

Implementation Status of Nursing Process and Associated Factors Among Nurses Working in Tikur Anbessa Specialized Hospital Addis Ababa, Ethiopia, 2017

Tsiyon Birhanu Wube¹, Teshome Habte Wurjine^{2,*}, Yohannes Ayalew Bekele²

¹Department of Nursing, College of Health Sciences, Aksum University, Tigray, Ethiopia

²Department of Nursing, College of Health Sciences, Addis Ababa University, Addis Ababa, Ethiopia

Email address:

tsyontd@gmail.com (T. B. Wube), teshome.habte@aau.edu.et (T. H. Wurjine), yohannes.ayalew@aau.edu.et (Y. A. Bekele)

*Corresponding author

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Abstract: Background: -Nursing process is a systematic method of assessing, diagnosing, planning, intervening and evaluating individualized care for clients in any state of health. Even if, its implementation is mandatory due to many factors, it is poorly implemented in most of the health institutions in the country and resulted loss of quality nursing care. Objective:-The aim of this study was to assess the implementation status of nursing process and its' associated factors among nurses in Tikur Anbessa Specialized Hospitals. Method: -A cross-sectional study design was conducted from February to March 2017 with a total of 151 participants and 271 medical records were selected by using Simple random sampling method. The collected data checked for accuracy, completeness and entered into epi- data version 3.1 and analyzed using SPSS version 22. Bivariate and multivariate logistic regressions were used to identify associated factors with nursing process implementation. Statistical significance interpreted using odds ratio with 95% CI & P value <0.05. Result: - A total of 151 respondents, mean age was 28.5 years and about 86 (57.6%) had implement nursing process. Working in medical ward unit [AOR=3.43, (1.01, 11. 5), surgical unit [AOR=9.59(2.21, 41.61), organized environment [AOR=4.44 (1.80, 10.95) and Good Knowledge [AOR=10.2, (3.05, 34.1) were significantly associated with the implementation of 271 medical card review 239 of the cards included nursing process registration form, among those 65 (24.6%) of them was found to include the nursing process and those staying in the hospital for 11-20 days and 21-30 days was [AOR= 1.8895 (1.01, 3.53) and AOR=2.84 (1.06, 7.5) were significantly associated with implementation of the nursing process. Conclusion and recommendation: In this study the level of nursing Process implementation was suboptimal and it needs further intervention to increase its utilization. Those who had worked at medical and surgical unit, organized work environment, good knowledge and length of stay were identified as possible determinant factors for the implementation of nursing process. Health care authorities must help in promotion of the health care with employing sufficient nurses, educational training and providing necessary situations for nursing process.

Keywords: Nursing Process, Determinants of Nursing Process, Nurses

1. Introduction

1.1. Background

Nursing is a profession that ensures the successful implementation of interventions which welcome and nurture life, promotes or restores health, enables the means to a peaceful, dignified and pain-free death [1]. It demands a

consistent, high level of critical thought, coupled with critical actions. This criticality is equated with the nursing process, which confines to a dynamic, single right solution, problem-solving process [2].

One of the most important policies in nursing job is using the nursing process model which is the systematic framework to assess the patients' needs in order to make clinical decisions based on complete science and art [3]. It was

developed based on the assumption that professional nursing practice is interpersonal in nature, assumes human beings as holistic, thereby acknowledging mind, body, emotion, spirit and environment are not separated but function as a whole [1].

The Nursing Process is a systematic problem-solving approach used to identify, prevent and treat actual or potential health problems and promote wellness. This includes five major steps, namely; Assessment, Nursing diagnosis, planning, implementation, and evaluating [4].

Assessment involves gathering subjective and objective data about the client's condition, diagnosis encompasses the human response needs that nurses deal with, planning involves prioritizing problem, setting goal and expected outcome, implementation plans, implementation of care involves skillful and competent actions taken to meet the needs of the client, evaluation is done to determine the success of the implemented care [5].

Importance of nursing process in the health care system is to: Speed up diagnosis and treatment of actual and potential health problems, reduce the incidence of hospital stays, improve communication through documentation, prevent errors, omissions, and unnecessary repetitions, Promotes flexibility and independent thinking, Tailors interventions for the individual (not just the disease) and Helps nurses to gain the satisfaction of getting results [1].

In theory, the majority of nurses have knowledge of the nursing process, but they do not apply it in practice due to many factors. As a result, problems identified with regard to the nursing practice, including a loss of quality care, disorganization of the service, and conflicting role among nurses, dissatisfaction of customers with the care provided, medication error, poor disease prognosis, and increased mortality. These problems are manageable if a nurse can properly implement the nursing process [6].

1.2. Statement of the Problem

Nursing process is a global concept, which forms the foundation of nursing as a profession. The use of nursing process in most hospitals is lagging behind due to different factors despite all the effort of nursing professionals to implement its use [7].

Different world health care organizations like world health organization (WHO), International Council of Nursing and the American Joint Commission on Accreditation of Hospital Nursing Service Standards highly recommended and gave emphasis that nursing process should be used in nursing documentation and promoted with the use of every nursing care [8]. According to the standards of nursing actions in the United States and Canada, performing professional nursing cares demand using the nursing process and, thus, participation of nurses in activities that lead to increase in knowledge toward nursing process is strongly recommended [9]. However, many evidences have shown that in most cases, the nursing process is carrying out by routine caring performance form rather than the systematic one [10, 11]. Despite the introduction of nursing process in the school of

nursing and department of nursing long ago, but the impact is not felt in the clinical area in certain parts of Africa like Ethiopia.

The utilization of the nursing process in a part of Africa has not reached the standard that is set by the profession's regulatory body. Factors influence its utilization in Africa need to be understood by comparing to, those factors that influence utilization of the nursing process in other parts of the world [12]. If the nursing process is not valued and not used, then nurses might continue to intervene in standardized nursing procedures on the basis of medical diagnoses rather than a rational based on the steps of the nursing process, then the question might arise in what way nurses assume accountability and responsibility for the patient and how the quality of nursing care could be measured [13]. As a result of poor implementation of the nursing process, reduction of job satisfaction and quality of care, devaluation of this profession by nurses themselves and their excessive dependency to the physicians, incorrect evaluation, neglecting of some of the authorities in this field, indisputable obedience, doing routine activities without thinking, conducting one dimensional care, reduce in patient's independence and costing heavy expenses due to doing repeated acts will happen [14].

The implementation of nursing process by nursing practitioners in different health care settings in Ethiopia is still not well developed and organized [15, 16]. Currently the Ethiopian health care system, demand the application of nursing process in every clinical practice. Due to this Ethiopian Federal Ministry of Health prepare and distribute standardized nursing care plan and nursing care practice standards for all health care settings and fostered increased awareness in use of nursing process through training in collaboration with different NGOs like Clinton foundation, ICAP -Ethiopia, and I-tech Ethiopia throughout the country. Despite this the utilization of nursing process in health institutions in Ethiopia there is still a big gap on the implementation of nursing process among nurses working in hospitals [1]. For example, of the total of 358 Medical records reviews in a governmental hospital of Harare and Dire Dawa in 2015, the nursing process registration form included in 134 cards among those only 26% was included five steps of nursing process [17]. Also, a study conducted in Addis Ababa selected governmental hospitals among 192 participated nurses, 52.1% of them implement while 47.9 % of them did not implement the nursing process [18]. Similarly, a study carried out on nurses working in selected government hospitals in southwest Ethiopia, show that from 138 participant 73.9% of the nurses applies the nursing process [19]. In contrast to this, study conducted in Mekelle zone hospitals northern Ethiopia, all the 200 respondents did not apply any of the nursing process steps [15]. Hence, all the studies conducted in Ethiopia except the study conducted in a governmental hospital of Harari and Dire Dawa did not try to cross check the response of nurses with the actual medical card records done towards the implementation of nursing process. This is important to obtain the exact result how the utilization practice looks like by avoiding social desirability

bias. In this study both the medical record review and response of nurse participants included which was not done by other researches.

Even though the Federal government of Ethiopia gives more emphasis on quality of health service in general and quality of nursing care in particular [1], there is still a big problem on the utilization of nursing process among nurses working in hospitals. [15] With this view, this study intended to be conducted to explore more about the factors that contribute to implementation nursing process in a well coherent manner and to forward a possible solution for the improvement of quality nursing care.

1.3. Significance of the Study

Poor quality of implementing nursing care plan leads to poor delivery of nursing care to patients. Quality of nursing care can be improved, if the factors hindering the application of nursing care plan are investigated.

This study assesses the barriers encountered by nurses in their daily implementation of nursing process which is a framework of delivering quality nursing care; this eventually serves as a reference on the challenges encountered by nurses and how best they can be solved. Therefore a better

understanding of factors affecting the implementation of nursing process can make nursing directors and decision makers aware of the factors and design a strategy in educational programs, governmental intervention and policy modification to tackle these factors. It will also recommend possible solutions for concerned bodies and used as baseline information for further study. Moreover, it helps the respondents in reminding and testing their knowledge and practice of nursing process implementation. Since, the study has included medical record review, it will examine the way how nurses implement components of the nursing process in the hospital.

1.4. Conceptual Frame Work

The conceptual frame work was adapted and modified from reviewing of many previous studies conducted [17, 19, and 20]. According to the frame work factors like socio-demographic of nurses (age, sex, educational level, year of service, position of nurses), knowledge and attitude of nurses, patient related factors (Cooperativeness, Length of stay) and organizational factors those may be either facilitator or barrier factors directly affect the implementation level of nursing process.

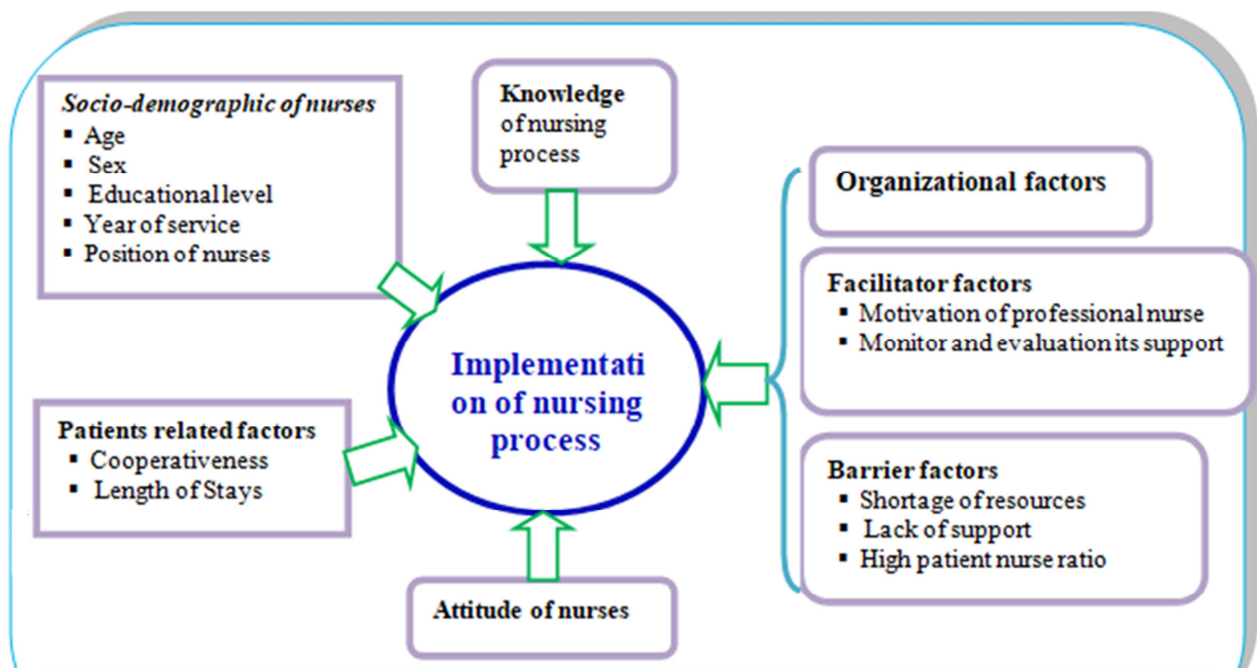


Figure 1. Conceptual frame work on nursing process implementation and associated factors.

2. Methods and Materials

2.1. Study Setting and Design

2.1.1. Study Setting

The study was conducted in Addis Ababa, the capital city of Ethiopia which was founded in 1886 by Emperor Menelik II and seat of Africa Union. It is the largest city of the country and occupies an estimated area of 526.99 square kilometers. Based on figures from the Central Statistical

Agency of Ethiopia, Addis Ababa has an estimated total population of 3,384,569 (CSA 2007). From the total 30 Hospitals in the city 12 found to be owned by the government. Among those, Tikur Anbessa Specialized Hospital (TASH) is one of them. According to data from the hospital's administrative unit; the hospital was inaugurated in 1964 E. C. This hospital sees approximately 370,000 – 400,000 patients per year and it has 625 beds and 836 nursing staffs. It is a specialized referral teaching hospital which is managed by Addis Ababa University (AAU).

2.1.2. Study Design and Period

A cross-sectional study conducted using quantitative methods from March, 2017 - April 2017.

2.2. Study Population, Sample Size Determination and Sampling Procedure

2.2.1. Study Population

All nurses working in the ward (in-patient department) in Tikur Anbessa Specialized Hospital. A one month medical record which is from March 1, 2017 to April 1, 2017 was taken as study Unit: this helped to obtain recent data on the practice nursing process.

2.2.2. Sample Size Determination

For nurses' participants: The sample size was determined by using single population proportion formula with marginal error (d) that will tolerate in either sides of the true proportion to be 5%, and using 95% confidence level, $\alpha=0.05$ and adding 10% to compensate for nonresponses and the proportion of application of Nursing Process was (P), 0.36 from the previous research [19].

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

$$n = \frac{(1.96)^2 (0.36)(1-0.36)}{(0.005)^2}$$

$$n=354$$

Where;

n = minimum sample size required for the study

$Z_{\alpha/2}$ = standard normal distribution (=1.96) with confidence interval of 95% and $\alpha=0.05$

p= prevalence Proportion of nursing process implementation from previous study (p=0.36)

Since the total nurses found in the selected inpatient departments in (222) was less-than final sample size which was (354) and the source population was <10,000, the finite population correction formula was employed and the final sample was 137.

By assuming non-response rate 10% the final sample size will be = 151.

For the medical record review; The sample size was determined by using single population

Proportion formula with P = 0.5

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

$$n = \frac{(1.96)^2 (0.5)(1-0.5)}{(0.005)^2}$$

$$n=384$$

The total number of cards registered admitted and discharged within one month was 675. By using the correction formula and addition of 10% non response rate the

final sample size become 271.

2.2.3. Sampling Procedure

From the total nurses in the hospital first, nurses working in In-patient department were selected then, among them nurses working in emergency, labor and delivery, Intensive Care Unit, Neonatal Intensive Care Unit and operation theaters were excluded. From the selected nurses by using the sampling frame which was obtained from the director office, nurses selected with simple random sampling method after proportional allocation for each unit.

Similar to the nurse's participant's medical cards selected with the same procedure. The medical card number obtained from HMIS registration book by taking the admission and discharged record of one month which is from March 01 to April 01, 2017.

2.3. Study Variables

1. Dependent (outcome) variable: Implementation of nursing process
2. Independent variable: Socio-demographic characteristics:– sex, age, educational status, working unit, working position and work experience.

Organizational factors:– on job training, adequate staffing, resource, supportive administration, time, monitoring and evaluation, work load and condition of working environment.

Nurse related factors:– knowledge and attitude

Patient related factors:– cooperativeness and length of stay

2.4. Eligibility Criteria

Inclusion criteria

1. Nurses working in TASH for equal or greater than six months.
2. Nurses who are working in In-patient wards include medical, surgical, obstetrics and gynecology, oncology, pediatric and orthopedic ward.

Exclusion criteria

1. Nurses working in the outpatient department.
2. Nurses working in emergency unit, labor and delivery unit, Intensive Care Unit, Neonatal Intensive Care Unit and operation theaters because these units has their own registration sheet other than nursing process steps.
3. Medical Card Numbers registered in oncology ward. In this ward there are a lot of patients admitted per week but, most of them are an admission for the purpose of routine treatment and radiology check up.
4. Number Patients admitted as a result of illness is less so there may be the chance of getting false result.

2.5. Operational Definitions

This study tries to operationalized terms by taking the previous studies as a base line [16, 17, 19, 20].

2.5.1. Operational Definition for Questionnaires

Implementation of nursing process: the status of nursing process application in practice by nurses in the hospitals.

1. *Implemented*- is the level of nursing process

application in which the nurses rendered nursing care based on all steps of the nursing process and did documentation in the patient's record.

2. *Not implemented*- nursing care is not carried out based on all steps of the nursing process and not documented.
3. Nurses' Knowledge -level of nurse's awareness about nursing process and classified as:
 4. *Good knowledge*: for nurses those who answer greater or equal to 80% of the knowledge related questions.
 5. *Fair knowledge*: for nurses those who answer 60 to 79% of the knowledge related questions.
 6. *Poor knowledge*: for nurses those who answer less than 60% of the knowledge related questions.
7. Nurses' Attitude - means the nurses perception towards nursing process and classified as:
 8. *Favorable attitude*: for those who have a mean score of more than or equal to 50% of attitude related questions.
 9. *Unfavorable attitude*: for those who have mean score of less than 50% of attitude related questions.

2.5.2. Operational Definition for Medical Card Review

- i) Nursing process implementation
 - (a) *Implemented* -cards those includes nursing charts as well as contain all steps of nursing process correctly.
 - (b) *Not implemented* -cards those not include nursing charts and did not complete all the steps of the nursing process in a correct way.
- ii) Performance of the steps of nursing process
 - (a) *Fully performed* -cards contain all the required statements or action which assigns for those steps.
 - (b) *Partially performed* -cards contain some of the expected statements or actions assigned for that step but not fully performed.
 - (c) *Incorrectly performed* -cards which contain statements or actions which are incorrect or inappropriate for the given steps
 - (d) *not performed* - cards which did not had any documented statements or actions for the given steps.

2.6. Data Collection Instrument

For nurse participants self administered structured questionnaire used. The questioner is adopted and modified from relevant review of many literatures [16, 17, 18, and 19]. The questionnaire composed of four parts: (1): include the socio-demographic data of the study participant's such as age, sex, educational qualification, years in service and work unit. (2) Implementation related questions, organizational and nurses -related questions. (3) Knowledge related question, (4) attitude -related questions based on Likert Scales. For medical record review the check list and measuring criteria was prepared based on previous studies, text books, NANDA check list, Gordon's Functional Health Pattern assessment tool and nursing care practices standards, Reference manual for nurses in Ethiopia [1, 17, 21].

2.7. Data Collection and Quality Control

To ensure quality of data training given for data collectors

and supervisor for two days prior to study period on objectives of the study, how to collect data, regarding ethical issues, and on data quality. Before the actual data collection to determine the questioner appropriateness and ethical soundness it was pretested on 10% of sample size in Zewditu Memorial Hospital. The finding of the pretest incorporated to modify and clarify the collection tool before actual data collection one supervisors who closely follow the data collection process and four data collectors recruited among the BSC nurses and three card collectors were also assigned for medical card review. During data collection, the supervisor had routine checkups for its completeness and scientific soundness. Additionally, the principal investigator checked the filled questionnaire and gave feedback for supervisor daily.

2.8. Data Processing and Analysis

Data first cleared, coded and entered into computer using Epi-data version 3.1 and errors related to inconsistency of data checked and corrected during data cleaning. Then data entered to SPSS version 22 statistical software packages. Descriptive statistics such as percentage frequency distribution, mean, ratio and standard deviation of different characteristics analyzed. Bi-variate analysis used to explore association between dependent and independent variable.

2.9. Ethical Consideration

Ethical clearance was obtained from the Institutional Review Board of Addis Ababa University, College of Health Sciences, Department of Nursing and Midwifery, from which an official letter written to Tikur Anbessa Specialized Hospital to get their permission and cooperation for the study. Approvals obtained from the mentioned hospital. In addition, consent obtained from participant, and confidentiality kept also, the respondents had the right not to participate or withdraw from the study at any stage of the study.

2.10. Dissemination and Utilization of the Result

The result of this research submitted to the ministry of Health and Addis Ababa University College of health science, school of nursing and midwifery. The result also communicated to Tikur Anbessa Specialized Hospital was the research study was conducted.

3. Result

Total of 151 study participants were interviewed using semi- structured questionnaire and 271 one month admitted and discharged medical card was reviewed with response rate of 95%.

3.1. Socio Demographic Status of Nurses

From the total 151 Respondents 99 (65.6%) were females. Majority of the study participants 118 (78.1%) were in the age group of 25 to 44 years. Mean age of the respondents were 28.5 years with minimum age of 21 and maximum age

of 55. As depicted in Table 1 below, Work experience of nurse varies from one to thirty years while majority lies on less or equal to four years (mean 4.92). Nurses whose clinical

service was less than and equal to four years were 91 (60.3%) and the rest 61 (39.7%) nurses had greater than four years.

Table 1. Socio demographic characteristics of nurses in relation to the implementation of nursing process in TASH hospital Addis Ababa Ethiopia, in 2017G. C.

Variable	Category	Not implementedN (%)	ImplementedN (%)	TotalN (%)
Sex	Male	26 (40.6)	20 (29.6)	52(34.4)
	Female	38(59.4)	61(70.1)	99(65.6)
Age	≤24	12(18.8)	17(19.5)	29(19.2)
	25-44	51(79.7)	67(77)	118(78.1)
	45-54	1(1.6)	2(2.3)	3(2)
	≥55	0(0.0)	1(1.1)	1(0.7)
	Degree	54(84.4)	84(96.9)	138(91.4)
Educational	Master	10(15.6)	3(3.4)	13(8.6)
	Medical Ward	15 (23.4)	27(31)	42(27.8)
Working unit	Surgical Ward	9(14.1)	27(31)	36(23.8)
	Pediatric Ward	19(29.7)	11(12.6)	30(19.9)
	Gyn/Obs ward	8(12.5)	10(11.5)	18(11.9)
	Orthopedic andOncology	13(20.3)	12(13.8)	25(16.6)
Working position	Head nurse	5(3.3)	9(6)	14(9.3)
	Case team coordinator	7(4.6)	5(3.3)	12(7.9)
	Staff nurse	52(34.4)	73(48.3)	125(82.8)
	≤ 4	33(21.9)	58(38.4)	91(60.3)
Service	5-10 yrs	27(17.9)	23(15.2)	50(33.1)
	11 -15yrs	2(1.3)	5(3.3)	7(4.6)
	16-20	1(0.7)	0	1(0.7)
	≥ 21	1(0.7)	1(0.7)	2(1.3)

3.2. Nursing Process Implementation Status

From the total of 151 respondents, 65(42.4%) did not document and implement all the five steps of nursing process whereas 86(57.6%) of the respondents mentioned that they

did nursing care based on nursing process as shown in Figure 2 below using all five steps: assessment, nursing diagnosis, planning, implementation and evaluation and done documentation.

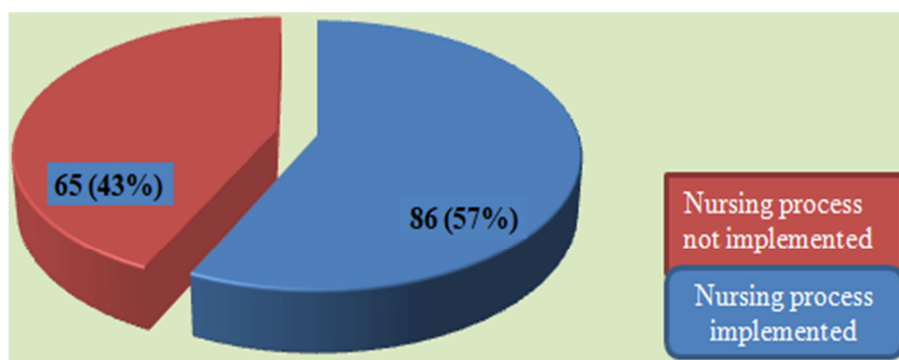


Figure 2. Nursing process implementation status at TikurAnbessa Specialized Hospital, Addis Ababa, Ethiopia.

From 47(31%) participants respond on the influencing factors for not implementing nursing process rated according to reason listed here; there are lots of patients so there is not enough time to apply 17 (36.2%), it is not as such important 11 (23.4%), lack of enough resource 9 (19.1%), it is not practically applicable 5 (10.6%), Patients are un cooperative or discharged before completing the planned 5 (10.6%).

Additionally, a total 271 medical records of admitted patients were reviewed to evaluate documentation on the nursing process. The result showed that 239 (88.2%) of the cards include the form or chart necessary to register the

phases of the nursing process documentation, but among them only 65 (24%) were recorded all the five steps of the nursing process. Among the steps of the nursing process measuring evaluation 210(77.8%) is not performed. In contrast 213 (78.6%) of the evaluation part stated without measurement or quantification of their outcome (in most of the cards on evaluation part they state; *the patient has a good prognosis* instead of measuring by how much the improvement is achieved. From the assessment by using Gordon's Functional Health Pattern as an assessment tool, objective data are less performed than the subjective data.

Nursing diagnosis was recorded correctly using NANDA label with three part statement etiology, related factors and defining characteristics were 165 (60.9%), 155 (57.2%) and 162 (59.8%) respectively.

3.3. Knowledge and Attitude of Nurses on Nursing Process

There were ten questions about knowledge which were measured as good knowledge, fair knowledge and poor knowledge. Majority of the participants 63(41.7%) had poor knowledge which is followed by 50(33.1%) fair knowledge. Regarding the overall attitude of nurses towards nursing process, among nine attitudes related questions, 64(42.4%) answer the attitude question above the mean and the remaining 87(57.6%) had unfavorable attitude towards the nursing process.

According to the medical card review, Even though majority of the cards document nursing diagnosis correctly,

their stated component was very limited to some statements or actions this revealed that majority of nurses has no enough knowledge on nursing diagnosis.

3.4. Organizational Related Factors

Regarding the organizational factors 91 (60.3%) said that the hospital administration were supportive in the application of nursing process and 124 (82.1%) mentioned there is a regular monitoring and evaluation has done. There are also participants, which forward complain like inadequate resource 87(57.6%), in-optimal nurse to patient ratio 93 (61.6%), rules made without considering staffs 77 (51%) and presence of unorganized work environment 89 (58.6%) as show in Table 2 below.

Most of the respondents 137 (90.7%) stated they work more than 8 hours per a day and serve greater than 6 patients per a day 112 (74.2%).

Table 2. Organizational factors in relation to the implementation status of nursing process among nurses working in TASH, Addis Ababa, Ethiopia, 2017 G. C.

Variable	Category	Not implement N (%)	Implement N (%)	Total
Working hour	≤ 8hrs	7(10.9)	7(8)	14(9.3)
	>8hrs	57(89.3)	80(92)	137(90.7)
Optimal nurse to patient ratio	Yes	19(29.7)	39(44.8)	58(38.4)
	No	45(70.3)	48(55.2)	93(61.6)
Working environment	Organized	18(28.1)	44(50.6)	62(41.1)
	Disorganized	46(71.9)	43(49.4)	89(58.9)
Service patients per Day	≤6	15(23.4)	24(27.6)	39(25.8)
	>6	49(76.6)	63(72.4)	112(74.2)
Work place anxiety	Caring many Patients	21(32.8)	37(42.5)	58(38.4)
	Rule without considering staff	34(53.1)	43(49.4)	77(51)
	Harassing co-workers	9(14.1)	7(8)	12(10.5)
Resource	Yes	25(39.1)	39(44.8)	64(42.8)
	No	39(60.9)	48(55.2)	87(57.6)
Support	Yes	33(51.6)	58(66.7)	91(60.3)
	No	31(48.4)	29(33.3)	60(39.7)
Monitor	Yes	49(76.6)	75(86.2)	124(82.1)
	No	15(23.4)	12(13.8)	27(17.9)
Feed back	Yes	11(17.2)	25(28.7)	36(23.8)
	No	53(82.8)	62(71.3)	115(76.2)

3.5. Factors Associated with Implementation of Nursing Process

As can be noted from the result of bivariate analysis (Table 3 and 4), eleven of the sixteen variables show a significant association with the implementation of the nursing process at the 5 % level of significance. Multivariable logistic regression was done by taking 11 variables into account simultaneously. The backward method, regression was used. The majority of variables which showed significant association with implementation of nursing process in bivariate analysis could not persist as significant in the multivariable analysis. These covariates were; sex, educational level, organizational status, nurse to patient ratio, anxiety, administration support, administration monitor, feedback from administration, and attitude to nursing process.

In the multivariate binary logistic regression analysis, only

three variables had shown an overall significant effect on the implementation of the nursing process at the 5 % level of significance. Working in the medical ward and surgical ward unit shows a significant association with the implementation of the nursing process. The odds of working in the medical ward unit were 3 times more associated with implementation of nursing process than to those who were working in the oncology and orthopedic unit [AOR= 3.43 at 95% CI (1.01, 11.5), and the odds of the surgical ward unit were 9 times more likely associated with implementation of nursing process [AOR= 9.59 at 95% CI (2.21, 41.6).

Those nurses who were working in organized environment were significantly associated with implementation of nursing process than to their counterpart. The odds of working in organized environment were 4 times more likely associated with the outcome variable of implementation of nursing process [AOR=4.44 at 95% CI (1.80, 10.95).

Those who had good knowledge had significant association with the outcome variable of implementation of the nursing process. The odds of good knowledge were 10 more likely to implement nursing process than those had poor knowledge [AOR=10.2 at 95%CI (3.05, 34.1)].

Table 3. Bivariate and multivariate analysis of implementation of nursing process among nurses working in TASH, Addis Ababa, Ethiopia, 2017 G. C.

Variable	Category	Not implement N (%)	Implement N (%)	COR	AOR
Sex	Male	26 (40.6)	20 (29.6)	0.6(0.3,1.23)	0.6(0.32,1.23)
	Female	38(59.4)	61(70.1)	1	1
Working unit	Medical	15 (23.4)	27(31)	1.95(0.71,5.33)	3.43(1.01,11.5)**
	Surgical	9(14.1)	27(31)	3.25(1.09,9.65)	9.59(2.21,41.61)**
	Pediatric	19(29.7)	11(12.6)	0.62(0.21,1.84)	1.88(0.32,4.36)
	GYN/OBS	8(12.5)	10(11.5)	1.35(0.40,4.75)	2.27(0.52,9.86)
	Orthopedic & oncology	1	1	1	1
Nurse to patient ratio	Yes	19(29.7)	39(44.8)	1.924(0.97,3.8)	1.7(0.69,4.59)
	No	45(70.3)	48(55.2)	1	1
Working Environment	Organized	18(28.1)	44(50.6)	2.62(1.3,5.2)	4.44(1.8,10.95)**
	Disorganized	46(71.9)	43(49.4)	1	1
Anxiety	Caring many patients	21(32.8)	37(42.5)	1	1
	Rule without considering staff	34(53.1)	43(49.4)	0.58(0.57,6.01)	3.561(0.25,50.6)
	Harassing coworkers	8(12.5)	4(4.6)	0.42(4.24)	1.56(0.25,50.6)
Support	Yes	33(51.6)	58(66.7)	1.879(0.97,3.6)	0.7(0.27,1.93)
	No	31(48.4)	29(33.3)	1	1
Monitor	Yes	49(76.6)	75(86.2)	1.9(0.874,4.32)	1.46(0.47,4.5)
	No	15(23.4)	12(13.8)	1	1
Feed back	Yes	15(23.4)	12(13.8)	1	1
	No	53(82.8)	62(71.3)	1	1
Knowledge	Poor	53(82.8)	62(71.3)	1	1
	Fair	21(13.9)	29(19.2)	1.8(0.86,3.90)	1.71(0.70,4.15)
	Good	7(4.6)	31(20.5)	5.9(2.2,15.4)	10.2(3.05,34.1)**
Attitude	Favorable	33(21.9)	31(20.5)	0.6	9(0.29,1.6)
	Unfavorable	31(20.5)	56(37.1)	1	1

** Significant at p value 0.05

As can be noted from the result of bi-variate analysis in the Table 4 below, two of the four variables show a significant association with the implementation of the nursing process from medical card review at the 5 % level of significance. Of these lengths of stay and having chart for documentation,

were entered in multivariate logistic regression with significance level at 0.2. Multivariable logistic regression was done by taking two variables into account simultaneously. The backward method, regression was used.

Table 4. Bivariate and multivariate analysis of implementation of nursing process among nurses working in TASH, Addis Ababa, Ethiopia, 2017 G. C.

Variable	Category	Not implement	Implement	COR	AOR
Length of stay in days	≤10	132(48.7)	31(11.4)	1	1
	11-20	52(19.2)	23(8.5)	1.8(1.01,3.5)	1.88(1.01,3.53)*
	21-30	12(4.4)	20(7.4)	2.84(1.1,7.5)	2.84(1.06,7.5)*
	31-40	4(1.5)	6(2.2)	6.4(1.69,24.0)	6.4(1.69,24)
	≥41	3(1.1)	0(0.0)	0.0(0.00)	0.9(0.0,0.0)
Having chart for documentation	Yes	174(64.2)	65(24)	0.27(0.08,0.94)	0.4(0.11,1.36)
	NO	29(10.7)	3(1.1)	1	1

In the multivariate binary logistic regression analysis, only one variable had shown an overall significant effect on the implementation of the nursing process at the 5 % level of significance. Those patients staying at the hospital for 11-20 days and 21-30 days were significantly associated with the outcome variable. Those stay in the hospital for 11-20 days and 21-30 days was 1.88(1.01, 3.53) and 2.84(1.1, 7.5) times more likely associated with implementation of nursing

process than staying less than ten days respectively.

4. Discussion

The aim of this study was to assess the implementation status of nursing process and associated factors among nurses working in Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia 2017.

4.1. Nursing Process Implementation Status

The level of implementation of nursing process was 86(57.6%). This study was consistent with the study conducted in the bale zone, Amhara region and Tehran which was 76 (52.1%) [20], 264(78.1%) [23] And 63(50.8) [22] respectively. But, it is very low when it compares with the study conducted in Sweden which

was 137 (98%) [24] This might be due to study area, measurement criteria to say nursing process is implemented and developmental status of the country. In contrast, this study is higher than with a study conducted in Debremarkos finoteSalem hospitals 46 (37.1%) [16] and the study in selected governmental hospital of Harer and Dire Dawa (36.6%) [17]. This variation might be due to lack of administration, monitoring and evaluation by a quality control officer in those hospitals. But in TASH, there is a strict order on implementation and a continuous monitoring and evaluation done by administrative staffs. Moreover, this hospital is a specialized referral hospital, so that it is expected to serve better standardized professional work.

In medical record review from the total 271 cards 239 includes the form necessary to register the phase of nursing process, among those only 65(24.6%), of cards were perform all steps of nursing process in corrected way. when it compares to the study conducted in Brazil, 100% presence of available register form, this study has low availability of the charts, This difference is might be due to the differences in the study area as well as the economic developmental status of the country. Similarly the study conducted in governmental hospitals Harare, Deredawa and Tigray were 70(35%) [25], 95 (26.5%) [17] of the cards includes the forms to implement nursing process among this only 95(26.5%) of the cards contain implementation of nursing process somehow this study is lower in implementation status this might be due to the sample size difference.

4.2. Knowledge About Nursing Process

The findings from this study identified that 38(25.2%) of respondents were has good knowledge, 50(33.1%) were has fair knowledge and 63(41.7%) had poor knowledge. In this study nurses who were Good knowledgeable were 10 times more likely implement nursing process than who had poor knowledge [AOR=9.1 at 95%CI (2.69, 30.9)]. This study was similar with the study conducted in Bale zone hospitals, South East Ethiopia Highly knowledgeable nurses were 3 times more likely and significantly associated with implementation of nursing process than moderately and low knowledge group nurses (AOR: 3, 95%CI: (1.302 - 8.425), P: <0.012)(34), even in previous study which was conducted before six year in Addis Ababa selected hospital shows, Highly knowledgeable nurses were 38.9 times more likely and significantly associated with implementation of nursing process than low knowledge group nurses (AOR: 38.913, 95%CI (10.3-147.006)). many studies revealed that knowledge is mandatory to implement the nursing process for example, 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, then it concludes knowledge is the main factors from all the pre request criteria for nursing process implementation.

In this hospital the main gaps observed from the component of nursing process were, nursing diagnosis, objective data collection and measuring evaluation. For instance, in diagnosis part about 56(41.8%) state acute or chronic pain, 34(25.5%) state knowledge deficit and 19(14.2%) state ineffective breathing pattern. this implies there is few words of etiology used through the hospital even if there are abundant lists are present in NANDA. From the related factor 156(87.2%) of them stated disease process as a related factor even though there are different related factors present for each problem. For defining characteristics amazingly 154(96.3%) of the evidence were verbally, this result show how much the nurse working in this hospital perform the nursing diagnosis in narrow range of knowledge.

4.3. Organizational Factors for the Implementation of Nursing Process

Working in medical and surgical unit were 14.4 and 40 times more likely associated with implementation of nursing process than nurse working in the oncology unit. This could be nurse working in medical and surgical unit had less work over load, adequate health provider(nurse to patient ratio), less flow of the patient to the ward the unit and severity or nature of the disease than oncology ward.

Working in the organized environment showed significant association with the implementation of the nursing process. The odds of working in organized environment were 4 times more associated with implementation of nursing process than compared to those who were not working in disorganized or stress full environment [AOR=4.44, 95%CI(1.8, 10.95)]. This study was similar to a study conducted at Arbaminch general hospital in (2014) (29) [AOR8.78.(2.97-77.48)] which indicated working in stress full environment was 0.23 less likely associated with implementation of nursing process. This could be working in the organized environments reinforce and stimulate activity of nurse works. In contrast if it is stress full it will increase the chance of making error and skipping some nursing activities may occur.

Other factors such as, suboptimal nurse to patient ratio (caring greater than six patients per day), rules made without consideration of staffs, inadequate resource, high work overload and unavailability of on job training are factors mainly the implementation of nursing process. Other studies conducted in many area states the organizational factor as predominant reason to implement the nursing process in effective way.

Additionally, patient related factors like the cooperativeness of the patients and length of stay has association with implementation of nursing process. For example length of stays in a day significantly associated with the implementation of nursing process. Those stay in the hospital for 11-20 days and 21-30 days was 1.88(1.01, 3.53) and 2.84(1.1, 7.5) times more likely associated with

implementation of nursing process than staying less than ten days respectively. This result explains as the chance of the length of stays increase during admission the probability of implementing nursing process increased.

5. Conclusion and Recommendations

5.1. Conclusion

This study indicated that the status of nursing process utilization among nurse was 86 (57.6 %) however according to the medical card review, among cards contains the nursing process sheet only 65 (24.4%) of them includes all the steps of nursing process in a correct way. Significant factors associated with utilization of nursing process in this study were: level of knowledge about nursing process, working environment of the institution, the working unit or ward where the nurses assigned, and the length of stay of the patients in the hospital were significant on the implementation of nursing process.

Other factors such as, sub optimal nurse to patient ratio (caring greater than six patients per day), rules made without consideration of staffs, inadequate resource, high work overload, unavailability of on job training, nurses poor attitude towards the nursing process, patient related like uncooperativeness and discharging before completing the treatment were some factors that hinder the implementation of nursing process.

5.2. Recommendations

It is well known that nursing process implementation is very essential to maintain nursing as a profession. The following measures should be taken to minimize some factors affecting implementation of nursing process. For the better implementation, the principal investigator would like to give the following recommendations for:

5.2.1. Nurses Scholars and Policy Maker

- (a) For nurse researchers it is better to focus to the challenges of the contemporary nursing in Ethiopia in comparison to the status of the international nursing.
- (b) Produce a standardized Ethiopian nursing practice with ethical code conduct if there is any performance of actions performed below the expected criteria or qualification.

5.2.2. Quality Control Staffs

During monitoring and evaluation of nursing process practice, it is better to check in the standard way by following updated scientific approach this helps the nurses to work accordingly which means with the highest quality of performance. This contributes for development of the nursing profession and introduction of evidence based practice through the staff.

5.2.3. Ministry of Education

It should not be theory-based alone, but a period of internship should be provided with specifically in the

application of the nursing process.

5.2.4. Hospital (Administration Staffs, Finance Office, Human Resource)

Provide opportunities like on job training or periodical training to update the knowledge of nursing process.

Provide some important charts, guidelines, text books on the wards this helps the nurses to initiate reading mood to update their knowledge. The hospital should provide the appropriate supply of instruments for nursing care.

6. Strength and Limitation of the Study

Strength of the Study

- (a) This study used medical card review which is not included in many studies. This helps to compare the reliability of the nurses' responses to the result of the card review towards the implementation of nursing process.
- (b) Data collectors are recruited from staffs out sides of the hospital this decrease biases.

7. Limitation of the Study

- (a) The study design was cross sectional which is used to investigate findings on a single point of time. So that the factors affecting implementation of nursing process out of the study period could not be investigated.
- (b) Quantitative questionnaire was prone to social desirability bias; because of every one do not want to expose once inability or unwanted attitude. The mismatch in the result between the card and questionnaire was an evidence for this bias.
- (c) Qualitative study design was not applied in the study so that it might not address more associated factors.

Conflict of Interest and Funding

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Authors' Contributions

TH, TB and YA, conceptualized the paper, searched literature, trained field researchers for data collection and wrote the results and discussion sections. All authors participated in data analysis, interpretation and in critical review of the manuscript, and drafted the manuscript for publication and each author read and approved the final manuscript.

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