COLLEGE OF HEALTH SCIENCE

SCHOOL OF NURSING AND MIDWIFERY

DEPARTMENT OF NURSING AND MIDWIFERY

AWARENES, PRACTICE PATTERN, AND PERCEIVED BARRIER TOWARD CHEMOTHERAPY INDUCED NAUSEA AND VOMITING PROPHYLAXIS GUIEDLINE ADHERENCE AMONG NURSES IN ONCOLOGY UNITS AT SELECTED HOSPITALS IN ADDISS ABABA, ETHIOPIA, 2019.

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A THESIS SUBMITTED TO THE SCHOOL OF GRADUATE STUDIES OF ADDIS ABABA UNIVERSITY, DEPARTMENT OF NURSING AND MIDWIFERY,IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTERS IN ONCOLOGY NURSING.

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APPROVAL SHEET

ADDS ABABA UNIVERSITY

COLLEGE HEALTH SCIENCE SCHOOL OF ALLIED SCIENCES DEPARTMENT OF NURSING AND MIDWIFERY

I, the undersigned MSc student, declare that I have submitted my original work on a title Awareness, practice pattern, and perceived barriers toward CINV prophylaxis guideline adherence among nurses working in oncology units of selected hospitals in Addis Ababa, Ethiopia,2019.for the examination.

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STATEMENT OF DECLARATION

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ACRONYMS AND ABBREVIATIONS

AAU	Addis Ababa University
AC	Anthracycline
ASCO	American Society Of Clinical Oncology
AUC	Area Under Curve
CINV	Chemotherapy Induced Nausea And Vomiting
GCCP	Guideline Consistent CINV Prophylaxis
GI	Gastrointestinal
GICP	Guideline Inconsistent CINV Prophylaxis
HEC	High Emetogenic Effect Chemotherapy
MEC	Moderate Emetogenic Effect Chemotherapy
IRB	Institute Of Review Board
MASCC	Multinational Association Of Supportive Care In Cancer
N&V	Nausea And Vomiting
NCCN	National Comprehensive Cancer Center
NK-1	Neurokinin-1
NK-1RA	Nurokinin-1 Receptor Antagonist
5HT-3	Serotonin5-Hydroxytrypitamin
5HT-3R	Serotonin-5 Hydroxytrypitamin Receptor Antagonist
SPHMMC	St. Paul Hospital Millennium Medical College
SPSS	Statistical Soft Ware For Social Science
TASH	Tikur Anbesa Specialized Hospital
USA	United States Of America

TABLE OF CONTENTS

APPROVAL SHEET I

APPROVAL BY THE BOARD OF EXAMINATION II

STATEMENT OF DECLARATION III

ACKNOWLEDGEMENT IV

ACRONYMS AND ABBREVIATIONS V

TABLE OF CONTENTS VI

LIST OF FIGURES X

Abstract XI

CHAPTER ONE: INTRODUCTION 1

1.1: Background of the study 1

1.2. Statement of the problem 3

1.3: Justification 6

1.4: Significance of the study 7

2: LITERATURE REVIEW 8

2.1. Demographic and Professional Characteristics Related Factors 8

2.2: Awareness toward Guideline Recommendation, And Practice Pattern of Guideline Adherence for the Prophylaxis of CINV. 8

2.3: Perceived Barriers toward Management of CINV. 11

3: OBJECTIVES 13

3.1. General Objectives 13

3.2. Specific Objectives 13

4: RESEARCH METHODS 14
4.1. Study Design, Setting and Period 14
4.2: Source Population 14
4.3. Study Population 14
4.4: Eligibility Criteria 15
4.4.1; Inclusion Criteria 15
4.4.2; Exclusion Criteria 15
4.5; Sample Size Determination 15
4.5.1; Sampling Procedure 15
4.5.3; Data Collection Instrument 15
4.5.4; Data Collection Procedures 16
4.6. Study Variables 16
4.6.1. Dependent Variables 16
4.6.2. The Independent Variables 16
4.6.3: Operational Definition 17
4.7; Quality Control 17
4.8.0. Data Processing and Analysis 18
4.1.1. Ethical Consideration 18
4.1.2 Dissemination and Utilization of Results 19
5: RESULT 20
5.1:Socio-demographic and professional characteristics 20
5.2:Nurses'Awareness Toward CINV Prophylaxis Guideline 21
5.3: Practice pattern toward CINV guideline adherence 23

5.4: Nurses' Barriers toward CINV prophylaxis guideline adherence 24

5.5: Nurses' Awareness toward CINV prophylaxis guideline and associated factors 25

5.6: Nurses' Practice regarding CINV prophylaxis guideline adherence and associated factors 26

6: DISCUSSION 29

7: STRENGTH AND LIMITATION OF THE STUDY 32

7.1: Strength Of The Study 32

7.2: Limitation Of The Study 32

8: CONCLUSION AND RECOMENDATION 33

8.1: Conclusion 33

8.2: Recommendation 33

REFERENCES 35

ANNEX I: Research Participant Information Sheet 39

Questionnaire (Check list) 41

LIST OF TABLES

Table 1: Socio-demographic and professional characteristics the participant(n=79) ..... **Error! Bookmark not defined.**

Table 2: Awareness of the participant about CINV guideline recommendation, (n=79) 22

Table 3: practice pattern of the participants toward CINV prophylaxis guideline adherence:(n=79) 23

Table 4:Association b/n awareness of CINV prophylaxis guideline and socio-demographic and professional characteristics of participants: (n=79) 26

Table 5: Association of socio demographic and professional characteristics and practice pattern toward CINV prophylaxis guideline adherence of the participant(n=79).....27

LIST OF FIGURES

Figure 1: Conceptual Frame Work :Source: From literature reviews of(27) ,28 ,31 ,32,37). 12

Figure 2: participants perceived barriers of CINV prophylaxis guideline adherence (n=79).. **Error! Bookmark not defined.**

Abstract

Background: Nausea and vomiting remain among the most distressing side effects of treatment with chemotherapy. Chemotherapy Induced Emesis Can Impair Quality of Life and poor control of emesis can interrupt or force withdrawal from critical chemotherapy. Therefore, Nurses play crucial roll toward assessment, prevention, and management of Chemotherapy Induced Nausea and Vomiting. Knowledge of Nurses to triage patient problems and assist in the evaluation of symptoms and initiation of interventions, information about the last chemotherapy treatment and evidence from the current emesis guideline, guide the nurse in determining the patient's disposition and treatment. Therefore, it is important to determine and enhance the nurses' awareness and practice toward chemotherapy induced nausea and vomiting prophylaxis guideline and, reduce barriers that prevents the nurse not to act in line with the guideline.

Objectives: To assess awareness, practice and perceived barriers toward current CINV prophylaxis guideline adherence among nurses working at selected hospitals in Addis Ababa, Ethiopia, 2019,

Methods: Institution based descriptive study design was used to conduct the study in selected hospitals, at Addis Ababa, from April1-30, 2019. The study area was selected using purposive sampling method. Selection of the study participant by population census method from the source population nurses working in oncology units at selected hospitals. Using population census method 79 nurses were participated with response rate of 97%. The data was cleared and entered in to EPI-data version 4.2 then exported to SPSS version 24. Data analysis result was described in frequencies, means, and standard deviations, the association of demographic variables with nurse's awareness and practice was done using bivariate and multi- vairate logistic regression.

Result: from the total of 79 nurses 49(62%) were female and the mean age of the participant was 29.6±4.08years old. only 60% of the study subject have good awareness where as 59% of the participant have poor practice regarding Chemotherapy induced nausea and vomiting guideline adherence. being oncology certified[**AOR**: 1.477; 95% **CI** (1.110,1.967)and CINV training[**AOR**: 1.638; 95% **CI**(1.213, 2.212)]were significantly associated with CINV awareness.

Conclusion: nurses working in oncology unit have favorable awareness but they didn't practice regarding CINV guideline recommendation

Key words: CINV, Nurses Awareness, Challenges/Barriers, Guideline Adherence

CHAPTER ONE: INTRODUCTION

1.1: Background of the study

Cancer Patients experience a considerable number of symptoms during the course of their disease, Of these symptoms, chemotherapy-induced nausea and vomiting is one of the most reported, and it increases the cancer burden on patients (1,2).

Nausea is defined as the unpleasant feeling causing the desire to vomit, and can be accompanied by symptoms such as tachycardia, dizziness and weakness, followed by vomiting, which is the contraction of the muscles of the abdomen and diaphragm that triggers the expulsion of stomach contents (3).

Chemotherapy induced nausea and vomiting is a collective term used to describe the presentation of nausea, vomiting, or a combination of both symptoms associated with the administration of cytotoxic chemotherapy. Although nausea and vomiting are related concepts, they involve distinct physiologic mechanisms and are therefore defined separately (4)

As the healthcare delivery system changes and new scientific discoveries are integrated into cancer care, the role of the oncology nurse will continue to evolve. Oncology nurses currently work in a variety of roles and settings that were unheard of 10 years ago, but are now increasingly commonplace. In the ambulatory setting, oncology nurses function in nurse-run clinics that provide services such as long-term follow-up care to patients with cancer, prescreening prior to chemotherapy administration (5).

Oncology nurses are challenged on a daily basis to deal with the numerous symptoms of patients with cancer encounter because of their cancer or its treatment. Knowledge of Nurses to triage patient problems and assist in the evaluation of symptoms and initiation of interventions, subjective and objective data, including information about the last chemotherapy treatment , guide the nurse in determining the patient's disposition and treatment, This information assists in the treatment of nausea and vomiting and evaluation of the effectiveness of prescribed treatments(6-8)

The main role of nurses in the field of oncology is chemotherapy administration which is sensitive domain in oncology nursing where little negligence or mistake may lead to adverse consequences for patients, staff, and nurses (9).

Practitioners, especially oncology nurses, play an important role in Chemotherapy induced nausea and vomiting assessment and management Oncology nursing professionals play a key role in the care of patients receiving chemotherapy. However, to do so, they require access to the most recent clinical information and guidance, the latest developments in chemotherapy induced nausea and vomiting therapy, and expanded knowledge of chemotherapy induced nausea and vomiting Pathophysiology. In addition, oncology nursing professionals need evidence based practice focused on appropriate screening in order to better identify patients at risk of chemotherapy induced nausea and vomiting before chemotherapy begins, and developing the skills to undertake a comprehensive assessment of chemotherapy induced nausea and vomiting once treatment has been initiated(10).

Oncology nurses have assisted in the development of chemotherapy induced nausea and vomiting prophylaxis guidelines for the use of antiemetic particularly the 5-hydroxytryptamine–receptor antagonists, These guidelines outline the optimal use and safe delivery of antiemetic drugs and have proved to be an effective means of cost containment(11)

In general, the guidelines recommend prescribing a NK-1 receptor antagonist along with a 5-HT_3 receptor antagonist and dexamethasone for prevention of chemotherapy induced nausea vomiting in patients receiving high emetic chemotherapy, and a 5-HT_3 receptor antagonist and dexamethasone in patients receiving moderately emetic chemotherapy (12).

1.2. Statement of the problem

Worldwide, more than 12 million individuals are newly diagnosed with cancer annually Of 8.2 million cancer deaths in 2012, 65% occurred in less developed regions (13).

Chemotherapy-induced nausea and vomiting (CINV) is one of the most reported side effects of cancer treatment with an estimated that 50% of patients experiencing it after therapy (14).

Chemotherapy-induced nausea and vomiting (CINV) is a common problem occurring in the absence of antiemetic drugs in up to 99% of patients treated with highly emetogenic chemotherapy (HEC) and in 30%to 90%of those receiving moderately emetogenic chemotherapy(15).

It can result in significant morbidity and can negatively affect quality of life. However, in recent years many new antiemetic medications and combinations have become available, dramatically decreasing the incidence and severity of this dreaded complication. Risk factors include the emetogenic potential of the specific drug, the dose used, the treatment schedule, and how chemotherapy agents Are combined. For example, a drug with a low emetogenic potential given in high doses may cause a dramatic increase in the potential to induce N&V(16).

Delayed nausea and vomiting is associated with cisplatin, cyclophosphamide, and other drugs (e.g., doxorubicin and ifosfamide) given at high doses or given on 2 or more consecutive days(17).

In a large European observational study, 1000 patients who had received guideline-consistent antiemetic treatment had significantly better CINV control than those did not receive guideline-consistent treatment. The complete control rates were 60% versus 51%, respectively (18).

Study conducted in the United States the incidence of No CINV was significantly higher in the guideline consistent chemotherapy induced nausea and vomiting prophylaxis(GCCP) cohort Than the guideline inconsistent chemotherapy induced nausea and vomiting prophylaxis(GICP) cohort (53.4% v 43.8%; P .001). The adjusted odds of No CINV with GCCP was 1.31 (95% CI, 1.07 to 1.69; P .037) (19).

Several institutional guidelines on the management of CINV are released and updated regularly, for example, the national comprehensive cancer network (NCCN), oncology nursing society (ONS), American society of clinical oncology (ASCO) and multinational association of supportive care in cancer (MASCC)(20).

Despite the existence of guidelines, CINV remains prevalent and the guidelines are not fully implemented in clinical practice (20). This results in under treatment of CINV, which may lead to delaying or discontinuing chemotherapy treatment and lead to a reduced quality of life (21).

Nurses have an important role in implementing appropriate strategies to minimize the occurrence of chemotherapy-induced nausea and vomiting. As well as pharmacological agents, advice regarding eating little and often, avoiding strong smells, and an understanding that it is okay to abstain from food intake for 24 hours as long as fluid intake is good can be reinforced at treatment sessions. Non-Pharmacological interventions, including acupressure and acupuncture, also been used with some effect. Ginger is also a common and popular remedy(22-24)

In Jordan, most nurses do not receive specific training on caring for patients with cancer, so their oncology knowledge and skills gained mainly from clinical experience. without accurate assessment and strong knowledge of available treatments, effective CINV management might not be achievable (25)

The prevalence of CINV in the oncology unit of TASH, Addis Ababa, Ethiopia is reported to be 83%, this is not specific study on chemotherapy-induced nausea, and vomiting rather it was a study at 12-oncology unit of TASH on drug related problem. Antiemetic used to counteract CINV is Limited to 5-HT3 antagonists in combination with dexamethasone, as aprepitant is not yet available in the country. and also most of the nurses who encounter cancer patients here in black lion were responsible for administering the ordered chemotherapy for the patient, so the aim of this study is to assess the nurses awareness About emetic effect of different type of chemotherapy, practice pattern in line with anti-emetic guideline and barriers to manage CINV(26).

The outcome of the study will help to identify weather the nurses use evidence based practice or not. Moreover, the result will directly guide CINV treatment for cancer patients in the direction recommended by the ASCO 2016, and other guidelines given such actual gaps are present. In

addition, identifying the relationship between CINV management practice and potential barriers will help in focusing on the respective factors while managing the condition. The study will certainly help in drawing attention to the matter and in doing so help cancer patients get the required and adequate prophylaxis for CINV.

1.3: Justification

The challenges confronting nurses in today's rapidly changing health care environments have highlighted the necessity for well prepared for Evidence based practice at clinical set up and literatures highlighted the burden of CINV on patients QOL in addition to the cancer. If the CINV is not well managed the patient forced to refuse to take his treatment regimen, so to prevent further complication and treatment withdrawal the nurse must be competent with both science and skill to manage and prevent CINV, it is vital to explore the awareness, practice and perceived barriers to manage CINV using guideline recommendation.

1.4: Significance of the study

The result of this study will be helpful to make institutions service evidence based; the institutions can use this research finding as an input to improve the quality service delivery. It gives the clinical environment to utilize antiemetic guideline for the successful prevention and management of CINV. And it uses nurses to see them self and recommends them to update their knowledge toward management of CINV, and It can also improve anti-emetic guideline adherence practice of nurses working in each institution, who administers chemotherapy for cancer patients by getting in service training, which intern cancer patient will benefited, by being served by knowledgeable and skillful nurses. It also uses the nurse coordinator or all the concerned body to think about in service training for nurses to enhance their knowledge, skill and to avoid or minimize barriers of nurses to manage CINV, lastly it uses as a reference for future researcher.

2: LITERATURE REVIEW

2.1. Demographic and Professional Characteristics Related Factors

Nurses in the outpatient setting stated significantly greater confidence in their knowledge; 75% of those in outpatient settings said they were confident or very confident, compared to 57% of those in inpatient and 47% in the other settings (p = .002). More experience in oncology setting (p = 0.012) and being ONS members (p = .011) also were associated with greater confidence(27)

Studies done in 16 European Countries, respondents had 15 years (median) experience as an oncology nurse and most were able to suggest or prescribe anti emetics. Most (169, 80%) worked in the public not-for-profit hospital setting, seeing both in- and outpatients (107, 50%). While nurses were most familiar with ASCO (97, 46%) and MASCC/ESMO (84, 40%) guidelines, individual institution guidelines were used most (99, 47%)(28).

Hematology/ oncology nurses reported that delayed nausea was problematic (50 %). Interestingly, a higher proportion of hematology/oncology nurses indicated that acute nausea was the most problematic to manage compared with hematology/oncology physicians (20%, P<.0001). The percentage of hematology/oncology nurses who strongly agreed/ agreed that CINV is well controlled in their patients was 88%, (P=.01)(37).

2.2: Awareness toward Guideline Recommendation, And Practice Pattern of Guideline Adherence for the Prophylaxis of CINV.

The major risk factor for chemotherapy induced nausea and vomiting is the intrinsic Emetogenesity of the chemotherapy, young women treated with highly emetogenic chemotherapy, Patients who experience motion sickness, and low intake of alcohol have a higher risk of chemotherapy induced nausea and vomiting(29)

Intravenous chemotherapy drugs were sorted into four emetogenic categories. highly emetogenic agents includes: cisplatin, high-dose cyclophosphamide, carboplatin and dacarbazine. with highly emetogenic chemotherapy, the incidence of CINV would be greater than 90% in the absence of any preventive therapy, with moderately emetogenic chemotherapy, the incidence of chemotherapy induced nausea and vomiting would be 30-90%(30).

Most nurses rated the chemotherapy dose, administration route, number of cycles of chemotherapy, history of nausea (non-chemotherapy related), history of CIN, history of CIV, and anxiety as somewhat or very influential on the patient's experience of CIN and/or CIV In contrast, Most participants were unsure that the level of alcohol intake, a history of drug addiction, and a psychiatric history were important influences on the patient's experience of CIN and CIV(31).

Study done in USA showed that nurses were most familiar with national comprehensive cancer network(NCCN) (73%) and American society of clinical oncology(ASCO) (48%) antiemetic guidelines. While (77%) of the participant felt that antiemetic prescribed were consistent with guideline recommendations and, practice patterns of antiemetic use showed poor adherence to those guidelines, particularly during the delayed phase following highly emetogenic chemotherapy, Where only 25% of nurses reported administration of guideline-recommended agents(27).

Research indicated that 88% to 95% of oncology nurses' reported that their patients' CINV,was well controlled with their current antiemetic regimens, but also indicated that 25% of their patients experienced uncontrolled CINV. Regardless, many of these same providers indicated that they stopped or delayed their patients' chemotherapy after CINV symptoms (32).

Study conducted in Australia, China, Hong Kong, and Nine Latin American countries shows more than one-third of participants regarded their own knowledge of CINV as fair to poor. (96.5%) of the participant agreed that chemotherapy-induced nausea and chemotherapy-induced vomiting would consider separately (79%), but only 35% were confident in their ability to manage chemotherapy-induced nausea (53%) or chemotherapy-induced vomiting (59%). Only one-fifth reported frequent use of a standardized CINV assessment tool and only a quarter used international clinical guidelines to manage CINV. however, participants perceived their own knowledge of CINV management to be insufficient(31).

Another study done in 16 European country shows key discrepancies between antiemetic use and guideline recommendations were: **i)** underutilization of NK1RAs, 5-HT3RAs and a steroid on day 1 in the HEC setting and **ii)** high use of 5-HT3RAs during days 2-5 when guidelines recommend a steroid. Metoclopramide use (not guideline recommended) was also high, with 30% and 50% of

nurses reporting usage for acute and delayed phases, respectively, for both HEC and MEC settings.(28)

Retrospective study in Japan, risk analysis indicated that age younger than 55-year-old was a significant factor that reduces the control of both nausea and vomiting. Olanzapine (5 mg/day for 5 days), when added to the standard three-drug antiemetic medication, significantly improved the control of nausea and complete response.(33)

In South Korea a 5-hydroxytryptamine-3 receptor antagonist ($5HT_3$-RA) prophylaxis for the acute phase was administered to 79/80 patients (98.8%) for HEC and 70/71 patients (98.6%) for MEC regimens. Triple regimen (corticosteroid-$5HT_3$-RA-neurokinin 1-RA) was initiated in 46/80 patients (57.5%) for prophylaxis of acute **CINV** in cycle 1 of HEC Double regimen (corticosteroid-$5HT_3$-RA, with or within NK_1-RA) was initiated in 61/71 patients (83.1%) for control of acute **CINV** in cycle 1 of MEC(34).

A Multicenter prospective study in eight European countries evaluated the predictors for CINV development, including patient- and treatment-related characteristics. One of the most important predictors was the use of antiemetic medications inconsistent with international guidelines. The study showed that the adherent to antiemetic guidelines was critical to optimizing CINV management(35).

Another small retrospective cohort study included 49 pediatric oncology patients who completed their first cycle of chemotherapy. That study found that 14 out of 49 patients experienced breakthrough nausea and vomiting. All antiemetic regimens that were ineffective to prevent CINV were found to be inconsistent with the standard guidelines.(36)

Prospective observational study in Sudan revealed that 90% of pre-chemotherapy antiemetic prescriptions did not adhere to antiemetic guidelines. The trends of non-adherence included an overuse of ondansetron (14%), under-prescribing of dexamethasone (16%) and corticosteroid duplication (14%). Regarding antiemetic use for the prevention of delayed emesis, the data showed that 90% of antiemetic prescriptions were non-adherent with ASCO guidelines, with overuse of ondansetron (20%) and metoclopramide (37%) and lack of dexamethasone prescriptions (80%) on days 2 and 3 being the most frequently reported trends. The percentage of

patients with complete response (no emesis or rescue therapy) over 5 days post chemotherapy was 36%(37).

2.3: Perceived Barriers toward Management of CINV.

Study in Europe revealed that the most common barrier to the use of guideline recommended agents reported as physician preference 84(40%). Product cost and formulary inclusion also played a role. The two most common challenges in managing CINV were "controlling nausea and vomiting in the delayed phase" (64%) and "reducing the impact of CINV on patients' quality-of-life" (61%).(28)

Another study In USA showed that, The predominant barrier interfering guideline-recommended antiemetic prophylaxis was reported as physician preference (71%) (27)

Study in Germany reported barriers to effective management of CINV included: cost of antiemetic, poor patient adherence to antiemetic regimens, limited formulary antiemetic options, and health care providers' poor adherence to guidelines. In addition, respondents selected intravenous (IV) as the preferred route of administration of antiemetic primarily because of "convenience for the patient" a greater percentage of hematology/oncology nurses preferred IV antiemetic compared with hematology/oncology physicians (60vs 42 %; P=.002) (32).

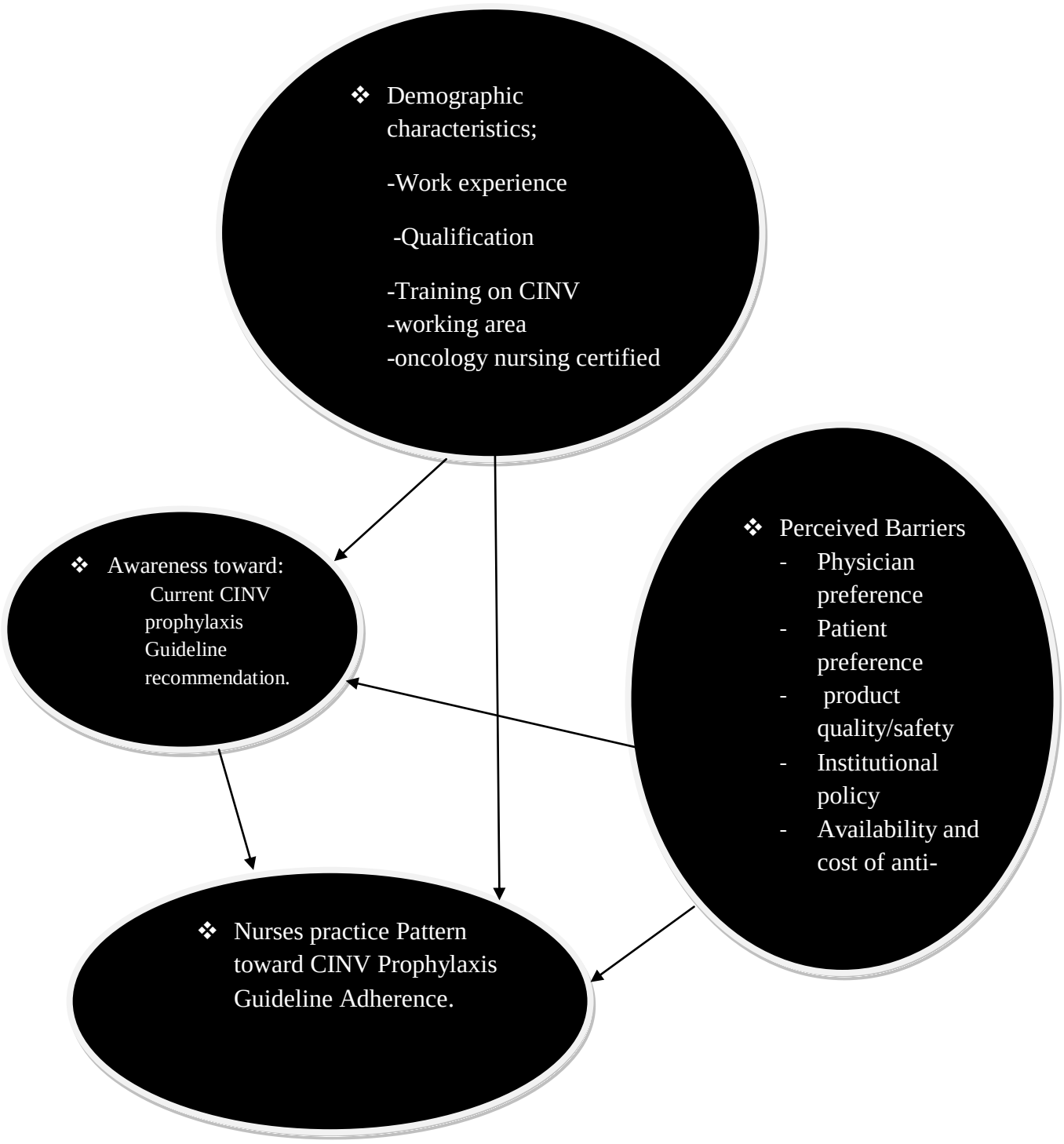

Figure 1: Conceptual Frame Work :Source: From literature reviews of(27) ,28 ,31 ,32,37).

3: OBJECTIVES

3.1. General Objectives

- To assess awareness, practice pattern, and perceived barrier of chemotherapy induced nausea and vomiting prophylaxis guideline adherence among nurses working at oncology units of selected hospitals in Addis Ababa, Ethiopia, 2019.

3.2. Specific Objectives

- To assess awareness of antiemetic guideline recommendations among nurses in oncology units at selected hospitals in Addis Ababa.
- To Determine the practice patterns of antiemetic use and antiemetic guideline recommendations among nurses in oncology units at selected hospitals, Addis Ababa.
- To Explore their perceptions of barriers to adhere the antiemetic guideline recommendations among nurses in oncology units at selected hospitals, Addis Ababa.

4: RESEARCH METHODS

4.1. Study Design, Setting and Period

Institution Based Cross Sectional Study Design was used. The study was conducted at selected governmental in Addis Ababa, Ethiopia. Addis Ababa is the capital city of Ethiopia and Africa, with a population of around 3.4 million according to the 2013 population projection of Ethiopia. Its area is estimated to be 530Km2 With Altitude ranging from 2200 to 3000 meter above sea level. Average temperature of 22.8^{0c},and average rainfall of 1180.4mm. The current hospital pillar in Ethiopia offered at governmental and private hospitals. Addis Ababa has Forty private hospitals and twelve governmental hospitals.

Tikur Anbesa specialized hospital and, St. Paul specialized hospital, was selected for study area purposively by considering having oncology unit. Currently the total number of nurses working in oncology units of Black lion hospital is 56 and the total number of nurses in oncology units of St. Paul was 26

The data collection, was conducted from March 1-May 30, 2019 at selected hospitals in Addis Ababa, Ethiopia.

4.2: Source Population

The source population was the nurses working in oncology units at selected hospitals in Addis Ababa, Ethiopia, 2019

4.3. Study Population

The study population was the nurses working in oncology units at selected hospitals in Addis Ababa and who fulfills the eligibility criteria.

4.4: Eligibility Criteria

4.4.1; Inclusion Criteria

-The study participant must be a Nurse who currently works in oncology ward, oncology OPD, Daycare center For Chemotherapy Administration, and Chemotherapy administration units of selected Hospitals.

- Nurses' currently working in chemotherapy administration unit, and available at the time of data collection.

- Nurses' who was willing to participate in the study.

4.4.2; Exclusion Criteria

-Nurses', who was not available at the time of data collection was not selected.

- Nurses' who was not willing to participate in the study.

4.5; Sample Size Determination

From the total of 82 nurses' working in oncology units at selected hospitals, 79 nurses who were available during the data collection time and who fulfill the inclusion criteria included in the sample using population census approach.

4.5.1; Sampling Procedure

Study area selected for this study was by using purposive sampling method, out of twelve governmental hospitals in Addis Ababa only two hospitals was selected. The study population selected by population census formula and 79 nurses were selected, working in oncology units of these two hospitals with convenient method was used.

4.5.3; Data Collection Instrument

The data collection instrument was adapted from different literatures (27). The questionnaires was pre-tested to check whether the questions are simple, clear, and easily understandable. The questionnaire consists of four sections, the part-one includes demographic questions, part-two

includes nurses awareness toward guideline recommendation, part- three concerned with nurses practice pattern toward current CINV prophylaxis Guideline adherence, and part-four about the nurses perceived barriers toward adherence to the guideline.

4.5.4; Data Collection Procedures

Data was collected by self-administer type questionnaire's. For data collection Six BSc nurses for data collector and two MSc nurses for supervisors was used. before data collection Data collectors was explain the objective and purpose of the study to the respondents and oral consent was obtained . After filling of questionnaire by participants. Data collectors and supervisors were check the questionnaires for competences.

4.6. Study Variables

4.6.1. Dependent Variables

- Nurses Awareness Toward Antiemetic Guideline Recommendation And, Practice Pattern Toward Current Chemotherapy Induced Nausea and Vomiting Prophylaxis Guideline Adherence.

4.6.2. The Independent Variables

- **Demographic Characters**

  -Age

  - Gender

  -Years of experience in chemotherapy administration

  -Qualification

  -Work setting (OPD, Ward)

  -certificate in oncology

  -CINV related training (supportive care training)

- **Perceived Barriers**:

  -Physician interference

  -Patient preferences

  -Product cost

  -Perceived compliance

- Products unavailability
- Products safety

4.6.3: Operational Definition

Adequate Awareness: The nurse who answers the questionnaires, scored mean, and above considered as having adequate awareness.

In-Adequate Awareness: The nurse who answers the questionnaires, scored below the mean, considered as having in-adequate awareness.

Good Guideline -Adherence: Among the three international CINV guidelines recommendations, the nurses who report that they were utilizing at least one of the guideline recommendation for prophylaxis of chemotherapy induced nausea and vomiting and respond above the mean score value of practice questionaries' said to be adherent

Guideline Non –Adherence: Among the three international guidelines recommendations, the nurses who report that they do not utilizing any of the guidelines recommendation for prophylaxis of Chemotherapy induced nausea and vomiting, and respond below the mean score value of practice questionaries' said to be non- adherent.

Perceived Barriers: The Nurses mention the reason or condition, which was affect their utilization of international guideline recommended for chemotherapy-induced nausea and vomiting.

4.7; Quality Control

The quality control was assured by giving training for data collectors about the Objective and purpose of the research, how the data collection procedures proceeds and how to approach the participants and not to interfere the response of the participants. 5% pretest was done with nurses who currently working in cancer unit in Hawasa referral hospital. finally the collected data was checked for completeness and inconsistencies before the analysis process. The collected data was checked for the completeness of the questionnaire.

4.8.0. Data Processing and Analysis

Data were checked for completeness, edited and entered into Epi data version 4.2.2 and exported to SPSS version 24 for analysis,

Descriptive result was presented with frequencies, means, and standard deviations from the demographic data.

Bivariate and multivariate analysis was used to see the association of independent with dependent variable. Logistic regression model was employed to control confounding variables, and some of the statistical test like, odds ratio (crude & adjusted) was used to measure their association and some of the results was compared with results of other studies.

A weighted Rank score was calculated for the response regarding the barriers in preventing and managing CINV in their practices. Respondents were asked to rank the major barrier from a list of nine perceived barriers; which already listed on questionnaires, Finally adding all the response of the Participant, the response which gets higher score was the major perceived barriers of nurses which makes the nurses poorly adherent to CINV guideline.

4.1.1. Ethical Consideration

Ethical clearance was Obtained from IRB of Department of Nursing and Midwifery research committee. Supportive permission letter was obtained from school of nursing and midwifery to concerned hospital for data collection. Data collectors was obtained oral consent from the study participant after explaining the purpose and benefit of the study. The respondents was guaranteed anonymity and confidentiality of the information they share not only this but also knowing that they have a full right to with draw and ask any question about the research at any time. In addition, nothing will happen on their future carrier if they wanted to refuse or withdraw.

4.1.2 Dissemination and Utilization of Results

The Finding of this study will be Disseminated Through submission and preparation of seminars for different nursing education institutes. On the top of this, it will publish to keep the acceptability document .it uses for the future researchers who want to study on this topic.

5: RESULT

5.1:Socio-demographic and professional characteristics

From the 82 nurses working in (TASH and SPMMHC) hospitals and selected for this study, 79 were responded the questionnaire's and included in the analysis making the response rate of 97%. The mean age of the participant was 28.85 years with the minimum age 24 years and the maximum age was 42 years old. Nearly two-third of the respondents were female 48(60.8%).

Regarding educational status of the respondent, most of the respondents have BSc degree 66(83.5%), followed by10 (12.7%) MSc holders, while only 3(3.8%) of the participant have diploma in nursing. Of the total 45(57%) of them not oncology certified and 43(54.4%) of the nurses doesn't trained for chemotherapy induced nausea and vomiting management training.66(83.5%) of the nurses have less than 5 years of clinical experience in oncology. 34.8% of them works in chemotherapy administration unit and the others were in oncology ward and outpatient department (29.1%and 35.4%) respectively. Only 2.5% of nurses were working as a nurse manager while the majority 91% of them works as staff nurse.

Table 1: Socio-demographic and professional characteristics the participant(n=79)

Factor	Category	Frequency(n)	Percent(%)
Age(years)	20-30	51	64.6%
	31-40	26	32.9%
	41-50	2	2.5%
	Above50	0	0%
Sex	Male	31	39.2%
	Female	48	60.8%
Working area	OPD	28	35.4%
	Ward	23	29.1%
	Chemo administration unit	28	35.4%
Educational level	Diploma	3	3.8%
	BSc	66	83.5%

	MSc	10	12.7%
Certified in oncology nursing?	Yes No	34 45	43% 57%
Have you trained for CINV management?	Yes No	36 43	45.6% 54.4%
Nursing experience in oncology unit	Less than 5 years 6-10 11-15 More than 16years	66 10 3 0	83.5% 12.7% 3.8% 0%
Position in your department	Staff nurse Nurse Supervisor Nurse manager?	72 5 2	91.1% 6.3% 2.6%

5.2:Nurses'Awareness Toward CINV Prophylaxis Guideline

Table2, shows the nurses awareness regarding CINV prophylaxis guideline based on 13 awareness question's. overall, 48(60.8%) of nurses have good awareness toward CINV prophylaxis guideline awareness. The overall nurses awareness score was obtained by recoding every correct answer in to 1 and every incorrect answer in to 0. Nurses who answered greater than a mean score of 0.61 correct answer were categorized as having good awareness and those who score less than the mean score were categorized as having poor awareness regarding CINV prophylaxis guideline. Table 2; illustrated highest percentage of nurses' who answered items correctly regarding nurses' awareness of CINV prophylaxis guideline. Those items with the highest percentage of nurses answered correctly include: considering emetogenic potential of chemotherapy (78.5%), considering CINV with previous chemotherapy (74.7%), considering anxiety(76%) when choosing antiemetic.

Conversely four items with the lowest percentage of nurses answered correctly include: Which antiemetic guideline does your hospital use(16%), How do you classify AC based chemotherapy when making decision about anti-emetic prophylaxis(27%), Are you confident in your knowledge of emetogenic potential classification (37%), considering younger age when choosing antiemetic (43%)

Table 2: Awareness of the participant about CINV guideline recommendation, (n=79)

Question	Ans.	N	Percent	Mean
When choosing antiemetic should you consider emetogenic potential of chemotherapy?	Yes	62	78.5%	0.78
When choosing antiemetic did you consider CINV with previous chemotherapy?	Yes	59	74.7%	0.75
When choosing antiemetic did you consider female gender?	Yes	42	53.2%	0.53
When choosing antiemetic did you consider low alcohol use?	Yes	29	36.7%	0.37
When choosing antiemetic did you consider younger age?	Yes	34	43%	0.43
When choosing antiemetic did you consider anxiety?	Yes	60	75.9%	0.76
When choosing antiemetic did you consider history of motion sickness?	Yes	42	53.2%	0.53
When choosing antiemetic do you think there is no risk consideration?	No	61	77.2%	0.77
Are you confident in your knowledge of emetogenic potential classification?	Yes	29	36.7%	0.37
Which antiemetic classification system does your hospital use?	NCCN,ASCO	57	72.2%	0.72
With which of antiemetic guidelines are you familiar?	NCCN	48	60.8%	0.61
Which antiemetic guideline does your hospital use?	NCCN	13	16.5%	0.16
How do you classify AC based chemotherapy when making decision about anti-emetic prophylaxis?	HEC	21	26.6%	0.27

5.3: Practice pattern toward CINV guideline adherence

The mean score of oncology nurses practice pattern toward CINV prophylaxis guideline adherence was 0.4177. about **41.8%** of the nurses have scored mean and above for the practice related items of the questionnaires'. Out of all respondent 73.4% of them were used 5HT3receptor antagonist to prevent CINV that may result from highly emetogenic chemotherapy on day 1(the day of chemotherapy administration) and 83.5% of the respondents use ondansetron most often among the 5HT3 receptor antagonist class. Only **25(31.6%**) of nurses were use steroid or 5HT3 receptor antagonist to prevent CINV which arises from highly emetogenic chemotherapy after day 2 and beyond ,and **20.3%** of nurses use only steroid(dexamethasone) to prevent CINV which arises from moderately emetogenic chemotherapy after day 2 and beyond but about 76% of participant said their practice regarding anti-emetic agent they choose for HEC(on day1) consistent with the guideline recommendation.

Table 3: practice pattern of the participants toward CINV prophylaxis guideline adherence:(n=79)

Question	Ans.	N	Percent	Mean
Which classes of agent do use to prevent CINV for HEC on day1(at the first day of chemo administration	5HT3-antagonist, NK1 receptor antagonist, steroid	58	73.4%	0.73
Which antiemetic do you use most often for HEC on day1	Ondansetron	66	83.5%	0.84
Which classes of agent do use to prevent CINV for HEC on day2 and beyond?	5HT3-antagonist, steroid	25	31.6%	0.32
Which antiemetic do you use most often for HEC on day2 and beyond?	Ondansetron	66	83.5%	0.84
Were your practice regarding anti-emetic agent you choose for HEC(on day1) consistent with the	Yes	60	75.9%	0.76

guideline				
Which classes of agent do use to prevent CINV for MEC on day1(at the first day of chemo administration	5HT3-antagonist	32	40.5%	0.41
Which antiemetic do you use most often for MEC on day1	Palenosetron	59	74.7%	0.75
Which classes of agent do use to prevent CINV for MEC on day2 and beyond?	Steroid	16	20.3%	0.2

5.4: Nurses' Barriers toward CINV prophylaxis guideline adherence

About 98% of the respondents said that there is a specific barrier at hospital that interfere with or prevent them not to administer the recommended anti-emetics in line with the guideline recommendation. Physician interference 29(36.7%), products un availability 27(34.2%) and products cost13 (16.5%) were the three top barriers of nurses

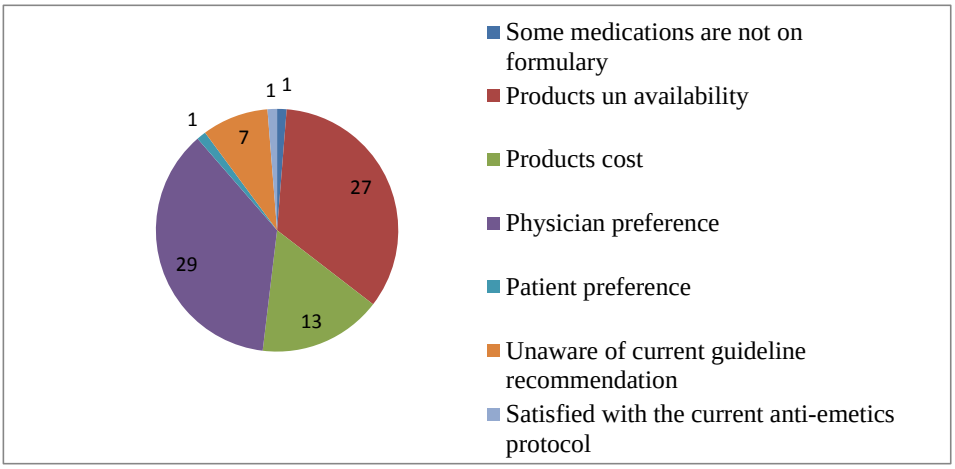

Figure 2: participants perceived barriers of CINV prophylaxis guideline adherence (n=79)

Controlling CINV in delayed phase (day 2 and beyond) (29%), controlling CINV in acute phase (26.6%) and lack of access to modern antiemetic's to prevent and manage CINV are the major challenges of nurses on their career.

5.5: Nurses' Awareness toward CINV prophylaxis guideline and associated factors

Bivariate and multivariate logistic regression analysis was used to identify the factors that are associate with nurses' awareness toward CINV prophylaxis guideline. on binary logistic regression analysis only working area, oncology nursing certified and trained for CINV management were found significant determinant factors of awareness of nurses in oncology set up at P-value <0.05 with 95% CI. However, age, sex, work experience as oncology nurse, position in the department and educational level have no statistical association with awareness toward CINV prophylaxis guideline (P-value >0.05; 95% CI).

After bivariate analysis, only those variables, which were significantly associated (P-value< 0.05) with awareness of nurses toward CINV prophylaxis guideline were entered for further multivariate analysis. By adjusting potential confounders in multivariate logistic regression analysis Oncology nursing certified nurses were 1.48 times more likely knowledgeable than those nurses who were not certified in oncology nursing [**AOR**: 1.477; 95% **CI** (1.110,1.967) .and, nurses who have trained for chemotherapy induced nausea and vomiting management were 1.64 times more likely awered than those who were not trained for chemotherapy induced nausea and vomiting management[**AOR**: 1.638; 95% **CI** (1.213,2.212)

Table 4:Association b/n awareness of CINV prophylaxis guideline and socio-demographic and professional characteristics of participants: (n=79)

Characteristics	Category	**Awareness items**		**COR(95% CI)**	**AOR(95% CI)**
		Poor (%)	good (%)		
Working area	Opd Ward Chemo unit	24% 22.78% 13.9%	11.4% 6.3% 21.5%	3.263(1.089,9.776)***** 5.564(1.598,19.375)***** 1	1.102(0.898,1.353) 1.043(.834,1.243)
Oncology nursing certified	Yes No	17.2% 43.03%	25.31% 13.9%	.226(.086,.584)***** 1	1.477(1.110,1.967)****** 1
Trained for CINV management	Yes No	13.9% 46.8%	31.64% 7.59%	.071(.023,.218)* 1	1.638(1.213,2.212)** 1

*p value is significant at 0.05

**p value is significant at 0.01

5.6: Nurses' Practice regarding CINV prophylaxis guideline adherence and associated factors

In order to identify variables that are significantly associated with nurses' practice regarding CINV prophylaxis guideline adherence both binary and multiple logistic regression were used. Variables that have significant association at binary logistic regression(P-value< 0.05, 95% CI) were again analyzed by multivariate logistic regression and (P-value< 0.01) were considered significant.

Binary logistic regression illustrated that gender, working department, having oncology certificate, having good CINV prophylaxis guideline awareness and trained for chemotherapy induced nausea and vomiting management training were significantly associated with practice in utilization of chemotherapy induced nausea and vomiting prophylaxis guideline recommendation(P-value < 0.05, 95% CI) however, age, clinical experience in oncology, position in the department and educational level of the participant doesn't associate with nurses' practice of CINV prophylaxis guideline adherence(P >0.01; 99% CI) then variables that have significant association with nurses

practice toward CINV prophylaxis guideline(P<0.01) were transported to multivariate logistic regression.

In multivariate logistic regression; nurses' awareness toward CINV prophylaxis guideline, having certificate in oncology nursing and trained for chemotherapy induced nausea and vomiting management training remained significantly associated with CINV management guideline utilization practice(P-value< 0.01) however, gender and working area doesn't associate with nurses practice toward CINV prophylaxis guideline adherence(P>0.01).

Nurses who have certified in oncology nursing have 1.477 times more likely to have good practices than who haven't certified in oncology nursing [**AOR**: 1.477; 95% **CI**(1.110, 1.967)]. Similarly, nurses' who were trained for CINV management were 1.638 times more likely to have good practice than nurses who didn't trained for CINV management training [**AOR**: 1.638; 95% **CI**(1.213, 2.212)]. Regarding CINV prophylaxis awareness of participants, nurses who have good awareness toward CINV prophylaxis guideline have 0.863 times less likely to have good practice about CINV prophylaxis guideline adherence[[**AOR**: 0.137; 95% **CI**(.045,.419)].

Table 5: Association of socio demographic and professional characteristics and practice pattern toward CINV prophylaxis guideline adherence of the participant(n=79)

Characteristics	Category	**practice items**		**COR(95% CI)**	**AOR(95% CI)**
		poor(%)	good(%)		
Gender	Male Female	25.31% 16.45%	13.92% 44.30%	4.895(1.850,12.951)* 1	1.210(.926,1.580)
Working area	Opd Ward Chemo administration unit	20.25% 15.18% 7.59%	16.45% 13.9% 27.84%	1 4.231(1.314,13.617)* 4.000(1.183,13.525)*	1 1.102(.898,1.353) -
Certified in	Yes No	11.39% 30.37%	31.64% 26.58%	.315(.120, .823)* 1	**1.477(1.110, 1.967)**** -

oncology nursing				
Trained for CINV manage ment	Yes NO	7.59% 37.97% 34.17% 20.25%	.119(.041, .346)* 1	**1.638(1.213,2.212)****
Awarene ss toward CINV	YES NO	.31% 35.44% 32.9% 6.32%	.137(.045, .419)*	**.137(.045, .419)****

*p value is significant at 0.05 ** p value is significant at 0.01

6: DISCUSSION

This study aimed at assessing the awareness, practice and perceived barriers of nurses regarding chemotherapy induced nausea and vomiting at selected hospitals of Addis Ababa (Tikur Anbesa specialized hospital and st.pauls hospital). The finding of this study revealed that 48(60.8%) of nurses' have good overall awareness toward Chemotherapy induced nausea and vomiting prophylaxis guideline but about 63% of the nurses are not confident in their knowledge of emetogenic classification of different type of chemotherapy This is higher than the study conducted on Registered nurses who administered chemotherapy to cancer patients in Australia , China, Hong Kong, and Nine Latin American countries which, shows more than one-third(36%) of participants regarded their own knowledge of CINV as fair to poor (31)

The finding of this study is less than the study conducted in USA which revels Nurses in the outpatient oncology setting stated significantly greater confidence in their knowledge; 75% of those in outpatient settings said they were confident or very confident, compared to 57% of those in inpatient and 47% in the other settings (p = .002) (27). This discrepancy might be due to cultural, socio-demographic difference, difference in work experience, study time gap and study setting difference. Being small in number and working closely with oncology physicians could also be another reason for good overall awareness.

The finding of this study showed that certified in oncology nursing was significantly associated with awareness toward chemotherapy induced nausea and vomiting prophylaxis guideline(P-value< 0.05, 95% CI). Participants who were certified in oncology nursing were 1.48 times more likely knowledgeable than those nurses who were not certified in oncology nursing [**AOR**: 1.477; 95% **CI** (1.110,1.967). this might be due to most of the participant who have oncology nursing certificate have also more experience in care of cancer patient with chemotherapy which might in turn improve their awareness of chemotherapy induced nausea and vomiting prophylaxis guideline recommendation. The result of this study is in line with the study carried out in USA which revealed that there were significant and strong correlation between chemotherapy induced nausea and vomiting prophylaxis guideline recommendation awareness and being certified in oncology nursing(P < 0.011) (27). This implies that awareness toward CINV prophylaxis guideline can be improved if nurses' were certified in oncology nursing.

Regarding training on CINV management the finding of this study reveal that nurse participant who were trained for management of chemotherapy induced nausea and vomiting were 1.64 times more likely awered than those who were not trained for chemotherapy induced nausea and vomiting management[**AOR**: 1.638; 95% **CI** (1.213,2.212). this suggests that with getting more training might have more opportunity to gain access to up-to-date information about chemotherapy induced nausea and vomiting prophylaxis guidelines'. The result in this study is consistent with the study conducted in Jordan which investigated that training about management of CINV had significant association with awareness toward CINV prophylaxis guideline(P< 0.001) (25). It was concluded that training for management of CINV the nurse has, the better his/her awareness toward CINV prophylaxis guideline.

The findings of this study revealed that 58% of the nurses have poor practice toward CINV prophylaxis guideline adherence this is less than the study conducted in Sudan where 90% pre-chemotherapy prophylaxis that the nurses uses for their patient were inconsistent with the guideline recommendation(37). And, higher than the study conducted in USA and European countries reported that only 25% of nurses reported administration of guideline-recommended agents(27,31). In addition Another study done in 16 European country shows key discrepancies between antiemetic use and guideline recommendations were: high use of oldastron during day(2-5) after the patient takes high emetic chemotherapy(30%) and moderately emetic chemotherapy(50%) when guidelines recommend a steroid(dexamethasone) (28). This discrepancy might be due to study setting difference, an availability of some of the antiemetic's in Ethiopia which the guideline recommends(NK-1RA) and, cost of the anti-emetic.

The finding of this study showed that certified in oncology was significantly associated with nurses' practice pattern toward CINV prophylaxis guideline adherence(P< 0.05, 95% CI). Nurses who have certified in oncology nursing have 1.477 times more likely to have good practices than who haven't certified in oncology nursing [**AOR**: 1.477; 95% **CI**(1.110, 1.967)]. This is congruent with the study done in Sudan ,which shows percentage of hematology/oncology nurses who could control CINV in their patients was 88%(P=.01).

Training about CINV management was another variable which was significantly associated with (P< 0.05, 95% CI). Nurses' who were trained for CINV management were 1.638 times more

likely to have good practice than nurses who didn't trained for CINV management [**AOR**: 1.638; 95% **CI**(1.213, 2.212)].

The result of current study also investigated that awareness toward CINV prophylaxis guideline was significantly associated with CINV prophylaxis guideline adherence practice(P< 0.05, 95% CI). Nurses who have good awareness toward CINV prophylaxis guideline have 7.29 times less likely to have good practice about CINV prophylaxis guideline adherence[**AOR**: 0.137; 95% **CI**(.045,.419)].This is congruent with the study done in multinational survey which shows that 88% to 95% of oncology providers said that their patients' CINV,was well controlled with their current antiemetic regimens, but also indicated that 25% of their patients experienced uncontrolled CINV(32). In contrast another study shows that positive association between Awareness toward chemotherapy induced nausea and vomiting prophylaxis guideline and CINV prophylaxis guideline adherence practice(31). This difference can be due to barriers that hinders not to practice in line with the guideline recommendation, lack of formal education toward CINV, difference in socio-economic status ,due to different measurement tool, and, lack of CINV management training.

The finding of this study also showed Physician interference 29(36.7%), antiemetic's un availability 27(34.2%) and antiemetic cost13 (16.5%) were the three top barriers of nurses which prevents not to practice the recommended anti-emetic to effectively control the emesis which arises from different type of chemotherapy. This result Supported by study conducted In USA which showed that, The predominant barrier interfering guideline-recommended antiemetic prophylaxis was reported as physician preference (71%) (27). Another Study in Germany reported barriers to effective management of CINV included: cost of antiemetic, poor patient adherence to antiemetic regimens, limited formulary antiemetic options, and health care providers' poor adherence to guidelines(32). The difference might be due to socio-economic status of the patient, measurment tool, difference sampling population.

7: STRENGTH AND LIMITATION OF THE STUDY

7.1: Strength Of The Study

The study be said the first in assessing nurses' awareness, practice pattern toward chemotherapy induced nausea and vomiting prophylaxis guideline adherences and, perceived barriers at selected hospital in Ethiopia. Pre-test was done before actual data collection time to check the tool weather it can collect a valid data or not.

7.2: Limitation Of The Study

No study was conducted so far in Ethiopia on this topic, no enough literature was available to discuss on national context. Since self-administered questionnaires were used to collect data; the study may be subjected to response bias from each respondents.

Small sample size due to small number of source population..

Though the study area mentioned selected hospitals of Addis Ababa the result may not represent awareness and practice toward chemotherapy induced nausea and vomiting management guideline in Addis Ababa other than TASH & SPHMMC.

8: CONCLUSION AND RECOMENDATION

8.1: Conclusion

Generally, the study showed that: majority of nurses have good awareness regarding CINV prophylaxis guideline , certified in oncology and trained in CINV have significant association with good awareness toward CINV management guideline.

Majority of nurses have poor CINV guideline adherence practice, Having good awareness, certified in oncology and trained in CINV management have significant association with good CINV guideline adherence practice.

Physician preference, products un availability and cost of anti-emetics were the major barriers of nurses not to adhere the CINV guideline recommendation.

8.2: Recommendation

The following recommendation are put forward to improve nurses' awareness and practice pattern toward CINV prophylaxis guideline adherence

To FMOH

Should consider using newer anti-emetic agents including NK-1 antagonist in the better management of CINV, and policy makers should prepare policies and guideline's to improve nurses' awareness and skill toward management of CINV.

To Hospital Managers

The hospital managers should recruit nurses who have oncology nursing certificate and should avoid potential barriers of nurses which inhibits the nurses not to work in line with the guideline recommendation.

To Nursing Department

Design in-service training for nurses about CINV management

Design curriculum regarding oncologic nursing care. Access new knowledge and develop new skill related to the teaching of care of cancer patient with CINV. Teach students how to manage and prevent CINV.

To Nurses

The nurse must be competent enough both in skill and knowledge by updating their skill and knowledge using the current guideline recommendation

To Researcher

Further study needs to explore the effects of additional variables that were not measured in the current study, which can also directly or indirectly influence nurses' awareness and practice toward CINV prophylaxis guideline adherences. Future research's also need to focus on limitation of this study

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ANNEX I: Research Participant Information Sheet

Introduction

Madam/ sir You have been invited to take part in a research study. Before you decide whether to take part it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully. Ask me anything that is unclear or if you would like more information.

Purpose of the study

The purpose of this research is to assess Nurses Awareness, Practice Pattern, and Perceived Barriers toward Current CINV prophylaxis Guideline Adherence at Selected Hospitals in Addis Ababa.

Why have I chosen you?

You have been chose to take part in this study because you are a nurse here **Name of selected Hospital**. The Principal has agreed to this research will be carried out in the college. Ethics Approval Panel, your hospital management has reviewed and granted ethics clearance for this project.

Do I have to take part?

Your participation in this survey study is completely voluntary and you have the right to refuse to be in the study. If you refuse to participate in the study there will be no implications for you as an individual or to your career. If you agree to participate, consent is given once the questionnaire are completed and returned. Therefore, you will not be able to withdraw after the submission of the completed questionnaires.

What do I have to do?

To take part in this research you are being asked to complete the questionnaires provided. The completed questionnaires are to be place in the box provided in your ward.

What will happen to the results of the research study?

All information will be recorded anonymously and my supervisors and I will access the data. The data would be stored on the computer at home, secured by a password. Completed questionnaires would be stored in a locked filing cabinet. The results of the research study will be submitted in my dissertation. In addition, the research will be published in academic journals concerned with evidence-based practice and the findings will be presented at conferences. Summary of the research findings will be available to the Principle and Head of the Division and Nursing Department when the research is completed. Additionally, a summary of the results will be available to the students through the College's newsletter.

Benefits of the study:

There is no personal benefit for the participant nurse. The information you give to me used as an input for the future quality clinical service provision for your hospital as a whole.

Risks:

There is no foreseeable risk or discomforts associated with this study.

Confidentiality:

All information is recorded anonymously and therefore no one accessed it so you will not be affected. Please note the data collected will be used for research purposes only**.**

Questionnaire (Check list)

Part –I: Socio -demographic Characteristics

s. No	Variables	Content
1	Age in years	☐ 20-30 ☐ 30-39 ☐ 40-49 ☐ ≥ 50
2	Gender	☐ Male ☐ Female
3	Working Department	☐ OPD ☐ Impatient Ward ☐ Chemotherapy administration unit
4	Educational level	☐ Diploma ☐ Bsc degree ☐ Msc
5	Certified in oncology nursing?	☐ Yes ☐ No
6	Have you trained for chemotherapy induced nausea and vomiting management?	☐ Yes ☐ NO
7	Nursing experience in oncology unit (years)	☐ 0-5 ☐ 6- 10 ☐ 11 -15 ☐ ≥ 16

8	Position in your department	☐ Staff nurse ☐ Nurse supervisor ☐ Nurse manager/Metron

Part-II: Awareness toward guideline recommendation

1: When choosing antiemetic(s) for a given patient, is the risk for both acute and delayed nausea/vomiting based on the emetogenic potential of the chemotherapy (i.e., moderately emetogenic chemotherapy [MEC]; or highly emetogenic chemotherapy[HEC])?

Yes

☐ No

2: When choosing antiemetic(s) for a given patient, which of the following patient-related emetic risk factors are considered? ***Check all that apply***.

2.1:CINV with previous chemotherapy (CINV = chemotherapy-induced nausea and vomiting) ? ☐ YES

☐ NO

2.2:Female gender?

☐ YES

☐ NO

2.3: Low alcohol use

☐ YES

☐ NO

2.4:Younger age

☐ YES

☐ NO

2.5: Anxiety

☐ YES

☐ NO

2.6:History of morning/motion sickness

☐ YES

☐ NO

There is no risk consideration

☐ YES

☐ NO

3: How confident are you in your knowledge of the emetogenic potential/classification of various chemotherapies/regimens (e.g., highly emetogenic [HEC], moderately emetogenic [MEC])?

- ☐ Very confident
- ☐ Confident
- ☐ Somewhat confident
- ☐ Not confident at all

4: Which anti emesis **classification** system does your hospital or clinic use?

- ☐ Hesketh *JClinOncol*1997
- ☐ ASCO (American Society of Clinical Oncology) Antiemetics guideline classification
- ☐ MASCC (Multinational Association of Supportive Care in Cancer) antiemetics guideline classification
- ☐ NCCN (National Comprehensive Cancer Network) antiemetic guideline classification
- ☐ None
- ☐ Other (please specify)_____

5: With which of the following anti emesis guidelines (disseminated by the noted institutions) are you familiar? *Check all that apply.*

- ☐ ASCO (American Society of Clinical Oncology)
- ☐ MASCC (Multinational Association of Supportive Care in Cancer)
- ☐ NCCN (National Comprehensive Cancer Network)
- ☐ Individual institutional guidelines
- ☐ None
- ☐ Other (please specify)_____

6: Which of the following anti emesis guidelines (disseminated by the noted institutions) does your hospital/clinic use? *Check all that apply*.

- ☐ ASCO (American Society of Clinical Oncology)
- ☐ MASCC (Multinational Association of Supportive Care in Cancer)
- ☐ NCCN (National Comprehensive Cancer Network)
- ☐ Individual institutional guidelines
- ☐ None
- ☐ Other (please specify)_____

7: How do you classify the Emetogenicity of **anthracycline/ Cyclophosphamide (AC)** based chemotherapy when making decisions about anti emetic prophylaxis?

- ☐ As highly emetogenic chemotherapy
- ☐ As moderately emetogenic chemotherapy
- ☐ Unsure
- ☐ Other (please specify)_____

Part III: Practice Patterns/Adherence with Anti emesis Guidelines

1: Which of the following classes of agents are you using to prevent CINV that may result from ***highly emetogenic chemotherapy*** [e.g., cisplatin-based] ***on Day 1***(the day of chemotherapy administration)? *Check all that apply*.

☐ 5-HT3 receptor antagonist (e.g., dolasetron [Anzemet], granisetron [Kytril], ondansetron [Zofran], palonosetron [Aloxi])

☐ Steroid (e.g., dexamethasone [Decadron])

☐ NK1 receptor antagonist (e.g., aprepitant (PO), fosaprepitant (IV),[Emend])

☐ Phenothiazine (e.g., prochlorperazine [Compazine])

☐ Benzodiazepine (e.g., lorazepam [Ativan])

☐ Antipsychotic (e.g., olanzapine [Zyprexa])

☐ Other (pleasespecify)_____

1 A: Which of the following do you use most often? *Select one.*

☐ Dolasetron [Anzemet]

☐ Granisetron [Kytril]

☐ Ondansetron [Zofran]

☐ Palonosetron [Aloxi]

2: Which of the following classes of agents are you using to prevent CINV that may result from ***highly emetogenicchemotherapy*** [e.g. cisplatin-based] **after**(day2 and beyond) the day of chemotherapy administration? *Check all that apply*.

☐ 5-HT3 receptor antagonist (e.g., dolasetron [Anzemet], granisetron [Kytril], ondansetron [Zofran], palonosetron [Aloxi])

☐ Steroid (e.g., dexamethasone [Decadron])

☐ NK1 receptor antagonist (e.g., aprepitant (PO), fosaprepitant (IV), [Emend])

Phenothiazine (e.g. prochlorperazine [Compazine])

☐ Benzodiazepine (e.g. lorazepam [Ativan]

☐ Antipsychotic (e.g. olanzapine [Zyprexa])

☐ Other (please specify)_____

2 A: Which of the following do you use most often? *Select one.*

☐ Dolasetron [Anzemet]

☐ Granisetron [Kytril]

☐ Ondansetron [Zofran]

☐ Palonosetron [Aloxi]

3: Were your responses regarding the antiemetic agents you choose in (1A,and 2A) consistent with these recommendations?

Yes ☐

No ☐

4: Which of the following classes of agents are you using to prevent CINV resulting from ***moderately emetogenic chemotherapy*** [e.g., carboplatin, oxaliplatin, ifosfamide] ***on Day 1***(the day of chemotherapy administration)? *Check all thatapply*.

- ☐ 5-HT3 receptor antagonist (e.g., dolasetron [Anzemet], granisetron [Kytril], ondansetron [Zofran], palonosetron [Aloxi])
- ☐ Steroid (e.g., dexamethasone [Decadron])
- ☐ NK1 receptor antagonist (e.g. aprepitant (PO), fosaprepitant (IV),[Emend])
- ☐ Phenothiazine (e.g. prochlorperazine [Compazine])
- ☐ Benzodiazepine (e.g. lorazepam [Ativan])
- ☐ Antipsychotic (e.g. olanzapine [Zyprexa])
- ☐ None
- ☐ Other (pleasespecify)_____

4A: Which of the following do you use most often? *Select one*.

- ☐ Dolasetron [Anzemet]
- ☐ Granisetron [Kytril]
- ☐ Ondansetron [Zofran]
- ☐ Palonosetron [Aloxi]

5: Which of the following classes of agents are you using to prevent CINV resulting from ***moderately emetogenic chemotherapy*** (e.g., carboplatin, oxaliplatin, ifosfamide) ***after*** (**day 2** and beyond) the day of chemotherapy administration? *Check all thatapply*.

- ☐ 5-HT3 receptor antagonist (e.g., dolasetron [Anzemet], granisetron [Kytril], ondansetron [Zofran], palonosetron [Aloxi])

  Steroid (e.g., dexamethasone [Decadron])

- ☐ NK1 receptor antagonist (e.g., aprepitant (PO), fosaprepitant (IV),[Emend])
- ☐ Phenothiazine (e.g., prochlorperazine [Compazine])
- ☐ Benzodiazepine (e.g., lorazepam [Ativan])
- ☐ Antipsychotic (e.g., olanzapine [Zyprexa])
- ☐ None
- ☐ Other (pleasespecify)_____

5 A: Which of the following do you use most often? *Select one.*

- ☐ Dolasetron [Anzemet]
- ☐ Granisetron [Kytril]
- ☐ Ondansetron [Zofran]
- ☐ Palonosetron [Aloxi]

6: Were your responses regarding the antiemetic agents you choose(4A, and 5A) consistent with these recommendations?

Yes ☐

No ☐

Part IV: Perceived barriers toward guideline adherence.

1: Are there specific barriers or reasons at your hospital/clinic that interfere with or prevent your staff from administering these recommended anti emetics?

- ☐ YES
- ☐ NO

1.1: If you say yes which one /are of the following factors do you perceive as barrier ? you can choose one option

- ☐ Some medications not on formulary
- ☐ Product(s) availability
- ☐ Product(s) cost
- ☐ Product(s) safety
- ☐ Product(s) insurance coverage
- ☐ Satisfied with the currently used anti-emetic protocols
- ☐ Concern with patient compliance with anti-emetics after day of chemotherapy
- ☐ Physician preference
- ☐ Patient preference
- ☐ Not aware of current guideline recommendations/updates