PATIENT SAFETY CULTURE AND ASSOCIATED FACTORS AMONG HEALTH CARE WORKERS, IN EAST WOLLEGA ZONE PUBLIC HOSPITALS, WEST ETHIOPIA

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ABSTRACT

Background: *Patient safety is an important aspect of health care quality and currently it is an issue of high concern globally. Patient safety culture is widely recognized as a significant driver in changing behavior and expectations to increase and emphasize safety within organizations. In Ethiopia little is known about patient safety culture in hospitals at all levels.*

Objective: *To assess patient safety culture and associated factors among health care workers in public hospitals of East Wollega Zone, Oromia Regional State; West Ethiopia.*

Methods: *Institution-based cross sectional study was conducted and 421 health care workers were selected using simple random sampling technique from March 4-March 29/2019. The standardized tool which measures 12 patient safety culture composites were used for data collection. The data were cleaned and entered in-to Epidata version 3.1 and analysis was done using Statistical package for social science Version 25. First the assumptions were checked and the linear regression model was fitted to identify factors associated with patient safety culture. Bivariate and multivariate linear regression analyses were performed. Significance level was set at 95 % CI and p-value < 0.05 and un-standardized β coefficient was used for interpretation.*

Results: *This study revealed that Level of patient safety culture was 49.2% and patient safety culture components score have ranged from 29.2% (non-punitive responses to errors) to 77.9% (teamwork within hospital units). Respondents those whose age ≥ 45 years (β = 13.642, p-value: = 0.001, CI: 5.324-21.959); those who had 1-5 years experience in the current hospital (β = 5.559, p-value: = 0.002, CI: 2.075-9.042); those who had work in general hospital (β = 11.988, p-value: < 0.001, CI: 7.233-16.743) and primary hospitals (β = 6.408, p-value: = 0.003, CI: 2.192-10.624) were statistically significantly associated with patient safety culture.*

Conclusion: *In general the level of patient safety culture and percent positive scores of most of patient safety culture components were very low and need improvement. Respondents whose age ≥ 45 years, who had work in Primary & general hospitals and who had 1-5 years current hospital experience were positively associated with patient safety culture. Generally working on patient safety culture among hospital staffs through patient safety training and participation in patient safety program were recommended.*

Key words: *East Wollega, Ethiopia; patient safety culture; perception of patient safety; public hospital.*

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Table of Contents

List of tables:

List of Figures:

Acronyms

- **AHRQ** - Agency for Health Research and Quality
- **APH** – Arjo Primary Hospital
- **CEO** - Chief Executive Officer
- **CI** - Confidence Interval
- **GAGH** – Gida Ayana General Hospital
- **GP** – General Practitioners
- **HSOPSC** – Hospital Survey On Patient Safety Culture
- **ICU** – Intensive Care Unit
- **NRH** – Nekemte Referral Hospital
- **PSC** - Patient Safety Culture
- **SD**- Standard Deviation
- **SPH** – Sire Primary Hospital
- **SRS** – Simple Random Sampling
- **SPSS** - Statistical package for social science
- **WHO** - World Health Organization
- **WURH** – Wollega University Referral Hospital
- **USA** - United States of America

CHAPTER ONE: INTRODUCTION

1.1. Background

Patient safety is a global concern, which is sometimes missed due to the complexity of health care system (1). Health interventions are intended to benefit the public, but due to the complex combination of processes, technologies and human interactions there is an inevitable risk that healthcare adverse events will happen. Identifying and reducing the occurrence of these errors and improving the safety and quality of health care has been brought forward as a priority issue for health services around the world (2).

Patient safety is a global public health issue and important component of healthcare quality. The previous efforts have been on improving the structures and processes of healthcare delivery; but, recent attention has been focused on the patient safety culture of an organization and its impact on patient outcomes (3).

The World Health Organization defines patient safety as," the absence of preventable harm to a patient during the process of health care" (4). This implies a discipline of coordinated efforts to avoid patient harm, caused during the process of health care itself. Patient safety and the initiative of developing safety cultures to assure patients from harm have slowly but steadily become one of the central concerns in quality improvement (5) .The Agency for Healthcare Research and Quality (AHRQ) defines patient safety culture as, "the product of individual and group values, attitudes, perceptions, competencies and patterns of behavior that determine the commitment to, the style and proficiency of an organization's health and safety management" (6). Patient safety culture is widely recognized as a significant driver in changing behavior and expectations to increase and emphasize safety within organizations (7).

Around the world, healthcare organizations have lately observed to pay more attention to the importance of patient safety culture. To achieve patient safety culture, it is important to understand the principles, attitudes, standards related to an organization and what attitudes and behaviors related to patient safety are expected and appropriate (1)

The capacity of an organization to obtain patient safety culture can be improved when creating and establishing a culture of safety among its professionals. Culture can be defined as: the sum of values, experiences, attitudes and practices that guide the behavior of a group. A culture of blame, where mistakes are viewed as personal failures, should be replaced by a culture, where mistakes are seen as opportunities to improve the system (8).

The main characteristics of a safety culture include; a commitment to discuss and learn from mistakes; the recognition of the inevitability of errors, proactive identification of latent threats, and the incorporation of a non-punitive system for reporting and analyzing adverse events(9).

Patient Safety Culture (PSC) is increasingly recognized as an essential driver of patient safety and organizations with a positive safety culture are characterized by communications founded on mutual trust, shared perceptions of the importance of safety, and the efficacy of preventive measures (10). The studies of patient safety culture provide feedback to the healthcare systems with the possibility to implement improvement measures based on the identification of specific problems(11). In recent years, a lot of developed and some developing countries have been published surveys on patient safety culture in hospitals(12). Assessing the existing safety culture in hospital is the first stage of developing patient safety culture (13).

1.2. Statement of the Problem

In developed countries, even though patient safety is now recognized as a top priority for hospital managers and policy makers (14), the medical adverse events has been remaining a significant source of morbidity and mortality across the globe and no country has yet overcome all of its patient safety problems (15). Data from well-funded and technologically advanced hospitals have shown that one in every ten patients admitted to hospital is affected by an adverse event (incident rate of 10%) (16).

The situation is thought to be more challenging in developing countries with higher risk of patient harm due to the limitation in resources, infrastructures, technologies and human resources (17). Even though evidences are limited in developing countries, the probability of patients being harmed in hospitals when receiving care might be much greater than that of the industrialized nations. For instance, a report claimed that the risk of health care-associated infection in developing countries is up to 20 times higher than in developed countries (18).

According to research done on patient safety in developing and transitional countries (two African countries (Kenya and South Africa) and six Eastern Mediterranean countries(Egypt, Jordan, Morocco, Sudan, Tunisia and Yemen)) which done in 26 hospitals by cross-sectional survey study design; almost one third of patients who suffered a harmful incident died, 14% sustained permanent disability, 16% sustained moderate disability, 30% were left with minimal disability and 8% of the patients harm could not be specified (19)

Sometimes when people receive health care, errors associated with care may result in a serious harm such as death, disability or additional prolonged treatment. Also it may cause indirect health care costs and productivity losses (20), affects the customer perception, attitude and trust and providers' confidence and integrity (21).

In Africa little is known and information is limited in scope about patient safety culture (22). A report of the WHO stated, "In the African Region, most countries lack national policies on safe healthcare practices. Inappropriate funding and unavailability of critical support systems including strategies, guidelines, tools and patient safety standards remain major concerns in the Africa region." Also, the report implied that understanding of the problems associated with patient safety is hampered by inadequate data (23).

In Ethiopia, there is little empirical evidence about patient safety culture and medical errors. But circumstantial evidences show that almost all medical errors have been treated traditionally through 'blaming, shaming and punishment' and most medical errors are not reported or hidden. Consequently, health care workers and managers are not in a position to learn from mistakes committed in health care organizations (24). Studies on patient safety culture mostly come from developed countries (25). In Ethiopia; however, patient safety culture is a relatively new focus, and little is known regarding the current status of patient safety culture in public hospitals. Some studies done in Ethiopia, which used patient safety culture survey tool of AHRQ shows; low overall level of patient safety culture 46.7% (26), 46% (27) and most of patient safety culture dimensions score were very low or areas of improvement/intervention when compared with the AHRQ benchmark scores. One of the ultimate aims of Ethiopian National Health Care Quality strategy is to consistently ensure and improve patient safety. For this reason, this study was proposed to verify the existing information gap and come up with findings which might highlight the nature of patient safety culture among healthcare workers of East wollega zone hospitals.

1.3. Significance of the study

The main significances of this study were:

- To provide valuable information related to patient safety culture dimensions/items.
- To indicate the hospital's areas of success or strength, areas of potential for improvement and follow-up.
- Enable healthcare workers to reflect on their perception towards patient safety culture.
- Policy makers may use these results to design specific interventions aimed at improving patient safety culture.
- A base line for further research in the area of patient safety culture.

CHAPTER TWO: LITERATURE REVIEW

2.1. Patient Safety And Patient Safety Culture

Unsafe medical care is a major source of morbidity and mortality throughout the world. Although estimates of the size of the problem are imprecise, it is likely that millions of people suffer disabling injuries or death directly attributable to medical care (28).

The study in developed countries shows; in Australia, adverse event rate of 16.6% among hospital patients; in Europe, every tenth patient in hospitals suffers from preventable harm related to unsafe care; in United States, 75% of the adverse drug events are attributable to system failures and 95% of doctors and 89% of nurses have witnessed a serious medical error; In Italy, Poor quality healthcare is responsible for more than 30% of avoidable deaths and in Canada, between 9,000 and 24,000 Canadians die annually following an avoidable medical error (29, 30).

In developing countries the probability of adverse events is much higher than in industrialized nations due to the poor state of infrastructure and equipment, unreliable supply and quality of medicines, shortcomings in waste management and infection control, low number and poor performance of personnel because of low motivation or insufficient technical skills, and severe under financing of essential operating costs of health services (31). In Ethiopia, the study had done in the pediatric ward shows an incidence of 9.2 adverse drug events per 100 hospital admissions, of which one third could be preventable (32).

The study conducted in Sri Lanka indicates, there were positive responses towards patient safety culture within the organization. The highest positive response was team work within units (84.8%) followed by Organizational learning – continuous improvement (82.5%), Overall perception of patient safety (81%), handing over and transferring practice (74.6%), Hospital management support for patient safety (74.2%), Managers‘ Expectations and Actions Promoting Patient Safety (73.3%), Team work across the hospital units (65.9%), Communication Openness and Feedbacks (62.1%), Non-punitive response to error (39.4%), Frequency of events reporting as it occurs (36.3%), workload and staffing (15.7%) (33).

Another study done in India; to Assess Patient Safety Culture amongst a Category of hospital Staff of a Teaching Hospital shows, the overall patient safety culture was 48% and the maximum composite score of positive responses was obtained for Organizational learning- continuous improvement (65%) and feedback & communication about error (65%); followed by team work within hospital units (63%), Hospital management support for patient safety (55%); Supervisor expectation and action (56%); communication openness (54%), Teamwork across Hospital Units (52%), Hospital Handoffs & Transitions (43%), overall perception of patient safety (41%), staffing (26%), non-punitive responses (20%) (34).

The Hospital survey done on patient safety culture in china indicates, the positive response rate for the ten patient safety culture dimensions ranged from 45% to 88%, the mean positive response rate was 65%. The lowest positive response rate of dimension was staffing (45%) while the highest positive response rate of dimension was Organization Learning-Continuous Improvement (88%). Other dimensions positive responses were; Team work within units (84%); Hospital management support for patient safety (69%); Team work across the hospital units (66%); Communication Openness and Feedbacks (65%); 'Managers Expectations and Actions Promoting Patient Safety (63%); Non-punitive response to error (60%); Overall perception of patient safety (55%); and feedback and communication about error (50%) (35).

In Iran the study conducted on Measuring Patient Safety Culture Using the Hospital Survey on Patient Safety Culture indicates that, the overall patient safety culture score was 55.7%. The score means varied between 44% and 65% across the 12 factors. The highest scored dimension was 'Teamwork within the Units' (65%) followed by 'Organizational Learning – Continuous Improvement' (62%), and 'Supervisor/Manager Expectations and Actions Promoting Patient Safety' (61%); Overall perception of patient safety and handoff & transition (60%); feedback & communication 56%; management support 54%; communication openness and team work across unit 53%; staffing 47% and 'Non-punitive Response to Error' received the lowest score (44%) among the dimensions (36).

Study done on assessment of patient safety culture in Saudi Arabian hospitals shows positive responses to patient safety culture components have ranged from 22% to 87%. Organizational learning and continuous improvement 87%; Team work within units 84%; feedback and communication about error 77%; management support 74%; Supervisor expectation and action 70; handoffs and transition 61% ;communication openness 60% overall perception of patient

safety 59; team work across hospital units 50%; Staffing 27% and non-punitive responses to error 22% (37).

According to Hospital survey on patient safety culture 2016 user comparative database report in U.S; overall level of patient safety culture composite score was 62%. When ranged from highest to lowest: Teamwork within units 82%, Supervisor e & actions Promoting Patient Safety 78%, Organizational Learning - Continuous Improvement 73%, Management Support for Patient Safety 72%, Feedback & Communication About Error 68%, Overall Perceptions of Patient Safety 66%, Communication Openness 64%, Teamwork Across Units 61%, staffing 54%, 9Handoffs & Transitions 48% and Non-punitive Response to Error 45% (38).

The study conducted on assessment of patient safety culture in Palestinian public hospitals were indicates the overall patient safety culture composite percent positive score was 44.4%. The percent positive score ranged from 17% to 71% with the highest positive scores were teamwork within units 71%; organizational learning and continuous improvement 62% and supervisor/manager expectations and actions promoting patient safety (56%); Hospital handoffs and transition 48%; Feedback and communication about error 46%; team work across hospital units 44%; overall perception of patient safety 43%. The composites with the lowest scores were non-punitive response to error 17%, communication openness 36%; hospital management support for patient safety 37% and staffing 38% (39).

Another study done on assessing patient safety culture in 45 hospitals in Netherland showed average percent positive score was 52.2% with the highest score of team work within units 85% followed by communication openness 68%; Non punitive responses to error 66%; supervisor expectation and action 63%; staffing 59%; feedback and communication about error 52%; overall perception of patient safety 49%; organizational learning 47%; handoffs and transition 42%; management support for patient safety 31% and team work across units 28% (40).

The study conducted on measuring patient safety culture in Taiwan using the Hospital Survey on Patient Safety Culture (HSOPSC) shows the overall average positive response rate for the 12 patient safety culture dimensions of the HSOPSC survey was 64%. Team work within units 94%; Organizational learning 84%; supervisor expectation and action 83%; team work across units 72%; overall perception of safety 65%; management support for patient safety 62%; feedback and communication about error 59%; communication openness 58%; handoffs and transition 48%; non punitive responses to error 45% and staffing 39% (41).

According to research done on the current state of patient safety culture in Lebanese hospitals; the average percent positive score was 61.5% ranged from 24% to 82%. Team work within units 82.3%; Organizational learning 78.3%; supervisor expectation and action 66.4%; team work across units 56%; overall perception of safety 72.5%; management support for patient safety 78.4%; feedback and communication about error 68%; communication openness 57.3%; handoffs and transition 49.7%; non punitive responses to error 24.3% and staffing 36.8% (42).

In Egypt, the study done on assessment of patient safety culture among healthcare providers at a teaching hospital in Cairo, shows; the highest positive response was Organizational learning – continuous improvement 78.2% followed by team work within units 58.1%, Overall perception of patient safety 33.9%, hospital handoffs and transferring practice 24.6%, Hospital management support for patient safety 27.2%, Managers‘ Expectations and Actions Promoting Patient Safety 46.4%, Team work across the hospital units 38%, Communication Openness and Feedbacks 34.6%, Non-punitive response to error 19.5% and workload and staffing 49.3% (43).

In Tunisia, study done on patient safety culture indicates, Overall perception of patient safety 57.8%, management support for patient safety 46.1%, Managers‘ Expectations and Actions 48.2%, Team work across the hospital units 43.3%, Communication Openness and Feedbacks 55.3%, Non-punitive response to error 48.1%, staffing 45.3%, team work within units 57%, organizational learning and continuous improvement 56.1%, frequency of events reported 59.4%, higher percentage of respondents giving their work areas a patient safety grade of “Excellent” or “Very Good” (44) .

In Ethiopia, the study done on patient safety culture and associated factors among healthcare workers in Jima zone Hospitals; shows, the overall patient safety culture was 46.7%. The highest positive response scores were team work within units 82%, followed by organizational learning 71.3%, team work across hospital departments 59.5%, managers expectation and actions 48.5%, overall perception of patient safety 50.5%, communication openness 46%, management support for patient safety 42.7%, handoffs and transition 41.5%, staffing 35.25%, feedback and communication for error 33%, frequency of event reporting 27%, Non-punitive response to error 23.7; 11 %, 23 %,39%,21% and 6% of the respondents rated the patient safety grade as excellent, very good, acceptable, poor and falling respectively. 69% respondents never reported any event report (26).

Another study conducted in Ethiopia; Hospital survey on patient safety culture in Ethiopian public hospitals: a cross-sectional study shows, the overall patient safety culture was 46%. The highest positive response scores were team work within units 72% and organizational learning 72%, followed by team work across hospital departments 57%, managers expectation and actions 46%, overall perception of patient safety 44%, communication openness 42%, management support for patient safety 47%, handoffs and transition 33%, staffing 26%, feedback and communication for error 46%, frequency of event reporting 36%, Non-punitive response to error 33(27) .

2.2. Factors Associated With Patient Safety Culture:

A study from Michigan, USA, indicates there is a difference in perceptions of patient safety between different health care providers. Nurses' shared values, beliefs and behavioral norms towards patient safety were identified as the overarching dimensions of the patient safety culture (45).A study by different scholars reveals that effective communications of information between healthcare providers is a fundamental component of patient care, key to ensuring quality care in clinical practice, an ongoing interdisciplinary education of all team members and improve the delivery of safe care to patients (46).

The study conducted in Riyadh noted that a significant association between small facility size and higher patient safety grade and number of events reported. Small hospital size has been found to be associated with higher overall average percent positive response on the patient safety culture composites and a higher percentage of respondents giving their work areas a patient safety grade of "Excellent" or "Very Good" (47).

The study done in China on factors associated with nurses' perceptions of patient safety culture indicates that four factors were found to be associated with patient safety culture: nurses' perception of managers' trustworthiness, organizational safety prioritization, length of unit nursing experience and managers' safety commitment(48).

In Tunisia, the study conducted shows; Small hospital size has been found to be associated with higher overall average percent positive response on the patient safety culture composites and longer years of experience were associated with progressively lower overall perception of patient safety. Experience was associated with higher patient safety grades whereby respondents who had 6 to 20 years of experience had greater odds of reporting higher patient safety grades (44).

The result of research done in Jima zone hospitals indicates, the multivariate analysis showed that hours worked per week, level of staffing, teamwork within hospital, good communication, reporting an event, exchange of feedback about error, level of staffing and participation in patient safety program were found to be significantly associated with the patient safety culture (26).

2.3. Conceptual Framework of Patient safety culture

After reviewing different literatures the following conceptual framework was developed to assess patient safety culture among health care workers of East wollega zone public hospitals.

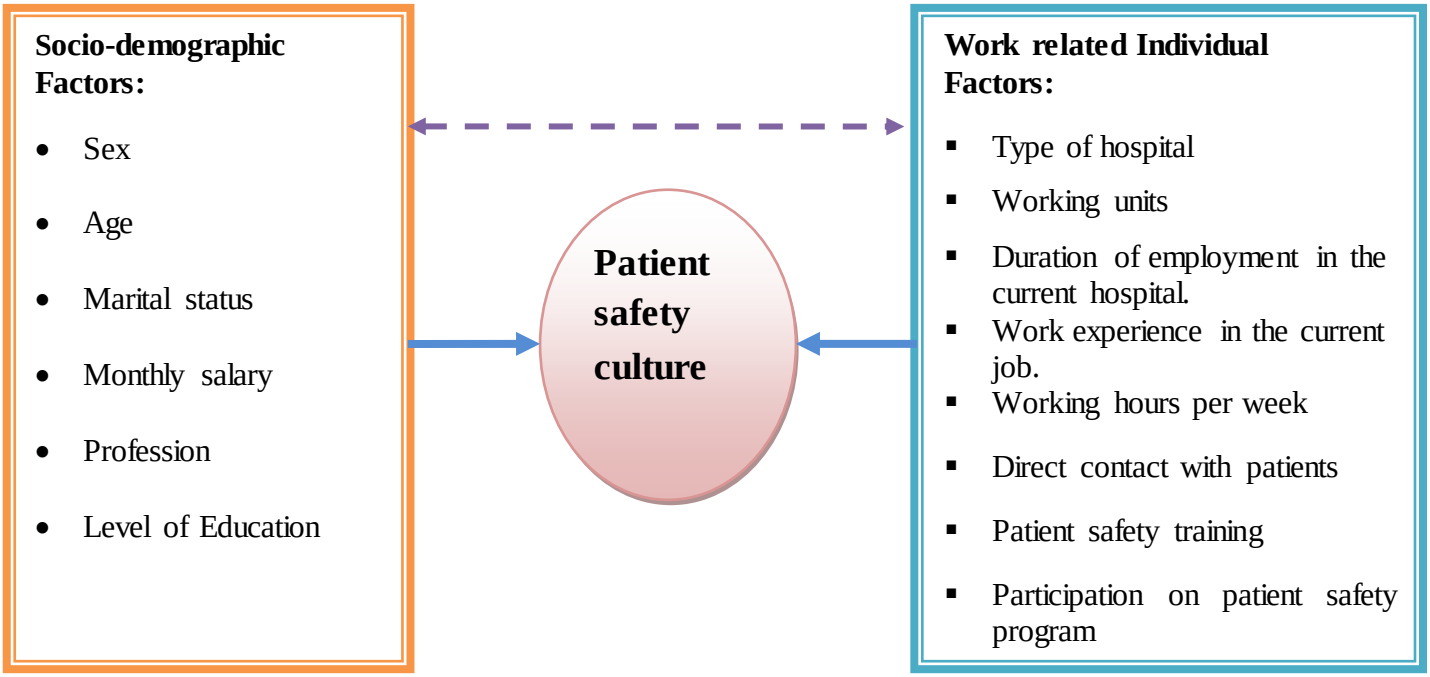


Figure 1: Conceptual framework adapted (Nurses PC, Lee BY, Yang C, 2013) (49) for assessment of patient safety culture and associated factors among health care workers of East Wollega Zone public hospitals, March 2019

CHAPTER THREE: OBJECTIVES

3.1. General Objective:

- To Assess Patient Safety Culture and Associated Factors among Health Care Workers in Public Hospitals of East Wollega Zone, West Ethiopia, 2019.

3.2. Specific Objectives:

- To determine the magnitude of patient safety culture among health care workers in public Hospitals of East Wollega Zone, West Ethiopia.
- To identify factors associated with patient safety culture among health care workers in public Hospitals of East Wollega Zone, West Ethiopia.

CHAPTER FOUR: METHODS AND MATERIALS

4.1. Study Area and Period

The study was conducted in East Wollega Zone Public Hospitals. East Wollega Zone is one of the Oromia Regional State Zones with an area of 12,580 km ^{2}. It has 17 Woredas and 1 administrative town. Nekemte is the zonal capital town which is 328 km away in the West from Addis Ababa. The zone has 2,413 health professionals, 5 Public Hospitals (two referral, one general and two primary hospitals), 57 health centers and 325 health posts. The populations being served by the hospitals were estimated to be more than 1.5 million. The hospitals deliver services in gynecology and obstetrics, surgery, pediatrics and child health, internal medicine, ophthalmology and dentistry. The study was conducted from March 4 –March 29 /2019 G.C

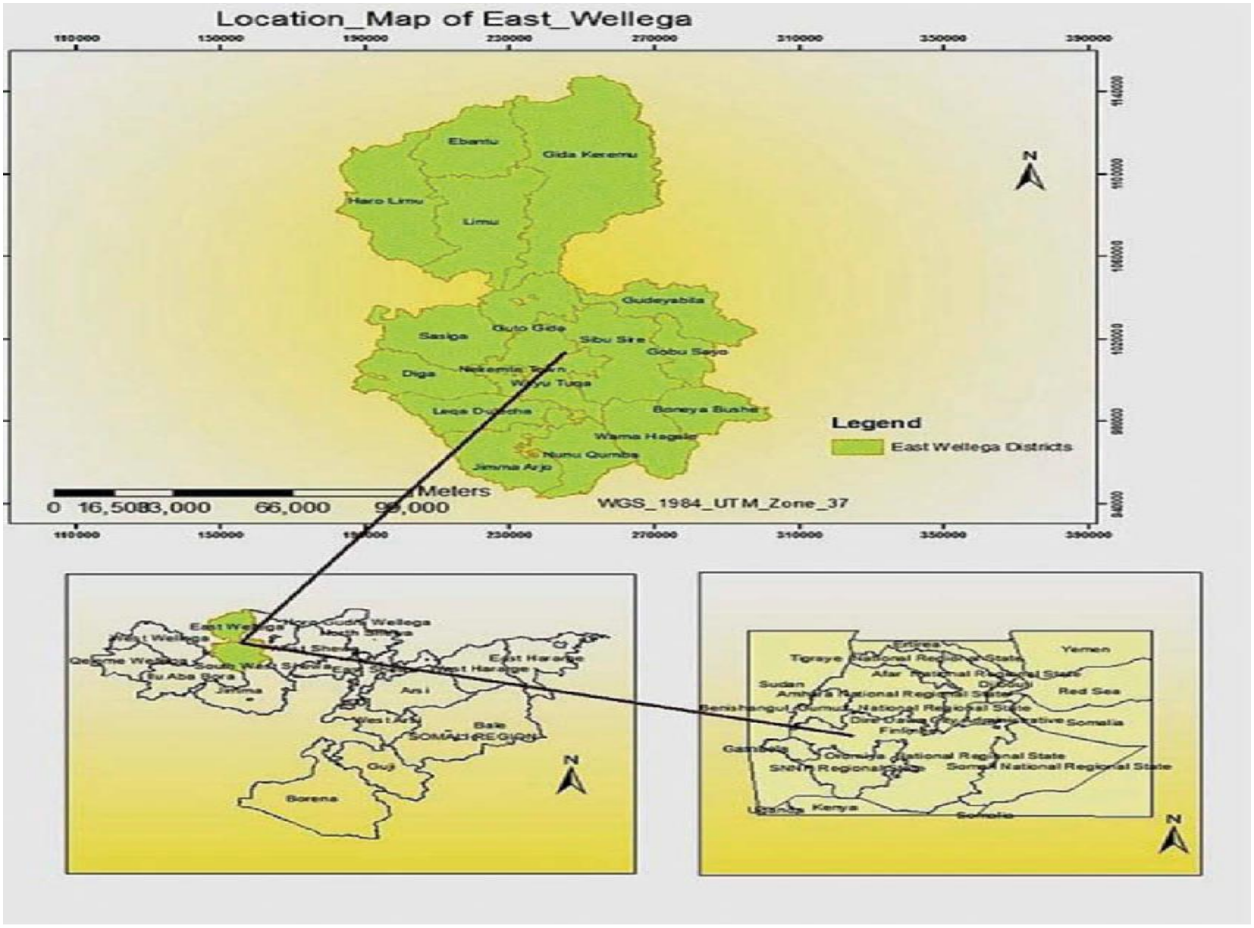


Figure 2: East Wollega Zone Map, 1984.

4.2. Study Design

Institution-based cross sectional study design was employed.

4.3. Population

4.3.1. Source Population

All health care workers in the five public hospitals of East Wollega zone Oromia regional state**.**

4.3.2. Study Population

A sample of healthcare workers employed in the five public hospitals of East Wollega Zone; Oromia Regional State.

4.3.3. Inclusion and Exclusion Criteria

☐ **Exclusion criteria:**

- Health care workers who had less than six months of working experience in the Hospital
- Health care workers who were critically sick and could not be returned to their work place during the data collection period

4.4. Sample Size and Sampling Procedure

4.4.1. Sample Size Determination

Sample size was determined using a single population proportion formula; (46) using 46.7% overall level of patient safety culture which is recently done in Jima zone Hospitals (26); with 95% confidence interval and margin of error 5% between the sample and the underline population.

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

Where n= sample size

P= Proportion of patient safety culture score = 46.7%

Z= standard normal distribution curve value for the 95%

α= confidence interval (1.96)

D = margin of error (5%)

$$n = \frac{(1.96)^2 * (0.467) * (1-0.467))}{(0.05)^2} = 383$$

Adding 10% non response rate; total sample size were = 383 + 38 = **421**

4.4.2. Sampling Technique

All public hospitals in East Wollega zone (Wollega University Referral Hospital, Nekemt Referral Hospital, Gidda Ayana General Hospital, Arjo Primary Hospital and Sire Primary Hospital) were selected and samples were proportionally allocated for each hospital. Then in each hospital, healthcare workers were stratified according to their profession and samples were proportionally allocated to each profession. The required sample sizes were selected by using simple random sampling (SRS) technique from each stratum/profession.

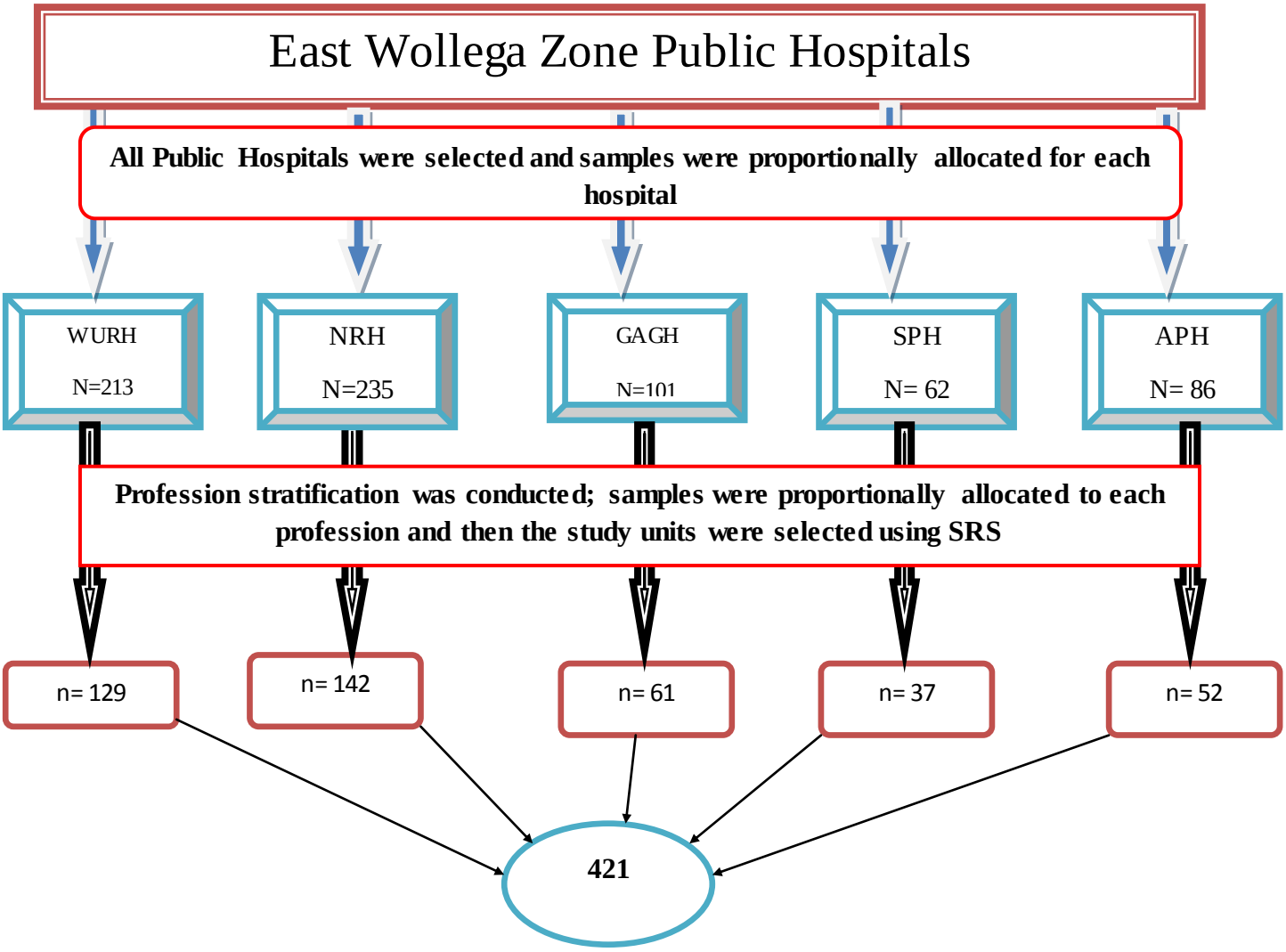


Figure 3: Schematic presentation of sampling procedure for study on assessment of patient safety culture and associated factors among East Wollega Zone public hospitals, March 2019

4.5. Data Collection Tools And Procedures

4.5.1. Data Collection Instrument

The Hospital Survey on Patient Safety Culture (HSOPSC) which was developed by the Agency for Healthcare Research and Quality (AHRQ) in the USA were used to ask hospital staff about patient safety issue (50). The original HSOPSC has been validated in USA hospital settings (51)and already used in other countries like Saudi Arabia, Canada, the United Kingdom, Belgium, Denmark, Norway, Taiwan, Egypt, Tunisia and Ethiopia. All items use the 5-point likert scale of agreement (strongly disagree to strongly agree) or frequency (never to always). The survey measures seven unit-level aspects of safety culture, totally 24 items including: Supervisor/Manager Expectations & Actions Promoting Safety (4 items), Organizational Learning—Continuous Improvement (3 items), Teamwork within Units (4 items), Communication Openness (3 items), Feedback and Communication about Error (3 items), Non-punitive Response to Error (3 items), and Staffing (4 items) and the survey also measures three hospital-level aspects of safety culture totally 11 items: Hospital Management Support for Patient Safety (3 items), Teamwork Across Hospital Units (4 items), and Hospital Handoffs and Transitions (4 items) and outcome aspect of safety culture; Overall perceptions of patient safety (4 items).Totally 39 HSOPSC items were used.

Frequency of events reported dimension was excluded in this study; because of no or poor event reporting system in Ethiopia which may affect the quality of this result. The instrument also includes fourteen items that respondents were asked to provide limited background information about them.

4.5.2. Personnel

Five trained Diploma Nurses were facilitating the required data collection and two BSC nurses were assigned to supervise. Both supervisors and facilitators were recruited from health facilities outside the study hospitals.

4.5.3. Data Collection Methods

Data were collected through structured self-administered questionnaires. The supervisor and facilitators were assigned for 3 to 5 days to each hospital. Facilitators explained the purpose of the study and ensure willingness of the study participants before administering the questionnaire.

Participants were allowed to fill the questionnaire whenever they are free and submit when they finish. The supervisor collected the filled questionnaires from data collectors and submits to the principal investigator on daily bases.

4.6. Study Variables

4.6.1. Dependent Variables

- Patient Safety culture

4.6.2. Independent Variables

❖ **Socio-demographic Factors**

- Sex, age, marital status, monthly salary, profession, level of education, type of hospital, working units, duration of employment in the current hospital, work experience in the current job

❖ **Work related Individual Factors**

- Working hours per week, direct contact with patients, Patient safety training, participation on patient safety program

4.7. Operational Definition

- **Level of patient safety culture** - measured by the health-care workers response on the HSOPSC questionnaire in likert scale and percentages of the positive responses (agree and strongly agree or Most of the time and Always) for the 11 patient safety culture dimensions (39 items) were considered as overall level of patient safety culture.
- For the purpose of analysis, the average percent positive scores of all patient safety culture dimension: (51)
  - ≥ 75 % were considered as good patient safety culture/area of strength.
  - Between 50 % and 75 % considered as moderate patient safety culture.
  - < 50 % were considered as poor/low patient safety culture/need improvement.
- **Percent positive score: -** Is percentage of positive responses (e.g. Agree, Strongly agree) to positively worded items or negative responses (e.g. Disagree, Strongly disagree) to negatively worded items.
- **Supervisor/manager expectations & actions promoting Safety:** Is the extent to which supervisors/managers consider staff suggestions for improving patient safety (52). It was measured using the scale of four items by asking respondents on 5 point likert scale (1

strongly disagree to 5 strongly agree) and operationalized as the respondents score on manager expectation and action on HSOPSC

- **Organizational Learning and continuous improvement:** Is the extent to which Mistakes have led to positive changes and changes are evaluated for effectiveness. It was measured using the scale of three items by asking respondents on 5 point likert scale (1 strongly disagree to 5 strongly agree) and it is operationalized as the respondents score on Organizational learning – continues improvement on HSOPSC.
- **Team work within hospital units**: Is the extent to which staff support each other, treat each other with respect, and work together as a team. It was measured using the scale of four items by asking respondents on 5 point likert scale (1 strongly disagree to 5 strongly agree) and it is operationalized as the respondents score on team work within hospital units on HSOPSC.
- **Communication Openness:** Is the extent to which staffs freely speak up if they see something that may negatively affect a patient and feel free to question those with more authority. It was measured using the scale of three items by asking respondents on 5 point likert scale (1 strongly disagree to 5 strongly agree) and it is operationalized as the respondents score on communication openness on HSOPSC.
- **Feedback and communication about errors**: Is defined as staffs are informed about errors that happen are given feedback about changes implemented, and discuss ways to prevent errors. It was measured using the scale of three items by asking respondents on 5 point likert scale (1 strongly disagree to 5 strongly agree) and it is operationalized as the respondents score on Feedback and communication about errors on HSOPSC.
- **Non- punitive responses to error**: Is the extent to which staffs feel that their mistakes and event reports are not held against them and that mistakes are not kept in their personnel file. It was measured using the scale of three items by asking respondents on 5 point likert scale (1 strongly disagree to 5 strongly agree) and it is operationalized as the respondents score on non- punitive responses to error on HSOPSC.
- **Staffing:** Is the extent to which there are enough staff to handle the workload and work hour are appropriate to provide the best care for patients. It was measured using the scale of four items by asking respondents on 5 point likert scale (1 strongly disagree to 5 strongly agree) and it is operationalized as the respondents score on staffing on HSOPSC.

- **Handoffs and Transitions:** Is the extent to which important patient care information is transferred across hospital units and during shift changes. It was measured using the scale of four items by asking respondents on 5 point likert scale (1 strongly disagree to 5 strongly agree) and it is operationalized as the respondents score on handoffs and transitions on HSOPSC.
- **Teamwork across hospital units**: Is defined as the extent to which hospital units cooperate and coordinate with one another to provide the best care for patients. It was measured using the scale of four items by asking respondents on 5 point likert scale (1 strongly disagrees to 5 strongly agree) and it is operationalized as the respondents score on teamwork across hospital units on HSOPSC.
- **Management support for patient safety:** Is defined as the extent to which hospital management provides a work climate that promotes patient safety and shows that patient safety is a top priority. It was measured using the scale of three items by asking respondents on 5 point likert scale (1 strongly disagrees to 5 strongly agree) and it is operationalized as the respondents score on teamwork across hospital units on HSOPSC.
- **Overall perceptions of patient safety**: Is defined as the extent to which procedures and systems are good at preventing errors and there is a lack of patient safety problems.

4.8. Data Processing and Analysis

The data was checked, edited, coded and entered in to Eidata version 3.1 and exported to Statistical Package for Social Science (SPSS) version 25 for further analysis by the principal investigator. Data cleaning was performed to check for accuracy, consistencies and missing values. Any logical and consistency error identified during data entry was corrected after revision of the original completed questionnaire. The cleaned and edited data was ready for statistical analysis.

Descriptive statistics (Frequencies, mean, SD, percentage) was used to summarize socio-demographic and individual factors. Composite/dimension level score was computed by summation of the items within the composite scales and dividing by the number of items with non-missing values. The scores of negatively worded items were reversed to ensure that higher scores always reflect more positive responses. The Likert-type scale was converted to a 100-point scale (1 = 0, 2 = 25, 3 = 50, 4 = 75, and 5 = 100). Linear regression model was fitted to identify factors associated with patient safety culture. The patient safety culture was regressed

against the socio-demographic and individual factors. Before fitting linear regression model, first the assumptions were checked. Accordingly all assumptions were satisfied. The assumption of linearity was checked through scatter plot. The assumption of normality was checked by plotting histogram and P-P plots. The assumption of homoscedasticity was checked by plotting scatter plot of standardized residuals against the standardized predicted values. The assumption of auto-correlation was check by using Durbin Watson test. The value of the Durbin Watson statistics for this data was 1.610 which falls within the acceptable range from 1.50 to 2.50. Multi-co-linearity assumption was checked through Variance Inflation Factor (VIF). The analysis showed VIF for each independent variable was less than 10. A one-way analysis of variance (ANOVA) was conducted on overall PSC score to determine the extent to which PSC scores were differentiated across hospitals. Cronbach's $\alpha \geq 0.7$ was used to evaluate the reliability of the questioner (53) and it was 0.777. Bivariate linear regression analysis was performed and variables with p-value < 0.25 were exported to multivariate linear regression analysis. Significance was declared at 95% CI and p-value <0.05 and un-standardized β coefficient was used for interpretation. The result of the analysis was presented using tables, graphs, charts and texts.

4.9. Data Quality Management

The questionnaire was originally in English version and it was translated to Afan Oromo and back to English by another translator to check the consistence of its content. The translation was then reviewed by professional experts. Before starting the actual data collection, a pre-test was conducted among 5% (21) Health care workers of Bedele General Hospital to check the consistency of the translated questionnaire and the necessary adjustments was done prior to the actual study time

Orientation: Data collection materials were prepared and orientation was given for supervisors and facilitators on the basic technique of data collection, approaches and on the issue of confidentiality and privacy by principal investigator. Moreover, the facilitators were supervised daily by supervisors (BSC Nurses). The filled questionnaires were checked daily by the supervisors and principal investigator for completeness and consistency.

4.10. Ethical Considerations

Ethical clearance was obtained from Institutional Review Board of Jimma University, Institutes of Health and from ORHB Ethical reviews committee and letter was obtained from East Wollega Zonal Health Department. Then these letters were delivered to the respective chief executive officers (CEO) of each Hospital. The purpose and importance of the study was explained to the participants. Data were collected after full informed written consent was obtained and confidentiality of the information was maintained by omitting their names and personal identification or privacy.

4.12. Dissemination Plan

The result of the study will be disseminated and communicated to Jimma university department of health policy and management; East Wollega Zone Public Hospitals, East Wollega Zonal Health Department and other interested governmental and non-governmental organizations. Publication in Scientific journal and online dissemination will be considered

CHAPTER FIVE: RESULTS

5.1. Characteristics of the study Participants

From the total of 421 questionnaires distributed to different departments/units in the five public hospitals; 388 questionnaires were fully completed and returned, which gives a response rate of 92.2%.

From the total 388 respondents; 238 (61.3%) were males and more than half (212 (54.6%)) of respondents age were ≤ 29 years, 251 (64.7%) respondents were from referral/specialized hospitals, 171 (44.1 %) were nurses followed by physicians 64 (16.5%), 105(27.5%) working units were others (i.e. Anesthesia, radiology, ICU, Biomedical engineering, environmental health, OR, Dental and Eye clinic) and 309 (79.6 %) respondents had less than or equal to 5 years of work experiences. Regarding level of education, 256 (66%) respondents were BSC holders followed by 64 (16.5%) medical doctors. Of the total 388 study participants, 313 (80.7 %) respondents had direct interaction or contact with the patients and 244 (62.9 %) of the respondents did not have training on patient safety (table 1).

Table 1:- Socio-demographic and Individual characteristics of the study participants in East Wollega Zone Public Hospitals March, 2019 (n=388).

Variables	Category	Frequency(N)	Percentage
Participants at each hospitals	NRH	128	33%
	WURH	123	31.7%
	GAGH	56	14.4%
	APH	51	13.1%
	SPH	30	7.7%
Sex	Male	238	61.3%
	Female	150	38.7%
Age category	≤ 29	212	54.6%
	30 – 44	159	41%
	≥ 45	17	4.4%
Marital Status	Single	150	38.7%
	Married	233	60%
	Divorced/Widowed	5	1.3%
Monthly Salary	≤ 5,000	153	39.4%
	5,001 -10,000	201	51.8%
	≥10,000	34	8.8%
Level of Education	BSc	256	66%
	Medical doctor	64	16.5%
	Diploma	58	14.9%
	MSc	10	2.6%
Number of hours worked per week	40-59 hours	200	51.5%
	60-79 hours	132	34%
	≥ 80 hours	56	14.4%

WURH= Wollega University Referral Hospital; NRH= Nekemte Referral Hospital; GAGH= Gidda Ayana General Hospital; APH= Arjo Primary Hospital; SPH= Sire Primary Hospital

Table 1:- (Continued)…

Participants by type of Hospitals	Primary	81	20.9%
	General	56	14.4%
	Referral/specialized	251	64.7%
Position/Profession	Nurse	171	44.1%
	Physician	64	16.5%
	Lab personnel	42	10.8%
	Pharmacist/Druggist	39	10.1%
	Midwifery	37	9.5%
	Others*	35	9%
Working department/Unit	Others**	105	27.1%
	Medicine	46	11.9%
	Surgery	42	10.8%
	Laboratory	41	10.6%
	Pharmacy	37	9.5%
	Emergency	35	9%
	Pediatrics	33	8.5%
	Midwifes/delivery	25	6.4%
	Gynecology/Obstetrics	24	6.2%
Duration of experience in the current Hospital	< 1 year	43	11.1%
	1 -5 years	258	66.5%
	6 -10 years	57	14.7%
	> 10 years	30	7.7%
Duration of experience in current department/unit	<1 year	52	13.4%
	1 -5 years	257	66.2%
	6 -10 years	58	14.9%
	> 10 years	21	5.4%
Direct contact with patients	Yes	309	79.6%
	No	79	20.4%
Patient safety training	Yes	153	39.4%
	No	235	60.6%
Participate on Patient Safety Program	At least once per year	95	24.5%
	Never	293	75.5%

**- Anesthesia, radiology, ICU, Biomedical engineering, environmental health, OR, Dental and Eye clinic;

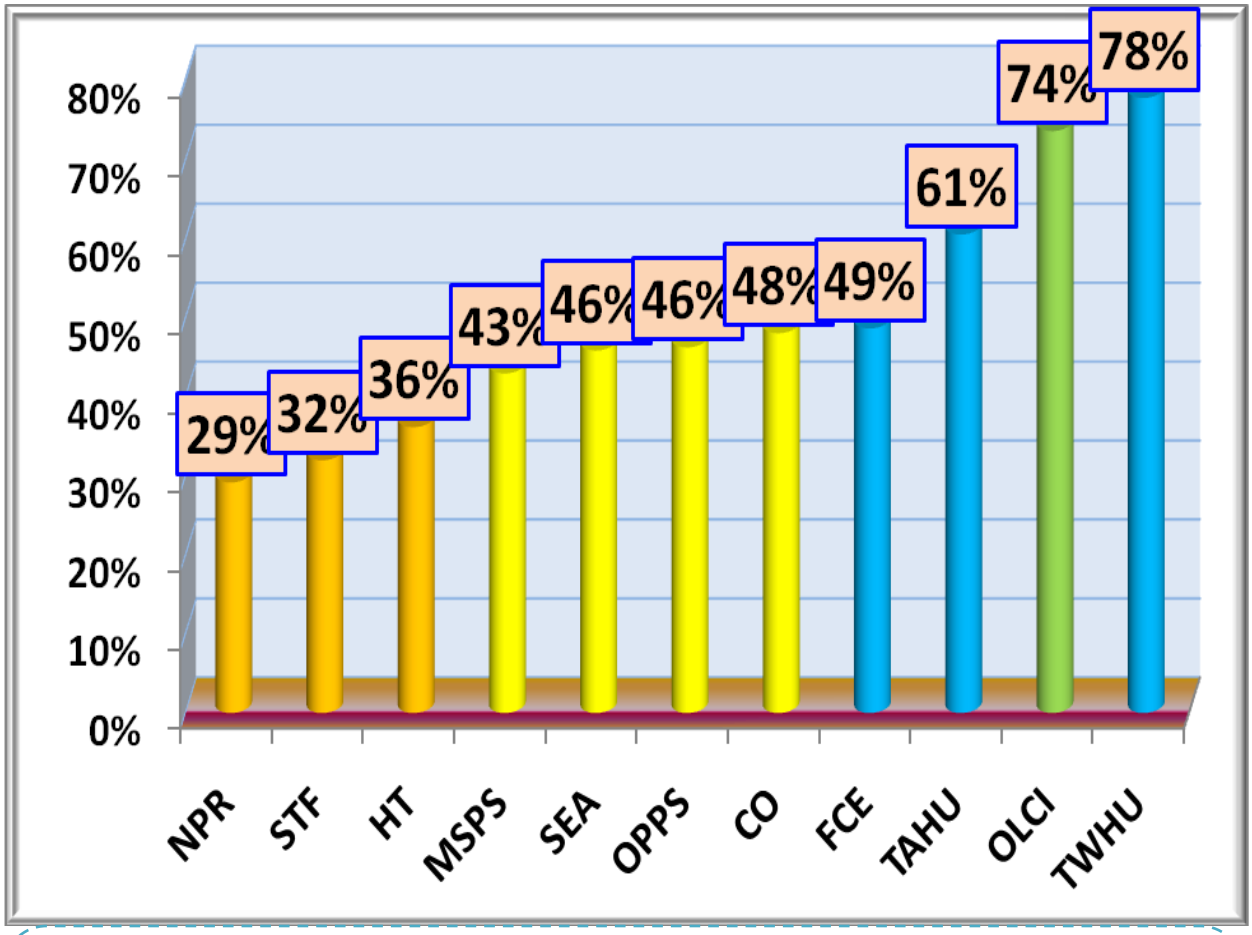
*- Anesthetistics, Radiology technologist/technician, Emergency surgical officers, biomedical engineers, ophthalmic nurses, Dentist

5.2. Patient Safety culture

This study reveals that level of patient safety culture was 49.2% (95% CI: 47.6%-50.9%). Average percent positive responses to patient safety culture components have ranged from 29.2% (non-punitive responses to errors) to 77.9% (teamwork within hospital units). Teamwork within hospital units 77.9% was the only areas of strength/success in this study. Areas of potential for improvement or interventions were non-punitive responses to errors 29.2%; staffing 32%; handoffs and transitions 36.2%; management support for patient safety 43%; supervisor/manager expectation and action 45.9%, Communication openness 48.1% and feedback and communication about errors 48.7% (table 2).

Table 2: PSC Dimensions average positive response score of East Wollega zone public hospitals, West Ethiopia, March, 2019 (n=388)

Patient safety culture components	**Number of items**	**Cronbach's alpha**	**Average % positive Score**	**95% CI for Average % positive score**	
				Lower Bound	Upper Bound
Supervisor Expectation and Action	4	0.762	45.9%	43.4848	48.2677
Organizational Learning	3	0.768	73.7%	70.40	77.02
Team work with in Hospital Units	4	0.761	77.9%	74.61	81.19
Communication openness	3	0.759	48.1%	44.99	51.23
Feedback & Communication about error	3	0.769	48.7%	44.82	52.60
Non punitive response to error	3	0.787	29.2%	25.79	32.63
Staffing	4	0.769	32%	29.39	34.65
Teamwork across Hospital Units	4	0.744	60.6%	57.36	63.78
Handoffs and transitions	4	0.762	36.2%	32.41	40.01
Mgt support for patient safety	3	0.758	43%	39.78	46.13
Overall Perception of patient safety	4	0.763	46.3%	43.74	48.78
Level of Patient safety culture	39	0.732	49.2%	47.57	50.89



NPR-Non punitive responses to error, HT- Handoff and transition, MSPS-Management support for patient safety, SEA-Supervisor expectation and action,OPPS- Overall perception of patient safety, CO-Communication about error, FCE-Feedback and communication about error, TAHU-Team work across hospital units, OLCI-Organizational learning and continuous improvement, TWHU-Team work within hospital units, PSC-

Figure 4: Score of Patient Safety Culture and Patient safety culture dimensions of East Wollega zone public hospitals, March 2019 (n=388)

Comparative results on Patient safety culture dimensions and Level of Patient safety culture across East Wollega zone Public Hospitals

A t- test analysis of variance was done for a single categorical explanatory variable with two numbers of levels to assess the mean difference of overall level of patient safety culture. Unfortunately, there were no significant differences among these categorical variables and overall patient safety culture (table: 3).

Table 3: Comparative results on overall Patient safety culture with two levels of categorical variables across East Wollega zone Public Hospitals; West Ethiopia; March 2019 (n=388)

Category	Levels	N	Means	Mean Difference	Std. Deviation	t	Sig. (2-tailed)	95% CI of the Difference	
								Lower	Upper
Sex	Male	238	49.41	.47	16.19	.27	.78	-2.95	3.89
	Female	150	48.94	.47	17.47	.27	.79	-3.01	3.96
Direct contact with patients	Yes	309	49.85	3.04	16.42	1.45	.15	-1.08	7.17
	No	79	46.81	3.04	17.56	1.39	.17	-1.29	7.37
Do you have Patient safety training	Yes	153	50.32	1.80	17.59	1.04	.29	-1.61	5.20
	No	235	48.52	1.80	16.05	1.02	.31	-1.67	5.28
Participate on patient safety program	Yes	95	50.33	1.45	16.75	.74	.46	-2.42	5.32
	No	293	48.88	1.45	16.67	.74	.46	-2.45	5.35

A One-way ANOVA Analysis of variance was done to assess the mean difference of average percent positive responses for each patient safety culture dimensions across the hospitals. Accordingly a significance difference had been found among the five public hospitals in all dimensions (P-value <0.005) (table 4).

Table 4: Comparative results on Patient safety culture dimensions across five East Wollega zone Public Hospitals; West Ethiopia; March 2019 (n=388)

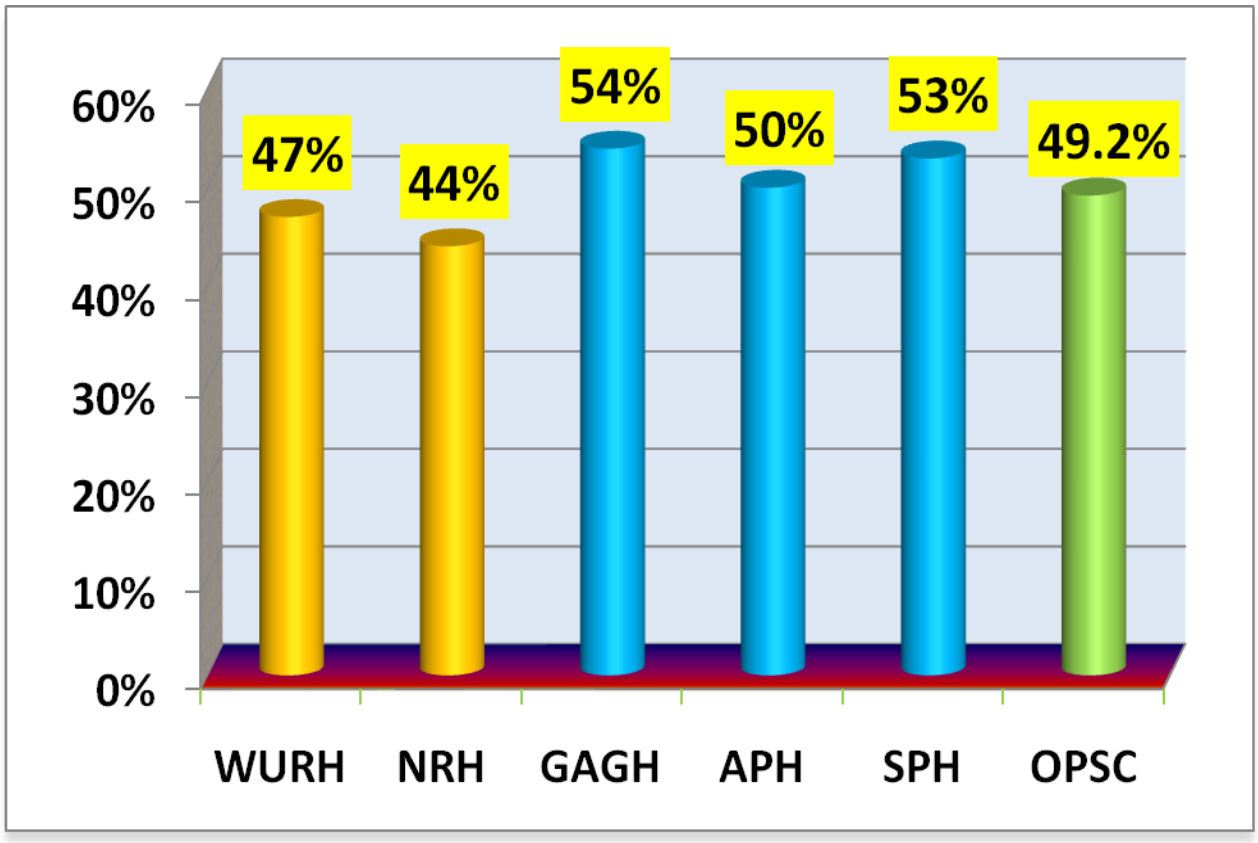
Patient Safety Culture Components	**Average Positive Responses Score (95% Confidence Interval)**					
	WURH (n=123)	**NRH (n=128)**	**GAGH (n=56)**	**APH (n=51)**	**SPH (n=30)**	**P-Value**
Supervisor Expectation and Action	39 (35.6-42.5)	43.2 (39.1-47.2)	56.7 (49.7-63.8)	41.7 (35.8-47.6)	72.5 (64.6-80.4)	< 0.001
Organizational Learning	79 (73.8-84.4)	62.5 (56.1-68.9)	82.1 (74.5-89.8)	75.2 (65.3-85.1)	81.1 (72.1-90.2)	< 0.001
Team work with in Hospital Units	85 (80.2-90.1)	69 (62.1-75)	82 (73.9-90.4)	81 (73.1-89.7)	74 (60.6-87.7)	0.001
Communication openness	48 (42.3-53.1)	44 (38.2-49.3)	64 (55.8-72.8)	44 (36.6-52.3)	44 (33.9-55)	0.001
Feedback & Communication about error	39 (31.8-45.8)	50 (43-56.5)	63 (53.1-73.1)	58 (47.1-69.2)	42 (31.4-53)	0.001
Non punitive response to error	26 (20-34)	27 (21.7-32.5)	27 (17.4-36.2)	28 (17.4-37.5)	59 (46-71.8)	< 0.001
Staffing	26 (21.9-30.6)	28 (23.2-32)	50 (42.3-57.7)	29 (23.5-35.3)	46 (36.3-55.4)	< 0.001
Teamwork across Hospital Units	64 (58.7-68.6)	50 (44.5-56.3)	68 (60.3-76.3)	68 (58.4-77)	65 (51.9-78.1)	< 0.001
Handoffs and transitions	31 (23.8-37.5)	33 (27-40)	39 (29.3-49.3)	50 (38.3-62)	42 (30.1-53.3)	0.026
Mgt support for patient safety	37 (31.6-42.6)	44 (38.4-49.6)	54 (45.2-63.1)	49 (41.7-56.4)	31 (18.9-43.3)	0.002
Overall Perception of patient safety	45.5 (40.4-48.6)	42.8 (37.8-47.7)	55 (47.7-62.1)	44 (38.1-50.2)	56 (49-62.6)	0.006
Level of Patient Safety Culture	47.1 (44.7-49.5)	44.3 (41.7-47.9)	54.4 (53.5-63.2)	50.7 (47.4-55.9)	53.8 (50.5-58.0)	<0.001

A One-way ANOVA Analysis of variance was done to assess the mean difference of average percent positive responses for overall level of patient safety culture across the hospitals. Accordingly a significance difference had been found among four hospitals. These are WURH with GAGH (p- value <0.001), NRH with GAGH (p-value <0.001) and SPH (p-value = 0.009) (table 5).

Table 5: Comparative results on level of Patient safety culture across five Public Hospitals East Wollega zone; West Ethiopia; March 2019 (n=388)

Name of the hospitals	Mean (95% CI)	Name of the hospitals	Mean Difference	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
WURH	47 (44.7-49.46)	NRH	2.27730	2.02344	1.000	-3.4357	7.9903
		GAGH	-11.26014*	2.58340	.000*	-18.5541	-3.9662
		APH	-4.59183	2.66900	.862	-12.1274	2.9438
		SPH	-8.62035	3.26320	.086	-17.8336	.5929
NRH	44.8 41.6-47.96	WURH	-2.27730	2.02344	1.000	-7.9903	3.4357
		GAGH	-13.53744*	2.56756	.000*	-20.7867	-6.2882
		APH	-6.86913	2.65367	.100	-14.3615	.6232
		SPH	-10.89765*	3.25068	.009*	-20.0756	-1.7197
GAGH	58 53.47-63.21	WURH	11.26014*	2.58340	.000*	3.9662	18.5541
		NRH	13.53744*	2.56756	.000*	6.2882	20.7867
		APH	6.66831	3.10187	.322	-2.0895	15.4261
		SPH	2.63979	3.62581	1.000	-7.5973	12.8769
APH	51 47.43-55.92	WURH	4.59183	2.66900	.862	-2.9438	12.1274
		NRH	6.86913	2.65367	.100	-.6232	14.3615
		GAGH	-6.66831	3.10187	.322	-15.4261	2.0895
		SPH	-4.02852	3.68729	1.000	-14.4392	6.3822
SPH	55 50.50-60.90	WURH	8.62035	3.26320	.086	-.5929	17.8336
		NRH	10.89765*	3.25068	.009*	1.7197	20.0756
		GAGH	-2.63979	3.62581	1.000	-12.8769	7.5973
		APH	4.02852	3.68729	1.000	-6.3822	14.4392
Total	49.2 47.56-50.89						

*. The mean difference is significant at the 0.05 level.



WURH– Wollega University Referral Hospital, NRH –Nekemte Referral Hospital, GAGH– Giga Ayana General Hospital, APH – Arjo Primary Hospital, SPH – Sire Primary Hospital, OPSC – Overall Patient safety culture

Figure 5: Patient safety culture percent positive scores across East wollega zone public hospitals, March 2019 (n=388)

5.3. Predictors of Patient Safety Culture

Bivariate Linear Regression Analysis

After variables computed and assumptions were checked; bivariate analysis by linear regression model was done for each Independent variables with dependent variable and variables with p-value < 0.25 were selected for further analysis. Accordingly variables were entered independently to see their association with patient safety culture using simple linear regression analysis. Nineteen variables: age (≥ 45: β= 9.401, p=0.025), monthly salary (≤ 5,000 birr: β= 8.507, p= 0.008,5,000-10,000 birr: β = 11.122, p<0.001); type of hospital (Primary: β=7.245, p<0.001), general: β= 12.421, p<0.001); position (nurse: β=7.485, p=0.011, midwifery: β=8.165, p=0.033, laboratory: β=9.187, p=0.013, others :β=9.039, p= 0.020); working unit (medicine: β=10.639, p=0.004; pediatrics: β= 11.187, p=0.005; delivery: β=8.636, p= 0.045; emergency: β=8.726, p=0.026; laboratory: β=9.842, p= 0.009, others: β=6.634, p= 0.037); experience in the current hospital 1-5years: β=7.291, p=0.029 and level of education (GP: β=11.639, p= 0.041; BSC: β=13.937, p= 0.010, Diploma: β=11.714, p= 0.040) were selected as a candidate for multiple linear regression (table 6).

Table 6: Bivariate analysis of predictors of patient safety culture among health care providers of East wollega zone public hospitals, March, 2019 (n=388)

Variables	Category	Un standardized Coefficients		t	P	95% CI for ß	
		ß	Std. Err			lower	Upper
Sex	Male	0					
	Female	.48	1.74	.273	.785	-2.95	3.89
Age	≤ 29 years	0					
	30-44 years	2.11	1.74	1.214	.225	-1.31	5.54
	≥ 45 years	9.40	4.18	2.247	.025	1.17	17.63
Marital status	Single	0					
	Married	2.54	1.75	1.455	.147	-.89	5.97
	Divorced	9.79	8.45	1.160	.247	-6.82	26.41
	Widowed	5.44	16.73	.325	.745	-27.46	38.33
Monthly salary (in birr)	≤ 5,000	8.51	3.19	2.661	.008	2.22	14.79
	5,001-10,000	11.12	3.13	3.556	.000	4.97	17.27
	>10,001	0					
Type of hospital	Primary	7.25	2.05	3.536	.000	3.22	11.27
	General	12.42	2.37	5.242	.000	7.76	17.08
	Referral	0					
Profession/ Position	Pharmacy	0					
	Physician	6.04	3.37	1.79	.074	-.59	12.67
	Nurse	7.49	2.95	2.54	.011	1.69	13.27
	Midwifery	8.16	3.81	2.14	.033	.68	15.66
	Laboratory	9.19	3.69	2.49	.013	1.93	16.44
	Others*	9.04	3.87	2.34	.020	1.44	16.64
Level of Education	MSC	0					
	Specialist	15.88	8.18	1.94	.053	-.20	31.96
	GP	11.64	5.69	2.05	.041	.45	22.83
	BSC	13.94	5.35	2.61	.010	3.42	24.46
	Diploma	11.71	5.68	2.06	.040	.54	22.89

Table 6: **(Continued)…**

	Pharmacy	**0**					
	Medicine	10.69	3.66	2.92	.04	3.49	17.89
	Surgery	5.71	3.74	1.53	.13	-1.64	13.06
	Pediatrics	11.19	3.97	2.82	.01	3.38	18.99
Working unit	Gynecology	7.86	4.34	1.81	.07	-.68	16.40
	Delivery	8.64	4.29	2.01	.05	.19	17.07
	Emergency	8.73	3.91	2.23	.03	1.04	16.41
	Laboratory	9.84	3.76	2.62	.01	2.45	17.23
	Others**	6.63	3.17	2.09	.04	.40	12.86
Experience in	< 1 year	0					
current	1-5 years	7.29	3.32	2.19	.03	.76	13.83
hospital	6-10 years	-6.33	3.31	-1.91	.06	-12.84	.173
	>10 years	3.51	3.89	.90	.37	-4.15	11.17
Experience in	< 1 year	0					
current dept	1-5 years	-1.82	2.54	-.72	.47	-6.82	3.17
	6-10 years	-4.38	3.18	-1.37	.17	-10.65	1.89
	>10 years	-1.08	4.31	-.25	.80	-9.57	7.41
Hours worked	>80 hours	0					
per week	40-59 hrs	-.03	2.53	-.01	.99	-5.00	4.94
	60-79 hrs	.69	2.67	.26	.79	-4.55	5.93
Direct contact	Yes	3.04	2.10	1.45	.15	-1.08	7.17
with pts	No	0					
Patient safety	Yes	1.80	1.73	1.04	.29	-1.60	5.21
training	No	0					
safety	Yes	1.45	1.97	.74	.46	-2.42	5.32
program	No	0					
participation							

- ***:** *Anesthetistics, Radiology technologist/technician, Emergency surgical officers, Biomedical engineers, Ophthalmic nurses, Dentist*
- ****:** *Anesthesia, radiology, ICU, Biomedical engineering, environmental health, OR, Eye clinic*
- ***0** = Reference group*

Multivariate Linear Regression Analysis

All variables with p-value less than 0.25 in bivariate analysis were considered as candidates for multiple linear regressions analysis. Age (≥ 45 years), monthly salary (≤ 5,000 birr, 5,000-10,000 birr); type of hospital (Primary, general); position (nurse, midwifery, laboratory, others); working unit (medicine, pediatrics, delivery, emergency, laboratory, others); experience in the current hospital 1-5years, and level of education (GP, BSC, Diploma) were tested in multivariable linear regression for association on patient safety culture (table 5).

According to this study, respondents whose age ≥ 45 years were significantly associated with patient safety culture (β = 13.642, p-value: = 0.001, CI: 5.324-21.959). This means respondents those who were ≥ 45 years had 13.642 unit (p- value = 0.001) greater score of patient safety culture as compared to those who were ≤ 29 years of participants.

Respondents those who had 1-5 years of experience in the current hospital were significantly associated with patient safety culture (β = 5.559, p-value: = 0.002, CI: 2.075-9.042). Participants who had 1-5 years work experience in the current hospital had 5.559 unit (p-value = 0.002) higher score of patient safety culture than those who had less than 1 year experience in the current hospital.

Respondents who had work in general hospital were significantly associated with patient safety culture (β = 11.988, p-value: < 0.001, CI: 7.233-16.743). This means that health care workers those who had work in general hospital had 11.988 unit (p – value < 0.001) greater score of patient safety culture than those who had work in referral hospitals.

Respondents those who had work in primary hospitals were significantly associated with patient safety culture (β = 6.408, p-value: = 0.003, CI: 2.192-10.624). Health care workers those who had work in primary hospitals had 6.408 unit (p – value = 0.003) higher score of patient safety culture as compared to those who had work in referral hospitals.

Table 7: Predictors of patient safety culture among health care workers of East wollega zone public hospitals, March, 2019 (n=388)

Variables	Category	Un-standardized Coefficients		T	Sig.	95.0% Confidence Interval for B		Co-linearity Statistics	
		B	Std. Error			Lower Bound	Upper Bound	Tolerance	VIF
	(Constant)	31.790	4.417	7.197	.000	23.104	40.476		
Monthly salary in birr	≤ 5,000	4.587	3.974	1.154	.249	-3.227	12.401	.167	6.006
	5,001-10,000	6.180	3.561	1.736	.083	-.822	13.182	.199	5.037
	>10,001	0							
Position/ profession	*Pharmacy*	0							
	Nurses	4.306	3.248	1.326	.186	-2.080	10.693	.242	4.140
	Midwifery	3.559	4.898	.727	.468	-6.073	13.191	.303	3.296
	Others	5.046	4.099	1.231	.219	-3.014	13.106	.455	2.196
Level of Education	*MSC*	0							
	GP	.559	4.918	.114	.910	-9.113	10.230	.207	4.828
	BSC	.766	4.761	.161	.872	-8.596	10.128	.123	8.102
	Diploma	-1.004	5.240	-.192	.848	-11.307	9.300	.180	5.558

- ***:** *Anesthetistics, Radiology technologist/technician, Emergency surgical officers, Biomedical engineers, Ophthalmic nurses, Dentist*
- ****:** *Anesthesia, radiology, ICU, Biomedical engineering, environmental health, OR, Dental and Eye clinic*
- 0: Reference group

Table 7: (Continued)…

Variables	Category	Un-standardized Coefficients		T	Sig.	95.0% Confidence Interval for B		Co-linearity Statistics	
		B	Std. Error			Lower Bound	Upper Bound	Tolerance	VIF
	(Constant)	31.790	4.417	7.197	.000	23.104	40.476		
Working Unit	*Pharmacy* 0								
	Medicine	5.596	3.149	1.777	.076	-.595	11.787	.606	1.650
	Pediatrics	5.992	3.471	1.726	.085	-.833	12.818	.670	1.493
	Delivery	1.232	5.143	.240	.811	-8.881	11.345	.394	2.539
	Emergency	3.511	3.426	1.025	.306	-3.226	10.248	.652	1.534
	Others	-.767	2.707	-.283	.777	-6.090	4.556	.434	2.303
Age in year	*≤ 29* 0								
	Age >=45	13.642	4.230	3.225	.001	5.324	21.959	.838	1.194
Experience in hospital	< 1year 0								
	1.1-5 years	5.559	1.772	3.138	.002	2.075	9.042	.898	1.113
Type of hospital	*Referral* 0								
	Primary	6.408	2.144	2.989	.003	2.192	10.624	.827	1.209
	General	11.988	2.418	4.957	.000	7.233	16.743	.870	1.150

- ***:** *Anesthetistics, Radiology technologist/technician, Emergency surgical officers, Biomedical engineers, Ophthalmic nurses, Dentist*
- ****:** *Anesthesia, radiology, ICU, Biomedical engineering, environmental health, OR, Dental and Eye clinic*
- 0: Reference group

CHAPTER SIX: DISCUSSION

6.1. Level of Patient Safety Culture

Assessing and promoting a culture of safety is recognized as a prerequisite step towards improving patient safety (54). This study assessed the current status of patient safety culture in East Wollega Zone public hospitals and the result showed that level of patient safety culture and the percent positive response score of Patient safety culture dimensions were not satisfactory enough similar to another studies done before in Jima zone hospitals (26) and Amhara region hospitals (27).

This study revealed that the level of patient safety culture was to be found 49.2% (95% CI: 47.6%-50.9%). The result is slightly similar with the study done in India 48 % (34), Netherland 52.2% (25) in Ethiopia Amhara region hospitals 46% (27) and jimma zone hospitals 46.7% (26). This similarity might be due to the similarities in staffing and hospital infrastructure between these countries.

However, this result is lower when compared with the study done, in Taiwan 64% (55), in Saudi Arabia 61 % (56), in Lebanon 61.5% (42), in USA 62% (38), in Srilanka 62.7% (33) and in China 65% (53). This variation might be due to the differences in organizational structure or behavior between these countries. These countries might have better management and organizational commitments, leadership and relationships within hospital staff. Other possible reasons might be due to high economic development and these countries were initiated patient safety issue early compared to our country. This result indicates that the hospitals had low/poor patient safety culture and areas of potential for improvement.

In this study "team work within hospital units" was the only areas of strength with average positive response rate of 77.9%. This result is in line with the study conducted in many hospitals across different countries like; China 84% (53), Lebanese 82% (42), Taiwanese 94% (41), Saudi hospitals 84% (56) and Ethiopia; Jima zone hospitals 82% (26). This shows that the staffs are positive to support each other; treat each other with respect; work together as a team and doing things to improve patient safety.

The area with the most potential for improvement in this study area was 'non punitive response to error' 29.2%. This result is comparable with the findings of study conducted in Lebanese 24% (42) ; in Saudi Arabia 22% (56); in Egypt 20% (43); in Ethiopia (Amhara region hospitals 33%) (27). This similarity might be because of the punitive approach and managerial inaction to promote patient safety of these countries. . However it is lower than

the findings of study done on patient safety culture in Netherland 66% (4) and china 60% (13). This difference might be due to non-punitive approach/response to error reports of health care staffs and managerial action for promoting patient safety. This result reflects that health care workers in this study area feel that their mistakes are held against them, when an event is reported feels like the person is being written up not the problem and worry that mistakes they make are kept in their personnel file

Another potential for improvement in this study area was 'staffing' 32%. Meaning that most of the respondents feel that staff allocation is not adequate to handle patient safety related workload. This finding is comparable with the study done in India 26% (34) , Saudi hospitals 27% (56), Palestine 38% (39), Taiwan 39% (57), Lebanese 37% (42), Ethiopia 35%,26% (26, 27). However this finding is lower than that of Netherland 59% (25) and U.S. 54% (38). These differences might be due to the size of hospitals, level of staffing, style of leadership, management strategy; relationships with in hospital staff and these countries may use computerized system.

Hospital handoffs and transition (36.2%) was another area of potential for improvement in this study. This is slightly comparable with the study conducted in India 43% (34), Netherland 42% (25) and Ethiopia 41%, 33% (26, 27).This result shows that important patient care information might not be well transferred across hospital units and often lost during shift changes, problems often occur in the exchange of information across hospital units. However, it is lower when compared with the study done in Srilanka 74.5% (33), Iran 60% (58), and Saudi hospitals 61% (56) and this difference might be related with lack of team work across hospital units, lack of handoff and transition protocol within these hospitals.

Management support for patient safety 43% is another area of potential for improvement in this study. This finding indicates that the hospital management do not provides a work climate that promotes patient safety and patient safety is not a top priority. This is in line with the study conducted in Palestine 37% (39) , Ethiopia 42.7%, 47% (26, 27) but lower than that of Srilanka 74% (33), Saudi Arabia hospitals 74% (37), china 69% (35).

It is also interesting to see other potential for improvement like: supervisor expectation and action; overall perception of patient safety; communication openness; feedback & communication about errors were areas need improvement with average positive response rate of 45.9%, 46.3%, 48.1% and 48.7% respectively. This means managers do not consider

staff suggestions for improving patient safety, do not praise staff for following patient safety procedures, and may overlook patient safety problems; Procedures and systems are not good at preventing errors; Staff not freely speak up if they see something that may negatively affect a patient and not feel free to question those with more authority and Staff are not informed about errors that happen, are not given feedback about changes implemented, and not discuss ways to prevent errors. These results are lower than the findings of study conducted in Srilinka (33), China (35), Iran (36) and Saudi Arabia hospitals (37). These variations might be due to the differences in location and size of hospitals, level of staffing, style of leadership, management strategy and relationships with in hospital staff

Generally, the results of this study highlights deficiencies in many patient safety culture components and indicates that there are areas of potential those need urgent improvement.

6.2. PREDICTORS OF PATIENT SAFETY CULTURE

In this study, respondents those whose age ≥ 45 years, type of hospital (Primary, general) and respondents experience in the current hospital (1-5 years) were significantly associated with patient safety culture.

According to this study, respondents those who had work in general hospital (β = 11.988, p-value: < 0.001, CI: 7.233-16.743) and primary hospitals (β = 6.408, p-value: = 0.003, CI: 2.192-10.624) were significantly associated with patient safety culture. This finding agree with the study conducted in Riyadh (59) and Tunisia (44). This implies that larger organizations are more hierarchical and bureaucratic making implementation of quality initiatives challenging and also affects employees' attachment to these organizations and consequently their performance. Evidences from international literature link small hospital size (<100 beds) to increased formal organizational leadership in relation to patient safety events. This is due to the fact that in small hospitals (where the economic burden of safety programs may be large), formal leader-ship is closer to the front lines and has greater impact on patient safety than in larger hospitals. (60)

Respondents those who had 1-5 years of experience in the current hospital were significantly associated with patient safety culture (β = 5.559, p-value: = 0.002, CI: 2.075-9.042). This finding is similar with the study done Tunisia (44) and China(48).

According to this study, respondents those whose age ≥ 45 years were significantly associated with patient safety culture (β = 13.642, p-value: = 0.001, CI: 5.324-21.959).

6.3. LIMITATIONS OF THE STUDY

- This study was limited to only public hospitals in East Wollega Zone; therefore, the result cannot apply to other categories of health care organizations
- The study did not include other non technical staff of the hospitals like administrative staff, cleaners, financial staff, guards, and kitchen & laundry workers.
- The study did not supported by qualitative study which may decrease the richness of the result.

CHAPTER SEVEN: CONCLUSION AND RECOMMENDATION

7.1. CONCLUSION

This study showed that level of patient safety culture and average percent positive scores of patient safety culture components in East Wollega Zone public hospitals were lower than the AHRQ bench mark. Team work within hospital units was the only area of strength and most of patient safety culture dimensions are areas of potential for improvement.

According to this study, respondents whose age ≥ 45 year; those who had 1-5 years of experience in the current hospital; those who had work in general hospital and primary hospitals were significantly associated with patient safety culture.

7.2. RECOMMENDATION

Based on the findings of the study the following recommendations were forwarded:

1. East Wollega zone public hospitals:

- ✓ Hospital managers should take patient safety as a top priority and provide work climate that promote safety culture.
- ✓ Developing blame free culture and stimulating organizational learning by realizing that errors as an opportunity for learning and workers as heroes improving safety rather than as villains committing errors.
- ✓ Focusing on hospital transfers and transitions among different units in the hospital by developing hospital handoff and transition protocol.
- ✓ Developing a culture of feedback and open communication about error
- ✓ It is better if hospitals have a regular assessment on patient safety culture and take improvement action

2. Health care Workers of East Wollega Zone Public Hospitals

- ✓ Health care workers not feel like their mistakes are held against them rather leads to positive changes.
- ✓ Freely speak up or report if they see something wrong that may affect patient care.
- ✓ Discuss errors to prevent from happening again.
- ✓ Ensure that important patient care information not lost during shift changes.

3. East Wollega Zone Health Office

- ✓ Conduct conferences and discussions about how to initiate and maintain safety culture among all working teams while providing patient care.

4. Ministry of Health and Regional Health Bureau.

- ✓ Revises patient safety guideline directing patient safety culture in hospitals.
- ✓ Working on patient safety culture among hospital staffs through staff training and education.

5. Researchers

- ✓ Conducting another study on patient safety culture including patient and system perspective is suggested.
- ✓ Further studies are also suggested which explore qualitatively including non technical staffs.

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Annex:

Questioner: In English and Afan Oromo

Jima University; Institute of Health, Department of Health Policy and Management

Questionnaire prepared on the title: Assessment of Patient safety culture and Associated Factors among Health care workers in Public Hospitals of East Wollega Zone, Oromia Regional state, West Ethiopia**.**

Hello! My name is …….. I am here on behalf of Melkamu Garuma, student of Masters of Health care and Hospital Administration (MHA) in Jima University. He is conducting a research for the partial fulfillment of second degree on "Patient safety culture and associated factors among Health care workers in public Hospitals of East Wollega Zone". I would like ask you to complete self-administered questioner about your opinion regarding patient safety issue in your hospitals and it will take about 10-15 minutes. We are kindly requesting you to answer the questions that we have prepared for you.

Patient safety: is defined as the avoidance and prevention of patient injuries or adverse events resulting from the processes of health care delivery

An event: is defined as any type of error, mistake, incident, accident, or deviation, regardless of whether or not it results in patient harm.

Please feel free to answer the entire questions to the best of your ability; as your participation in this study will be completely anonymous. Do not hesitate to contact research assistant in case of any ambiguity.

Are you voluntary to complete the questionnaire?

Yes: ☐ No: ☐

1. Name of your Hospital: _____

2. Questioner Code: _____

3. Facilitator Name: _____Signature: _____

PART I: Background Characteristics of the Respondents

➢ **For each item, please circle the single most appropriate number.**

S/N	Questions	Responses
01	Sex	**1**. Male **2**. Female
02	Age	_____(years)
03	Marital status	**1**. Single **2**. Married **3.** Divorced **4.** Widowed
04	Monthly Salary	_____in ETB (gross)
05	What is your hospital type?	**1**. Primary Hospital **2.** General Hospital **3.** Referral/Specialized Hospital
06	What is your position in this hospital?	**1**. Physician **2.** Nurse **3**. Midwifery **4**. Pharmacist/Druggist **5**. Lab. technologist/technician **6**. Others (specify) ……
07	What is the highest level of education you have completed?	**1**. Specialist **2**. GP **3**. MSc **4**. BSc **5.** Diploma **6**. Others (specify)…..
08	What is your working unit?	**1**. Medicine **2**. Surgery **3**. Pediatrics **4**. Gynecology/Obstetrics **5**.Delivery/labor **6**. Emergency **7**. Laboratory **8**. Pharmacy **9**. Others (specify)……
09	How long have you worked in this hospital?	_____(years) and _____months
10	How long have you worked in your current hospital unit/area?	_____years and _____months
11	How many hours per week do you work in this hospital?	_____hours
12	Do you have a direct contact with patients?	**1**. Yes **2**. No
13	Do you have patient safety training?	**1**. Yes **2**. No
14	Do you participate on patient safety program?	**1**. Never **2**. Once at least per year

PART II: Patient safety culture questionnairs

- **For each item, please circle the single most appropriate number**

2.1.Unit level Questionnairs

2.1.1	**Supervisor/Manager expectations and actions:** **(1- Strongly Disagree, 2- Disagree, 3- Neutral, 4- Agree and 5- Strongly Agree)**					
2.1.1.1	My supervisor/manager says a good word when he/she sees a job done according to established patient safety procedures.	**1**	**2**	**3**	**4**	**5**
2.1.1.2	My supervisor/manager seriously considers staff suggestions for improving patient safety.	**1**	**2**	**3**	**4**	**5**
2.1.1.3r	Whenever pressure builds up, my supervisor/manager wants us to work faster, even if it means taking shortcuts.	**1**	**2**	**3**	**4**	**5**
2.1.1.4r	My supervisor/manager overlooks patient safety problems that happen over and over.	**1**	**2**	**3**	**4**	**5**
2.1. 2	**Organizational Learning—Continuous Improvement:** **(1- Strongly Disagree, 2- Disagree, 3- Neutral, 4- Agree and 5- Strongly Agree)**					
2.1.2.1	We are actively doing things to improve patient safety	**1**	**2**	**3**	**4**	**5**
2.1.2.2	Mistakes have led to positive changes here.	**1**	**2**	**3**	**4**	**5**
2.1.2.3	After we make changes to improve patient safety, we evaluate their effectiveness.	**1**	**2**	**3**	**4**	**5**
2.1.3	**Teamwork Within Hospital Units:** **(1- Strongly Disagree, 2- Disagree, 3- Neutral, 4- Agree and 5- Strongly Agree)**					
2.1.3.1	People support one another in this unit.	**1**	**2**	**3**	**4**	**5**
2.1.3.2	When a lot of work needs to be done quickly, we work together as a team to get the work done.	**1**	**2**	**3**	**4**	**5**
2.1.3.3	In this unit, people treat each other with respect.	**1**	**2**	**3**	**4**	**5**
2.1.3.4	When one area in this unit gets really busy, others help out.	**1**	**2**	**3**	**4**	**5**
2.1.4	**Communication Openness** **(1 – Never; 2- Rarely; 3. - Sometimes, 4. - Most of the time and 5 - Always)**					
2.1.4.1	Staff will freely speak up if they see something that may	**1**	**2**	**3**	**4**	**5**

	negatively affect patient care.					
2.1.4.2	Staff feels free to question the decisions or actions of those with more authority.	**1**	**2**	**3**	**4**	**5**
2.1.4.3r	Staffs are afraid to ask questions when something do not seem right.	**1**	**2**	**3**	**4**	**5**
2.1.5	**Feedback & Communication About Error** **(1 - Never, 2- Rarely, 3. - Sometimes, 4. - Most of the time and 5 - Always)**					
2.1.5.1	We are given feedback about changes put into place based on event reports.	**1**	**2**	**3**	**4**	**5**
2.1.5.2	We are informed about errors that happen in this unit.	**1**	**2**	**3**	**4**	**5**
2.1.5.3	In this unit, we discuss ways to prevent errors from happening again.	**1**	**2**	**3**	**4**	**5**
2.1.6	**Non-punitive Responses to Errors:** **(1- Strongly Disagree, 2- Disagree, 3- Neutral, 4- Agree and 5- Strongly Agree)**					
2.1.6.1r	Staffs feel like their mistakes are held against them	**1**	**2**	**3**	**4**	**5**
2.1.6.2r	When an event is reported, it feels like the person is being written up, not the problem.	**1**	**2**	**3**	**4**	**5**
2.1.6.3r	Staff worry that mistakes they make are kept in their personnel file	**1**	**2**	**3**	**4**	**5**
2.1.7	**Staffing:** **(1- Strongly Disagree, 2- Disagree, 3- Neutral, 4- Agree and 5- Strongly Agree)**					
2.1.7.1	We have enough staff to handle the workload.	**1**	**2**	**3**	**4**	**5**
2.1.7.2r	Staff in this unit work longer hours than is best for patient care.	**1**	**2**	**3**	**4**	**5**
2.1.7.3r	We use more agency/temporary staff than is best for patient care.	**1**	**2**	**3**	**4**	**5**
2.1.7.4r	We work in "crisis mode" trying to do too much, too quickly	**1**	**2**	**3**	**4**	**5**
2.2. Hospital level Questionnaires						
2.2.1	**Teamwork Across Hospital Units:** **(1- Strongly Disagree, 2- Disagree, 3- Neutral, 4- Agree and 5- Strongly Agree)**					
2.2.1.1	There is good cooperation among hospital units that need to work together.	**1**	**2**	**3**	**4**	**5**
2.2.1.2	Hospital units work well together to provide the best care for patients.	**1**	**2**	**3**	**4**	**5**

2.2.1.3r	Hospital units do not coordinate well with each other	**1**	**2**	**3**	**4**	**5**
2.2.1.4r	It is often unpleasant to work with staff from other hospital units.	**1**	**2**	**3**	**4**	**5**
2.2.2	**Handoffs & Transitions:** **(1- Strongly Disagree, 2- Disagree, 3- Neutral, 4- Agree and 5- Strongly Agree)**					
2.2.2.1r	Things "fall between the cracks" when transferring patients from one unit to another.	**1**	**2**	**3**	**4**	**5**
2.2.2.2r	Important patient care information is often lost during shift changes.	**1**	**2**	**3**	**4**	**5**
2.2.2.3r	Problems often occur in the exchange of information across hospital units.	**1**	**2**	**3**	**4**	**5**
2.2.2.4r	Shift changes are problematic for patients in this hospital	**1**	**2**	**3**	**4**	**5**
2.2.3	**Management Support for Patient Safety:** **(1- Strongly Disagree, 2- Disagree, 3- Neutral, 4- Agree and 5- Strongly Agree)**					
2.2.3.1	Hospital management provides a work climate that promotes patient safety.	**1**	**2**	**3**	**4**	**5**
2.2.3.2	The actions of hospital management show that patient safety is a top priority.	**1**	**2**	**3**	**4**	**5**
2.2.3.3r	Hospital management seems interested in patient safety only after an adverse event happens	**1**	**2**	**3**	**4**	**5**

2.3. Outcome measure questionnaires

2.3.1.Overall Perceptions of Patient Safety Questionnaires:

(1- Strongly Disagree, 2- Disagree, 3- Neutral, 4- Agree and 5- Strongly Agree)

3.1	Patient safety is never sacrificed to get more work done.	**1**	**2**	**3**	**4**	**5**
3.2	Our procedures and systems are good at preventing errors from happening.	**1**	**2**	**3**	**4**	**5**
3.3r	It is just by chance that more serious mistakes don't happen around here.	**1**	**2**	**3**	**4**	**5**
3.4r	We have patient safety problems in this unit	**1**	**2**	**3**	**4**	**5**

Key: **r** = negatively worded items.

Gaaffii:

Jimmaa Universiitiitti; Inistituutii Fayaa: Departimantii Poolisii Fayyaa fi Bulchiinsaa

Gaaffileen kan qophaa'an mata duree" ogeessota fayyaa hospitaala mootummaa wallaga bahaa; Mootummaa Naannoo Orooomiyaa; Lixa Itoophiyaa

Hello! Maqaan koo …….. kanan jedhamu obbo Melkamu Garuma, barataa digrii lammaffaa " Masters of Health care and Hospital Administration (MHA); jimmaa universiitiitti barachaa kan jiran qorannoo isaanii: "Qorannoo akkaataa Aadaa qabinsa dhukkubsattootaa fi sababoota isaa" kan jedhu irratti waan gaggeessaniif akka isin yaada hospitaala keessanii gaaffilee armaan gaditti dhihaataniif yeroo daqiiqaa 10-15 hin caalle keessatti guuttanii akka naaf deebistan kabajaan isin gaafadha.

Sababa qorannoo kana keessatti hirmachuun keessan guutummaan guutuutti dhokataa ta'eef bilisa ta'aatii gaaffii hundumasaa naaf guutaa. Waanta isin rakkisuuf immoo haala mijeessaa/tuu ykn to'ataa gaafachuu hin sodaatiinaa.

Gaaffilee kana guutuudhaaf fedhii qabdaa?

Eeyyee: ☐ Lakki: ☐

1. Maqaa hospitaala kee: _____

2. Coodii Gaaffii: _____

3. Maqaa haala mijeessaa/tuu: _____ mallattoo: _____

KUTAA I: Gaaffiiwwan Amaloota Seenaa Maamiltootaa

➢ **Gaaffilee maraaf deebii sirrii dha jettan tokko qofaatti maraa.**

T/L	Gaaffilee	Filannoowwan
1	Saala	**1**. Dhiira **2**. Dhalaa
2	Umurii	_____(waggaadhaan)
3	Haala fuudhaa fi heerumaa	**1**. Hin heerumne/hin fuune **2**. Heerumeera/fuudheera **3.** Wal-hiikneera **4.** Kan du'e/duute
4	Mindaa ji'aa	_____qar. Etoophiyaatiin
5	Gosa Hospitaalakee?	**1**. Hospitaala jalqabaa **2.** Hospitaala walii Galaa **3.** Hospitaala Riferaalaa
6	Hospitaala kana keessatti ga'ee hojiikee	**1**. Hakiima **2.** Narsii **3**. Deesistuu **4**. Ogeessa faarmaasii **5**. Ogeessa Laaboraatorii **6**. Kan biro (……..)
7	Sadarkaa barnootaa kee	**1**. Ispeeshaalii **2**. Hakiima Walii galaa **3**. Digrii lammaffaa **4**. Digrii Jalqabaa **5.** Dipiloomaa **6**. Kan biro (…….)
8	Kutaa hojii kee	**1**. Kutaa Waldhaansaa **2**. Kutaa baqaqsaa **3**. Kutaa Daa'imaa **4**. Kutaa yaalii Gadameessaa **5**. Kutaa Da'umsaa **6**. Kutaa balaa tasaa **7**. Kutaa Laaboraatorii **8**. Kutaa faarmaasii **9**. Kan biro (……..)
9	Hospitaala kana keessa hammamiif tajaajiltee?	_____(waggaa) fi _____(ji'a).
10	Kutaa amma hojjechaa jirtu keessa hammamiif tajaajiltee?	_____(waggaa) fi _____(ji'a).
11	Torbeetti sa'aatii meeqa hojjettaa?	_____(sa'aatii)
12	Dhukkubsattoota waliin kallattiin wal	**1**. Eeyyee **2**. Lakki

	qunnamtaa?	
13	Haala qabinsa dhukkubsataa irratti leenjii qabdaa?	**1**. Eeyyee **2**. Lakki
14	Sagantaa haala qabinsa dhukkubsattootaa irratti ni hirmaattaa?	**1**. Eeyyee **2**. Lakki

KUTAA II: Gaaffiiwwan Sababoota Dhaabbata Waliin Wal-qabatan

- **Gaafilee maraaf deebii sirriidha jettan tokko qofaatti maraa.**

1. Gaaffilee Sababoota Sadarkaa Kutaalee Waliin wal qabatan

❖ **Haala Qabinsa Dhukkubsataa Guddisuuf; Ilaalchaa fi gochaa Gaggeessaa/To'ataa**

(1- Gonkumaa itti walii hin galu, 2- Itti walii hin galu, 3- Giddu galeessa, 4- Waliin gala and 5- Cimseen walii gala)

15	Hoogganaan/to'ataankoo hojii akkaataa standardii qabinsa dhukkubsattootaaf qaphaa'een hojjetame argu jecha gaarii jedha.	**1**	**2**	**3**	**4**	**5**
16	Hoogganaan/to'ataankoo haala qabinsa dhukkubsattootaa fooyyessuuf, yaada hojjettootaa ilaalcha keessa ni galcha.	**1**	**2**	**3**	**4**	**5**
17r	Yeroo dhiibbaan jirutti, karaa gabaabaa ta'us, hoogganaankoo akka nuti ariitiin hojjennu ni barbaada.	**1**	**2**	**3**	**4**	**5**
18r	Rakkoo haala qabinsa dhukkubsattootaa yeroodha gara yerootti uumamu hoogganaan/to'ataan koo callisee ni ilaala	**1**	**2**	**3**	**4**	**5**

❖ **Barnoota Dhaabbatarraa fi Jijjiirama itti fufinsaa**

(1- Gonkumaa itti walii hin galu, 2- Itti walii hin galu, 3- Giddu galeessa, 4- Waliin gala and 5- Cimseen walii gala)

19	Nuti haala qabinsa dhukkubsattootaa fooyyessuuf ciminaan ni hojjenna	**1**	**2**	**3**	**4**	**5**
20	Dogongoroonni asiiti uumaman waan gaarii akka jijjiirru ni godhu	**1**	**2**	**3**	**4**	**5**
21	Haala qabinsa dhukkubsattootaa fooyyessuuf jijjiiram erga goonee, galma ga'insa isaanii ni madaalla.	**1**	**2**	**3**	**4**	**5**

❖ **Hojii Garee Kutaalee Hospitaalaa keessaa**

(1- Gonkumaa itti walii hin galu, 2- Itti walii hin galu, 3- Giddu galeessa, 4- Waliin gala and 5- Cimseen walii gala)

22	Kutaa kana keessatti namootni wal walii isaanii ni gargaaru	**1**	**2**	**3**	**4**	**5**
23	Yoo hojiin baay'een hatattamaan akka hojjetamu barbaadame, nuti	**1**	**2**	**3**	**4**	**5**

	gareedhaan ni hojjenna.					
24	Garee kana keessatti namootni jaalalaan walwalii isaanii ni tumsu.	**1**	**2**	**3**	**4**	**5**
25	Kutaa kana keessaa garee tokkotti hojiin yoo baay'ate, gareen kaan ni gargaaru	**1**	**2**	**3**	**4**	**5**
❖ **Bilisaan Dubbachuu** **(1 – Gonkumaa; 2- Baay'ee xiqqoo; 3. – Yeroo tokko tokko, 4. – Yeroo baay'ee and 5 – Yeroo maraa)**						
26	Hojjettootni wanta haala qabinsa dhukkubsataa miidhu yeroo argan bilisaan ni dubbatu	**1**	**2**	**3**	**4**	**5**
27	Hojjettootni waara aangoo qaban bilisaan gaaffii ni gaafatu.	**1**	**2**	**3**	**4**	**5**
28r	Wanti tokko gaarii yoo itti fakkaachuu dide hojjettootni gaaffi gaafachuu ni sodaatu	**1**	**2**	**3**	**4**	**5**
❖ **Waa'ee Dogongoraa Dubbii fi duubdeebii** **(1 – Gonkumaa; 2- Baay'ee xiqqoo; 3. – Yeroo tokko tokko, 4. – Yeroo baay'ee and 5 – Yeroo maraa)**						
29	Ta'iiwwan gabaasaa irratti hundaa'uun jijjiirama dhufeef duubdeebiin nuuf ni kennama.	**1**	**2**	**3**	**4**	**5**
30	Dogongoroota kutaa kana keessatti uumamaniif hubannoon nuuf ni kennama.	**1**	**2**	**3**	**4**	**5**
31	Kutaa kana keessatti dogongorootni irra deebi'anii akka hin uumamneef mare ni gaggeessina.	**1**	**2**	**3**	**4**	**5**
❖ **Dogongoraaf Deebii Adabbii malee** **(1- Gonkumaa itti walii hin galu, 2- Itti walii hin galu, 3- Giddu galeessa, 4- Waliin gala and 5- Cimseen walii gala)**						
32r	Hojjetootni dogongorri isaanii akka isaan miidhutti yaadu	**1**	**2**	**3**	**4**	**5**
33r	Dongorri uumame yoo gabaafame, rakkoo sana osoo hin taane, xalayaan akka itti barreefamu yaadu	**1**	**2**	**3**	**4**	**5**
34r	Hoojettootni kan itti dhiphatan dogongorri isaan uuman kuusaa isaanii keessa akka galutti.	**1**	**2**	**3**	**4**	**5**
❖ **Humna namaa** **(1- Gonkumaa itti walii hin galu, 2- Itti walii hin galu, 3- Giddu galeessa, 4- Waliin gala and 5- Cimseen walii gala)**						
35	Baay'ina hojii jiruuf human namaa gahaa qabna.	**1**	**2**	**3**	**4**	**5**

36r	Hojjettootni kutaa kanaa dhukkubsataa akka gaariitti gargaaruuf jecha yeroo dheeraa ni hoojetu	**1**	**2**	**3**	**4**	**5**
37r	Dhukkubsattoota haala gaariin tajaajiluuf jecha, humna namaa yeroo ni fayyadamna.	**1**	**2**	**3**	**4**	**5**
38r	Haala baay'ee rakkisaa ta'e keessatti hojii baay'ee h atattamaan ni hojjenna.	**1**	**2**	**3**	**4**	**5**
2. Gaaffilee Sababoota Sadarkaa Hospitaalaa Waliin Walqabatan						
❖ **Hojii Garee Kutaalee Hospitaalota keessaa waliin** **(1- Gonkumaa itti walii hin galu, 2- Itti walii hin galu, 3- Giddu galeessa, 4- Waliin gala and 5- Cimseen walii gala)**						
39	Kutaalee hospitaalotaa gidduu walii galtee gaariitu jira.	**1**	**2**	**3**	**4**	**5**
40	Dhukkubsattootaaf tajaajila gaaarii kennuuf kutaaleen hospitaala keessaa akka gaariitti waliin ni hojjetu.	**1**	**2**	**3**	**4**	**5**
41r	Kutaaleen hospitaala keessaa akka dansaatti walii hin galan.	**1**	**2**	**3**	**4**	**5**
42r	Hojjettoota kutaalee hospitaalota biroo waliin hojjechuuf mijataa miti.	**1**	**2**	**3**	**4**	**5**
❖ **Hospitaala keessatti wal-harkaa fuudhinsaafi jijjiirraa** **(1- Gonkumaa itti walii hin galu, 2- Itti walii hin galu, 3- Giddu galeessa, 4- Waliin gala and 5- Cimseen walii gala)**						
43r	Jijiirraan kutaadhaa gara kutaatti yeroo ta;u,gidduu kanatti wanttotni ni badu	**1**	**2**	**3**	**4**	**5**
44r	Yeroo wal jijjiirraa dabaree odeeffannoon dhukkubsattootaa murteessoo ta'an ni bada.	**1**	**2**	**3**	**4**	**5**
45r	Yeroo kutaaleen hospitaalaa odeeffannoo wal jijjiiran yeroo mara rakkoon ni uumama.	**1**	**2**	**3**	**4**	**5**
46r	Hospitaala kana keessatti dhukkubsattootaaf yeroon dabaree wal jijjiirraa rakkoo guddaa dha.	**1**	**2**	**3**	**4**	**5**
❖ **Qabinsa dhukkubsattootaaf deeggarsa hooggantootaa** **(1- Gonkumaa itti walii hin galu, 2- Itti walii hin galu, 3- Giddu galeessa, 4- Waliin gala and 5- Cimseen walii gala)**						
47	Haala qabinsa dhukkubsattootaa guddisuuf gaggeessaan hospitaalaa haala ni mijeessa	**1**	**2**	**3**	**4**	**5**
48	Gochi gaggeessaa hospitaalaa haalli qabinsi dhukkubsataa daran olaanaa ta'uu ni mul'isa	**1**	**2**	**3**	**4**	**5**

49r	Gaggeessaan hospitaalaa haala qabinsa dhukkubsataaf fedhii kan agarsiisu erga rakkoon suukkanneessaan uumamee qofa.	**1**	**2**	**3**	**4**	**5**
KUTAA –III: <u>Hubannoo Walii galaa akkaataa Qabinsa Dhukkubsatttootaa</u> **(1- Gonkumaa itti walii hin galu, 2- Itti walii hin galu, 3- Giddu galeessa, 4- Waliin gala and 5- Cimseen walii gala)**						
50	Akaataan qabinsa dhukkubsattootaa gonkumaa hojii baay'ee hojjechuun hin miidhamu.	**1**	**2**	**3**	**4**	**5**
51	Adeemsii fi tooftaan keenyi dogongorri akka hin uumamneef garrii dha.	**1**	**2**	**3**	**4**	**5**
52r	Dogongorri cimaan asitti kan hin uumamneef akka carraa ta'eeti.	**1**	**2**	**3**	**4**	**5**
53r	Kutaa kanatti rakkoo qabinsa dhukkubsataa qabna.	**1**	**2**	**3**	**4**	**5**

Thesis approval form final

I, the undersigned, hereby declare that this thesis is my original work. The work has not been presented for degree in any university and source of materials used for the project has been acknowledged.

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