Nursing Process Implementation and Associated Factors in Tertiary Hospitals in Oromia Regional State, Ethiopia.

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A Thesis Report Submitted to Department of Health Economics, Management and Policy, Jimma University

In Partial Fulfillment of the Requirements For A Degree of Master of Healthcare and Hospital Administration (MHA).

December, 2018

Jimma, Ethiopia

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Abstract

Background: -Nursing process is described as a modified scientific method of clinical judgment used by nurses in clients' care. Nursing process is dynamic and it is used in clinical practice worldwide to deliver quality-individualized care to patients and lack of its application can affect the quality of nursing care in health institutions. Despite comprehensive training was given by different stake holders; evaluation reports of these hospitals shows low evidence of nursing process implementation. It has five steps which include assessment, diagnosis, nursing care plan, implementation and evaluation.

Objective:- To assess implementation status of nursing process and associated factors among nurses working in tertiary Hospitals in Oromia regional state, Ethiopia.

Methods and Materials:-Institution based cross-sectional study was conducted in tertiary hospitals of Oromia regional state, Ethiopia from February-March, 2017. All the nurses (396) from the four hospitals were included in the study. One month record review was systematically selected during the same study period. Data were collected using pre-tested self administered questionnaire and checklists prepared for medical record review and in-depth interview. Qualitative data were coded through content analysis according to the different themes identified. Data was coded, entered into Epidata 3.1 and exported to SPSS version 21 for analysis.

Result: -Out of 396 respondents 381 agreed to participate in the study and the response rate was 96.2%. With respect to overall performance of nursing process, 152(40%) of respondents were applied nursing process. From the total of 358 medical records reviewed only 38.5% had completed nursing process. Among the reviewed medical records majority 220(61%) had not performed evaluation of nursing process. Regarding the knowledge status of the respondents, two hundred fifty one (65.9%) of respondents were knowledgeable. Slightly 197(51.7%) of respondents had unfavorable attitude toward nursing process implementation. From multivariate logistic regression model analysis knowledgeable nurses were 1.8 times more likely to implement nursing process than non knowledgeable nurses *(AOR=1.766, 95% CI (1.101-2.834), P=0.02).* Majority of the key informants mentioned that the most challenging factors that obstacles implementation of nursing process are lack of training, high patient load, knowledge gap, lack of nurse human power, negligence and work load.

Conclusion and Recommendation: - The overall nursing process implementation was found low. Knowledge of nurses was predictor of implementation of nursing process. The regional

health bureau, hospitals as well as the nurses should seek means to upgrade their knowledge on the nursing process implementation was recommended in this study.
Key words: Nursing process, nursing process implementation, factors and tertiary hospitals.

Acknowledgment

First and for most, my special thanks goes to the Everlasting Almighty God who helped me in all my ways in the entire process of my activities.

I highly express my appreciation to my advisors Mr Kora Tushune and Mr Ayinengida Adamu for their constructive advice, support, valuable comments and suggestions during the development of this research paper.

I would like to extend my gratitude to Jimma University, Department of Health Economics, Management and Policy who gave me a very good ground to do this research and funding financial resources.

My heart full thank goes to all my friends and families who supported me technically, morally and by giving comments during preparation of this paper.

Lastly, but not the least my gratitude goes to all data collectors, supervisors and participated hospitals for their cooperation.

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Acronyms and Abbreviations

AH	Adama Hospital
ALOS	Average Length of Stay
ANA	American Nursing Association
BOR	Bed occupancy rate
BSc	Bachelor of Science
Dx	Diagnosis
FMAHACA	Food, Medicine, Healthcare Administration and Control Authority
ICN	International Council of Nurse
Km	Kilo meter
MKH	Matu Karl Hospital
NH	Nekemte Hospital
NANDA	North American Nursing Diagnosis Association
NP	Nursing process
PES	Problem (P), etiology/Cause (E) and Sign/symptom (S)
PI	Principal Investigator
SH	Shashemene Hospital
SPSS	Statistical Package for social science

Chapter One

1. Introduction

1.1 Background

Nursing is the protection, promotion, and optimization of health and abilities, prevention of illness and injury, alleviation of suffering through the diagnosis and treatment of human response, and advocacy in the care of individuals, families, communities, and populations (1).

Lydia Hall originated the term "Nursing Process" in 1955 in a lecture entitled 'The quality of Nursing Care' delivered in New Jersey. In United States of America Johnson (1959), Orlando (1961) and Wiedenbach (1963) were among the first nurse theorists to use it to refer to a series of phases describing the process of Nursing (2, 3). The Nursing Process has emerged as the cornerstone of clinical judgment in nursing practice. It has standardized the language of nursing and helped in improving the response of patients to care through improved nurse-patient relationship, maximum utilization of available resources toward patient care, good communication among practicing nurses (4).

According to current American and Canadian practice standards, nursing practice demands the efficient use of the nursing process and professional participation in activities that contribute to the permanent development of knowledge about this methodology (9). The nursing process is dynamic and requires creativity for its application. It is designed to be used with clients throughout the life span and in any setting in which a nurse provides care for clients (Sue and Patricia, 2002). Nursing process as a process of critical thinking, it requires gathering data, analyzing and interpreting data, making judgments, setting goals, establishing priorities, selecting appropriate interventions, implementing these interventions and evaluating the outcomes to determine if the plan has been effective (13). It's a five sequential and interrelated step processes which include assessment, diagnosis, planning, implementation, and evaluation. Although the steps of the nursing process have been stated in various ways by different writers, the common components cited are assessment, diagnosis, planning, implementation, and evaluation (5).

"*Assessment*:-A nursing assessment is a tool used to collect and document critical data regarding a patient's health, psychological and social status. This assessment remains accessible to the entire case team level healthcare team during the course of a patient's stay in order to assist them in determining proper patient care and treatment. In the nursing assessment, the nurse gathers and examines both *Subjective* and *Objective* data. *Subjective data* are what the patient/client actually states (e.g. "I'm tired"). These are his/her feelings and perceptions. *Objective data are concrete, observable information and* investigation.

Nursing diagnosis is a clinical judgment about an individual, family or community, response to actual or potential health problems. It provides a basis for the selection of nursing interventions to achieve outcomes for which the nurse is accountable. The nursing diagnosis forms the basis for providing nursing care. Nursing diagnoses are an actual or potential health problem that focuses upon the human response of an individual or group for which nurses can legally prescribe definitive interventions independently. Nursing diagnoses are those problems for which nurses can legally prescribe definitive interventions independently. Actual nursing diagnoses should be written as a three-part statement(s) which includes: the problem (P), its cause or etiology (E) and signs and symptoms (**S**). The PES format describes the problem and its etiology, together with data (signs and symptoms) that validate the chosen diagnosis. Potential Diagnosis should be written as a two part statements which include: problem and etiology.

Nursing care plan is designed to provide the consistency in care and treatment to a patient by documenting all aspects of the patient's nursing care regime. The goal of any plan of care is to aid the patient's return to his/her best state of health, to help him/her maintain independence and to ensure a smooth transition to home. The nursing care plan should be based on the nursing assessment and nursing diagnosis, and should be individualized, tailored to the patient's health problems or psychotherapeutic and physiological needs. The nursing care plan guides each nurse to intervene in a manner congruent with patient needs and goals and provides outcome criteria for measurement of progress. Implementation: In implementing the care plans, nurses uses a wide range of interventions designed to promote, maintain, and restore mental and physical health. This phase of the nursing process involves carrying out the proposed plan of nursing care. However, the patient and the family are involved, other members of the nursing, or other members of the health care team as appropriate to carry out the care. Judgment, critical thinking, and good decision-making skills are essential in the selection of appropriate scientifically and ethically based nursing interventions. All nursing

interventions are patient-focused and outcome-directed and implemented with compassion, confidence and a willingness to accept and understand the patient's responses.

Evaluation of nursing care is a dynamic process involving change in the consumer's health status over time, give rise to the need for new data, different diagnosis, and modification in the plan of care. As new problems arise they should be entered onto the problem index list and related goals and activities to address the problem should be entered onto the Nursing Care plan. Similarly, if a problem resolves this should be recorded on the Problem Index List to indicate that goals and activities related to that particular problem is no longer necessary" (5).

The utilization of the nursing process requires scientific knowledge, clinical problem solving skills and positive attitudes towards the nursing process. Scientific knowledge facilitates critical thinking skills that are appropriate to the demands of contemporary nursing practice. Nursing theory and practice should correlate. The nursing process is taught in theory and it should be applied in practice (15).

1.2 Statement of the problem

Nurses are the largest group of health professionals in every health care institution and quality of nursing care delivered by nurses is closely related to effectiveness of health care systems. Application of nursing process as a scientific framework for delivering quality patient centered care plays a significant role in improving quality of care and stimulates the construction of theoretical and scientific knowledge based on the clinical practice. For many years, the nursing process has provided framework for the delivery of nursing care, and proved to be a yardstick of measuring quality nursing care. It enables nursing to fulfill scientific methodology and autonomy as a profession. The nursing process is the underlying scheme that provides order and direction to nursing care. It is the essence of professional nursing practice. It is the "tool" and methodology of the nursing profession and, as such, helps nurses in arriving at decisions and in predicting and evaluating consequences (22). The challenge for developing a scientific base for nursing practice in order to improve the practice of its members in rendering services to clients/patients to make the greatest impact has been the basis for evolving a knowledge which is uniquely nursing.

Lack of application of the nursing process as a standard of care can reduce job satisfaction, incorrect evaluation, reduction in the quality of care, neglecting of some of the authorities to this field, devaluation of this profession by nurses themselves and their excessive dependency on the physicians, indisputable obedience, doing routine activities without thinking, conducting one dimensional care, reduce in patients independence and costing heavy expenses due to doing repeated acts (26).

The use of nursing process in most hospitals is lagging behind despite all the effort of nursing professionals to implement its use (12). However, if the nursing process is not used, the question might be asked in what way nurses assume accountability and responsibility for the patient and how the quality of nursing care could be measured (29). In the absence of nursing care, neither health care consumer nor health care providers will be satisfied with service provided (31). However, despite its benefits, many

nurses are not yet fully understand and put to practice the nursing process. This has led to poor patient care and outcome.

There are many reasons mentioned in several studies as hindrances for the implementation of the nursing process, such as infrastructural issues related to physical plant, insufficient personnel, lack of time, excessive attributions of the nurse, lack of leadership abilities by the supervision when overseeing this activity, lack of administrative support, lack of material resources (17).

Even though the government of Ethiopia give due attention on quality of health service in general and quality of nursing care in particular (22), there is still a gap on the implementation of nursing process among nurses working in hospitals (16). Despite structured and comprehensive training of nurses is made by Federal Ministry of Health in collaboration with partners, regional health bureau and hospitals on nursing process (22), evaluation reports of these institutions shows an evidence of low implementation of nursing process among nurses hence poor quality health care. Poor quality health care in turn leads to increased morbidity and mortality rates in our health care institutions.

Moreover, most of the studies reviewed in the literature have emphasized more on organizational, demography, knowledge and attitude factors that influence implementation of nursing process. Record reviews that show the actually performed nursing process have not been researched in depth. The researcher will go further to supplement the findings of the study by record review whether what nurses know theoretically is actually practical in implementation of nursing process. This prompted the researcher to conduct a study to assess the factors which are hindering nurses at tertiary care hospitals from implementing nursing process despite all the efforts. Besides, there is no such study conducted on the associated factors on the implementation of nursing process among nurses who works in tertiary level hospitals in Oromia regional state.

Therefore, this study is designed to assess associated factors on the implementation of nursing process in tertiary care level Oromia health bureau owned public hospitals, Adama, Matu Karl, Nekemte, and Shashemene hospitals by using different tools and methods (questionnaires, record review and in-depth interview) considering demographic, knowledge, organizational, and patient related factors and supplementing with medical record review.

1.3. Significance of the study

This study aimed to assess implementation status of nursing process and associated factors among nurses working in tertiary care level hospital.

The results of this study will contribute some importance for policy makers and health care planners in application of nursing process which will have a positive outcome in quality of nursing care provided in Oromia Region in particular and for the country in general. It can benefit the patients as it will improve quality of health care received by them will promote positive patient outcome and increase patient's satisfaction towards nursing care. It can also promote professional responsibility and accountability of nurse practitioners. Further, the result of the study can be used as a baseline data for further related studies. It is also hope that the findings will assist in solving problems that contribute to non-implementation of nursing process by nurses in tertiary hospitals and beyond.

Chapter Two

2. Literature review

2.1. Implementation of the Nursing process

According to American and Canadian practice standards, nursing practice demands the efficient use of the nursing process and professional participation in activities that contribute to the permanent development of knowledge about this methodology. Effective implementation of the nursing process leads to improved quality of care and stimulates the construction of theoretical and scientific knowledge based on the best clinical practice (7, 8).

Nursing process means providing nurse practitioners with a scientific method for the application of care, nurses mostly positively perceived the relation between the nursing process and their practical work, whose implementation would grant meaning and relevance to their professional knowledge and raise their nursing to the same level as the other profession in health care setting (10).

Study conducted in Nigeria identified that nurses who implemented assessment 40.37%, nursing diagnosis 13.76%, nursing care plan 43.12%, and evaluation 2.75% (8). Another study conducted in Mekele Zone, found that both the qualitative and quantitative findings indicated that the nursing process is not applied by following the scientific way in the hospitals and all of the respondents did not use the nursing process during provision of care to their patients at the time of the study (16). A cross-sectional quantitative study conducted in Addis Ababa on selected governmental hospitals revealed that only 52% of respondents were implemented nursing process. Other factors identified by the same study were factors that affects the nursing process were high patient flow 48(25%), patient load 78(40.6%) of nurses cared for more than 15 patients per day, early discharge 78(40.6%) (17).

The study conducted at Arbaminch on Determinants towards implementation of nursing process has identified lack of facility from organizational factors, economic status of the patient to collect material for nursing care, early discharge, lack of cooperation and complicated problems from patient related factors and level of knowledge were among those factors highly affecting nursing process implementation. This study also showed, nearly one third of respondents have consistent with the implementation of nursing process in the clinical setting. This factors cause poor quality of nursing care disorganized caring system; conflicting role, medication error and re-admission with similar problems, dissatisfaction with the care patients have received, and increased mortality (14).

Study conducted at Mekelle Zones hospitals revealed that the majority 180 (90%) of the respondents have poor knowledge and 99.5% of the respondents have a positive attitude towards the nursing process. All of the respondents said that they did not use the nursing process during provision of care to their patients at the time of the study. Majority (75%) of the respondent said that the nurse to patient ratio was not optimal to apply the nursing process (16).

Several factors can interfere in the efficient implementation of the nursing process. Nurses' unpreparedness, shortage of professionals, shortage of time, lack of willingness of managers of services, complexity of the method, lack of awareness, lack of interest and motivation by nurses' were the hindering factors to implementation of nursing process.

2.2. Factors affecting Implementation Nursing Process

2.2.1. Nurse-related factors

A systematic review conducted from 2005 up to 2013 in Brazil revealed that the most frequent difficulties were work overload, involvement with bureaucratic activities, and lack of theoretical knowledge. It is concluded that the difficulties do not change over the years and that there is a significant increase of the difficulties reported by nurses, interfering and paralyzing the systematization of care. Another systematic assessment of articles conducted in Iran identified different challenges in implementation of the nursing process that intangible understanding of the concept of nursing process, different views of the process, lack of knowledge and awareness among nurses related to the execution of process, supports of managing systems, and problems related to recording the nursing process were the main challenges that were extracted from review of literature (33).

Moreover, study conducted in Nigeria Factors Affecting the Use of Nursing Process in Health Institutions in Ogbomoso Town, Oyo State, point out that professional factor ranking the third highest predictive value in the use of nursing process, which means the professional factors, are negligible. It is expected that ordinarily the professional influence should outweigh other variables since the factors that make up a profession include education, with extensive knowledge and skills, which will distinguish nursing from other profession code of ethics, research, and autonomy amongst other requirements (24). The same study indicated that knowledge factor has the highest predictive value of 0.350 in the use of nursing process, followed by institutional factor (B=0.222) and professional factor (B=0.063) the least is the attitude factor (B=0.019). The result concluded that the knowledge factor has the most important influence on the use of nursing process (22). In contrast, Dousouri (2010) who notes that though there were various categories of nurses with regard to age, experience, rank and educational backgrounds, they had a generally very good knowledge of the nursing process. He add that all respondents view the nursing process as an essential tool for rendering comprehensive and quality nursing care to patients (13).

The barriers related to nursing process implementation in most health care institutions are related to nurses‟ perception and experience, work, resources, and others related to administration (12). In this study, 68.2% of nurses agreed that barriers related to nursing process were related to lack of time to implement nursing process, evolution on a daily basis, difficulty with defining diagnosis characteristics, and nursing process being time consuming. In contrast, study conducted at Egypt on barriers and facilitators for execution on nursing process from nurses' perspective found that the majority of nurses (94.6%) indicated that they had good knowledge of the nursing process and confidence in ability to apply it (79.8%). Top one advantage reported for NP is that it is a mean of unifying nursing practice (96%). Data collection identified by majority as the difficult phase (63.5%). Nurses identified barriers related work as the most commonly encountered barriers (81%). Having theoretical knowledge and practical experience (96%) was the most facilitator for easy execution of the nursing process (12).

According to study conducted in Oyo state of Nigeria attitudinal factor (B = 0.019) ranked the lowest predictive value in the use of nursing process. The same study further explained that higher nursing degrees were associated with more positive attitudes, but only 3.8% of the respondents of this study had degree which may account for the negative attitude. Their study concluded that the most common barrier to the use of the nursing process was

insufficient time and this portrays a negative attitude. Nurses' attitudes toward the nursing process can be effective on implementing the process (22).

The study conducted in Calabar Teaching Hospital in Nigeria revealed that nurses with diploma and degree holders or nurses in senior cadre and junior cadre or experienced nurses and less experienced nurses perceive barriers to implementation of the nursing process uniformly (32).

Nursing characteristics, such as level of education, training and experience, have already been described; however, other factors including scope of practice, role clarity, delegation practices and critical thinking processes have the potential to influence nursing processes and outcomes. In particular, these elements should be considered as part of a larger goal to optimize nursing workforce utilization (12). Study done in Southeast Bale zone, asserted that lack of teamwork, shifting of work time, interest of nurses to their professions and environmental interruptions around workplace can affect nurse to give adequate care to the patients. The same study found that the level of education, coordination of care, amount of time available for care and patient educational level and quality of communication was another influencing factor of nursing role implementations (30).

Demographic characteristics of nurses like age, years of work experience and level of education also have significant impact on nursing process implementation. Nurse's educational status has direct statistically significant relationship with the knowledge of nurses on nursing process (23).

A study conducted in Debre Markos and Finote Selam hospitals on the implementation of nursing process and associated factors among nurses, the knowledge level of nurses on nursing process as identified, 58.1% were highly knowledgeable, 30.6% were moderately knowledgeable and 11.3% were under the group of low knowledgeable category and nurses with low knowledge was 0.16 times less likely to implement nursing process (AOR=0.62, 95% CI=0.07-0.39) (20). On the other hand, a study conducted in Mekelle zone hospitals 90% of the respondents have scored below 50% on knowledge related questions and all the key informants indicated that nurses lack knowledge to apply the nursing process. The study was identified that knowledge is one of the most determinant factors for application of the nursing process (16).

Study in Arbamich found that highly knowledgeable nurses were 8.78 times more likely to implementation of nursing process than nurses who were not knowledgeable (OR: 8.78, [95%CI: (2.97- 77.48)] and economic status of patient to collect material for nursing care were negatively associated with implementation of nursing process (OR: 0.07, [95% CI: (0.02-0.31)] (14).

According to both the qualitative and quantitative findings, by Fissehe et al (2014), nurses of the study sites have positive attitude towards the nursing process. One hundred ninety-nine (99.5%) of the respondents have positive attitude towards the nursing process. From the same study, the qualitative finding also revealed that nurses have positive attitude towards the nursing process. The problem was not related to the attitude rather it was mainly related to knowledge (16).

2.2.2. Organizational-related factors

A number of researches have reported inadequate staffing and excess work load were rated highest by nurses as barriers to implementation of the nursing process followed by insufficient material resources while the least barrier perceived by the nurses were poor incentive and low level of perceived self efficacy in handling the nursing process **.**On the other hand, lack of belief and support of the authorities of the country from application of the nursing process is the other management barrier which can be due to lack of information about the importance and impact of this method on improving health care quality (15).

Nursing process to be effectively implemented, there must be collaboration of hospital administration with the implementing nurses for the process involves issues of finance, equipments, implementing tools and personnel. Shortage of resources, lack of knowledge, high patient nurse ratio/work load, and lack of training and motivating factors affected the application of the nursing process (19).

Poor equipment, staff shortage, non training of nursing staff and unattractive service conditions can as well lead to non implementation of nursing process. Poor nursing care in any institution arises as a result of barriers to the use of nursing process in inpatient care. It is therefore important for the hospitals as well as the nurses to seek means to upgrade the knowledge of on the nursing process and its implementation and the nurses to improve their knowledge on the nursing process application (23).

Regarding resources related barriers, the result of study by Manal & Hala (2013) revealed that 67.6% of nurses agreed upon several resources barriers, which included inadequate staff in the unit, lack of specified nursing care document and education budget, insufficient equipment and absence of supplies and materials.

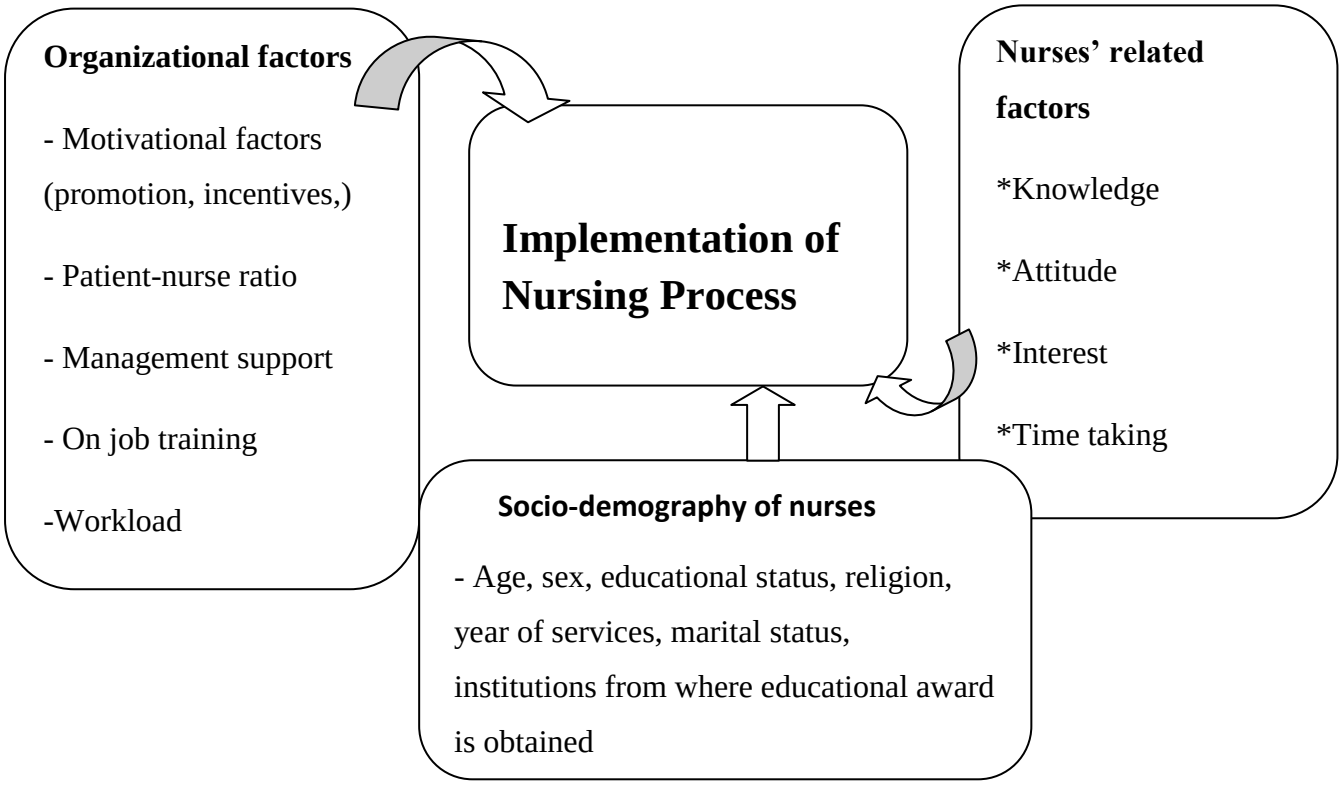
A study conducted in Debre Markos and Finote Selam Hospitals on the implementation of nursing process and associated factors among nurses, work experience of nurse varies from one to twenty seven years while majority lies on less than five years (mean 6.64 and median 4 years). Nurses whose clinical service was less than and equal to four years were 72 (58.1%) and the rest 52 (41.9%) nurses had greater than four years.

From the same study on implementation of nursing process, namely working experience of more than 4 years was almost double more likely to implement nursing process than working experience of less than or equal to 4 years, (COR=2.60, 95% CI=1.23-5.50). Availability of necessary equipment's for patient care in the hospital were three times more likely to implement nursing process than inadequate one (COR=3.30, 95% CI=1.54-7.09). Those nurses got orientation during the entrance of the respective hospitals were more likely to implement nursing process (COR=2.96, 95% CI=1.31-6.67).

Study conducted at Arbaminch southern of Ethiopia on determinants towards implementation of nursing process has identified lack of facility from organizational factors, economic status of the patient to collect material for nursing care, early discharge, lack of cooperation and complicated problems from patient related factors (14). The same study found that factor affecting implementation of nursing process were working in a stressful environment were 0.23 times less likely to implement nursing process than those working in organized environment (OR: 0.23, [95% CI: (0.07 0.78)].

Study conducted at south east Ethiopia showed that, majority 108 (74%) of the respondent said that the nurse to patient ratio was not optimal to apply the nursing process; whereas only 11 (7.5%) said that the salary and promotion were motivating for the application of the nursing process, moreover that around 123 (84.2%) of the respondents claimed that their educational level was adequate to apply the nursing process.

Conceptual frame work



(Source: After reviewing different literatures)

Figure1. Conceptual framework of factors affecting implementation of nursing process

Chapter Three

Objective

3.1. General Objective

- To assess implementation of nursing process and associated factors among nurses in tertiary hospitals in Oromia Regional state, Ethiopia, February-March, 2017.

3.2. Specific Objectives

- To assess implementation/application status of nursing process
- To describe the level of nursing process implementation from inpatient medical records
- To describe factors associated with implementation of nursing process

Chapter Four

Methods and Materials

4.1. Study area and period

The study was conducted from February to March, 2017 in four tertiary care level hospitals found in Oromia Regional State owned by Oromia Health Bureau. Currently there are sixty-six (66) public hospitals in Oromia regional state which are categorized with the tier system as per the Food, Medicine, HealthCare Administration and Control Authority (FMHACA) standards, from which four hospitals are listed under the tertiary care level by the Regional Health Bureau. These are Adama, Matu Karl, Nekemte and Shashemene Hospitals.

Adama hospital is found in East Shoa zone at 110km far away from Capital city Addis Ababa. This hospital has 250 operational beds. The bed occupancy rate (BOR) and average length of stay (ALOS) are 85% and 7.5 days respectively which are an indicator of inpatient capacity utilization of hospital.

Matu karl hospital is found in Ilu-Ababora Zone located at south-West part of the country about 600km far from Addis Ababa and has 214 operational beds. The current report showed BOR of the hospital is 89% and ALOS is 6.3 days.

Nekemte hospital is located at the Western part about 332km far from Addis Ababa and it's the only hospital serving for referral purpose for the western part of the country. Currently the hospital has 178 operational beds.

Shashemene hospital is 250km far from Addis Ababa found to the southern part of the country. Have functional beds of 165.

4.2. Study design

Institutional based cross-sectional study was done using both qualitative and quantitative methods.

4.3 Source population

- All Nurses and managers in tertiary hospitals.
- One month medical records of admitted patients in the selected hospitals during the same study period were taken as a source for the record review.

4.4 Study population

- All nurses and selected managers working in four hospitals during the study period.
- Medical records of discharged patients of selected hospitals during the study period.

4.5 Eligibility Criteria

4.5.1 Inclusion criteria

- All nurses and selected managers who are working at Hospitals available during the study period

4.5.2 Exclusion criteria

- Nurses who couldn't complete probation period or less than six months were excluded

4.6 Sample size and Sampling procedures

According to the data obtained from the Human Resource process owner of selected hospitals there were 124, 87, 107, and 78 of nurses in Adama, Matukarl, Nekemte and Shashemene hospitals respectively. All nurses (396) from these hospitals were included in the study. For qualitative aspects of the study, four chief executive officers and matrons as well as three ward heads (Medical, pediatric and Surgical) of each hospitals which account twenty (20) key informants were purposely included in the in-depth interview.

The sample size for the medical record review was determined based on the prevalence of the proper application of nursing process using single population proportion calculation formula.

$$n = (z_{\alpha/2})^2 (p(1-p)) / d^2$$

$$= (1.96)^2 (0.37(1-0.37) / (0.05)_2 = \underline{\mathbf{358}}$$

The total sample size of medical record was **358**

Where:

n = minimum sample size required for the study

Z = standard normal distribution (Z=1.96) with confidence interval of 95% and α=0.05

P = 0.37 *from study conducted at Debre Markos and Finota Selam.*

For the record review, medical records were selected systematically after proportional allocation of study units to each hospital and specified wards based on the one month total number of MRs in each hospital in the specified study period. Lists of medical records of admitted patients were taken from registration book from respective wards of each hospital and the first study unit was selected using lottery method. Medical record numbers (MRN) were used as sampling frame.

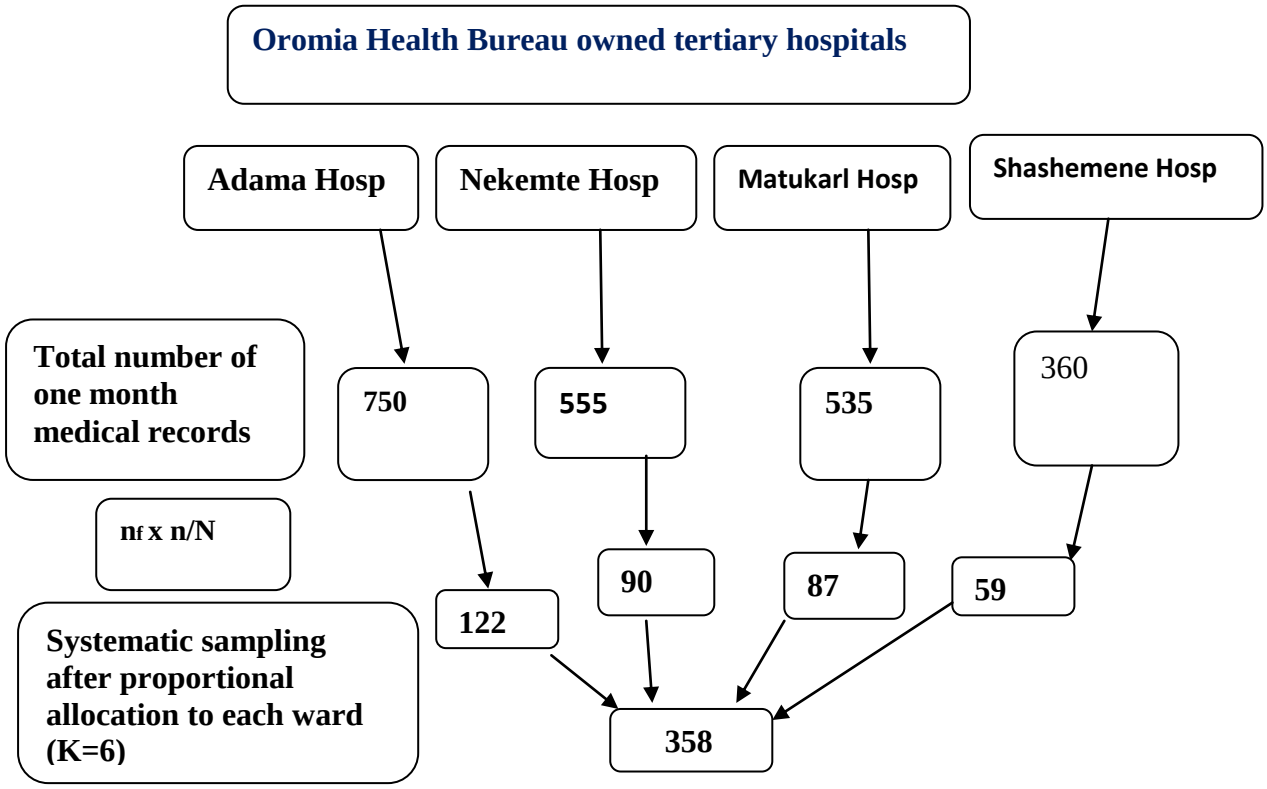


Fig.2 Schematic diagram for sample selection of medical records, tertiary hospitals, 2017 (n=358)

n_f x n/N *where*: n_f – exact sample size

n - Calculated sample size

N – Sample population

Medical record review sampling interval: - The first medical record review from the hospital in patient registration was determined by a table of random numbers. Every Kth medical records were then included, where K was the sample Interval.

Sampling interval (K) = Number of medical records in each hospitals / Calculated sample size of medical records

4.7 Data Collection techniques and Tools

For quantitative part, data was collected through self-administered questionnaires that were developed after different extensive literature review (12, 13, and14) was made and it has 5- parts: Socio demographic characteristics, implementation of nursing process, knowledge of nurses about nursing process, organizational related factors and Nursing attitude related items. The tool contains close ended questions which is prepared in English. Two BSc nurses who had training on nursing process were a supervisor and four data administrators were assigned to collect the data. Questionnaires were filled by nurses in their work place. Four Likert Scale was used to determine the attitude of nurses towards implementation of nursing process on four scales (Strongly agree, agree, disagree and strongly disagree).

Record review was guided by developed a checklist which includes closed ended questions after extensive literature review (22, 28). The checklist was focused on the presence or absence of separate nursing process sheet and accomplishment of each step and components of the steps of nursing process according to the standards.

The qualitative component of the study was collected information by conducting a series of in-depth interview with some selected respondents from the hospitals for this study. Selection of respondents for in-depth interview was purposive and which were including matrons, head nurses and chief executive Officers and willingness to participate in the interview .The interview guide consists of open ended questions related to the study objective. The principal investigator was moderate the interview and in the meantime was taking a note. The interview was taking average of forty-five minute. The interview was tape recorded after securing consent from the interviewees.

4.8 Variables

4.8.1 Dependent Variables

Implementation of nursing process

4.8.2 Independent variables

Socio demography like age, sex, educational level, year of service, marital status, Institution where educational award is obtained and monthly salary.

Organizational factors: - support of hospital administration, availability of resources and Staff, training, time taking, motivating factors, monitoring and evaluation.

Nurse related factors;- Attitude of nurses, Knowledge of nurses.

4.9. Operational Definitions

Seven items were used to measure the knowledge status, based on this:

- **Knowledgeable:** Nurses who score above or equal to mean for knowledge related questions.
- **Not knowledgeable:** Nurses who score below mean for knowledge related questions.

Attitude: - There were ten (10) items related to attitude which were measured on four Likert scales *(Strongly agree, Agree, Disagree and strongly disagree)* that were dichotomous considering (*strongly agree and agree = Positive)* and (*disagree and strongly disagree = negative)*. The mean of actual responses of the nurses were rated, based on this.

- **Favorable attitude:** Nurses who score above mean for attitude related questions.
- **Unfavorable attitude:** Nurses who score below mean for attitude related questions.

Implementation/application of nursing process: Application of five steps of nursing process in the patient care. Mean of the respondents score was calculated by dividing the sum of actual scores to the number of respondents. Seven items were asked to assess the nursing process implementation.

- **Applied/implemented NP:** Nurses who score above the actual mean considered as applied nursing process.

- **Not implemented/applied**:-Nurses who score below actual mean for implementation /application of nursing process related questions.

Completeness of nursing process for medical record

- **Completed nursing process:**-Reviewed medical records that follow all five steps of nursing process with full content.
- **Incomplete nursing process:-**a reviewed medical record that does not follow the steps of nursing process and the content is incomplete.

Tertiary care level:- Hospitals categorized as tertiary hospitals and owned by Oromia Regional Health Bureau based on services they provide, population being served and serving for referral purpose.

Managers:- In this study those people's who have responsibility to their respective position and influential in the hospitals including Chief Executive Officer, Matron, and Head Nurses of Medical, Surgical and pediatric wards.

Interest: - Nurses' concern/concentration towards application of nursing process

Time taking: - In this study it represents the time of nursing process consume to conduct the procedure in the inpatient care.

Patient cooperation: - Patients willingness to respond and collaborate during nursing process procedure including history taking and physical examination.

Motivational factors:-Encouraging nurses' to perform nursing process properly, including incentive packages, creating conducive environment, providing recognition, etc.

4.10 Data Quality Assurance

On each days of data collection, both principal investigator and supervisors checked the data for its completeness at each point. The principal investigator rechecked the data during entry into computer and again before analysis for missing values.

4.11 Pre-test

Before the actual data collection, pre-test was made on 5% of sample size of **20** nurses working in Ambo General Hospital found in West Shewa that helped me to verify the validity and reliability

issues. Necessary modifications were made for the questions based on the findings of the pre-test. For qualitative aspect, managers of the same hospital were included for pre-test purpose.

4.12 Data processing and analysis

For quantitative data, data was cleared, coded and entered using Epidata software version 3.1 and was exported to SPSS version 21 for analysis. The descriptive analysis such as percentage and frequency distribution of different characteristics of the questionnaire was analyzed. Bivariate analysis was used to describe the association of dependent and independent variables and result from bivariate analysis was moved to multivariate analysis to control the effects of confounding variables. Those variables having significant association with nursing process implementation at P-value of ≤ 0.25 and other important variables were included for further analysis in multivariate analysis and final decision was made upon p-value 0.05 at 95% CI for the significant association of nursing process implementation. Then, finally, data was presented in tables, graphs, frequency and percentage of different variables.

For qualitative data, note- taken data were read several times. The information was well acquainted with the main issues raised in the interview. A thematic content analysis was done by identifying common patterns through the color coding of data in terms of frequently raised issues. The codes with common meaning were grouped into categories from which the main themes were generated to explain the findings. The findings were presented by integrating with the quantitative data in its place.

4.13 Ethical Consideration

Ethical approval letter was obtained from Ethical Review Board of Jimma University Institute of Health before commencement of data collection. Permission letter was provided to the hospitals administrator before data collection for written consent. The purpose and procedure of data collection was cleared and confidentiality and privacy was ensured. It is clear that participation was fully based on the willingness of participants using informed consent.

Qualitative data collection was done privately and information taken from the key informant was kept confidentially. Information was taken from the key informant by tape recording based on their willingness.

4.14 Limitation of the Study

The study design was cross -sectional which is used to investigate findings on a single point of time. So that factors affecting nursing process application out of the study period could not be investigated.

The quantitative questionnaire was prone to social desirability bias; because of every one do not want to expose once inability or unwanted attitude.

The actual observation of nursing process implementation during procedure was not conducted.

4.15 Dissemination of findings

Result of the study would be delivered to each of the four hospitals; Adama, Matu karl , Nekemte and Shashemene hospitals; Oromia Regional Health Bureau and Jimma University, Department of Health Economics, Management and Policy.

Chapter Five

5. RESULTS

Out of 396 questionnaires 381 were returned and completed for analysis giving a response rate of 96.2%. One hundred nineteen (31.2%) were from Adama Hospital; 84(22%) from Matu Karl Hospital; 102(26.8%) from Nekemte Hospital and 76(19.9%) from Shashemene Hospital. The response coverage of participants by hospital is shown below.

A total of 358 medical records were reviewed. One hundred twenty two (34.1%) were from Adama Hospital, 87(24.3%) from Matu Karl hospital, 90(25.1%) from Nekemte Hospital, 53(16.1%) from Shashemene Hospital.

A total of fourteen (14) key informants were participated in the in-depth interview. Nine head nurses, three Matrons and two CEO's were interviewed purposively to include comments from decision makers and nursing officials regarding factors responsible for non-implementation of nursing process.

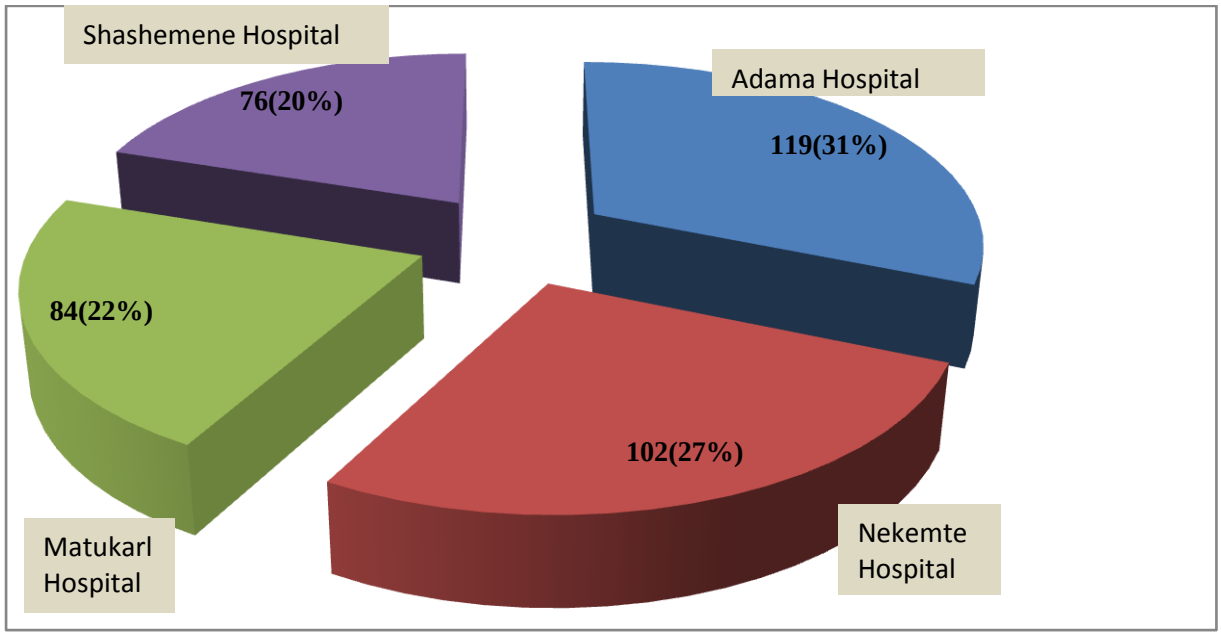


Figure 3 Percentage distribution of respondent by tertiary hospitals in Oromia Regional State, Ethiopia, 2017, (N=381)

Socio-demographic characteristics of respondents

Two hundred twelve (55.6%) respondents were females and most of the respondents were BSC degree in nursing which account about 234 (61.4%).

Most of the respondents age were found within the range of 20-24yrs which account 149(39.1%) followed by 98(25.7%), 25-29 yrs. With respect to marital status most of the respondents were married 228(59.8%) followed by 144 (37.8%) unmarried. Related with the year of experience 131(34.4%) respondents were found in the range of 5-9 years (34.4%), followed by 103 (27%) in the range of 1-4 years. With respect to institutions from where educational award is obtained, 322(84.5%) respondents were from government institution while 59(15.5%) were from private institution. ***(See Table 1 as shown below)***

Table 1. Demographic characteristics of respondents in tertiary Hospitals, Oromia Regional State, Ethiopia; March, 2017. (N=381).

Demography	Characteristics	Frequency	Percentage
Sex	Male	169	44.4
	Female	212	55.6
Age	<20	39	10.2
	20-24	149	39.1
	25-29	98	25.70
	30-34	42	11
	>=35	53	13.9
Marital status	Single	144	37.8
	Married	228	59.8
	Widowed	2	0.5
	Divorce	7	1.8
Educational Background	Diploma	147	38.6
	BSC	234	61.4
	MSC	0	0
Year of experience	<1yr	48	12.6
	1-4yrs	103	27

	5-9yrs	131	34.4
	>=10yrs	99	26
Institutions from where educational award is obtained	Government	322	84.5
	Private	59	15.5
Name of the hospital you are working in	Adama Hospital	119	31.2
	Matu Karl Hospital	84	22
	Nekemte Hospital	102	26.8
	Shashemene Hospital	76	19.9
Participants monthly income	1627-2197	26	6.8
	2198-3145	159	41.7
	3146-4725	106	27.8
	≥4726	90	23.6

Implementation of the Nursing Process

They were seven questions about implementation of nursing process which was dichotomous (Yes=1 /No=0). Mean of the actual responses of the nurses on the seven questions was calculated and rated as to be 10. Based on this 152(40%) of the respondents had applied nursing process while 229(60%) were not applied nursing process.

Three hundred sixteen (82.9%) of the participants responded that they followed the steps of nursing process during provision of nursing care while the rest didn't. Two hundred ninety six (77.7%) completed nursing admission assessments. Two hundred thirty five (61.7%) of the respondents developed actual nursing diagnosis, 152 (39.9%) developed potential nursing diagnosis during the study period. One hundred fifty one (39.6%) had conducted the evaluation for effectiveness of intervention while 229(60.4%) were not conducted evaluation. (**Table-2**)

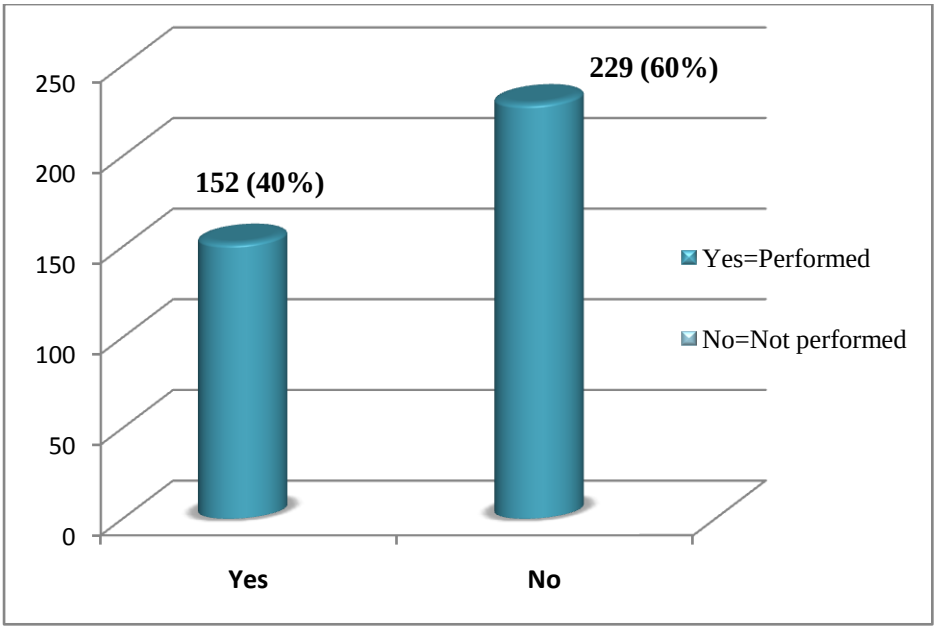


Figure 4: Implementation status of Nursing Process in tertiary hospitals, Oromia Regional State, Ethiopia, 2017. (N=381)

Table 2 Nursing process implementation related items in tertiary hospitals in Oromia Regional State, Ethiopia, 2017 (N=381)

Items	Response	Frequency	Percentage
Followed the steps of nursing process during provision of care	Yes	316	82.9
	No	65	17.1
Developed complete nursing admission assessments for patients	Yes	296	77.7
	No	85	22.3
Have been developed Actual nursing diagnosis	Yes	235	61.7
	No	146	38.3
Have been developed Potential nursing diagnosis	Yes	152	40
	No	229	60
Have been prepared care plan based on diagnosis	Yes	152	40
	No	229	60
Have been implemented the care plan developed	Yes	152	40
	No	229	60
Have been evaluated the effectiveness of the intervention	Yes	151	39.6
	No	230	60.4

Record Review results

Out of 358 medical record reviewed, 199(55.6%) of medical record had complete nursing assessments including subjective and objective data while 159(44.4%) were not completed properly. From the records reviewed, 193(53.9%) had no nursing diagnosis properly written that include 'Actual' and 'Potential' nursing diagnosis, for which actual nursing diagnosis is explained by three parts *problem, etiology/cause/ sign or symptom* as well as Potential nursing diagnosis is explained by *problem and etiology/cause*, while 165(46.1%) included actual and potential nursing diagnosis. Only 147(41%) developed nursing care plan including priority setting, goal and expected outcomes while the majority 211(58%) of medical reviewed had no care plan. One hundred forty-five (40.5%) of records had implemented according to the care plan developed but 213(59.5%) couldn't intervened accordingly. Only one hundred thirty eight (38.5%) of records had reviewed for evaluation but the majority, 220(61.5%) had no evaluation. *'Findings from qualitative findings mentioned, there should be regular supportive supervision, monitoring and evaluation on the implementation of nursing processes. Some of the key informant mentioned that, most of the nurses didn't use all stages of nursing process specifically they didn't know evaluation could be done which is similar with the findings of record review done.*

Table 3. Medical record review on completeness of nursing process in Tertiary hospitals in Oromia regional state, Ethiopia, March, 2017 (n=358).

Characteristics	Yes		No	
	Frequency	%	Frequency	%
Completed nursing assessments including subjective and objective data present	199	55.6	159	44.4
Properly written Nursing diagnosis that includes 'Actual and Potential' nursing diagnosis Actual = problem, etiology/cause/ sign or symptom Potential = problem and Etiology/cause	165	46	193	53.9
Documented Nursing care plan that include priority setting, goal and expected outcomes (Should be SMART)	147	41	211	58
Reviewed developed nursing care plan intervened as per the plan.	145	40.5	213	59.5
Reviewed evaluation of nursing process performed as planned	138	38.5	220	61.5

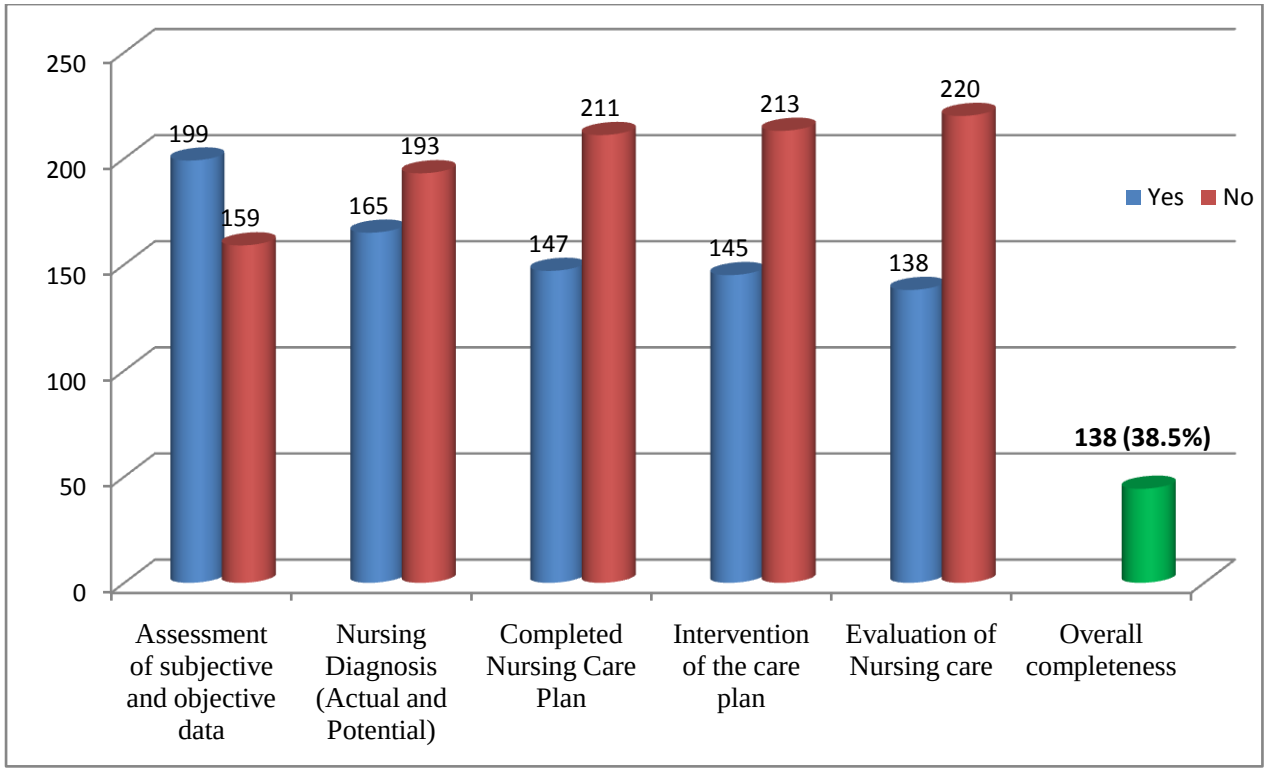


Figure-5. Medical record review to assess completeness on Nursing Process in tertiary hospitals in Oromia regional state, Ethiopia, March, 2017 (N=358).

Attitude of Nurses toward implementation of Nursing process

Regarding the overall attitude of nurses towards nursing process implementation, among ten attitudes related questions, the calculated actual mean score of more than or equal to **4** indicated a favorable attitude and the mean score of less than **4** indicates an unfavorable attitude towards nursing process implementation.

One hundred ninety seven (51.7%) of them had unfavorable attitude towards nursing process implementation.

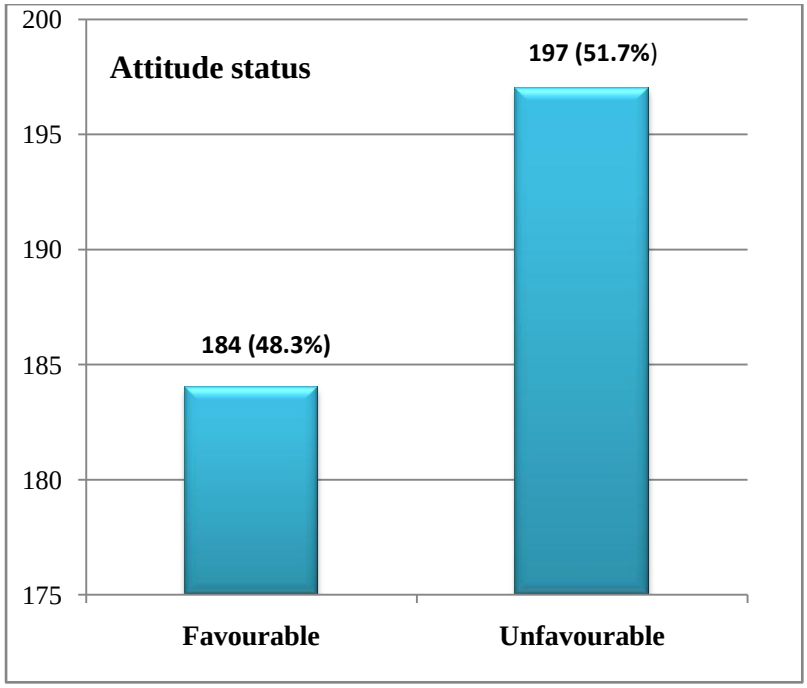


Figure-6. Attitude of respondents towards nursing process implementation in tertiary hospitals in Oromia Regional state, Ethiopia, March, 2017 (n=381)

Around 346 (90.8%) of the respondents reported that they either agreed or strongly agreed that the aim of the nursing process is appreciable, at same time 355 (93.2%) either agreed or strongly agreed that they were ready to implement nursing process. Majority 301(79%) of the respondents had reported either disagree or strongly disagree with feed up of hearing about the nursing process. Three hundred and twenty one (84.3%) respondents either agreed or strongly agreed that implementation of nursing process would increase patient satisfaction but 267(70%) respondents reported that either disagree or strongly disagree that nursing process involves too much of paper work. Most of the respondents 279(73.2%), 346(90.8%) and 365(95.5%) reported they were either disagree or strongly disagree with there is no enough time to apply nursing process during pt care, staff will never accept the nursing process and nursing process should be used by BSc only respectively.

Key informants said, "The nursing process in the hospitals was not fully implemented as it was expected despite the fact that some of nurses had acquired knowledge during their stay in the university". There was lack of interest by some nurses due to negligence about nursing process. Hence, the situation of nursing process is incomplete that mean partially being implemented".

Table –4. Nurse's attitude toward nursing process implementation in Tertiary hospitals in Oromia regional state, Ethiopia, March, 2017 (n=381)

Variables	Strongly agree		Agree		Disagree		Strongly Disagree	
	Frequency	**%**	**Frequency**	**%**	**Frequency**	**%**	**Frequency**	**%**
I am ready/willing to implement nursing process	54	14.2	301	79	25	6.6	1	0.3
I like the aim of nursing process	54	14.2	292	76.6	35	9.2	0	0
I am fed up with hearing about the nursing process	14	3.7	66	17.3	234	61.4	67	17.6
Nursing process can increase patient satisfaction towards nursing care	57	15	264	69.3	52	13.6	8	2.1
I think the nursing staffs have no willingness to apply NP	4	1	77	20.2	239	62.7	61	16
I do not see the need to implement the nursing process.	2	0.5	44	11.5	246	64.6	89	23.4
The nursing process involves too much of paper work	7	1.8	107	28.1	204	53.5	63	16.5
There is no enough time to apply NP during pt care	3	0.8	99	26	221	58	58	15.2
I think the staff will never accept the nursing process	1	0.3	34	8.9	262	68.8	84	22
The nursing process should be used by BSc only	1	0.3	15	3.9	207	54.3	158	41.5

Knowledge of Nurses on Nursing Process implementation

They were seven questions about knowledge level which were measured in mean and rated as knowledgeable for those who scored above or equal to **4** and non-knowledgeable who scored below **4.** Based on this majority of the respondents 65.9% had good knowledge.

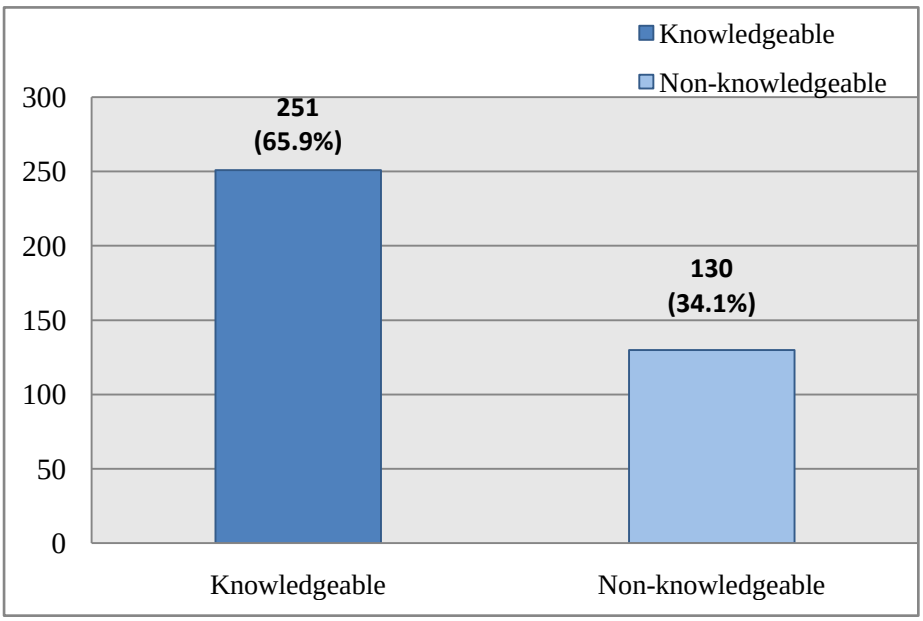


Figure 7 Respondents level of knowledge on Nursing Process Implementation in tertiary hospitals in Oromia regional state, Ethiopia, March, 2017 (N=381).

Regarding the knowledge assessment of nurses most of the respondents 370(97.1%) know the components of nursing process but 11(2.9%) were not. Two hundred fifty nine (68%) stated correctly the five steps of Nursing (Assessment, Diagnosis, Plan, Implementation and Evaluation) while the remaining 122(32%) did not state. Two hundred forty five (64.5%) of respondents correctly responded the core purpose of nursing process which is 'to diagnose and treat human responses to actual and potential health problems' while 136(35.5%) did not respond correctly. Two hundred sixty one (68.5%) correctly responded to 'collecting subjective and objective data' for the question a nurse should do one at the first step of nursing process while 120(31.5%) stated incorrectly. Only one hundred fifty six (40.9%) respondents replied correctly that nursing diagnosis always focuses on human responses than diseases process to the question 'what makes nursing process different from medical approach' but 225(59.1%) failed to respond the correct answer. With respect to mentioning the types of nursing diagnosis, about 200(52.5%) of respondents stated correctly while the remaining 181(47.5%) failed to mention. Most of respondents 264(69.3%) failed to identify problem, etiology/causes and sign & symptom for the question *ineffective airway clearance related to incisional pain as manifested by poor cough effort* while the remaining 117(30.7%) identified correctly.

In contrast, Qualitative findings revealed that majority of the respondents agreed that lack of knowledge is the main obstacle that affects the implementation of nursing process. The difference between quantitative and qualitative study result seen may be due to the social desirability bias of the quantitative questionnaires. A pediatric female ward head with BSc degree of eight years experience said, "Nurses have knowledge gap since there's no refreshment training, as you know knowledge must be up-dated, but they are giving care using their previous knowledge gained from school and training was given four years back and I do not think it is enough".

Another informants said, 'Knowledge of nurses on nursing process in our hospital varies .Some of the nurses had taken training/ course/ in the school but it was different what was actually implemented in the hospital".

Table 5 Nurses' knowledge about implementation of Nursing process in Tertiary Hospitals in Oromia Regional state, Ethiopia, March, 2017. (N=381)

Questions	Response	Frequency	%
Know components of Nursing process	Correct answer	370	97.1
	Incorrect answer	11	2.9
Listed steps of nursing process	Correct answer	259	68
	Incorrect answer	122	32
Core purpose of Nursing Process	Correct answer	245	64.3
	Incorrect answer	136	35.7
A nurse did one at the first step of nursing process implementation	Correct answer	261	68.5
	Incorrect answer	120	31.5
Made Nursing process differ from medical approach	Correct answer	156	40.9
	Incorrect answer	225	59.1
Mentioned types of nursing diagnosis	Correct	200	52.5
	Incorrect	181	47.5
"Ineffective airway clearance related to	Correct answer	117	30.7

incisional pain as manifested by poor cough effort " Identify problem, etiology and sign & symptom	Incorrect answer	264	69.3

Organizational related factors on Implementation of Nursing Process

Two hundred fifty (65.5%) responded that hospital supplied relevant tools for the nursing care but 131(34.4%) mentioned hospitals were not supply necessary tools for the nursing care. With respect to having on job training on nursing process most of the respondents 232(60.9%) were not trained and only 149(39.1%) had got training. One hundred twenty six (33.1%) responded nurse-to-patient ratio were optimal to apply/implement the nursing process but 255(66.9%) responded nurse-to-patient ratio were not optimal to apply/implement the nursing process. One hundred ninety three (50.7%) responded hospital administration were support the application of nursing process while 188(49.3%) failed to have hospital administration support. One hundred ninety nine (52.2%) responded there were monitoring and evaluation for the application of nursing process but 182(47.8%) were not. Most of the respondents 248(65.1%) replied they were not appreciated with feedback/recognition for the application/implementation of nursing process from their hospitals.

From in-depth interview informants said, '*Nursing process was moderately implemented in the hospital. There were many challenges to fully implement nursing process in our hospital. There is lack of nurse human power that is a nurse to patients' ratio was not proportional. Hence, one nurse gave service to more than ten patients which made nurses not fully accomplish nursing process. Nursing care plan format was also another hindrance since it was not available on time. Besides, training was not regularly given and the supervision by hospital administration on enforcement of nursing process was infrequent. Another informant chief executive Officer said, the number of nurse assigned to hospital is with previous structure, which is incompatible with current EHRIG standard.*

Key informants of hospitals mostly shared,' There was no appreciating feedback or recognition given for our performance rather hospital administration order us to apply nursing process even without training. From the four hospitals many of the informants said, "Nursing process sub-implementation committee at hospital level who oversee, coaching and auditing the nurses on nursing process was established four years back during which training was given by different partners but they were not functional in four hospitals".

Another hindering factor to implement nursing process that the four hospitals shared was, there were high patient which imbalances with the number of nurses.

Other qualitative findings, some nurses in hospital did have interest to implement nursing process but the problem lay on shortage of time due to load of work. One nurse gave service for more than twelve patients which made nurses negligent on nursing process. .Another factors which hindered the implementation of nursing process in our hospital were lack of incentives and risk.

Table-6. Organizational factors related characteristics in tertiary hospitals in Oromia Regional State, Ethiopia, March, 2017 (N=381).

Characteristics	Response	Frequency	Percentage
Hospital supplied with relevant tools to do your nursing care	Yes	250	65.6
	No	131	34.4
Got on-job training on nursing process	Yes	149	39.1
	No	232	60.9
Nurse-patient ratio optimal to apply / implement the nursing process	Yes	126	33.1
	No	255	66.9
Hospital administration supported application of nursing process	Yes	193	50.7
	No	188	49.3
Monitoring and evaluation for application of nursing process	Yes	199	52.2
	No	182	47.8
Appreciating feedback available for application / implementation of NP	Yes	133	34.9
	No	248	65.1
Adequate resources allocated for implementation of NP	Yes	137	36
	No	244	64

Association of Nursing Process Implementation and independent variables

Table 7 Bi-variate logistic regression analysis /Association of implementation of nursing process by selected variables among nurse in tertiary hospitals, in Oromia Regional State, Ethiopia, 2017(n=381)

Variables		Nursing process implementation		P-value	COR(95% CI)
		Yes	No		
Participants sex	Male	73	96	**0.241**	**1.280(0.847, 1.934)***
	Female	79	133	**1**	**1**
Institution where you obtain education award	Government	134	188	**0.112**	**1.624(0.894, 2.949)***
	Private	18	41	**1**	**1**
Name of Hospital participant is working	Matukarl	28	56	0.033	**0.917(0.56,3.788)***
	Nekemte	44	58	0.364	1.391(0.726, 2.393)
	Shashemene	38	38	0.043	**1.833(1.020, 3.294)**
	Adama	42	77	**1**	**1**
Knowledge status of nurses	*Knowledgeable*	*110*	*141*	*0.03*	*1.635(1.048, 2.549)*
	Non knowledgeable	42	88	**1**	**1**
Nurse-to-patient ratio	***Yes***	*56*	*70*	***0.203***	***1.325(0.859, 2.043)***
	No	96	156	**1**	**1**
Monitoring and evaluation	***Yes***	*86*	*113*	***0.167***	***1.338(0.886, 2.020)***
	No	66	116	**1**	**1**

Through binary logistic regression eleven independent variables (P<0.25) were identified and candidate for multiple logistic regression to have statistical significance of variables.

Table 8 Multivariate logistic analysis, Association of implementation of nursing process by selected variable among nurses in tertiary hospitals, Oromia Regional State,Ethiopia,2017(n=381)

Variables		Implementation of Nursing Process		P-value	AOR (CI at 95%)
		Yes	No		
Knowledge of Nurses on Nursing Process Implementation	**Knowledgeable**	*110*	*141*	**0.02**	**1.766(1.101, 2.834)**
	Non knowledgeable	42	88	***1***	***1***

In adjusted analysis, variables with a p-value of ≤ 0.25 in the bivariate analysis and other important variables were analyzed and one variable was statistically significant to associate with the implementation of nursing process. Nurses who were more knowledgeable were 1.8 times more likely to implement nursing process than non knowledgeable nurses ***(AOR=1.766, 95% CI (1.101, 2.2834),*** **P-value 0.02)**.

Majority of the key informants mentioned that," Regarding knowledge of nurses on nursing process in our hospital varies. Some of the nurses had taken training /course/ in the school but it was different what was actually implemented in the hospital, where as some Diploma graduate nurses claimed that they hadn't taken any courses on nursing process in the college hence it was difficult for them to carry out it in the hospital".

As far as the nurses' knowledge on nursing process in the hospital is concerned, most of nurses have had knowledge but its implementation has had problems. This is due to patients to nurse ratio which was imbalanced, lack of time since nursing process format is very long made them not fully implement nursing care plan.

Qualitative Study Findings

A total of fourteen respondents were participated in this interview from four hospitals of the study area. The respondents' responsibilities were CEO, matrons and ward head nurses. The data collected from interviewees was summarized thematically by the core ideas they have responded. They were asked questions on factors that can affect implementation of nursing process. The respondents view and experience was summarized and expressed as follows:

Knowledge of nurses on nursing process

Most of participants said that, most of the nurses have good knowledge on nursing process, as a result of series training were taking except newcomer from rural health center and newly graduated whom weren't attending training on nursing process, in contrast some diploma nurse didn't know about nursing process due to they didn't learn it at college.

Majority mentioned that," *Regarding knowledge of nurses on nursing process in our hospital varies. Some of the nurses had taken training/ course/ in the school but it was different what was actually implemented in the hospital, where as some Diploma graduate nurses claimed that they hadn't taken any courses on nursing process in the college hence it was difficult for them to carry out it in the hospital".*

And also participant explained about regarding the knowledge of nurses on nursing process:

Most of nurses have had problem in identifying the nursing diagnoses from medical approach. They totally depend on prescription of physician while implementing nursing process/ nursing diagnosis that means most of the time they depend on medical approach rather than holistic approach .They frequently used medical approach.

"Most of the time the difficulty is in making the diagnosis. The interventions have always been identified. What is hard is to identify the nursing diagnosis, the objectives, to label them correctly. That is very hard. It takes a lot of time. Perhaps you label it in an inappropriate way or mixing the medical diagnosis with the nursing diagnosis"

Most of the key informants mentioned that a major challenge to the application of the nursing process in tertiary hospitals, although most of nurses' have good theoretical knowledge of the process, some nurses has not been translated into practice. In practical terms, their inadequate knowledge and experience have affected the application of the nursing process in the hospital. Another major challenge to the application of the nursing process in the hospital was shortage of nursing staff which result imbalance of nurse-to-patient ratio. Besides, nurses who are coming from Health centers were not as knowledgeable as nursing in hospitals.

Difficulties encountered with the implementation of the nursing process

This category refers to the difficulties and obstacles found by the participants during the implementation of the nursing process. Almost all participants' interviewees, they explained the challenges encountered when implementation of nursing process as follows:

Some of the challenges encountering to implement nursing process in the hospitals identified as contributing factors were includes: knowledge gaps among nurses, some nurses couldn't attend training, language barriers, lack of nursing care formats, Lack of interest by some of nurses due to negligence about nursing process; Lack of time due to work load implementing the standard care of the patients, lack of regular supervision by management and nurses work load. Some nurses didn't have interest to implement nursing process due to burden of work, patients to nurse ratio which was imbalanced, lack of time since nursing process format is very long and it's time consuming.

In order to implement nursing process properly

Factors that can facilitate the implementation of nursing process:

Majority said that, *"The first thing that should be done is while teaching nurses' the schools should be emphasized as well, just as the hospital setting is being focused"*.

Training must also be given; strong supervision provided with checklist should be maintained. As much as possible nurse the Ministry of Health should enhance nurses' interest by providing them with incentive like education promotions, certificates, giving awards and increment of salary ,the knowledge gap among nurse should be minimized by granting them continuous and ample training for those who require knowledge on nursing process. There should also be regular follow up and evaluation on the part of committee to fully apply it in the hospital. These challenges can be addressed through employing more nurses, by providing subsequent supervision by hospital administration, by equipping all nurses with training, by granting education opportunity for diploma nurses and providing some incentives to nurses to enhance their interest on nursing process.

Chapter Six

6. Discussion

This study assessed nursing process implementation and its associated factors in the tertiary hospitals in Oromia Regional State. From the total of 381 nurses 152(40%) had mentioned that they applied nursing process while 299(60%) had not implemented nursing process. In this study the identified variable which was significantly associated with implementation of nursing process was nurses' knowledge on nursing process.

One hundred fifty two (40%) implemented nursing process during provision of nursing care. This figure is nearly similar with the study conducted in Debre Markos and Finote Selam Hospitals about 37.1% of nurses were implementing nursing process very much and the rest 62.9% fall from not all practicing to somewhat practicing (21). There is strong evidence in the literature that indicate shortage of nurses exist globally and more specifically in developing countries. In contrast to this a study conducted in Mekelle findings revealed that the nursing process was not applied by following the scientific way in the hospitals. All the 200 respondents reported that they did not apply any of the nursing process steps and in-depth interview also all participants, commonly stated that the nursing process was not applied in patient care (16). The discrepancy might be due to difference in the study setting especially of time that, this study was conducted four years back after that study, so concerns might have been given to nursing process nationally with in these four years. Slightly this study is vary with study conducted in Addis Ababa which revealed ninety two (47.9%) of respondents were able to identify the problem, etiology and sign and symptoms of a given actual nursing diagnosis. Only 39(20.3%) of respondents were able to write a full actual nursing diagnosis that have consisted of problem, etiology, and manifestations of the problem (17).

Most of the key informants mentioned that a major challenge to the application of the nursing process in tertiary hospitals, although most of nurses' have good theoretical knowledge of the process, some nurses has not been translated into practice. In practical terms, their inadequate knowledge and experience have affected the application of the nursing process in the hospital. Another major challenge to the application of the nursing process in the hospital was shortage of nursing staff which result imbalance of nurse-to-patient ratio. Besides, nurses who are coming from Health centers were not as knowledgeable as nursing in hospitals.

Findings from medical record review slightly nearest to the findings of self administered assessments of nursing process application. Among records reviewed only 55.6% had completed nursing assessments including subjective and objective data present, 46% of records reviewed had properly written Nursing diagnosis that includes 'actual' and 'potential' nursing diagnosis using NANDA criteria (Actual = problem, etiology/cause/ sign or symptom, Potential = problem and Etiology/cause). Only 41% of reviewed medical records had documented Nursing care plan that including priority setting, goal and expected outcomes based on nursing diagnosis. One hundred forty five (40.5%) and 138(38.5%) of records reviewed had no evidence of intervention of nursing care as per the plan and had no evaluation of nursing process performed respectively. Thus, overall medical record reviewed completed were 38.5%. In general, this slight variation might be due to what nurse respond and know theoretically might be not practical in the real situation. Because everyone does not want to expose one`s inability or undesirable attitude towards nursing process.

The findings of this study showed that knowledge was one of the associated factors for the implementation of nursing process. Nurses who were more knowledgeable were more likely to apply nursing process. It also showed that the majority 65.9% of nurses had good knowledge of nursing process, could be said to be an indication of good attending of training on the concept of nursing process during pre-service learning. Knowledgeable nurses were 1.8 times more likely and significantly associated with implementation of nursing process than non-knowledgeable group nurses (AOR=1.766, 95% CI (1.101-2.834), P value 0.02). The result of this study is in agreement with study by Zewdu and Abera, (2015) found that highly knowledgeable nurses were 8.78 times more likely to implement nursing process than nurses who were not knowledgeable (14).

And also it's in agree with the study conducted in Nigeria on factors influencing the implementation of nursing process, indicated that knowledge factor has the highest predictive value of 0.350 in the use of nursing process, and the author concluded that the knowledge factor has the most important influence on the use of nursing process (23). *Majority of the key informants indicated that nurses lack knowledge to apply the nursing process in their hospitals.*

The quantitative result of this study identified that attitude towards nursing process had no significant association with the application of nursing process. But most of the key informants mentioned that attitude of nurses towards nursing process was affecting its application. This

discrepancy might be evident due to social desirability bias of the questionnaires. The qualitative result of this study is in agreement with the qualitative study result in Namibia which showed that some of key informants had negative attitudes and beliefs towards nursing process application which are important hindrance of nursing process application (15). Organizational factors like poor management support, poor monitoring and evaluation, inadequate nurse to patient ratio and poor recognition may have been responsible for the identified low level of nursing process implementation.

Chapter Seven

Conclusion and Recommendation

7.1 Conclusion

This study identified that the status of nursing process implementation was low in tertiary hospitals in Oromia Regional state during the study period, whilst the overall completeness of medical record reviewed was also found to be low.

The identified factor that had statistically significant association with nursing process implementation was knowledge of nurses on nursing process. Major factors identified using in-depth interviews were inadequate optimum nurse patient ratio, knowledge gap, and lack of updating nurses through training, negligence and high patient load.

Regarding the organizational factors affecting nursing process implementation the most important factors identified were: poor management support, poor monitoring and evaluation, imbalance of nurse to patient ratio and absence of recognition for the better performers.

The result of medical record review further identified that the method of documenting nursing process was fragmented and inconsistent; for instance, the fifth step of nursing process evaluation is not usually carried out.

7.2 Recommendations

Based on the study finding the following recommendations were drawn to:-

1. **Oromia Regional Health Bureau and Hospitals**
   - It is possible to recommend the regional health bureau, hospitals as well as the nurses to seek means to upgrade the knowledge of nurses on the nursing process and its implementation and the nurses to improve their knowledge on the nursing process application respectively.

- Hospitals should strengths the monitoring and evaluation of nursing process through established nursing process sub-implementation committee that can oversee, coach and auditing the performance of nursing process in the hospital including medical record completeness.
- Hospitals should apply the system of provision of recognition for the best performers and to create sense of competition among nurses.

2. Researchers

- Should conduct further study using different study design other than cross-sectional and document review from patient side.

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Annex-I: Consent form

Jimma University

Department of Health Economics, Management and Policy

This questionnaire is prepared to assess the implementation of nursing process and associated factors affecting implementation of nursing process among nurses working in tertiary hospitals found in oromia Regional State, Ethiopia. The assessment is for the partial fulfillment of Master of Healthcare and Hospital Administration (MHA). The results of the study will be used as base line information to design appropriate intervention strategies to increase nurses' capacity to conduct nursing process for their patients. The questionnaire contains both closed and open ended questions and will be provided in self administered form. Key informant interview will be guided with checklists for in depth interview. The information you provide is confidential and is used only for the purpose of this study. If you have any question, don‘t hesitate to ask the data collector. Your cooperation and participation until the completion of the questionnaire is very necessary for the successful completion of the assessment. We therefore ask your genuine willingness.

Risk/ Discomfort

By participating in this research project, you may feel that it has some discomfort especially on wasting time. But we hope you will participate in the study by considering the benefit of the research result. There is no risk in participating in this research project.

Benefits

If you participate in this research project, there may not be direct benefit to you but your participation is likely to help us in assessing implementation of nursing process among nurses. Ultimately, this will help us to identify the gap and take the appropriate intervention by the authorized stakeholder.

Incentives

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

Right to refuse or withdraw

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

Persons to contact:

If you have any question to ask, please contact

Israel Bekema

Tel: +251-921-825-625

Email = bekamaisrael@gmail.com

Are you voluntary (✓)Yes ☐ No ☐

Thank you in advance for your cooperation

Annex II: Questionnaires

Part I. Socio-demographic data

Instruction;-For closed ended questions circle on your responses and for open ended questions write your response on the spaces provided.

S.no	Questions	Response/s	Remark
101	Sex	1. Male 2. Female	
102	Age	1. <20 2. 20-24 3. 3. 25-29 4. 30-34 5. ≥35	
103	Marital status	1. Single 2. Married 3. Widowed 4. Divorce	
104	Educational status	1. Diploma 2. BSc 3. MSc	
105	Years of experience	1. <1yr 2. 1-4rs 3. 5-10yrs 4. >10yrs	
106	Institutions from where educational award is obtained	1. Government 2. Private	
107	The name of the hospital where you are working in	1. Adama hospital 2. Matukarl hosp 3. Nekemte hosp 4. Shashemene hosp	
108	Monthly income (In birr)	1. 1627-219 2. 2198-3145 3. 3146-4725 4. ≥4726	

Part II:- Nursing process implementation related questions

The following statements refer to the specific question of nursing process implementation. Please put right mark (✓) the response which must closely reflects your answer.

S.no	Items		Yes	No
201	Do you follow the steps of nursing process during provision of care?			
202	Do you develop complete nursing admission assessments for patients?			
203	Have you developed nursing diagnosis from your assessment?			
204	Have you developed nursing diagnosis	1. Actual		
		3. Potential/Risk		
205	Have you been preparing care plan based on your diagnosis			
206	Have you been implementing the care plan you have developed?			
207	Have you been evaluating the effectiveness of your intervention			

Part III:- Questions related with organizational factors affecting implementation of Nursing process

Instructions;- For closed ended questions circle on your responses and for open ended questions write your response on the spaces provided under response column.

S.no	Questions	Response/s	Remark
301	Does the hospital supply you with relevant tools to do your nursing care?	1. Yes 2. No	
302	Have you got on job training on nursing process?	1. Yes 2. No	
303	Does the nurse-patient ratio optimal to apply / implement the nursing process?	1. Yes 2. No	
304	Does the hospital administration support the application of nursing process?	1. Yes 2. No	
305	Are the monitoring and evaluation for application of nursing process?	1. Yes 2. No	
306	Does appreciating feedback available for application / implementation of NP?	1. Yes 2. No	
307	Is the allocation of resources for implementation of NP adequate?	1. Yes 2. No	

Part IV: Knowledge related questions

S.no	Questions	Response/s	Remark
401	Do you know components of nursing process?	1. Yes 2. No	
402	*If your answer is NO for Q # 401, end the question here.*		
403	How many steps did nursing process has?	1. Three 2. Four 3. Five 4. Six	
404	What is the core purpose of nursing process	1.To diagnose and treat human responses to actual and potential health problems 2.To treat the specific disease that the individual has 3. to treat problems with structure and function of organs or systems 4.To teaching about how diseases and trauma are treated	
405	A nurse should do one at the first step of nursing process	1.Collecting subjective and objective data 2. Directly intervening the problems of the patient 3. Evaluating what has be done for the patient 4. Indicating the activities to be done 5.Other, specify_____	
406	What makes nursing process different from medical approach?	1. Nursing diagnosis always focuses on the diseases than other human responses 2. Nursing diagnosis always focuses on human responses than diseases process 3. Both focuses on human responses but nursing process is limited to pathological problems4. Both have similar procedure to resolve a patient‘s problem 4. Other, specify_____	
407	Write down steps of nursing process in order?		
408	Mention types of nursing Diagnosis		
409	*“Ineffective airway clearance related to incisional pain as manifested by poor cough effort ”*	Identify Problem;- Etiology;- Sign/symptom;-	

Part V. Nurses’-Attitude related questions

The following statements refer to the specific nursing process. “The Attitude of nurse toward nursing process," as you sees it. The four columns provide spaces for the following responses:

Strongly agree (4) Agree (3) Disagree (2) Strongly disagree (1)

Please put right mark (✓) the response which must closely reflects your feelings. There is no right or wrong answers.

Variables	Strongly agree	Agree	Disagree	Strongly Disagree
I am ready/willing to implement nursing process				
I like the aim of nursing process				
I am fed up with hearing about the nursing process				
Nursing process can increase patient satisfaction towards nursing care				
I think the nursing staffs have no willingness to apply NP				
I do not see the need to implement the nursing process.				
The nursing process involves too much of paper work				
There is no enough time to apply NP during pt care				
I think the staff will never accept the nursing process				
The nursing process should be used by BSc only				

Annex III: Checklists of Record Review

In this medical record review there should be fully recorded and informative data based on the steps of each Nursing Process to tick **"Yes".**

NB: If the patient has more than one admission and nursing process performed, the last document will be reviewed.

Code	Characteristics	Response (✓)		Remark
		Yes	No	
601	Is nursing assessments including subjective and objective data present?			
602	Does the Nursing diagnosis properly written that include 'Actual' and 'Potential' nursing diagnosis? Actual = problem, etiology/cause/ sign or symptom Potential = problem and Etiology/cause			
603	Does the nursing care plan including priority setting, goal and expected outcomes developed? (Should be SMART)			
604	Do developed nursing care plan intervened as per the plan?			
605	Do evaluation is performed as planned?			

Annex IV: Key informant interview checklists

My name is Israel Bekema from Jimma University, Department of Health Economics, Management and Policy. I am studying a Master of HealthCare and Hospital Administration and I am carrying out this research for academic purposes. The study is designed to assess implementation of nursing process and associated factors in tertiary level hospitals Oromia Regional State, Ethiopia; I hope you will be willing to answer a few questions. Anything you tell me is confidential. Nothing you say will be personally attributed to you in any reports that result from this interview. All of our reports will be written in a manner that no individual comment can be attributed to a particular person.

Are you willing to answer my questions? Do you have any questions before we begin?

1. Is Nursing Process (NP) been implemented by nurses in this hospital? (*Establishment and functional Nursing Implementation sub-committee, Nursing workforce plan and Written policies about the Nursing process)*

.....

2. What is the most challenging factor that can affect implementation of nursing process? Explain

……....

3. How does hospital administration support NP implementation?

……..

4. How do you do evaluations/audit NP implementation?

…….....

5. Have you been providing recognition/reward for implementation of NP?

Thank you very much for your time and for sharing your experiences with us.

Do you have any additional comments or insight on Factors affecting nursing process implementation?

Do you have any questions for us?

Again thank you very much.

Have a good day!