

# Implementation of Nursing Process and Its Associated Factor Among Nurses at Woldia Comprehensive Specialized Hospital, Northern Ethiopia: An Institution-Based Cross-Sectional Study

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**Background:** Many countries have adopted the nursing process as a basic requirement for quality health care services, but there is a problem with its implementation in the clinical areas of many hospitals. Even though nurses accept the benefits of the nursing process, they do not use it practically. The implementation of the nursing process in Ethiopia is not well organized and developed. Many health care settings in Ethiopia demand the application of the nursing process in clinical practice.

**Methods:** An institutional-based, descriptive cross-sectional study design was conducted at Woldia Comprehensive Specialized hospital. A simple random sampling technique was applied to select study subjects. The data were collected using self-administered questionnaires from August (01/08/21) to September 01/09/2021. Binary logistic regressions were used. Then, P-value < 0.05 was considered statistically significant in this study.

**Results:** This study revealed that 62.8% of nurses implemented the nursing process. Work experience greater than or equal to five years [AOR: 1.79; 95% CI (1.31–4.84)], support from the administration of the organization to do the nursing process [AOR: 1.98; 95% CI (1.22–3.01)], and knowledgeable nurses [AOR: 2.21; 95% CI (1.32–4.97)] are significantly associated with the implementation of the nursing process.

**Conclusion:** More than sixty percent of nurses implemented the nursing process. Work experience, organizational support to implement the nursing process, and knowledge were significant factors affecting the implementation of the nursing process.

**Keywords:** nursing process, nurse, Woldia comprehensive specialized hospital

## Plain Language Summary

This study may be considered the first to assess the implementation of the nursing process and its associated factor among nurses at Woldia comprehensive specialized Hospital. Multiple logistic regressions were used to control the possible confounding factors to assess the relative effect of independent variables. It was impossible to establish a cause-and-effect relationship as the study design was a cross-sectional study design and due to the small sample size, the result might not be representative of all nurses working in Ethiopia.

## Introduction

Nursing process is a holistic approach designed with the nursing essence, its scientific basis, technology, main role, and humanist assumptions that encourage critical thinking, set priority, creativity, and permit solving problems in nursing practice.<sup>1</sup> It is a widely accepted method of problem-solving and has been suggested as a scientific method to guide nursing practice and helps with quality nursing care. It is a systematic method of assessing the clients' conditions, identifying their problems, designing plans to solve a problem, initiating the plans to put in practice, implementing them, and evaluating the extent to which the plans were effective in resolving the identified problems.<sup>2</sup> It has its steps that guide nurses in the

description of holistic nursing care. The steps are assessment, nursing diagnosis, outcome identification, implementation, and evaluation. The nursing process decreases the hospital stay of patients and increased patient satisfaction.<sup>3</sup>

Implementation of the nursing process allows the nurse to deliver quality nursing care using a systematic and goal-directed framework. An omission in the implementation of any of the steps of the nursing process leads to less optimal nursing care.<sup>4</sup> Poor implementation of the nursing process can result in poor quality of nursing care, disorganization of the health service, conflicting roles among nurses, medication errors, poor disease prognosis, dissatisfaction of customers with the care provider, increased hospital stays, and increased mortality.<sup>2-5</sup>

There were an estimated 2.9% to 3.7% of acute care hospitalizations in the USA and an estimated 44,000 to 98,000 patients die in hospital each year, with nearly half due to errors in the implementation of nursing care.<sup>2,4</sup> In Africa, many countries have adopted the nursing process as a basic requirement for quality health care services, but there is a problem with its implementation in the clinical areas of many hospitals. Studies conducted in many African countries found that while nurses generally accept the benefits of the nursing process, they do not use it practically.<sup>6</sup>

In Ethiopia, nurses are the largest group of health professionals. Considering its importance in improving the quality of health care, the Ethiopian hospital's reform implementation guideline sets the nursing process as one of the core components set to improve healthcare services.<sup>7</sup> However, in practice, it is not well implemented as evidenced by researchers done in different hospitals. These include 52.1% in Addis Ababa,<sup>8</sup> 32.7% in Arba Minch,<sup>9</sup> nearly absent in Mekele,<sup>10</sup> 35% in selected hospitals of central and North West Zones, Tigray,<sup>11</sup> and 37.1% in Debre Markos referral hospital and Finote Selam hospital.<sup>12</sup>

In general, the implementation of the nursing process by nursing practitioners in a different health care setting in Ethiopia is not well organized and developed. Currently, many health care settings in Ethiopia demand the application of the nursing process in clinical practice. This is shown by the Ethiopian Federal Minister of Health (EFMOH) prepared and distributed standardized nursing care plans and nursing care practice standards for all health care settings.<sup>13</sup> The demand for high-quality nursing care increases day by day. This demand will be solved through the implementation of the nursing process, which is the most important tool for putting nursing knowledge into practice. As a result, all nurses should implement the nursing process, and there the level of implementation should be identified in Woldia referral hospital as there is no study conducted before on the implementation of the nursing process. Therefore, this study is designed to investigate the implementation of the nursing process and the factors affecting it among nurses working in Woldia comprehensive specialized hospitals.

## Methods

### Study Setting

Facility based cross-sectional study design was conducted in Woldia comprehensive specialized hospital in Northern Ethiopia. Woldia is a hill market town and the capital town of the North Wollo zone. It is about 521 Km from Addis Ababa and 360 km from Bahirdar. The town has a total population of 75,496 of whom 37,279 are females and 38,167 are males.<sup>11</sup> The hospital have 17 specialists, 45 general practitioners, 172 nurses (94 BSc and 78 diploma clinical nurses), and 66 midwives. The study was conducted from august (01/0821 to September 01/09/2021).

### Study Design

Facility based cross-sectional study design was conducted.

### Inclusion and Exclusion Criteria

All nurses who were working in Woldia comprehensive specialized hospital were considered as the study population. Nurses who had at least 6 months of work experience were included in the study and nurses who were critically ill were excluded from the study. Furthermore, those nurses who were on annual and maternal leave, and those who were in short-term and long-term training during the study period were excluded from the study.

## Sampling Technique and Sampling Procedure

Woldia Comprehensive Specialized Hospital has seven nurse departments. So, in order to get representative sample we took the total sample size by allocated proportionally to each department. Then, from each department, study subjects were selected by a computer-generated simple random sampling method.

## Sample Size Determination

The sample size was calculated based on a single population proportion formula designated as  $n = (Z\alpha/2)^2 p(1-p)/d^2$ ; where  $n$  = the required minimum and feasible sample size,  $Z\alpha/2(1.96)$ : significance level at  $\alpha=0.05$  with 95% confidence interval,  $p$ : the proportion of implementation of the nursing process from a previous study (0.37),<sup>14</sup> and  $d$ : margin of error (5%). Then, the final sample size calculated was 113 after considering 10% non-response rate.

## Method of Data Collection

The data were collected using pretested, structured, adopted self-administered questionnaires prepared in English. The questionnaires include information on socio-demographic characteristics, organizational and nurse's related questions, knowledge, and practice assessment questions.<sup>13</sup> The questionnaires were pretested on 5% of the sample size at Dessie specialized hospital and the necessary correction was made based on the strength and weakness of the questionnaires. Furthermore, an amendment was done regarding the questionnaire format after the pretest. The data were collected by two BSc nurses and supervised by one MSc nurse. The data collectors were trained before actual data collection and the supervisors supervised the data collector closely. The nurses who scored mean and above the mean of knowledge-related questions were considered knowledgeable, whereas those who were scored below the mean were considered as not knowledgeable. Similarly, nurses who practiced the nursing process daily were considered as good practice, whereas those who were not practicing the nursing process at least once a day were considered under poor practice.

## Data Processing and Analysis

After the data collection, the data template format was prepared, coded, and entered into Epi data version 4.2. Then the data were exported to SPSS version 24 for analysis. The descriptive and analytic analysis was employed to describe the percentages and distributions of the respondents for socio-demographic characteristics, organization, and nursing-related characteristics, and the factors that influence the implementation of the nursing process. Bivariate and multivariate analysis was conducted for the association of the independent variables with the dependent variable. Crude and adjusted odds ratios with the corresponding 95% confidence intervals were also computed. P-value  $<0.05$  was considered statistically significant in this study. The results were presented in the form of texts and tables.<sup>9</sup>

## Data Quality Control

All data collectors and supervisors received one day training about objectives and the procedure how to collect the data using self-administer questionnaire. Moreover, the assessment tool was prepared first in English then translated in to local Amharic Language as per the mother tongue of the participant and again translated back into English to check the consistency of the questionnaire by language expert in both cases. The questionnaires was pre-tested on the population of 5% of study subjects at Dessie specialized hospital. Then, correction and modification of the questionnaire was undertaken accordingly. Furthermore, The investigator and supervisors were closely follow the data collection process throughout the data collection period. Investigator was reviewing the filled questionnaires at the end of data collection every day. The principal investigator and the supervisor was check the collected data for completeness and corrective measures was taken accordingly. The collected data was cleaned, coded and explored before analysis.

## Result

### Socio-Demographic Characteristics of the Respondents

Of the 113 respondents, 62 (54.9%) were males and 51 (45.1%) were females. The age of the respondents was ranged between 19 and 45 years with a median age of 26. The work experience of nurses varies from one to twenty-three years,

while the majority lies in less than five years with a mean of 4.4 years. The majority, 60 (53.1%) of the participants were diploma nurses (Table 1).

## Organizational and Nurse Related Factors

Of the total respondents, 78 (68.1%) worked overtime; of these, 94 (83.3%) of the nurses were dissatisfied with their payment (Table 2).

## Nurse's Knowledge and Practice of the Nursing Process

In this study 74 (62.8%) of nurses had a good practice of the nursing process and 61 (54%) were knowledgeable regarding the implementation of the nursing process. Eighty-nine respondents knew all components of the nursing process (Table 3).

## Factors Affecting the Implementation of the Nursing Process

Implementation of the nursing process among nurses was affected by working experience. Nurses who had work experience of  $\geq$  five years were 1.79 times more likely to implement a nursing process than those who had work experience of less than five years [AOR: 1.79; 95% CI (1.31–4.84)]. Similarly, nurses who got support from the administration of the organization to do the nursing process were 1.98 times more likely to implement the nursing process face than their counterparts [AOR: 1.98; 95% CI (1.22–3.01)]. The implementation of the nursing process is also affected by the knowledge of nurses regarding the nursing process. Nurses who had a good knowledge about the nursing process were 2.21 times more likely to implement the nursing process than nurses who had poor knowledge about the nursing process [AOR: 2.21; 95% CI (1.32–4.97)] (Table 4).

AOR; Adjusted Odds Ratio, CI; Confidence Interval, COR; Crude Odds Ratio

**Table 1** Socio-Demographic Characteristics of Nurses Working in Woldia Comprehensive Specialized Hospital, Northern Ethiopia, 2021

| Characteristics    |                | Frequency | Percentage (%) |
|--------------------|----------------|-----------|----------------|
| Sex                | Male           | 62        | 54.9           |
|                    | Female         | 51        | 45.1           |
| Age                | < 29           | 89        | 78.8           |
|                    | $\geq$ 29      | 24        | 21.2           |
| Marital status     | Single         | 76        | 67.3           |
|                    | Married        | 32        | 28.3           |
|                    | Widowed        | 5         | 4.4            |
| Educational status | BSc            | 53        | 46.9           |
|                    | Diploma        | 60        | 53.1           |
| Working experience | <5 years       | 60        | 53.1           |
|                    | $\geq$ 5 years | 53        | 46.9           |
| Working hours/day  | <8 hours       | 19        | 16.8           |
|                    | 8 hours        | 84        | 74.3           |
|                    | 12 hours       | 7         | 6.2            |
|                    | >12 hours      | 3         | 2.7            |

**Table 2** Organizational and Nurse's Related Factors for the Implementation of the Nursing Process in Woldia Comprehensive Specialized Hospital, Northern Ethiopia, 2021

| Variables                                     | Responses                                      | Frequency | Percentage (%) |
|---|--|-----------|----------------|
| Satisfied with payment                        | Yes  | 13        | 16.9           |
|   | No   | 64        | 83.1           |
| Workplace                                     | Stressful                                      | 47        | 41.6           |
|   | Negligent at a time                            | 40        | 35.4           |
|   | Disorganized                                   | 26        | 23             |
| Effect of staff turnover                      | Decreasing productivity                        | 27        | 23.9           |
|   | Disorganized service delivery                  | 61        | 54             |
|   | Decrease spread of knowledge                   | 25        | 22.1           |
| Methods used to make work visible             | Recording every activity performed             | 42        | 37.2           |
|   | Using the nursing process                      | 44        | 38.9           |
|   | Reporting to the supervisors                   | 8         | 7.1            |
|   | Working on a patient problem                   | 16        | 14.2           |
|   | Nothing used                                   | 3         | 2.7            |
| The major reason for patient turnover         | Poor understanding of modern medicine          | 38        | 33.6           |
|   | Poor economic status                           | 55        | 48.7           |
|   | Long time required to get the service          | 19        | 16.8           |
|   | If they have incurable diseases                | 1         | 0.9            |
| How it influences your nursing care delivery? | Discharge before completing interventions      | 27        | 23.9           |
|   | Not cooperative for the care that you provide  | 19        | 16.8           |
|   | Inability to collect required materials        | 32        | 28.3           |
|   | Complicated cases that patients presented with | 35        | 31             |

## Discussion

This study revealed that 62.8% of nurses were implementing the nursing process and the rest. This is not enough compared to the demand of the nursing process. This might be due to the reason that nurses working in Woldia comprehensive specialized hospital had work overload. However, the result of this study is higher than studies conducted Harar (48.9%), Addis Ababa (52.1%) and Finote Selam hospitals (37.1%).<sup>8,12,16</sup>

This variation might be due to the difference in the level of nurse's knowledge about the nursing process, training availability, and follow-up on the implementation of the nursing process. Thus, nurses working at hospitals found nearby universities believed to have better knowledge to practice nursing process. The possible reason is that there will be continuous follow-up and training on the implementation of the nursing process. It might be also due to the different study years, which the previous studies were conducted before five years when the issue of nursing process was not emphasized. Conversely, the prevalence of implementation of nursing process in this study is lower than studies

**Table 3** Nurse's Knowledge About the Implementation of the Nursing Process at Woldia Comprehensive Specialized Hospital, Northern Ethiopia, 2021

| Variables   | Correct No (%) | Incorrect No (%) |
|---|----------------|------------------|
| Component of nursing process (steps of nursing process)   | 89 (78.8%)     | 24(21.2%)        |
| Applying gordon approach  | 66 (58.4%)     | 47 (41.6%)       |
| A nursing diagnosis is better to solve a patient's problem with diabetes mellitus chronic complication in the future? | 30 (26.5%)     | 83 (73.5%)       |
| The difference between the nursing process and medical approach   | 72 (63.7%)     | 41 (36.3%)       |
| Better accomplishment of nursing process  | 65 (57.5%)     | 48 (42.5%)       |
| Activities performed in the planning phase of the nursing process   | 25 (22.1%)     | 88 (77.9%)       |
| The nurse is expected to perform the implementation step of the nursing process                                       | 53 (46.9%)     | 60 (53.1%)       |
| Guide for evaluation of nurses performance in nursing process   | 49 (43.4%)     | 64 (56.6%)       |
| Identify problem, etiology and sign/symptom of nursing diagnosis  | 87 (77%)       | 26 (23%)         |
| Write full nursing diagnosis  | 76 (67.3%)     | 37 (32.7%)       |

conducted in Nigeria (64.22%) and Brazil (98.7%),<sup>15,16</sup> This substantial difference might be due to the difference in socio-demographic factors of nurses, patient flow, nurse and patient ratio, and organizational facilities that can help to implement nursing process. The additional possible reason may be due to differences in the study setting, availability of resources, and technological advancements. Since Ethiopia is one of the low-income countries, there is a shortage of nurses, lack of training, and limited resources which deters the implementation of nursing process.

Regarding the level of knowledge, 54% of nurses were knowledgeable and the remaining 46% were not knowledgeable about the nursing process, which lower than the finding of a study conducted in Harar Regional Hospital, which 87.7% of the respondents were knowledgeable, and 14.4% were not knowledgeable.<sup>16</sup> However, it is higher than the findings of a study conducted in Mekelle Hospitals, where nearly 90% of nurses had poor knowledge and the remaining 10% had fair knowledge.<sup>10</sup> It is also inconsistent with a study done in Arba Minch, where 23.34% of nurses were highly knowledgeable, 44.9% were moderately knowledgeable, and 31.63% were poorly knowledgeable.<sup>9</sup> It varies with the finding of a study conducted at Debre Markos and Finote Selam hospitals, where 58.1% were highly knowledgeable, 30.6% moderately knowledgeable, and the remaining 11.3% poorly knowledgeable. The finding of the current study also disagrees with a study done in Addis Ababa, where 16.1% of participants were highly knowledgeable, 52.6% moderately knowledgeable, and 31.2% poorly knowledgeable.<sup>8,12</sup>

The variation may be due to differences in the study setting. In the previous studies, all participants were from university hospitals, where nurses may have the opportunity to be trained about nursing process.

The level of knowledge in this study is inconsistent with a study conducted in Nigeria, where 92% of nurses had good knowledge, while only 8% of participants had poor knowledge about nursing process.<sup>15</sup> Similarly, it is inconsistent with a study done in Saudi Arabia, where 94.6% of participants had good knowledge regarding nursing process. The possible justification is that the variation in work experience, support from the organization, lack of training, and nurse-to-patient ratio. Nurses who had an experience of five years and above were nearly two times more likely to implement the nursing process than their counterparts. This is because experienced nurses build knowledge and a positive attitude towards the nursing process, which directly motivates them to implement the nursing process. Nurses who got support from the hospital administration to do the nursing process were more likely to implement the nursing process due to initiatives from the organizations. The findings of this study also showed that nurses who had good knowledge were 2.21 times more likely to implement the nursing process. This is because knowledgeable nurses can easily understand how a patient gets improvement, which is due to the practicing of the nursing process.

**Table 4** Bivariate and Multivariable Analysis of the Implementation of the Nursing Process Among Nurses Working at Woldia Comprehensive Specialized Hospital, Northern Ethiopia, 2021

| Variable   | Response      | Practice |      | COR (95% CI)      | AOR (95% CI)      |
|--|---------------|----------|------|-------------------|-------------------|
|  |               | Good     | Poor |                   |                   |
| Marital status   | Single        | 48       | 28   | 1                 | 1                 |
|  | Married       | 22       | 10   | 1.28 (0.53–3.09)  | 0.99 (0.29–3.38)  |
|  | Divorced      | 1        | 4    | 0.15 (0.02–1.37)  | 0.42 (0.03–7.00)  |
| Sex  | Male          | 43       | 19   | 1.4 (0.86–4.02)   | 1.20 (0.66–4.89)  |
|  | Female        | 28       | 23   | 1                 | 1                 |
| Work experience  | <5            | 19       | 41   | 1                 | 1                 |
|  | ≥5            | 42       | 11   | 2.77 (1.95–4.54)  | 1.79 (1.31–4.84)  |
| Patient give care per day                                    | <5            | 4        | 9    | 1                 | 1                 |
|  | 5–10          | 30       | 18   | 0.13 (0.03–0.55)  | 2.27 (0.45–11.46) |
|  | 10–15         | 13       | 8    | 0.49 (0.17–1.36)  | 1.96 (0.33–11.47) |
|  | >15           | 24       | 7    | 0.47 (0.14–1.60)  | 3.42 (0.56–20.75) |
| Equipment to implement nursing care                          | Yes           | 31       | 25   | 0.73 (0.24–1.14)  | 0.74 (0.27–2.04)  |
|  | No            | 40       | 17   | 1                 | 1                 |
| Support from the administration to do nursing process        | Yes           | 58       | 23   | 2.32 (1.23–4.39)  | 1.98 (1.22–3.01)  |
|  | No            | 11       | 21   | 1                 | 1                 |
| Monitoring and evaluation for application of nursing process | Ye            | 58       | 30   | 1.63 (0.73–4.39)  | 1.08 (0.57–5.50)  |
|  | No            | 13       | 12   | 1                 | 1                 |
| Worked overtime  | Yes           | 52       | 25   | 1.57 (0.83–4.18)  | 1.40 (0.50–3.87)  |
|  | No            | 19       | 17   | 1                 | 1                 |
| Knowledge  | Knowledgeable | 46       | 6    | 2.64 (1.28 –6.19) | 2.21 (1.32–4.97)  |
|  | Not knowledge | 25       | 36   | 1                 | 1                 |

## Conclusion

In this study, more than sixty present nurses implemented the nursing process. Work experience of nurses less than five years, absence of organizational support of nurses to implement the nursing process, and poor knowledge of nurses about the nursing process were significant factors affecting the implementation of the nursing process. Having a work experience of fewer than five years may cause the nurse to have poor knowledge, which further deters the implementation of the nursing process. If the organization does not support the nurse to implement the nursing process, it will not focus on the practice and lead to poor implementation of the nursing process. Therefore, the nurse and nurse educator should update their knowledge on the nursing process, theoretical aspects, as well as practical aspects, especially for new graduate nurses. There should be also orientation and training about the nursing process. In addition, nurses' patient care knowledge in general and the nursing process, in particular, should be evaluated and monitored periodically. Furthermore, policymakers (FMOH), health office planer or director and other concerned bodies should give special attention to improve implementation of the nursing process.

## Strength and Limitations of the Study

This study may be considered the first to assess the utilization of the nursing process at Woldia comprehensive specialized Hospital. Multiple logistic regression was used to control the possible confounding factors to assess the relative effect of independent variables.

It was impossible to establish a cause-and-effect relationship as the study design was a cross-sectional study design and due to the small sample size, the result might not be representative of all nurses working in Ethiopia.

## Abbreviations

AOR, Adjusted Odds Ratio; BSc, Bachelor of Science; CI, Confidence Interval; COR, Crude Odds Ratio; EFMOH, Ethiopian Federal Minister of Health; SPSS, Statistical Package for Social Science.

## Data Sharing Statement

The datasets used for analysis are available from the corresponding author on reasonable request.

## Ethical Approval

Ethical clearance was obtained from the Institutional Review Board of Woldia University. An official letter was written to the Woldia comprehensive specialized hospital with ethical id of CHS /012/02. Permission was obtained from the administrative staff of the hospital. Verbal informed consent was approved by the Institutional Review Board of Woldia University and the data were collected after taking informed oral consent from study participants. The study participants were also informed of the attainment of confidentiality and anonymity or any identifiers.

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## Author Contributions

GY. Wrote the main manuscript text, GY, AG, AF, and AW. Wrote the methodology and the discussion section. GY, AG, AW, and TG. Prepared tables. All authors contributed to data analysis, drafting, or revising the article, have agreed on the journal to which the article will be submitted, gave final approval of the version to be published, and agree to be accountable for all aspects of the work.

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## Disclosure

The authors declare that they have no competing interests.

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