in bed. Your assessment reveals the following information: BP = 120/80; HR = 80; R = 18; on a scale of 0 to 10 (0 = no pain/ discomfort, 10 = worst pain/discomfort) he rates his pain as 8. A. On the patient's record you must mark his pain on the scale below. Circle the number that represents your assessment of Robert's pain: (8)	Correct	**89**	**29.9**
	Incorrect	209	70.1
Over all Pain assessment and measurement	Correct	15	5.10
	Incorrect	283	94.90
Clinical manifestation of pain		Frequency	Percent
Respiratory depression rarely occurs in patients who have been	Correct	163	54.7

receiving stable doses of opioids over a period of months.	Incorrect	135	45.3
A patient with persistent cancer pain has been receiving daily opioid analgesics for 2 months. Yesterday the patient was receiving morphine 200 mg/hour intravenously. Today he has been receiving 250 mg/hour intravenously. The likelihood of the patient developing clinically significant respiratory depression in the absence of new co morbidity **is>1%.**	Correct	96	32.2
	Incorrect	202	67.8
Following abrupt discontinuation of an opioid, physical dependence is **manifested sweating, yawning, diarrhea and agitation with patients when the opioid is abruptly discontinued.**	**Correct**	**91**	**30.6**
	Incorrect	207	69.4
True regarding opioid induced respiratory depression **Obstructive sleep apnea is an important risk factor.**	Correct	119	40.2
	Incorrect	179	59.8
Over all clinical condition	Correct	16	5.36
	Incorrect	282	94.64
Pain management		Frequency	Percent
Aspirin and other nonsteroidal anti-inflammatory agents are not effective analgesics for painful bone metastases.	Correct	160	53.7
	Incorrect	138	46.3
Combining analgesics that work by different mechanisms may result in better pain control with fewer side effects than using a **single analgesic agent.**	Correct	168	56.4
	Incorrect	130	43.6
The usual duration of analgesia of 1-2 mg morphine IV **is 4-5 hours.**	Correct	124	41.6
	Incorrect	174	58.4
Opioids should not be used in patients with a history of substance abuse.	Correct	138	46.3
	Incorrect	160	53.7
Elderly patients cannot tolerate opioids for **pain relief**.	Correct	153	51.3
	Incorrect	145	48.7
Patients should be encouraged to endure as much pain as possible **before using an opioid**.	Correct	155	52.0
	Incorrect	143	48
After an initial dose of opioid analgesic is given, subsequent doses should be adjusted in accordance with the **individual patient's**	Correct	191	64.1
	Incorrect	107	35.9

response.			
Anticonvulsant drugs such as gabapentin (Neurontin) produce optimal pain relief **after a single dose.**	Correct	139	46.6
	Incorrect	159	53.4
Benzodiazepines are not effective pain relievers and are rarely recommended as part of an analgesic regiment.	Correct	166	55.7
	Incorrect	132	44.3
Vicodin (hydrocodone 5 mg + acetaminophen 300 mg) PO is approximately equal to 5-10 mg of morphine PO.	Correct	165	55.4
	Incorrect	133	44.6
The term 'equianalgesia' means approximately equal analgesia and is used when referring to the doses of various analgesics that provide approximately **the same amount of pain relief.**	Correct	226	76.1
	Incorrect	72	23.9
The recommended route of administration of opioid analgesics for patients with persistent cancer-related pain is **oral**.	Correct	63	21.1
	Incorrect	235	78.9
The recommended route administration of opioid analgesics for patients with brief, severe pain of sudden onset such as trauma or postoperative pain **is Intravenous**.	Correct	186	62.4
	Incorrect	112	37.6
The drug of choice for the treatment of prolonged moderate to severe pain for cancer **patients is morphine.**	Correct	178	60.1
	Incorrect	110	39.9
The most likely reason a patient with pain would request increased doses of pain medication is patient is **experiencing increased pain.**	Correct	122	40.9
	Incorrect	176	59.1
Analgesics for post-operative pain should initially be given a **around the clock on a fixed schedule.**	**Correct**	**46**	**15.4**
	Incorrect	252	84.6
The drug that is useful for treatment of cancer pain is **Ibuprofen,Hydromorhone,Gabapentin**	Correct	115	38.6
	Incorrect	183	61.4
Patient who develop pain already have an alcohol and/or drug abuse problem of **5 - 15%.**	Correct	145	48.8
	Incorrect	153	51.2
The time to peak effect for morphine given IV is **15 min.**	Correct	177	59.6
	Incorrect	121	40.1

Your assessment, Andrew, is made two hours after he received morphine 2 mg IV. Half hourly pain ratings following the injection ranged from 6 to 8 and he had no clinically significant respiratory depression, sedation, or other untoward side effects. He has identified 2/10 as an acceptable level of pain relief. His physician's order for analgesia is "morphine IV 1-3 mg q1h PRN pain relief." Check the action you will take at this time. (**Administer morphine 3 mg IV now)**	Correct	69	23.2
	Incorrect	229	76.8
Your assessment, Robert , is made two hours after he received morphine 2 mg IV. Half hourly pain ratings following the injection ranged from 6 to 8 and he had no clinically significant respiratory depression, sedation, or other untoward side effects. He has identified 2/10 as an acceptable level of pain relief. His physician's order for analgesia is "morphine IV 1-3 mg q1h PRN pain relief." Check the action you will take at this time: (**Administer morphine 3 mg IV now)**	Correct	65	21.8
	Incorrect	233	71.2
Overall pain management	Correct	5	1.68
	Incorrect	293	98.32
Over all pain management domains	Correct	19	6.37
	Incorrect	289	93.63

5.6. Participant Level of competency on pain management competency.

The result indicates that majority189 (63.4%) of respondents were not competent on pain management competency and only 109(36.6%) are competent on pain management competency. The figure 3 below indicates nurses' level of pain management competency.

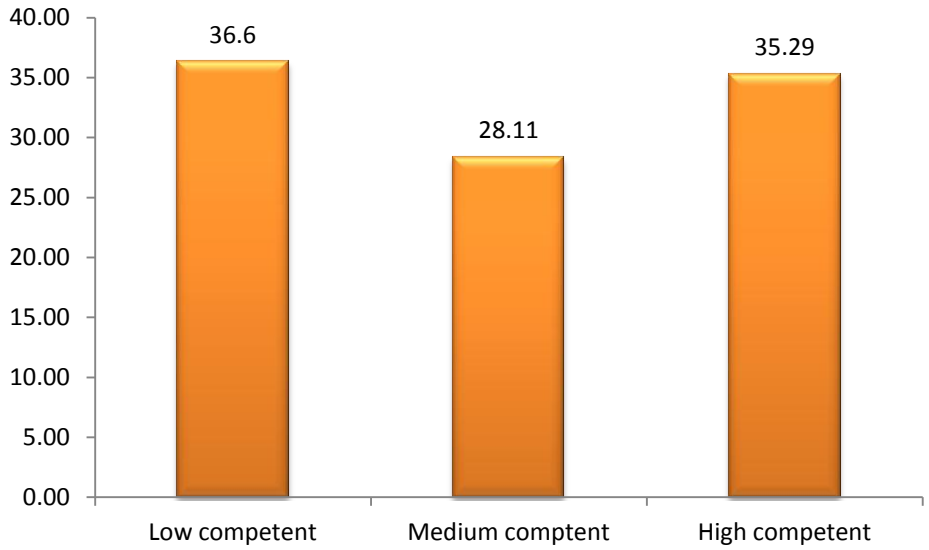

Figure 3: Level of competency on pain management competency among study subjects at Public Hospitals Jimma zone, Oromia, from March 1-28,2017

5.7. Factors affecting nurses pain management competency

Findings of this study showed that nurses' those who rated the overall nurse-physician relationship as good are 2.4 times more likely competent on hospitalized patient pain management than those who rated as poor with (AOR=2.36(1.36,4.08)].Respondents who were working at medical two times more competent on patient pain management than maternal ward with **[**AOR=2.05(1,02,4.12)]. Respondents who were working at surgical ward 81% less likely competent on patient pain management than maternal ward with **[**AOR=0.19(0.05,0.64)]. A significance level of P<0.007 was accepted as statistically significant **(Table6).**

Table 6: Bivariates and multivariates logistic regression analysis shows the association of nurse related factor, and Staff work relationship with level of pain management competency among respondent at Public Hospitals, Jimma zone, Oromia Regional state, March,2017

Variable	Category	Competency level		COR(95%CI)	AOR(95%CI)	P-value
		Competent	Incompetent			
Preservice	Yes	75(46.9%)	85(53.13%)	1.63(0.98,2.75)	1.27(0.707,2.28) **	0.42

training on pain	No	7(25%)	21(75%)	1	1	
Have you personal experience pain	Yes	85(38,6%)	135(61.4)	1.93(1.04,3.55) *	1.87(0.97,3.59)	0.061
	No	17(5.90%)	52(17.9%)	1	1	
Orientation on pain management	Yes	65(40.9%)	94(59.1%)	1.73(1.06,2.81)*	1.52(0.88,2.62)	.0.132
	No	42(30.2%)	97(69.8%)	1	1	
Read Guidelines on pain	Yes	52(39.4%)	80(60.6%)	.71(0.42,1.21) *	0.63(0.35,1.12)	0.12
	No	50(31.8%)	107(68.2%)	1	1	
Protocol facility	yes	65(40.9%)	94(59.1%)	1.7(1.04,2.75) *	1.59(0.908,2.81)	0.104
	no	42(30.2%)	97(69.8%)	1	1	
Working Unit	Medical	34(33.3%)	68(66,7%)	2.0(1.04,3.85) *	2.05(1,02,4.12) **	0.044
	surgical	35(50.72%)	34(49.28%)	0.27(0.085,0.83) *	0.19(0.05,0.64) *	0.007
	Maternal health	29(34.12%)	85(65.88%)	1	1	

Nurse-Physician work relationship on pain management competency

Nurse-physician relationship	Category	Competent	Incompetent	COR	AOR	P -Valu
Over all	Good	70(44.0%)	89(56.0%)	2.34(1.04,3.88) *	2.36(1.36,4.08) * *	0.005
	Poor	32(25.2%)	95(74.8%)	1	1	

COR=Crude odd ratio, AOR=Adjusted odd ratio, CI=confidence interval

*Variables which had association with Pain management competence by COR

** Variables which had association with Pain management competence by AOR

***significant at <0.005*

CHAPTER SIX

Discussion

This research is the first to provide data on the level of pain management competency among nurses' working in Jimma public hospitals, Jimma zone, Oromia regional state. The tool used in this present study has also been utilized in international studies with nurses and anesthetists from a variety of clinical backgrounds.

In this study effort has been made to identify level of nurses' pain management competency. The study indicated that the overall 36.6% of the study respondents were competent on pain management. This finding is lower as compared to the study conducted in Gondar referral hospital on competency nurses' patient management which was 48.7%)(32).This might be due to lack of training on pain management.

The study revealed that 55.0% patients who can be distracted from pain usually do not have severe pain. This figure is high as compared to the study conducted in Bangladesh in which 23.7% nurses reported that patients who can be distracted from pain usually do not have severe pain (17). This might be due to the fact that hospital had protocol. In this study 51.3%nurses' reported that elderly patients cannot tolerate opioids for pain relief. This finding is lower as compared to with study conducted in Gardner-hospital which indicated that 90.2% respondents correctly answered that elderly patients cannot tolerate opioids for pain relief (18). This might be nurses' were not knowledgeable pain medication that was indicated for elderly patients**.** Nurses' in this study reported that 64.4% patients' spiritual beliefs may lead them to think pain and sufferings are necessary. This figure is lower as compared to the study conducted in Bangladesh which was 80.9% **(**17**)**.This might be because of nurses' lack patients' spiritual belief about pain management . Hence, the hospital needs to work to increase the cultural competency of nurses.

In this study,37.6% of nurses' said Vital signs are always reliable indicators of the intensity of a patient's pain .This figure is high as compared to 26.9% in Bangladesh(17**).** The finding underscores that nurses' know more as vital sign are not reliable indicators of the patient assessment and measurement. In our finding 41.6% of nurses said that if the source of the patient's pain is unknown, opioids should not be used during the pain evaluation period, as this could mask the ability to correctly diagnose the cause of pain**.** This finding is low as compared to study conducted in

Bangladesh in which 53.2% gave correct answer for the same question (17).This finding showed that nurses' need to know pain evaluation period after source has been identified. The finding also indicated that 45.6%.respondents correctly answered that the most accurate judge of the intensity of the patient's pain is the patient This figure is high as compared to the study conducted in Hong kong in which 36.3% respondents reported that the most accurate judge of the intensity of the patient's pain is the patient (19).This might be due to nurses' awareness on assessment of pain management.

The study indicated that 41.1% respondent correctly answered the usual duration of 1-2 mg morphine IV is 4-5 hours. . This study is high when compared to the study conducted in Bangladesh in which 34% of respondents agree that the usual duration of analgesia of 1-2mg of morphine intravenous IV is 4-5 hourly (17). The finding underscores that nurses' need to know the usual duration of analgesia administration. In our study, 40.6% of nurses responded affirmatively to a question "Giving patients sterile water by injection (placebo) is a useful test to determine if the pain is real". The finding is much better than the finding of study conducted in Bangladesh, in which 81.9% did not support giving patients sterile water by injection (placebo) to determine if the pain is real (17).This indicated that nurses' need to know real pain testing method. The result also indicated that 47.1% Children less than 11 years old cannot reliably report pain so clinicians should rely solely on the parent's assessment of the child's pain intensity. The finding is low as compared to the study conducted in Hong Kong in which 63.7% respondent reported that Children less than 11 years old cannot reliably report pain so nurses should rely solely on the parent's assessment of the child's pain intensity (19). Because Nurses' do not believe pain reported by children because they might think that children's understanding of pain is limited.

The respondents reported that 54.7 %Respiratory depressions rarely occurs in patients who have been receiving stable doses of opioids over a period of months. It is consistent with study done in Bangladesh it was 54.3% believed that respiratory depression would occur in patients receiving who have been receiving stable doses of opioids over a period of months (17). The study revealed that, From the two patient case studies were used to determine nurses' ability to make decisions correctly about pain assessment data and interventions. Results showed that nurses might assess the pain score of a grimacing patient in comparison with a smiling patient as indicative of increased pain even though both patients reported the same pain score. Results revealed that nurses gave a lower pain score to the smiling patient as compared with the grimacing patient and administered less dose of

analgesia to the smiling patient. Thus, more nurses correctly assessed pain when the patient grimaced than when the patient was smiling. The study revealed that nurses relied on patient's appearance in assessing the pain and not depending on patients' statements. Unfortunately, only 23.2% of nurses' in the first case study and 21.8 % in the second case study indicated they would administer the recommended amount of morphine on the basis of the assessment data. This finding is high as compared to the study conducted in Jordanian,6.7% in the first case of patient and 10% in the case of second patient(20).One possible explanation of this finding is that nurses' were not adequately trained to understand the concentration of opioid doses and its administration.

In our study, 53.4% respondents reported that the hospitals have pain management protocols. This figure is higher when compared to the finding of the study conducted in Bangladesh, in which 18.3% of the nurses stated that there was a pain management standard or protocol in their hospital (26). This may increase nurse pain management competency. Also 46.0% of our respondents reported that the hospital has guidelines on pain management. This finding is lower when compared to the study conducted in Uganda, in which majority of respondents reported that their hospital has /guidelines which was (78.8%) (19).The presence of guideline may affect nurses' competency of pain management**.** In the present study 60.1% of study participants reported that pain medications were available at hospitals. It was inconsistent with WHO 2006 report on Ethiopian morphine per capita consumption which found 0.0002 mg/capita. However, it was lower when compared to global mean of 5.85mg (29). For this study we need to have follow up research for nurses' pain management competency. There was significant association between those who had pain management protocol than those who hadn't pain management protocol on pain management competency. Those hospitals need to have pain management protocol.

The finding indicated that 46.3% of respondents reported that they had in-service training on pain management competency. This figure is lower when compared to the study conducted in Ugandan and Irish studies in which 69% and 62.8 % reported that they had in-service training on pain management (19,26). This implies that the majority of nurses' in our study didn't get training regarding pain management competency**.** The hospital, therefore, needs to give in-service training for nurses' regarding competency of nurses' pain management. Nurses' those who rated the overall

nurse-physician relationship as good are 2.4 times more likely competent on hospitalized patient pain management than those who rated as poor with .Respondents who were working at medical two times more competent on patient pain management than maternal ward.This might be medical ward is critical area and well trained nurses' assigned to medical ward .Nurses' who were working at surgical wad 81% less likely competent on patient pain management than maternal ward .This might be Surgical ward is critical working area and well trained nurses' assigned to surgical ward.

The finding indicated that 76.5% respondents reported that they had personally experienced pain which required to take medication. This finding is higher compared to North-eastern united states indicated that 64.5% who answered yes to having had past personal pain experience that required medication or treatment**(**23).This might be due to nurses' work busy. It increases their competency of pain management.

There is no significant association between age of respondents, working area of respondents, sex, year of patient care and in-service training.

Strengths

This study has tried to assess the nurses' pain management competency and associated factors among nurses at Public Hospitals, Jimma Zone, Oromia Regional state. At the time of designing the research proposal and before data collection questionnaire well checked by Advisor. Data supervisors were trained, questionnaires were tested and necessary corrections were made. Simple random sampling technique was used to give equal chances for all study populations and can be generalized for the general population nurses working in Public Hospitals, Jimma Zone).In addition to that, the field activities of the data collection were closely observed, high response rate the data was entered, and cleaned thoroughly by the principal investigator. These were the strengths of the study which are highly believed to minimize the possibility of systematic bias.

Limitations of the study

Since it was study focused on competency, it would have been better participant observation technique had been employed as data collection method. But, because of time constraints, we could not incorporate such techniques. Too little literature were available and shortage of recently conducted studies are some of the limitation. Future researchers may fill the gap.

CHAPTER SEVEN

Conclusion and Recommendation

7.1 Conclusion

The overall nurse' pain management competency level in Jimma zone, Public hospital is very low. Among many factors contributed to the nurses' patient pain management competency are nurse-physician work relationship, hospital having protocol and working unit .Nurse related factor like using objective tool on pain management, read any book or journal about pain management, had association with nurse pain management competency.

7.2. Recommendation

The researcher recommends having future research nurses' competency of pain management. The hospital need to provide training for nurses', using objective tool on pain management competency and reading journal or books about pain for nurse on pain management is the most important for improvement of nurses' competency on pain management. Those show that Jimma public hospitals should design strategy to improve pain management competency. Nurse pain management competency enhances utilization of protocols, that specifies pain management by unit and promote nurse-physician relation.

This research initiates another preferably observational study in a greater number of clinical settings with a larger sample size to enhance generalizability.

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Questionnaires

JIMMA UNIVERSITY

INSTITUTE OF HEALTH

1. Information Sheet and informed consent form for hospital manager

My name is ----------. I am studying for my Master's degree at Jimma University, Institute of Health. I kindly request you to give me a permission to conduct the study in this hospital on Pain management competence and associated factor among nurses working in public hospitals, Jimma zone, Oromia Regional state, South west Ethiopia, 2017

Purpose of the study

The purpose of this study is to write a thesis as a partial requirement for the fulfillment of a Master's program in Adult health Nursing for the principal investigator. The result of this study will provide information about nurses' regarding pain management competence and associated factor. The study also helps the nurse manager to strengthen supervisory role in overseeing the quality of nursing care for patients. The results of the study may lead the nurse managers to formulate guidelines for the implementation of pain management protocol.

Procedure and duration

Nurses who will be worked in Medical, Surgical, Emergency, ICU, Gynecology and obstetrics pediatric ward and psychiatric ward will interviewed by using a questionnaire and the Nurses using a questionnaire to fill it by themselves. It will take 30minutes.

Benefits and risk

The findings from this research may reveal important information for hospital managers. There is no risk at all from this study. This will not label nurses for any loss of benefits

Confidentiality and Rights

The information nurses will provide us will be confidential. There will be no information that will identify nurses in particular. Participation for this study is fully voluntary. Nurses have the right to declare to participate or not in this study.

Declaration of informed voluntary consent

I have read the participant information sheet. I have clearly understood the purpose of the research, the procedures, the risks and benefits, issues of confidentiality, the rights of participating and the contact address for any questions .I have been given the opportunity to ask questions for things that may have been unclear. I was informed that I have the right to stop this study from being conducted in this hospital at any time. Therefore, I declare my voluntary consent for the student to conduct the study in this hospital with my initials (signature) as indicated below.

Address of principal Investigator: abiruneme@gmail.com

Address of advisor:gugsanemera@gmail.com

Signature of participant ---------- Signature of data collector----------

Date ___/___/___.

PLEASE ENCIRCLE FOR YOUR ANSWER (Give your answer accordingly)

Part I: Socio demographic

	Question	Response categories
Q101	Age	-------Years
Q102	Sex	1. Male 2. Female
Q103	Marital status	1. Single 2. Married 3. Divorced/separated 4. Widowed
Q104	Level of education	1. Diploma in Nursing 2. Degree in Nursing 3. Master degree in Nursing

Q105	Religion	1. Orthodox 2. Muslim 3. Catholic 4. Protestant 5.Other(specify----------)	
Q106	Where are you working?	1.JUMC 2.Agaro 3.Limmu genet 4.Shenen Gibe 5.Seka chekorsa	
Q107	What is your department Currently you are working?	1. Medical unit 2. Surgical unit 3. ICU unit 4. Emergency	5. Gynecology and obstetrics ward 6. pediatric ward 7. Psychiatric ward 8. Other (specify----------)
Q108	How many years of patient care experience do you have as nurse?	-----Years	
Q109	From which institution do you obtained your training?	1. Governmental Institution 2. Private institution	

PART II:NURSE RELATED FACTOR

	Question	**Response Category**
Q203	During your life school do you have pre-service training on pain management?	1.Yes 2.No
Q204	Have you ever attended any in-service training on pain management?	1.Yes 2.No
Q205	If yes to question number **204** when	1. In the last six month 2. One year a go 3. Before one year a go
Q206	Do you read any book or journal about pain	1. Yes

	management?	2. No
Q207	If yes to question **206**, Have you applied knowledge gained from books into your daily practice?	1. Yes 2. No
Q208	How often do you provide care to patients' experiencing pain?	1. Every 1-2hour 2. Each shift 3. At least once a week 4. Once a month 5. Never
Q209	How frequently are you using objective tool while assessing pain	1. Never 2. Seldom 3. Some times 4. Always

Personal Pain Experience

Q210	Have you personally had any experience with pain which required that you take pain medication?									**1.** Yes **2.** No	
Q211	If yes to question46.Please circle the number that represents the level of pain you had at that time										
	0 (*no pain/ discomfort)*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	8	9	10(Worst pain/discomfort)
Q212	Do you have orientation on pain management as new staff?									1.Yes 2.No	

	Part III: Staff Work Relation Ship				
	Joint participation				
	Questions	**Response**			
		Rarely	**Sometimes**	**Usually**	**Always**
Q301	In the event of a change in treatment plan, the nurses and the physicians have a mutual understanding of the reasons for the change of pain management	1	2	3	4

Q302	The nurses and the physicians check with each other concerning whether a patient has any signs of side effects or complications of pain management.	1	2	3	4
Q303	The nurses and the physicians share information about a patient's reaction to explanations of his/her disease status and treatment methods of pain management.	1	2	3	4
Q304	The nurses, the physicians, and the patient have the same understanding of the patient's wish for pain management.	1	2	3	4
	Sharing of patient information on pain management				
Q305	The nurses and the physicians all know what has been explained to a patient about his/her condition or pain management.	1	2	3	4
Q306	The nurses and the physicians share information to verify the effect of pain management.	1	2	3	4
Q307	The nurses and the physicians have the same understanding of the future direction of the patient's pain management.	1	2	3	4
Q308	The nurses and the physicians identify the key person in a patient's life for pain management.	1	2	3	4
	Cooperativeness				
Q309	The nurses and the physicians can easily talk about topics other than topic related to work pain management	1	2	3	4
Q310	The nurses and the physicians can freely exchange information or opinions about matters related to work on pain management.	1	2	3	4
Q311	The nurses and the physicians show concern for each other when they are very tired on pain management	1	2	3	4
Q312	The nurses and the physicians help each other on pain	1	2	3	4

	management				

PART IV: Perception of Organizational Factor

Q401	Do you think Continuous assessment of pain and medication effectiveness is necessary for good pain management?	1.Yes 2.No
Q402	Do you have protocol for pain management in your facility?	1.Yes 2.No
Q403	Organizations can enhance pain management?	1.Yes 2.No
Q404	Do you have a pain guidelines or standard in your organization?	1.Yes 2.No
Q405	If, yes how often you read guidelines	1.Always 2.Monthly 3.Quarterly 4.yearly
Q406	Is guideline for adult and children the same in your facility?	1.Yes 2.No
Q407	The regular availability of appropriate medications in daily patient care is important to organizational for effective pain management?	1.Yes 2.No

PART V: NURSE PAIN MANAGEMENT COMPETENCE

Please respond to the following question by circling on **T** for **True** statement and **F** for **False** statement**.**

	QUESTION	**RESPONSE**	
Q501	Vital signs are always reliable indicators of the intensity of a patient's acute pain.	**T**	**F**

Q502	Because their nervous system is underdeveloped, children under two years of age have decreased pain sensitivity and limited memory of painful experiences.	**T**	**F**
Q503	Patients who can be distracted from pain usually do not have severe pain.	**T**	**F**
Q504	Patients may sleep in spite of severe pain.	**T**	**F**
Q505	Aspirin and other non- steroidal anti-inflammatory agents are not effective analgesics for Painful bone metastases.	**T**	**F**
Q506	Respiratory depression rarely occurs in patients who have been receiving stable doses of opioids over a period of months.	**T**	**F**
Q507	Combining analgesics that work by different mechanisms (e.g., combining an NSAID with an opioid) may result in better pain control with fewer side effects than using a single analgesic agent.	**T**	**F**
Q508	The usual duration of analgesia of 1-2 mg morphine IV is 4-5 hours.	**T**	**F**
Q509	Opioids should not be used in patients with a history of substance abuse.	**T**	**F**
Q510	Elderly patients cannot tolerate opioids for pain relief.	**T**	**F**
Q511	Patients should be encouraged to endure as much pain as possible before using an opioid.	**T**	**F**
Q512	After an initial dose of opioid analgesic is given, subsequent doses should be adjusted in accordance with the individual patient's response.	**T**	**F**
Q513	Giving patients sterile water by injection (placebo) is a useful test to determine if the pain is real.	**T**	**F**
Q514	Vicodin (hydrocodone 5 mg + acetaminophen 300 mg) PO is approximately equal to 5-10 mg of morphine PO.	**T**	**F**
Q515	If the source of the patient's pain is unknown, opioids should not be used during the pain evaluation period, as this could mask the ability to correctly diagnose the cause of pain.	**T**	**F**
Q516	Anticonvulsant drugs such as gabapentin (Neurontin) produce optimal pain relief after a single dose.	**T**	**F**
Q517	Benzodiazepines are not effective pain relievers and are rarely recommended as part of an analgesic regiment.	**T**	**F**

Q518	Narcotic/opioid addiction is defined as a chronic neuro biologic disease, characterized by behaviors that include one or more of the following: impaired control over drug use, compulsive use, continued use despite harm, and craving.	**T**	**F**
Q519	The term 'equianalgesia' means approximately equal analgesia and is used when referring to the doses of various analgesics that provide approximately the same amount of pain relief.	**T**	**F**
Q520	Sedation assessment is recommended during opioid pain management because excessive sedation precedes opioid-induced respiratory depression.	**T**	**F**
Q521	Children less than 11 years old cannot reliably report pain so clinicians should rely solely on the parent's assessment of the child's pain intensity.	**T**	**F**
Q522	Patients' spiritual beliefs may lead them to think pain and suffering are necessary.	**T**	**F**

Multiple Choices – Place a✓ on the correct answer.

S.NO	**QUESTION**	**RESPONSE**
Q601	The recommended route of administration of opioid analgesics for patients with persistent cancer-related pain is	A. intravenous B. intramuscular C. subcutaneous D. oral E. rectal
Q602	The recommended route administration of opioid analgesics for patients with brief, severe pain of sudden onset such as trauma or postoperative pain is	A. intravenous B. intramuscular C. subcutaneous D. oral E. rectal
Q603	Which of the following analgesic medications is considered the drug of choice for the treatment of prolonged moderate to severe pain for cancer patients?	A. Codeine B. morphine C. meperidine D. tramadol

Q604	A 30 mg dose of oral morphine is approximately equivalent to:	A. Morphine 5 mg IV B. Morphine 10 mg IV C. Morphine 30 mg IV D. Morphine 60 mg IV
Q605	A patient with persistent cancer pain has been receiving daily opioid analgesics for 2 months. Yesterday the patient was receiving morphine 200 mg/hour intravenously. Today he has been receiving 250 mg/hour intravenously. The likelihood of the patient developing clinically significant respiratory depression in the absence of new co morbidity is----	A. less than 1% B. 1-10% C. 11-20% D. 21-40% E. > 41%
Q606	The most likely reason a patient with pain would request increased doses of pain medication is-----	A. The patient is experiencing increased pain. B. The patient is experiencing increased anxiety or depression. C. The patient is requesting more staff attention. D. The patient's requests are related to addiction.
Q607	Analgesics for post-operative pain should initially be given	A. around the clock on a fixed schedule B. only when the patient asks for the medication C. only when the nurse determines that the patient has moderate or greater discomfort
Q608	The most accurate judge of the intensity of the patient's pain is----------	A. the treating physician B. the patient's primary nurse C. the patient D. the pharmacist E. the patient's spouse or family
Q609	Which of the following is useful for treatment of cancer pain?	A. Ibuprofen (Motrin) B. Hydromorphone (Dilaudid)

		C. Gabapentin (Neurontin) D. All of the above
Q610	Which of the following describes the best approach for cultural considerations in caring for patients in pain	A. There are no longer cultural influences in the U.S. due to the diversity of the population. B. Cultural influences can be determined by an individual's ethnicity (e.g., Asians are stoic, Italians are expressive, etc). C. Patients should be individually assessed to determine cultural influences. D. Cultural influences can be determined by an individual's socioeconomic status (e.g., blue collar workers report more pain than white collar workers).
Q611	How likely is it that patients who develop pain already have an alcohol and/or drug abuse problem?	A. < 1% B. 5 – 15% C. 25 - 50% D. 75 - 100%
Q612	The time to peak effect for morphine given IV is	_____A. 15 min. _____B. 45 min. --------C. 1 hour ---------D. 2 hours
Q613	The time to peak effect for morphine given orally is	_____A. 5 min. _____B. 30 min. _____C. 1 – 2 hours _____D. 3 hours

Q614	Following abrupt discontinuation of an opioid, physical dependence is manifested by the following: _____	A. Sweating, yawning, diarrhea and agitation with patients when the opioid is abruptly discontinued. B. Impaired control over drug use, compulsive use, and craving. C. The need for higher doses to achieve the same effect. D. A and B
Q615	Which statement is true regarding opioid induced respiratory depression:	A. More common several nights after surgery due to accumulation of opioid. B. Obstructive sleep apnea is an important risk factor. C. Occurs more frequently in those already on higher doses of opioids before surgery. D. Can be easily assessed using intermittent pulse oximetry.
	Case Studies Two patient case studies are presented. For each patient you are asked to make decisions about pain and medication. Directions: Please select one answer for each question	
Q616	**Patient A**: Andrew is 25 years old and this is his first day following abdominal surgery. As you enter his room, he smiles at you and continues talking and joking with his visitors. Your assessment reveals the following information: BP = 120/80; HR = 80; R = 18; on a scale of 0 to 10 (0 = no pain/discomfort, 10 = worst pain/discomfort) he rates his pain as 8.	A. On the patient's record you must mark his pain on the scale below. Circle the number that represents your assessment of Andrew's pain. 0 1 2 3 4 5 6 7 8 9 B. 10 ---------- No pain/discomfort Worst Pain/discomfort
	B. Your assessment, above, is made two hours after he received morphine 2 mg IV. Half hourly pain ratings following the injection ranged from 6 to 8 and he had no clinically significant respiratory	1. Administer no morphine at this time. 2. Administer morphine 1 mg IV now. 3. Administer morphine 2 mg IV now. 4. Administer morphine 3 mg IV now

	depression, sedation, or other untoward side effects. He has identified 2/10 as an acceptable level of pain relief. His physician's order for analgesia is "morphine IV 1-3 mg q1h PRN pain relief." Check the action you will take at this time	
Q617	**Patient B:** Robert is 25 years old and this is his first day following abdominal surgery. As you enter his room, he is lying quietly in bed and grimaces as he turns in bed. Your assessment reveals the following information: BP = 120/80; HR = 80; R = 18; on a scale of 0 to 10 (0 = no pain/discomfort, 10 = worst pain/discomfort) he rates his pain as 8.	A. On the patient's record you must mark his pain on the scale below. Circle the number that represents your assessment of Robert's pain: 0 1 2 3 4 5 6 7 8 9 10 ----------No pain/discomfort
	Your assessment, above, is made two hours after he received morphine 2 mg IV. Half hourly pain ratings following the injection ranged from 6 to 8 and he had no clinically significant respiratory depression, sedation, or other untoward side effects. He has identified 2/10 as an acceptable level of pain relief. His physician's order for analgesia is "morphine IV 1-3 mg q1h PRN pain relief." Check the action you will take at this time:	1. Administer no morphine at this time. 2. Administer morphine 1 mg IV now. 3. Administer morphine 2 mg IV now. 4. Administer morphine 3 mg IV now.

THANK YOU, FOR YOU COOPERATION!

ASSURANCE OF PRINCIPAL INVESTIGATOR

The undersigned agrees to accept responsibility for the scientific ethical and technical conduct of the research project and for provision of required progress reports as per terms and conditions of the Health Science Institute in effect at the time of grant is forwarded as the result of this application.

Name of the student: _____

Date._____ Signature _____

APPROVAL OF ADVISORS

Name of the first advisor: _____

Date._____ Signature _____

Name of the second advisor: ----------

Date. _____ Signature._____