# The influence of patient safety culture on incident reporting among health care professionals working in public hospitals in Addis Ababa, Central Ethiopia

**By: - Wubetu Agegnehu (BSc.)**

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# The influence of patient safety culture on incident reporting among health care professionals working in public  hospitals in Addis Ababa, Central Ethiopia

By: - Wubetu Agegnehu(BSc.)

Name of advisors:

      Mr.  Shimeles Ololo (MPH, associate professor)

      Mr. Dejene Melese (BSc., MPH)

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Jimma, Ethiopia

# Abstract

***Background***: *Patient safety is crucial to the quality of patient care and remains challenging for countries at all levels of development. There is a popular acknowledgement of the importance of establishing patient safety culture in healthcare organizations. Hospitals with a positive patient safety culture are transparent and fair with staff when incidents occur, learn from mistakes, and rather than blaming individuals, look at what went wrong in the system. Health care providers are willing to report the errors but, due to poor reporting system and culture of blame and shame, there exists struggle of disclosure of adverse events.*

***Objective***: *To investigate the influence of patient safety culture on incident reporting behavior among health care professionals in public hospitals in Addis Ababa, central Ethiopia.*

***Methods***: *Institution based cross-sectional study was conducted from March 15-20, 2017 at public hospitals in Addis Ababa. Simple random sampling technique was used to select the study participants. A total of 697health professionals were selected by simple random sampling method Hospital Survey on Patient Safety Culture tool developed by Agency for Health Research and Quality was used. Data were coded, entered into Epi Data 3.1, and exported to SPSS version 21.0 software for analysis. Self-administered questionnaire was distributed to collect the data. A multivariate linear regression model was fitted. Then the effect of the socio-demographic variables and patient safety culture dimensions on the dependent variable "incident reporting behavior" was assessed using multiple linear regression analysis.*

***Results***: *Among the 691 health care providers, 578 health care providers returned the questioners with response rate of 83.6%. Majority (63.4%) of the respondents were males while the remaining 36.6% were female health care providers. The mean age of the participants was 29.06 (± 4.893years). In this study, 20.4% of the participants never reported an incident, 13.1% reported rarely, 19.9% reported sometimes. Only 30.4 % of respondents reported incidents always. Feedback about error ($\beta=0.136$, $p=0.008$), management support for safety ($\beta=0.28$, $p<0.001$), Non-punitive response to error, Supervisor/manager expectation and actions promoting patient safety ($\beta=0.356$, $p<0.001$) and communication openness ($\beta=0.170$, $p<0.001$) were the most predictive dimensions of patient safety culture for the outcome assessing the incident reporting.*

***Conclusions***:
*Incident reporting behavior among health care professionals was very low. To increase the incident reporting behavior, this study suggests placing priority on improving event reporting feedback mechanisms, communication regarding systems and process, giving priority by top-level hospital leadership and non-punitive response to errors.*

***Key words***: *- Incident reporting, patient safety culture*

# Acknowledgement

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# Abbreviations

AHRQ -Agency for health care research and quality

AIDS- Acquired immune deficiency syndrome

CEO-  Chief executive officer

FDRE-Federal democratic republic of Ethiopia

FMoH-Federal Ministry of Health

HEW-  Health extension workers

HSOPSC-Hospital survey of patient safety culture

IOM-  Institute of medicine

NHS-  National health survey

PSC-  patient safety culture

USA- United States of America

WHO -World Health Organization

# CHAPTER ONE: INTRODUCTION

## 1.1. Background

**Incident reporting: -** it is a process defined as the reporting of patient safety concerns by individuals in the health care setting who first discover, witness, or has familiarity with details of an incident, near miss event, or unsafe condition. An event is defined as any type of mistake, error, accident, or deviation, regardless of whether it has caused harm to a patient or not. Incidents that reach the patient resulting in harm according to AHRQ (agency for health research and quality) are considered adverse events. Events not reaching a patient are considered near miss events; unsafe conditions represent situations that increase the likelihood of the occurrence of an incident(1).

Reporting errors is fundamental to error prevention. The focus on medical errors that followed the release of the Institute of Medicine's (IOM) report To Err Is Human: Building a Safer Health System centered on the suggestion that preventable adverse events in hospital were a leading cause of death in the United States. Findings from the Harvard Medical Practice Study that found that more than 70 percent of errors resulting in adverse events were considered to be secondary to negligence, and more than 90 percent were judged to be preventable(2).

The IOM report also emphasized the importance of reporting errors, using systems to "hold providers accountable for performance," and "provide information that leads to improved safety." Conceptually these purposes are not incompatible, but in reality they can prove difficult to satisfy simultaneously(3). Patient safety initiatives target systems-related failures that contribute to errors within the complex environment of health care. Because many errors are never reported voluntarily or captured through other mechanisms, these improvement efforts may fail(2).

Many errors go unreported by health care workers(4).The major concern they have is that self-reporting will result in repercussions(5). Providers' emotional responses to errors inhibit reporting, yet some are relieved when they share the events of the error with patients. Health care professionals reported feeling worried, guilty, and depressed following serious errors as well as being concerned for patient safety and fearful of disciplinary actions. They also are aware of their direct responsibility for errors(6). Self-reporting errors can be thwarted by several factors. First, clinicians fear career- threatening disciplinary actions and possible malpractice litigation and liability(7,8). Health care leaders who do not protect reporters of

errors from negative consequences reinforce this fear, as does the criminalization of fatal health care mistakes (9). Fear of these negative consequences can lead to reporting errors only when a patient is harmed or when the error could not be "covered up"(10). Second, clinicians working in a culture of blame and punishment do not report all errors, primarily because they fear punishment. Many organizations have been challenged to provide an environment in which it is safe to admit errors and understand why the errors occurred(11). Fears of reprisal and punishment have led to a norm of silence. But silence kills, and health care professionals need to have conversations about their concerns at work, including errors and dangerous behavior of coworkers. Among health care providers, especially nurses, individual blame has been the predominant reaction for errors(12).

**Patient safety culture: -** A safe culture is an environment in which there is shared responsibility, role clarity and open and frequent communication related to safety. Key values and activities are nurtured and rewarded including employee awareness, vigilance, a process for formally identifying hazards and action steps for resolving safety concerns and problems(13). Patient safety culture is a component of organisational culture, includes the shared beliefs, attitudes, values, norms and behavioral characteristics of employees and influences staff member attitudes and behaviors in relation to their organization's ongoing patient safety performance(14).

Patient safety is a critical component of health care quality. As health care organizations continually strive to improve, there is a growing recognition of the importance of establishing a culture of safety. Achieving a culture of safety requires an understanding of the values, beliefs, and norms about what is important in an organization and what attitudes and behaviors related to patient safety are expected and appropriate(15).Measuring safety culture or climate is important because the culture of an organization and the attitudes of teams have been found to influence patient safety outcomes and these measures can be used to monitor change over time. It may be easier to measure perception of safety culture than safety culture practice(16).

An inclusive and systematic approach to incident reporting would help learning from errors and adverse events within the same setup(17). Through incident reporting, various kinds of errors can be traced and discussed among health professionals and preventive mechanisms can be designed(18). Despite the significant contribution of incident reporting to patient

safety, the magnitude of underreporting remains high in different countries across the globe(19). For instance, it occurs at a rate of 50%–96% in the United States (18).

## 1.2.    Statement of the problem

The World Health Organization (WHO) estimates that tens of millions of patients worldwide endure disabling injuries or death each year that can be attributed directly to unsafe medical practices and care(20). The seminal Institute of Medicine (IOM) report To Err Is Human: Building a Safer Health System found that medical errors kill between 44,000 and 98,000 people in U.S. hospitals each year. Using the lower estimate, more people die from medical errors in a year than from highway accidents, breast cancer, or AIDS. The IOM committee recommended that healthcare organizations create an environment in which culture of safety is an explicit organizational goal, becomes a top priority, and is driven by leadership. In response to the recommendations of the IOM, healthcare organizations began the process of improving the widespread deficits in patient safety, including a focus on organizational safety culture. (21) In the UK National Health Service (NHS) it is believed that a serious adverse event or critical incident occurs in up to 10% of all hospital admissions. That amounts to about 850,000 adverse events per year (22).

The total national cost of preventable adverse medical events in the USA, including lost income, disability and medical expenses, is estimated at between US$ 1.7 billion and US$ 2.9 billion annually. Added to these costs is the erosion of trust, confidence, and satisfaction among the public and health care providers (23). Studies from a variety of developed countries show that about one in ten patients are harmed while receiving hospital care. The consequences are devastated lives and billions of dollars unnecessarily spent on prolonged hospitalization, loss of income, disability and litigation. In the Eastern Mediterranean and African study, almost one third of patients who suffered a harmful incident died. Another 14% sustained permanent disability, 16% sustained moderate disability, 30% were left with minimal disability and 8% of the patients' harm could not be specified(24).

The study conducted in Iran, Ilam city, showed that the Ilam city hospitals had unacceptable conditions in terms of patient safety culture. The presence of punitive culture in workplace, lack of professional workforce, longer working hours and lack of patient safety programs were the main factors of unsuitable safety conditions in the studied hospitals(25). Ethiopia's health agenda for the next five years can be boiled down to a quest for two goals: quality and equity in health care. With the basic foundations of a health system in place, the government

is expanding its ambitions to focus on the quality of services patients receive. This shift in focus stems from an awareness that basic services have been introduced with little consideration of whether they are any good, which may account for why many health services continue to be poorly utilized(27).

A study conducted in six countries of the Region (all with developing or transitional economies) revealed that up to 18% of inpatient admissions in hospitals are associated with adverse events. Importantly, around 3% of hospital admissions are associated with death or permanent disability and 83% of such adverse events were judged to be preventable. This is an important study and calls the attention of policy-makers to the extent of the problem of unsafe health care. It also sheds light on the key areas that require attention(28).

The study conducted at Jimma university Specialized hospital indicated that there is poor patient safety practice and potentially preventable medical errors in the hospital. According to this study, death in low mortality patients was reported to occur most of the time by 10.4% of the respondents(29).

The study conducted in Ministries of Health of Egypt, Jordan, Kenya, Morocco, Tunisia, Sudan, South Africa and Yemen; the World Health Organisation (WHO) Eastern Mediterranean and African Regions (EMROandAFRO), and WHO Patient Safety, Of the 15548 records reviewed, 8.2% showed at least one adverse event, with a range of 2.5% to18.4% per country. Of these events, 83% were judged to be preventable, while about 30% were associated with death of the patient. About 34% adverse events were from therapeutic errors in relatively non-complex clinical situations(30). This study showed the importance of timely reporting the adverse events for the prevention of medical complications from patient safety events.

Another study conducted in Jimma zone-Ethiopia, shows the overall level of patient safety culture was 46.7 %. The dimension with the highest average percentage positive responses was teamwork within department (82 %). While the area with the most potential for improvement and the lowest average percentage positive response was non-punitive response to error (23.7 %)(31).

Although data on patient safety outcomes is limited, published figures from the largest hospitals in Ethiopia shows an all cause surgical mortality of 7% (26).

In Ethiopia, the Ministry of Health has designed strategies, procedures, and processes for patient care quality which included an incident reporting system. According to the Ethiopian hospital reform implementation guideline, an incident officer should be assigned to each hospital to receive and investigate all incident reports to the quality of the service being offered to users, supporting health facilities to evaluate and improve the provision of effective health services. A summary report of all incidents must be submitted to a quality assurance committee of each hospital(32). Although quite a lot of studies are available regarding incident reporting mainly in the western countries, very limited information exists in Ethiopia, particularly in the study area.

## 1.3.    Significance of the study

Event reporting is very important to hospital risk management programs. Analysis of events reported by staff assists in the identification of patterns, problems, and trends, which facilitate organizational learning. The phenomenon of incident reporting is a significant problem in health care organizations. The underreporting of incidents threatens the safety of patients since organizational learning and improvements will not take place if events are not reported. Despite the empirical evidence that organizational structures and positive patient safety culture in hospitals are prerequisites for incident reporting, little is known of the extent to which health care provider's perception of patient safety culture and safety practice dimensions of safety culture interact with incident reporting.

The findings will be beneficial to respective hospitals, healthcare workers, managers, health policy makers, and future researcher in terms of improving patient safety culture as well as for cultural transformation of the organization that promote the incident reporting system and culture.

# CHAPTER TWO: LITERATURE REVIEW

## 2.1. Incident reporting

Reporting errors is essential to error prevention. The center of attention on medical errors that followed the release of the Institute of Medicine's (IOM) report *To Err Is Human: Building a Safer Health System* centered on the suggestion that preventable adverse events in hospital were a leading cause of death in the United States. This report emphasized findings from the Harvard Medical Practice Study that found more than 70 percent of errors resulting in adverse events were considered to be secondary to negligence, and more than 90 percent were judged to be preventable(2).

Health care staff tend not to report mistakes or 'near misses' (errors or disasters that have been narrowly avoided), fearing that if they do so they will be blamed and punished. And this in turn means that senior medical, nursing and management personnel do not get the information they need in order to make the service safer. When the same mistakes occur repeatedly, this is a tragedy, and a gross failure of the care we should deliver for our patients(22).

Attributing or apportioning blame for adverse events to individuals is common. Mistakes do not happen in a void; the social and political context inevitably impacts on our understanding and subsequent demands for answers as to why the event occurred. It's easier to blame someone than undertake complicated detailed analysis of the many factors surrounding an adverse event. We think someone has to be accountable. Today most complex industrial/high technological organizations realize that a blame culture will not bring safety issues to the forefront. Finger pointing and cover-ups have no place in safe organizations which depend on open communication to identify breaks in the 'defenses'. Accident analysis in these organizations routinely examines equipment design, procedures, training and other organizational features. But in non-industrial fields such as healthcare, the blame-and-punish management philosophy is still dominant (33).

## 2.2. Patient safety culture and components of PSC

The Safety Culture is configured based on five characteristics, operationalized by the organization's safety management culture in which all workers, including professionals involved in the care and managers, take responsibility for their own safety and for the safety of their colleagues, patients and family members; a culture which prioritizes safety above financial and operational goals; a culture which encourages and rewards the identification,

notification and resolution of problems related to safety; a culture which, following the occurrence of incidents, promotes organizational learning; and a culture which provides resources, structure and responsibilization for the effective maintenance of safety" (34).

Studying the safety culture in the hospital raises the possibility of identifying the intervenient factors in the work process which impact on the patients' safety. The undertaking of research in the area makes it possible to discuss this culture, and the grasping of this knowledge leads to strengthening the effective communication of scientific evidence, techniques and recommendations aimed at ensuring patient safety in healthcare. Collecting and analyzing data via questionnaires is much less expensive and less time-consuming than conducting in-depth interviews and observations. This may partly explain why, practically speaking, safety climate questionnaires have become the accepted method for measuring safety of an organization's safety culture(35).

Accurate measurement of patient safety culture is limited by the ability to define measureable components of culture(36). Therefore, the demand for relatively low-cost, quick and easy to use assessments of patient safety culture has resulted in a reliance on patient safety climate questionnaires(37).

The increasing need for assessing patient safety culture has led to development of numerous instruments for specifically measuring patient safety in the healthcare industry. In response to requests from hospitals interested in comparing their results with those of other hospitals on the Hospital Survey on Patient Safety Culture, the Agency for Healthcare Research and Quality (AHRQ) established the Hospital Survey on Patient Safety Culture comparative database(38).

### 2.3.1. Open Communication and nun-punitive response to errors

Patient safety is a property dependent on open learning. Patient safety has another inherent feature that derives directly from its dependence on errors and adverse events as a main source of understanding. It depends on a culture of openness to all relevant perspectives in which those involved in adverse events are treated as partners in learning. In this sense, patient safety espouses continuous cycles of learning, reporting of adverse events or near misses, dissemination of lessons learned, and the establishment of cultures that are trusted to not cast unfair blame. The patient safety field marries principles of adult education and effective behavioral learning with the traditional approaches of the medical profession. Known from its early days as the field that seeks to move "beyond blame" to a culture trusted

by all to be just patient safety, patient safety pioneers have pushed for a much deeper understanding of the mechanisms of errors that often lie beyond the actions or control of the individual(39).

Communication about the importance of patient safety must be well conceived, repeated, and consistent across the entire organization. In its communication with physicians, managers, employees, and patients, the organization should stress that safety problems are quality problems and that all persons must be involved in identifying deficiencies in current care delivery processes and in designing and executing solutions needed to create safer systems. Communicated messages must be supported by organizational behavior that reinforces the priority the organization places on patient safety to ensure that the communication is believable and, in turn, promotes the desired behavior of those practicing, working, and being cared for within the organization(40).

Organizations with a positive safety culture are characterized by communications founded on mutual trust, by shared perceptions of the importance of safety and by confidence in the efficacy of preventive measures(41).

Failures of communication between Operating theater personnel are common. This may involve communicating too little or even too much, too early or too late, and may involve a failure of either the person initiating the communication or the receiver, who may fail to understand or even hear the message. Most surgical errors are not attributable to an individual but involve multiple personnel and steps; 43% of such errors are thought to be due to poor communication(42). There is evidence from a variety of sources that communications between members of health-care teams emerge as a key factor in poor care and are especially apparent where medical errors occur. Lingard and colleagues found that 31% of all communications could be categorized as a failure in some way: the information was missing, the timing was poor, there were unresolved issues, or key people were absent(43).

The study conducted in hospital of Northern Italy shows the positive findings on the communication about error (in the perspective 'Feedback and Communication about Error', 60% of the answers were positive) and the negative findings on the 'Non- punitive Response to Error' (only 35% of positive answers related to the 'Non-punitive Response to Error')(44). Recently published study in Ethiopia showed that out of all the patient safety culture dimensions, there was none that fits the criteria for areas of strength.

The study conducted in Jimma university teaching hospital showed that 67.6% of the participants felt frustrated after nurse physician interaction (45).

Nonetheless, it is worth acknowledging that those exposed to harm have a right to accountability where harm occurs through negligence or unprofessional behavior(46). This shows that there is a culture of blame and we will never have transparency in a culture of blame.

## 2.3.2. Staffing

In the United States, medical professionals, especially residents, are working far beyond the limits that society deems acceptable in other sectors. This practice is incompatible with a safe, and high-quality health care system(47).

Adequate staffing is fundamental to quality care and due to shortage of time associated with insufficient staffing, incident reporting was low in hospitals with a lower staffing level(40). This could be due to lack of time to complete the incident reporting form. High rates of staff turnover degrade the collective experience to the point that educators of new staff are themselves relatively inexperienced. Understaffing is one of the greatest threats to patient safety, but rapid turnover can be another(42).

The study conducted in Jimma zone at district hospitals showed that, staffing was the list positively endorsed patient safety culture dimensions. Only 35% of the participants had rated the staffing of the Jimma zone district hospitals positively(31).

The study conducted in Italy sowed that the perspectives involving hospital management issues, which health care providers thought they could not directly influence, were the ones with a low percentage of positive answers (30%) and therefore were critical. Accordingly, the perspective on 'staffing' showed a high mean percentage of critical situations in the clinical units resulting from the insufficient number of staff compared to the workload(44).

## 2.3.3. Organizational learning-continues improvement

Lack of training and experience is often mentioned as sources of medical errors(40). In a study of surgical errors leading to malpractice claims, Rogers and colleagues found that the leading causes (41%) were lack of experience and lack of technical competence. Training has been shown to decrease error and increase the ability to solve problems, particularly for inexperienced professionals(48).

The study conducted in London on 'Effectiveness of Continuous Professional Development' showed that highest scores(57%) for attitudes towards continuous professional development (CPD) were as a natural part of professional life, necessary for patient safety and rewarding(49).

The study conducted in Cairo, Egypt showed 78.2% positive response for the organizational learning- continuous improvement (50).

Another study on PSC showed that Organization learning – continuous improvement scored highest positive responses in a study carried out in an Acute Hospital Settings in Sri Lankan set up (82.5%)(63). (51).

A recent study conducted in Ethiopia showed, there is a severe deficit of patient safety culture in Ethiopian public hospitals. The overall patient safety score and most of the scores related to dimensions were lower than the benchmark score (US hospitals) and the study shows the punitive approach to error reporting was commonly reflected( (52)

## 2.3.4. Teamwork

Training in teamwork became a foundational building block for the new field of patient safety. The discipline of patient safety rejected the concept of health care delivery as an exclusive dominion of the medical profession over the patient-physician relationship. The vision was more inclusive and demanding. It included patient-centered care and the biomedical model, and it focused on interdisciplinary teams and families. It also included the technical and administrative aspects of health care delivery in a complex system(37).-----39

The according to the study conducted in Jimma zone district hospitals, teamwork was the area of strength among other patient safety culture dimensions((31).

## 2.3.5. Leadership and patient safety culture

Patient safety culture starts at the top, so that executive and nonexecutive directors play a critical leadership role in safety and hence in promoting awareness of human factors from within the boardroom to the patient's bedside by developing a positive safety culture and embedding human factors training in healthcare in their organizations that require high level leadership(50).

Leadership at the ward, unit and organizational levels is essential. Many good programs have failed because of weak and wavering support of those in leadership positions. Perceptual indicators of the culture are a reflection of the organizational practices and systems, therefore, improvement strategies should be targeted at changing organizational practices and systems like leadership style(33).

### 2.3.6. Patient Handoffs and transfer

It is mechanism for transferring information, primary responsibility, and authority from one or a set of caregivers, to oncoming staff. So, conceptually, the handoff must provide critical information about the patient, include communication methods between sender and receiver, transfer responsibility for care, and be performed within complex organizational systems and cultures that impact patient safety. The complexity and nuance of the type of information, communication methods, and various caregivers for each of these factors impact the effectiveness and efficiency of the handoff as well as patient safety. Ineffective handovers can lead to wrong treatment, delay in diagnoses, severe adverse events, patient complaints, increased healthcare costs, and length of stay(1).

## 2.4. Patient safety culture and incident reporting

The character of an organization's safety culture influences professional patient safety behavior and error reporting. Organizations with a just culture have been described as those who examine and identify their weaknesses; improvement and learning is therefore accomplished(51).

It is widely believed that people can learn from their past mistakes and if the lessons learned are shared, more people become aware. Hospitals with a positive patient safety culture are transparent and fair with staff when incidents occur, learn from mistakes, and, rather than blaming individuals, look at what went wrong in the system(52).

Patient safety culture in hospitals has been given considerable recent attention, and there is an emerging body of evidence that indicates it is an important predictor of adverse patient events in health care settings. However, less is known of the extent to which patient safety culture in hospitals predicts incident reporting by nurses, including their reports of mistakes or near misses that could harm a patient but does not(53).

A study of pediatricians in the United States indicated willingness among them to report errors to hospitals, but the belief that current reporting systems are inadequate and struggle with error disclosure(2).

Advocates of patient safety have called strongly for the removal of blame and shame from the reporting of medical errors. Health care organizations should even seek to reward error reporting. Interest is also increasing in encouraging health care organizations to report these events to central entities such as government patient safety institutions to improve patient safety throughout the healthcare system(54).

The study conducted in Taiwan's hospitals on: Cross-level relationship between organizational culture and patient safety behavior by Chen, Ng, and Li investigated the association between PSC and observed patient safety behavior among 788 healthcare workers, in 42 hospitals. They found that the PSC had a positive impact on patient safety event reporting (55).

The research measured and described patient safety culture (PSC) amongst the staff at the National District Hospital identified the perceived inadequacies with PSC and gives nurse managers a clear mandate to implement change to ensure a PSC that fosters quality patient care(56).

In another study, a PSC intervention in neonatal and pediatric intensive care units led to an increase in self-reported adverse incidents. On the other hand, perceived personal risk is a prime barrier to the self-reporting of errors. Studies have reported that 50% to 96% of errors go unreported because nurses are afraid of negative consequences and distrust their employer's ability to be constructive and provide support(53, 57).

Another study conducted in two East African hospitals identified obstacles to patient safety, among those obstacles, was poor communication along different hierarchies. Although staff generally felt there was a good level of cooperation within departments, week communication between professions and across hierarchies was frequently described (58).

**Theory/conceptual framework**

Implementing incident reporting has three phases-enabling, enacting, and elaborating-with each comprised of actions that influence patient safety and care outcomes. First, the enabling phase centers on leader actions that direct attention to patient safety and make it safe to speak up and act in ways that improve safety. In this stage, leaders create an environment for staff to safely communicate when faced with threats to patient safety. Next, the enacting phase involves frontline staff actions that highlight threats to safety and mobilize resources to reduce those threats. If enacting characteristics are strong, resources can be quickly mobilized and effectively used to resolve threats to safety.  Finally, the elaborating phase consists of learning practices that enable reflection about safety outcomes to modify actions involved in the enabling and enacting phases. In the elaborating stage, frontline employees reflect on problems in order to evolve and expand safety practices. This stage also has potential to strengthen enabling and enacting actions when recommendations from the elaborating phase are communicated to management(55). The conceptual model is framed for this study based on this theory.

**Enabling factors**

Management support

Communication openness

Staffing level

Overall perception of patient safety

Non-punitive response to errors

**Enacting factors**

Teamwork within units

Teamwork across units

Handoffs and transitions

**Incident reporting behavior**

**Participants' characteristics**
- Gender
- Age
- Educational level
- Years of experience in the current hospital
- Years of work in the current hospital unit
- Profession
- Working hours per week

**Elaborating factors**

Organizational learning

Feedback and communication for errors

Figure 1: Conceptual framework adapted from (Richter, Jason P, et al) showing the relationship of patient safety culture as perceived by health care providers and incident reporting behavior among health care providers in public hospitals, Addis Ababa, Ethiopia 2017 -(adapted from Richter, Jason P, et al) (58).

# CHAPTER THREE: OBJECTIVES

## 3.1. General objective

To assess the level of incident reporting and its relationship with perception of patient safety culture among health care providers in public hospitals, Addis Ababa, central Ethiopia, 2017.

## 3.2. Specific objectives

1. To determine incident reporting behavior among health professionals working in public hospitals, Addis Ababa; central Ethiopia.

2. To assess perceptions of health professionals towards patient's safety culture among health professionals in public hospitals, Addis Ababa; central Ethiopia.

3. To determine the influence of perception of patient safety culture on incident reporting of health professionals working in public hospitals, Addis Ababa; central Ethiopia.

# CHAPTER FOUR: METHOD AND MATERIALS

## 4.1. Study area and period

The study was conducted in public hospitals found in Addis Ababa from March 15-20/2017. In Addis Ababa, there are 12 public hospitals These are Amanuel Hospital, Armed force hospital, Alert Hospital, Black Lion hospital, Dejach Balcha hospital, Ghandi hospital, Menilik hospital, Police hospital, Ras Desta hospital, St, Pauls hospital, Yekatit 12 hospital, St. Peter hospital. Among these, five hospitals were selected for this study by lottery method. These are St. Paul specialized Hospital, St. Emanuel psychiatric specialized Hospital, St. Peter specialized Hospital, ALART specialized hospital, and Tikur Anbesa specialized teaching Hospital. Concerning the number of health professionals, St. paul has a total of 1041 health professionals, Amanuel hospital had 456, Tikur Anbesa hospital had 964, ALART hospital had 560, St. Peter had 456 health professionals.

## 4.2. Study Design

Facility based Cross sectional study design was employed.

## 4.3. Population

### 4.3.1. Source population

All health care professionals in selected public Hospitals

### 4.3.2. Study population

Sampled health care professionals in the selected public Hospitals

### 4.3.3. Eligibility criteria

#### 4.3.3.1. Inclusion criteria

Based on the Institute for health care improvement patient survey guideline recommendation,

- Those health care providers who are fulltime workers

- Staff members who at least has worked in the current hospital for 6 months.

#### 4.3.3.2. Exclusion criteria

Those health care providers who are on extended leave at the time of the study

## 4.4. Sample size determination

Sample size was determined based on single population proportion formula

$$n = \frac{z2P(1-P)}{d2}$$

Where P=proportion of health care providers who report incidents

p=0.5 is taken to get the maximum sample size

d=margin of error

Z=1.96 at 95% confidence level

$$n = 1.96^2 \frac{0.5 * 0.5}{0.05^2}$$

Because of the fact that the source population is less than 10, 000, correction formula was applied to get the final sample size.

$$nf = \frac{n}{1+\frac{n}{N}} \qquad = \qquad \frac{384}{1+\frac{384}{3777}} \qquad = 348.5$$

The sample size was multiplied by the design effect of 2 since the sampling technique was multi-stage sampling technique.
So, the final sample size was 2*348.5=697

### 4.4.1. Sampling technique

Multi-stage sampling technique was used. The hospitals were selected by lottery method and Proportional allocation of the respondents was done for each hospital based on their number of health care professionals. Respondents were selected by simple random sampling by using the list of the professionals from the human resource management as a sampling frame.
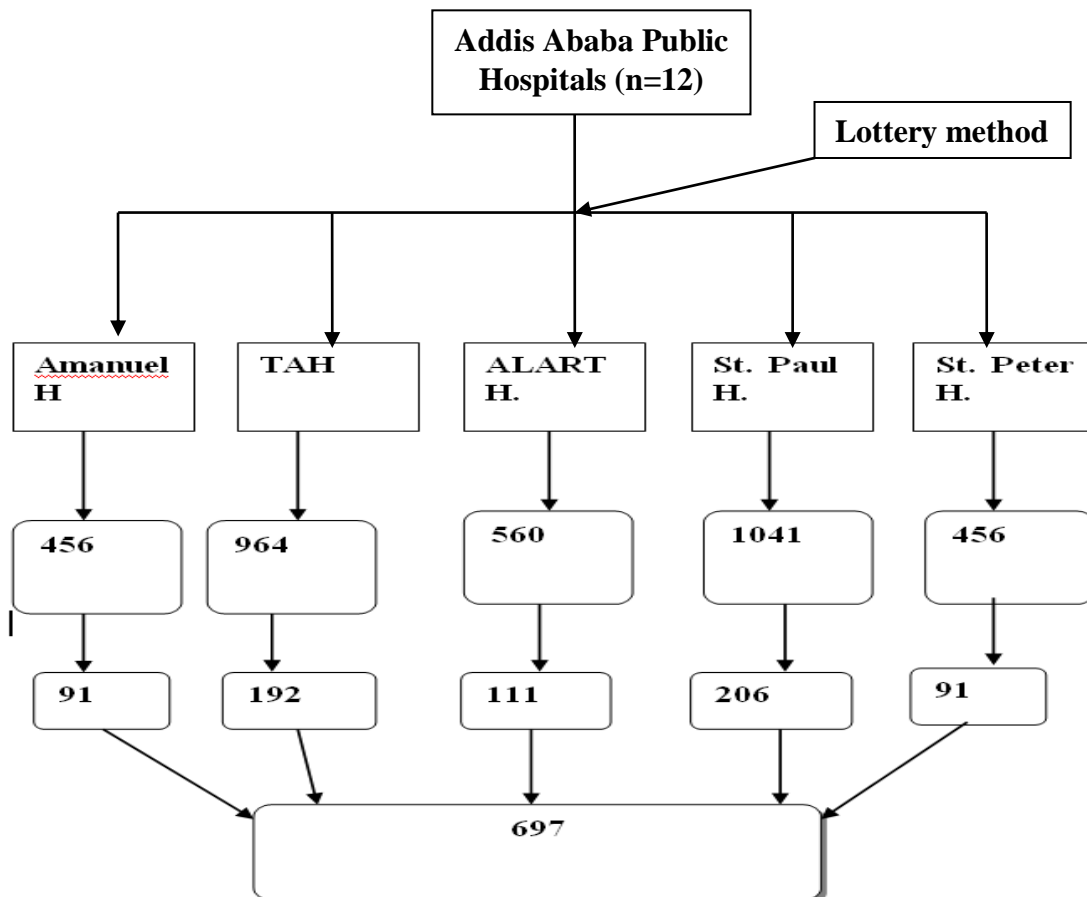


Figure 2:- schematic presentation of sampling procedure to assess the influence of patient safety culture on incident reporting behavior among health care providers' in public hospitals in Addis Ababa, central Ethiopia, 2017.

### 4.5. Data collection procedure
### 4.5.1. Data collection tool

Data collection tool was adapted from the AHRQ HSOPSC. Then it was translated to Amharic language. It contains socio-demographic variables (sex, educational status, work experience in the hospital and the current hospital unit/department, working hours per week and staff job role) and patient safety culture dimensions (hospital manager/supervisors actions promoting patient safety, organizational learning-continuous improvement, teamwork within units, communication openness, communication and feedback about errors reported,

non-punitive response to errors, staffing, hospital management support, teamwork across hospital units, hospital handoffs and transitions).

Internal consistency/reliability was checked by calculating Cronbach's alpha for each of the composite to ensure that items with in each composite were consistent. In this study the Cronbach's alpha for the composites ranged from 0.69 to 0.89. The HSOPSC user's guide indicates that a value of Cronbach's alpha 0.60 or greater is assumed to be acceptable. Therefore, each of the dimensions was found to have an acceptable reliability.

### 4.5.2. Data collection personnel

A total of 8 data collectors and supervisor were recruited for the successful completion of the data collection. The data collectors were BSc holders in Health sciences.

Training was given for the data collectors by the principal investigator for three days. After the training of the data collectors, pre-test was held on Jimma University Specialized Hospital, Oromia regional state, Ethiopia. Face validity and content validity was tested during the pre-test. According to the feedback of the pre-test, appropriate amendment was made on the tool.

### 4.5.3. Data collection technique

The self-administered questionnaires were distributed by the data collector for the study participants. Self- administered questionnaires were used for the following reasons: to make the participants feel free when filling the question(to avoid social desirability bias). the other reason is for its convenience to collect data from health professional. Because, its difficult to collect data during working time, the participants were given time to fill the questioner at home. The questionnaire was collected three days later after the distribution of the questionnaire. Frequent visit was made to get the unreturned questionnaires because of different reasons.

**4.6. Study variables**

**Dependent variables**

Incident reporting behavior

**Independent variable**s

- Participants' characteristics
  - Age
  - Sex
  - Educational status
  - Years of work in the current hospital
  - Job role in the hospital
  - Working hour per week
  - Service year in the current department/unit

- **Patient safety culture dimensions**
  - Supervisor/managers expectation and actions promoting patient safety
  - Organizational Learning and continuous improvement.
  - Teamwork within units.
  - Communication openness.
  - Communication and feedback about errors reported
  - Non-punitive response to error.
  - Staffing
  - Hospital management support.
  - Teamwork across hospital units.
  - Hospital handoffs & transition
  - Overall perception of patient safety

**4.7. Operational definition**

**An incident**- An injury, a medical error, and/or a near miss caused by a health care organization or a health professional unintentionally.

**Incident reporting behavior**

Is defined as reporting patient safety concerns by health care providers in public hospitals in Addis Ababa City Administration who may discover, identify, witness, or have familiarity with the occurrence of an event, unsafe condition, or near miss event that did not reach the patient. It was measured using three items; (1) when a mistake is made, but is caught and corrected before affecting the patient, how often is this reported? (2) When a mistake is made, but has no potential to harm the patient, how often is this reported? (3) When a mistake is made that could harm the patient, but does not, how often is this reported? It was measured by asking respondents to evaluate these issues on 5- point frequency (1 never to 5 always). Incident reporting is operationalzed as the participant's score on the frequency of events reported dimension on HSOPSC.

**Patient Safety Culture Composite Definitions**
**Teamwork within hospital units**

It measures weather staff support one another treats each other with respect and work together as a team. It has measured using four items considering four different scenarios (people support one another in this unit, when a lot of work needs to be done quickly, we work together as a team to the work done, in this unit, people treat each other with respect, and fourth when one area in this unit gets busy, others help). It was measured by asking respondents to evaluate these issue on 5- point Likert scales (1 strongly disagree to 5 strongly agree). It is operationalized as the participants score on teamwork within hospital units dimension on HSOPSC.

**Communication openness**
This domain assesses whether Staff 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 a 5 point Likert scale (1-strongly disagree to 5-strongly agree) of three items. The items are; (1) Staff will freely speak up if they see something that may negatively affect patient care; (2) Staffs feel free to question the decisions or actions of those with more authority; (3) Staffs are afraid to ask questions when something do not seem right. Communication openness is operationalized as the participants' score on communication openness dimension on HSOPSC.

**Feedback and Communication about Error**

It refers to whether Staffs are informed about errors that happen, are given feedback about changes implemented, and discuss ways to prevent errors. It was measured using three 5 point Likert scale items (1 never to 5 always); (1) We are given feedback about changes put into place based on event reports; (2) We are informed about errors that happen in this unit; (3) In this unit, we discuss ways to prevent errors from happening again. Feedback and communication about error is operationalized as the participant's score on the feedback and communication about error dimension on the HSOPSC.

**Hospital Handoffs & Transitions**
Assesses whether Important patient care information and drug is transferred across hospital units and during shift changes. It was measured using a scale having three items. These are; **(1)** Things "fall between the cracks" when transferring patients from one unit to another; **(2)** Important patient care information is often lost during shift changes; **(3)** Shift changes are problematic for patients in this hospital. Each item has five response categories ranging from strongly disagree (1) to strongly agree (5). Hospital handoffs & transitions is operationalized as the participants score on Hospital Handoffs & transitions dimension on HSOPSC.

**Hospital Management Support for Patient Safety**
It refers to whether hospital management provides a work climate that promotes patient safety and shows that patient safety is a top priority. It was measured by 3 items; (1) Hospital management provides a work climate that promotes patient safety; (2) The actions of hospital management show that patient safety is a top priority; (3) Hospital management seems interested in patient safety only after an adverse event happens. Each item has five response categories ranging from strongly disagree (1) to strongly agree (5). Hospital Management Support for Patient Safety is opperationalized as the participants score on Hospital Management Support for Patient Safety dimension on HSOPSC.

**Teamwork across hospital unit**

This domain refers to whether hospital units cooperate, coordinate with one another and encourage teamwork among staff from other units to provide the best care for patients. It was measured using four items considering four different scenarios (Hospital units do not coordinate well with each other, There is a good cooperation among hospital units that need to work together, It is often unpleasant to work with staff from other hospital units, and Hospital units work well together to provide the best care for patients). It was measured by

asking respondents to evaluate these issue on 5- point Likert scales (1 strongly disagree to 5 strongly agree). It is operationalized as the participants' score on teamwork across hospital units dimension on HSOPSC.

**Non-punitive Response to Error**

It measures whether 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 by using two items; (1) staffs feel like their mistakes are held against them; (2) when an event is reported, it feels like the person is being written up, not the problem. It was measured by asking respondents to evaluate these issue on 5- point Likert scales (1 strongly disagree to 5 strongly agree). Non-punitive Response to Error is operationalized as the participants score of Non-punitive Response to Error dimension on the HSOPSC.

**Organizational Learning—Continuous Improvement**

It refers to whether mistakes have led to positive changes and changes are evaluated for effectiveness. It was measured using three 5 point Likert scale items (1 strongly disagree, to 5 strongly agree); (1) we are actively doing things to improve patient safety; (2) Mistakes have led to positive changes here; (3) After we make changes to improve patient safety, we evaluate their effectiveness. Above 75 composite score was considered as positive attitude towards this dimension. Organizational Learning—Continuous Improvement is operationalized as the participant's score on the Organizational Learning—Continuous Improvement dimension on the HSOPSC.

**Staffing**

It refers to how the staffs perceive their working area in terms of staff and related conditions (number of staff, type of staff, working hour).  It is to assess whether there are enough staff to handle the workload and work hours are appropriate to provide the best care for patients. It was measured using four items; (1) we have enough staff to handle the workload; (2) staff in this unit work longer hours than is best for patient care; (3) we use more agency/temporary staff than is best for patient care; (4) we work in "crisis mode" trying to do too much, too quickly. Respondents were asked to rate their perceptions about these issues from 1(strongly disagree) to 5(strongly agree). Staffing is operationalized as the participant's score on the Staffing dimension on the HSOPSC.

**Supervisor Expectations & Actions Promoting Safety:**

This domain assesses whether supervisor/manager expectations and supervisors/managers consider staff suggestions for actions promoting patient safety, improving patient safety, praise staff for following patient safety procedures, and do not overlook patient safety problems. It was measured using a scale of four items. These are; (1) my supervisor/manager says a good word when he/she sees a job done according to established patient safety procedures; (2) my supervisor/manager seriously considers staff suggestions for improving patient safety; (3) whenever pressure builds up, my supervisor/manager wants us to work faster, even if it means taking shortcuts; (4) my supervisor/manager overlooks patient safety problems that happen over and over. Each item has five response categories ranging from strongly disagree (1) to strongly agree (5). Supervisor Expectations & Actions Promoting Safety is operationalized as the participant's score on the Supervisor Expectations & Actions Promoting Safety dimension on the HSOPSC.

## Measurement

For each patient safety culture dimensions, participants' score on the dimensions ≥75 were considered as positive responses (56). The proportion of participants whose score is ≥75 gives percent positive response (Positive Response Rate/PRR/) for each dimension.

For the outcome variable "incident reporting", the proportion of participants whose score ≥ 75 were those who has high frequency of incidents reporting, those score ≥ 50 & <75 were who had moderate frequency of incident reporting, those whose score ≥ 25 & 50 were who reported incidents rarely and those whose score <25 were those who never reported an incident.

## 4.8. Data analysis

Descriptive statistics including means and standard deviations was used to describe participants' characteristics, perceptions of patient safety cultures, and incident reporting. Most of the items in the questionnaire use a 5- point Likert scale such as scale of agreement (strongly disagree=1 to strongly agree=5) or scale of frequency (never=1 to always=5). Each of the five responses would have a numerical value (1-5), in which the highest two scoring answers (4-5) are perceived as positive response answers, while the lowest three scoring answers (1-3) are considered as neutral and negative response answers. Negatively worded items in the survey were reverse coded to ensure that positive answers indicate a higher score.

A numeric value was assigned to the response to each Likert scale questions, from 1-5(1, for strongly disagree, to 5, for strongly agree for positively worded questionnaire and 1, for strongly agree to 5, for strongly disagree for negatively worded questions)

A variety of statistical techniques were applied to compute the findings from the survey data. Frequency distributions were used to organize the data and present the responses obtained. The guidelines proposed by AHRQ were first used to analyze and interpret the respondents' perceptions on patient safety culture composites.

For each patient safety culture dimensions, the mean of the responses was calculated by adding the Likert scale responses of the individual for the respective dimension and dividing by the number of items under that construct (dimension). E.g. the dimension "staffing" has 4 items. If the response of the individual response is strongly agree (5) for the first item, disagree for the second item (2), agree for third item(4) and agree(4) for fourth item, to calculate the score of this respondent over the dimension "staffing" the responses were added and divided by the number of items:-mean score for the respondent $\frac{5+2+4+4}{5}=3$

To calculate the Safety Culture Scores for each dimension: 1(one) was subtracted from the safety climate mean of each participant. Then the result was multiplied by 25 to convert to a 100-point interval scale. Because, the Likert scale data were analyzed as an ordinal data and needs to be transformed in to interval scale for regression analysis.

The result is the safety culture dimension score for that respondent, which was between 1 and 100. From the above example, (3-1)*25=50(the participant score on this dimension).

All the safety culture scores were calculated by repeating this procedure. Based on the following general formula, Safety culture Scores were calculated for the rest of the participants.

Formula to calculate Score of patient safety culture dimensions for individual respondent=
$$(mean\ score\ of\ the\ dimension\ for\ the\ individual - 1) * 25 (1).$$

Example, if the mean score for the dimension "hospital management support" is 4.5, then, its score will be calculated as (mean score-1)*25= (4.5-1)*25= 87.5. This was repeated for all participants' score for all dimensions patient safety culture.

After calculating the dimensional score, to get what proportion of the participants have dimensional score of ≥75, the number of participants who have score of ≥75 were divided by

the total number of participants. Higher scores indicate more positive attitudes toward patient safety culture. Patient safety strengths are defined by AHRQ as those items that about 75% of the respondent's patient safety culture dimensional scores is ≥75.

Reliability test was performed using the patient safety dimensions involved in measuring patient safety culture and Cronbach's alpha was calculated. The cronbach's α was between 0.69(over all perception on patient safety) and 0.89(teamwork within units).

To reduce concerns about multi-co linearity, variance inflation factors (VIF) and tolerance test were used. Accordingly, all tolerance values were greater than 0.1 and all VIF values were less than 3.0, meaning that any significant relationships found are not inflated by correlations between the predictor variables.

Multiple linear regression was applied to know the predictors of incident reporting. This technique allowed us to enter a fixed order of variables to control for the influence of the covariates so that we can isolate the effects of the perceived patient safety culture predictors of incident reporting behavior. We first entered the eight covariates into the regression model as baseline predictors for incident reporting behavior. Finally, patient safety dimension scores were entered in to the regression model.

## 4.9. Data quality management

Before the actual data collection, pretest was conducted at Jimma University Specialized Hospital to test face validity and content validity of the tool. Data collectors will take training so that they can know how to collect the data and will have common understanding on the tool to give answer on unclear questions for the participants when they are asked. Before, the data is entered in to the electronic data, each data was checked for its completeness. Incomplete surveys were excluded from the analysis.

## 4.10. Ethical consideration

Ethical approval was obtained from Institutional Review Board (IRB) of Jimma University Institute of Health to conduct the study. Permission was requested from each hospitals and verbal consent was requested from each study participant. After the proposal is reviewed by each hospital's IRB, ethical clearance was obtained from each hospital. Participants had had full right to participate or refuse participation in this study.

The aim of the study was clearly stated on the questionnaire to participants and hospital officials. The data collection was begun after obtaining consent from each participant.

Confidentiality was maintained by excluding the names of participants from questionnaires. No other person except the data collection facilitators and the principal investigator had access to the filled questionnaires.

## 4.11. Dissemination plan

This study was presented to JU scientific community as part of the partial fulfillment of MPH in Health Service Management degree; and then it was disseminated or communicated to the respective hospital after it is approved by JU Public Health Faculty, Department of Health Economics, Management, and Policy. Further attempt will be made to publish it on national or international scientific journals.

# CHAPTER FIVE: RESULTS

## 5.1 Socio-demographic characteristics of the respondents

Out of the total 691 survey questionnaires distributed, 578 were returned with response rate of 83.6%. Majority (63.4%) of the respondents were males while the remaining 36.6% were female health care providers. The mean age of the participants was 29.06 ($\pm$ 4.893years).

Regarding the job role of the respondents 249(49.9%) were nurses followed by physicians 140(24.2%). Majority of the Participants (86.9%) had working experience of 1 year to 10 years. Three hundred twenty six (56.3%) participants reported as working in the hospital from 40-59 hours per week.

Concerning the educational level of the participants, there was a large number of BSc degree holders among the health care providers (78.8%, N=456) followed by diploma holders 65(11.2%). Ten percent of the respondents have master's degree and above.

**Table 1**: Socio-demographic characteristics of health care providers working in public hospitals, Ethiopia, 2017(n=578)

| Characteristics | Frequency | Percent |
|---|---|---|
| Sex | | |
|     Male | 367 | 63.4 |
|     Female | 212 | 36.6 |
| Educational status | | |
|     Diploma | 65 | 11.2 |
|     Degree | 456 | 78.8 |
|     Masters and above | 58 | 10 |
| Service year in the current hospital | | |
|     less than 1 year | 138 | 23.8 |
|     1 to 5 years | 147 | 25.4 |
|     6 to 10 years | 218 | 37.7 |
|     11 to 15 years | 44 | 7.6 |
|     16 to 2o years | 25 | 4.3 |
|     21 years and above | 7 | 1.2 |
| Job role | | |
|     medical doctor | 140 | 24.2 |
|     nurse/nurse assistant | 289 | 49.9 |
|     Technician (lab, radiologist) | 55 | 9.5 |
|     Pharmacy | 36 | 6.2 |
|     administrative/management | 25 | 4.3 |
|     Other | 34 | 5.9 |
| Length of Employment on Existing Unit of Hospital | | |
|     less than 1 year | 210 | 36.3 |
|     1-5 years | 158 | 27.3 |
|     6-10 years | 175 | 30.2 |
|     11-15 years | 25 | 4.3 |
|     16-20 years | 11 | .5 |
|     21 years and above | 8 | 1.4 |
| Hours Worked Per Week | | |
|     less than 20 | 12 | 2.1 |
|     20-39 | 102 | 17.6 |
|     40-59 | 326 | 56.3 |
|     60-79 | 86 | 14.9 |
|     80-99 | 33 | 5.7 |
|     100 hours and above | 20 | 3.5 |

**Reliability and multicollinearity test on HSOPSC tool**

Reliability test was performed using the patient safety dimensions involved in measuring patient safety culture and Cronbach's alpha was calculated. The cronbach's α was between 0.69(over all perception on patient safety) and 0.89(teamwork within units). They are within the recommended ranges (1) .

To reduce concerns about multi-collinearity, variance inflation factors (VIF) and tolerance test were used. Accordingly, all tolerance values were greater than 0.1 and all VIF values were less than 3.0, meaning that any significant relationships found are not inflated by correlations between the predictor variables.

**Table 2**:- the reliability and multicolline3arity test on HSOPSC tool at public hospitals in Addis Ababa, central Ethiopia, 2017210

| Patient safety measure dimensions | Number of items | Cronbach's Alpha(α) | Collinearity statistics | |
|---|---|---|---|---|
| | | | Tolerance test | VIF |
| Feedback and communication about errors | 3 | .85 | .343 | 2.916 |
| Organizational learning and continuous improvement | 3 | .72 | .356 | 2.806 |
| Handoffs and transitions | 4 | .86 | .853 | 1.173 |
| Supervisors expectations and actions promoting patient safety | 3 | .70 | . 336 | 2.908 |
| Teamwork within units | 4 | .89 | .349 | 2.865 |
| Teamwork across units | 4 | .87 | .752 | 1.331 |
| Non punitive response to errors | 3 | .77 | .567 | 1.764 |
| Overall patient safety | 4 | .69 | .315 | 3.171 |
| Staffing | 4 | .82 | .645 | 1.551 |
| Management support for patient safety | 3 | .79 | .402 | 2.490 |
| Communication openness | 3 | .75 | .456 | 2.193 |

**5.2. Patient safety culture score for each dimension**

The mean proportion of positive responses for the safety dimensions of the HSOPSC varied from 28.4% to 57.8%, and the mean scores from 2.88 (SD 1.00) to 4.32(SD 0.97) dimensions of the safety culture. Composites outcomes are shown in Table 3.

The two safety culture dimensions with the highest positive scores were 'team work within units (79.8%) and 'teamwork across hospital units' (77.9%). The five indices of patient safety culture that were least recognized included communication openness (32.6), 'hand-offs and transitions' (20.4%), 'staffing' (57.7 %) and 'non-punitive response to error' (36.2%), management support for patient safety (33.5%) (Table3).

Table 3:- Patient safety culture composite scores as perceived by the health care providers, percent of positive response and the mean score with SD at public hospitals in Addis Ababa, Central Ethiopia

| S. No. | Dimensions | Percent of positive response | Mean score(SD) |
|---|---|---|---|
| 1. | Communication openness | 32.6 | 3.42(0.87) |
| 2. | Feedback about error | 48.2 | 3.58(1.04) |
| 3. | Non punitive response to error | 36.2 | 2.86(1.20) |
| 4. | Organizational learning-continuous improvement | 49.1 | 3.65(1.04) |
| 5. | Staffing | 57.7 | 3.32(0.87) |
| 6. | Hospital Manager expectations and actions for safety(supervisor) | 40.5 | 3.40(0.71) |
| 7. | Teamwork within units | 79.8 | 4.29(0.77) |
| 8. | Handoffs and transitions | 20.4 | 2.88(1.00) |
| 9. | Management support for safety | 33.5 | 3.31(1.01) |
| 10. | Teamwork across units | 77.9 | 4.31(0.99) |
| 11. | Overall patient safety | 67.6 | 4.32(0.97) |

## 5.3 Incident reporting behavior

In this study, 20.4% of the participants never reported an incident, 13.1% reported rarely, 19.9% reported sometimes. Only 30.4 % of respondents reported incidents always. The overall mean aggregated score for the frequency of events reported was 3.05(SD=1.21), indicating that health professionals in each hospital, on average, reported incidents at a frequency of "sometimes" to "most of the time" basis.

## 5.4. Respondents character as Predictors of incident reporting behavior

Respondents personal variables such as sex, age, duration of experience in hospital unit, duration of experience in work unit, staffs' job role accounted for 3.4 % of the variance in the frequency of events reported by the participants (R square =0.030). Duration of experience in the current hospital unit which were ranged from 6 to 10 years was associated with decreased frequency of incident reported ($\beta$ =-0.109, P=0.009). Moreover, duration of experience in the current hospital working unit which were ranged from 11 to 15 years was associated with increased frequency of incident reporting ($\beta$ =-0.160, p<0.001). Working experience in the hospital at large which were ranged from 6 to 10 years was associated with decreased frequency of incident reporting ($\beta$ =-0.09, p=0.03). Hospital work experience range of 21 years and above was associated with an increased frequency of incident reporting ($\beta$=0.091, p=0.029).

Significant association were observed for the job role (administrative staffs) taken together with incident reporting score. Being administrative staff was associated with a higher frequency of incident reporting ($\beta$ =0.127, P= 0.002). Working hours which were ranged from 20 to 39 hours ($\beta$=0.092, p=0.027) and 60 to 79 hours ($\beta$=0.113, p=0.006) were associated with a higher frequency of frequency of incident reporting. Similarly, staffs working 100 hours and above per week were associated with decreased frequency of incident reporting ($\beta$=-118, p=0.004).

Table 4:- respondent characteristics as predictors of incident reporting behavior among health professionals in public hospitals, Addis Ababa, central Ethiopia, 2017(n=578).

| Respondent characteristics | Unstandardized Coefficients(β) | 95%CI of β | | p-value |
|---|---|---|---|---|
| | | Lower | Upper | |
| Age | -0.054 | -0.059 | 0.01 | 0.197 |
| Working hour per week | | | | |
| Less than 20*(n=12) | | | | |
| 20 to 39(n=102) | -.092[*] | -0.097 | -0.080 | 0.027 |
| 40 to 59(n=326) | -.001 | -0.03 | 0.01 | 0.98 |
| 60 to 79(n=86) | .113[**] | 0.101 | 0.15 | 0.006 |
| 80 to 99(n=33) | .061 | -0.009 | 0.096 | 0.14 |
| 100 hrs and above(n=20) | -.118[**] | -0.134 | -0.109 | 0.004 |
| Sex | | | | |
| Female(n=212)* | | | | |
| Male(n=367) | .041 | -0.011 | 0.057 | 0.32 |
| Educational status. | | | | |
| Diploma(n=65)* | | | | |
| Degree(n=456) | .050 | -.0034 | 0.057 | 0.23 |
| master and above(n=58) | -.075 | -0.079 | 0.0013 | 0.07 |
| Experience in the hospital(years) | | | | |
| Less than 1 year (138)* | | | | |
| 1 to 5(n=147) | -.008 | -.0098 | .0077 | 0.84 |
| 6 to 10(n=218) | -.109[**] | -.113 | -.009 | 0.01 |
| 11 to 15(n=44) | -.160[**] | -.171 | -.143 | 0.00 |
| 16 to 20(n=25) | .009 | -.001 | .010 | 0.82 |
| 21 and above(n=7) | .013 | -.0013 | .017 | 0.76 |

Table 4:- Continued

| Respondents characteristics | Unstandardized Coefficients(β) | 95 %CI for β | | p-value |
|---|---|---|---|---|
| | | Lower | Upper | |
| Experience in the hospital unit(year) | | | | |
| Less than 1 year(n=210)* | | | | |
| 1 to 5(n=158) | -.061 | -.063 | 0.009 | 0.14 |
| 6 to 10(n=175) | -.090$^*$ | -.101 | -.088 | 0.03 |
| 11 to 15(n=25) | -.077 | -.081 | .045 | 0.06 |
| 16 to 20(n=11) | -.043 | -.054 | .051 | 0.30 |
| 21 and above(n=8) | -.091 | -.13 | .006 | 0.30 |
| Job role: Physician(n=140) * | | | | |
| Nurse(n=289) | 0.029 | -.033 | .041 | 0.48 |
| Technician (lab. Technician, radiology)(n=55) | 0.012 | -.061 | .022 | 0.77 |
| administrative staff(n=25) | .127$^{**}$ | .101 | .143 | 0.002 |
| Others(n=34) | -0.056 | -.0074 | .01 | 0.18 |

*- reference, others: anesthesia, midwife, health officer

## 5.5. Dimensions of patient safety culture as predictors of incident reporting behavior

Bivariate analysis was done between frequency of events reported and each PSC dimensions. In this part the effect of each independent variables/safety culture dimensions (overall perceptions of safety, hospital handoffs and transitions, non-punitive response to error, organizational learning and continuous improvement, management expectation and support to patient safety, communication openness and feedback about error and teamwork across and within hospital unit) were tested for association on frequency of events reported. Accordingly, hospital handoffs and transitions was associated with an increasing frequency of incidents reporting (β=0.271, p=0.001). Non-punitive response to error was associated with an increasing frequency of incident reporting (β =0.545, p<0.001). Organizational learning and continuous improvement was associated with an increasing frequency of incident

reporting (β=0.641, p<001). Similarly, communication openness was associated with an increasing frequency of incident reporting (β=0.742, 001). Moreover, management expectations and support to patient safety was associated with an increasing frequency of incidents reporting (β=0.768, p<001). Feedback about error was associated with a higher frequency of incident reporting (β=0.685, 001) and teamwork within hospital units were associated with an increased frequency of incident reporting (β=481, p <0.001) (Table 5).

Table 5:- Association of dimensions of patient safety culture and, incident reporting at Addis Ababa public hospitals, central Ethiopia, 2017.

| PSC dimensions | Unstandardized Coefficients(β) | Sig | 95.0% CI for B | |
| --- | --- | --- | --- | --- |
| | | | Lower bound | Upper bound |
| Teamwork within the hospital unit | .481 | <.001 | .360 | .603 |
| Feedback and communication | 0.685 | <.001 | 0.609 | 0.761 |
| Organizational learning and continuous improvement | 0.641 | <.001 | 0.563 | 0.720 |
| Handoffs and transition | 0.271 | <.001 | 0.175 | 0.367 |
| Supervisor expectations and actions promoting patient safety | 0.921 | <.001 | 0.844 | 0.999 |
| Teamwork across units | -0.190 | 0.110 | 0.423 | 0.043 |
| Non-punitive response to errors | 0.545 | <.001 | 0.487 | 0.604 |
| Overall patient safety | 0.022 | 0.696 | -0.090 | 0.135 |
| Staffing | 0.111 | 0.042 | 0.004 | 0.218 |
| Hospital management support | 0.768 | <.001 | 0.698 | 0. 838 |
| Communication openness | 0.742 | <.001 | 0.663 | 0.821 |

## 5.6. Overall Predictors of incident reporting behavior

In the final model, component scores, and respondents characteristics were included and tested the impact on incident reporting behavior.

After Bivariate analysis, those variables which have association with frequency of incident reporting with P-value ≤0.25 were regressed against the dependent variable, incident reporting by multivariate linear regressions.

To determine the factors affecting incident reporting, a regression model was built using "frequency of events reported" as the dependent variable and patient safety dimensions, socio-demographic characteristics (gender, educational status, staff job role, respondents' experience) as independent variables. The categorical variables (staff job role, gender, and educational status) were transformed into dummy variables. The socio-demographic characteristics of the respondent explain 12% of the variation in the frequency of events reported. The patient safety culture dimensions accounted for 52.8% of the variation in incident reporting.

Duration of experience in working hospital ranged from 6 to 10 years was associated with decreased frequency of incidents reported ($\beta$=-.257, p= .003). This implies that respondents whose experience in work hospital ranged from 6 to 10 years had 0.302 higher score for event reported than respondents experiences ranged from 1 to 5 years.

Respondents whose experience in the current hospital unit ranged from 6 to 10 years was associated with a higher frequency of incident reporting. This implies that respondents whose experience in current hospital unit ranged from 6 to 10 years had 0.359 higher score for incident reported than respondents experience ranged from 1 to 5.

Respondents who work for 20 to 39 hours from 20 to 39 was associated with decreased frequency of incident reporting ($\beta$=-.255, p<0.001). This implies, respondents who work for 20 to 39 hours per week had .255 less score for incident reporting than respondents who work for less than 20 hours per week.

After multivariate regression, several culture variables were significant predictors of incident reporting. The incident reporting showed that a unit increase in the score of the dimension "feedback about error" increased by 0.14(95% CI=. 041,237). For 10 % increase in the dimension of "feedback about error, there was 14 % increase in the score of incident reporting frequency. Similarly, incident reporting behavior increased by 0.33(95%CI=211,439) for a one unit increase in the score of the dimension "hospital managers/supervisors actions and expectations". Moreover, a one unit increase in the score of the patient safety culture dimension "communication openness" increased the incident reporting behavior by 0.155(95%CI= 062, 249). A one unit increase in the score of the patient safety culture dimension "non-punitive response to errors" increased the incident reporting behavior by 0.23(95%CI=168, 292) (Table 6).

Table 6:-predictors of incident reporting behavior, at public hospitals of Addis Ababa, central Ethiopia, 2017.

| Independent variables | Frequency of incident reporting | | | |
|---|---|---|---|---|
| | Unstandardized B | Sig. | 95.0% CI for B | |
| | | | Lower | Upper |
| (Constant) | .288 | .267 | -.796 | .221 |
| Educational status | | | | |
| master and above | .185 | .108 | -.041 | .411 |
| Service year in hospital | | | | |
| 6 to 10 years | -.257 | .003 | -.425 | -.088 |
| 11 to 15 years | -.105 | .488 | -.404 | .193 |
| Service year in the current hospital unit | | | | |
| 6 to 10 years | .359 | <.001 | .174 | .544 |
| 11 to 15 years | -.083 | .636 | -.425 | .259 |
| 21 years  &above | -.038 | .896 | -.611 | .535 |
| Job role | | | | |
| Administrative staff | -.038 | .823 | -.370 | .294 |
| Working hours per week | | | | |
| 20 to 39 | -.255 | .003 | -.424 | -.086 |
| 60 to 79 | .081 | .382 | -.101 | .262 |
| 100 hrs and above | .247 | .200 | -.131 | .625 |
| Teamwork within hospital units | .013 | .791 | -.084 | .110 |
| Feedback for errors reported | .139 | .005 | .041 | .237 |
| Organizational learning | .034 | .496 | -.064 | .131 |
| Handoffs and transitions | -.062 | .068 | -.129 | .005 |
| Supervisors actions and expectations | .325 | <.001 | .211 | .439 |
| Non-punitive response to errors | .230 | <.001 | .168 | .292 |
| Staffing | -.154 | 0.1 | -.226 | .082 |
| Hospital  management support | .297 | <.001 | .206 | .389 |
| Communication openness | .155 | 0.001 | .062 | .249 |

# CHAPTER SIX:  DISCUSSION

In this study, 20.4% of the participants never reported an event, 13.1% reported rarely, 19.9% reported sometimes, 30.4% (95% CI=23.8, 36) reported most of the time all incidents types of incidents always. The study conducted in Northeast Region of Us shows that 72% of the participants reported patient safety events in all situations(58). There is a big difference when compared with our study. This difference might be due to the difference in the socioeconomic status of the two countries and the difference in the perception of the importance of event reporting for quality health care among the health care providers in those countries.

The overall perception of patient safety culture positive response for this study was 56.6% (95%CI=54.1-58.3). It is higher when compared with the same study conducted  in Netherlands (52.2%)(59). this might be due to the difference in study design and sample size difference between these studies. Another study conducted in Oman, reveals that overall average positive response rate patient safety culture dimensions of the HSPSC survey was 58%.(61), which is consistent with this study. This similarity might be due to the similarities in staffing and hospital infrastructure between countries.

In this study 'teamwork within hospital unit/department' was area of strength with positive response of 79.8% (95%CI=76, 85.4). This is in line with the study conducted in Taiwan (84.8%)(63).  It could be due to the fact that persons working closely together, like in one specific unit or department, may rate teamwork items focused on themselves more highly.

The dimension "teamwork across hospital units/departments was also one of areas of strengths with positive response of 77.9% (95%CI=.69.8, 84) It is higher when compared to the same study conducted in Taiwan(65.9%)(63). This difference could be due to the difference in socio-cultural values and study design. The study in Taiwan was total survey and this study was by simple random sampling method. The same study conducted in New York showed 42.35% positive response for teamwork across hospital units (18). This difference could be due to due to the small sample size and due to sampling methods employed in this study compared with the aforementioned study. The other possible explanation could be due to the fact that the organizational structure of hospitals in developed

countries is very much divided in many specializations in which professionals are less disposed to collaborate and are focused on the achievement of specific tasks.

"Overall patient safety" was rated 67.6% (95%CI=64.2, 69.1) positive responses. Staff perceives that there is a moderate safety practice in the hospital. This study shows considerable high positive responses to overall patient safety compared to New York (49.74%)(18). This may be due to actually less adverse events taking place or under reporting of such incidences. Staff may not report all the adverse events or may not fill the questionnaire sincerely aiming to protect the hospital from getting a bad reputation. The study conducted in Egypt showed 33.9% positive response for "overall patient safety" dimension (69). This could be due to the difference in perception of patient safety practices by the health professionals between the two countries.

The overall positive response rate for this study on the Non-Punitive Response to Error dimension was 36.2% (95%CI=34.0, 38.1) lower than the positive response rate (43%) for US hospitals, although an area for improvement in US hospitals as well. As in this study, results from the AHRQ studies indicated that most US hospitals reported Non-Punitive Response to Error as the lowest dimension. Findings from this study indicate that health care providers do not feel free to report errors or issues related to patient safety. This may be due to many reasons such as fear of punishment, blame, and potential for shame which that are reasons documented in the literature related to error reporting. But, when compared with the study conducted in Cairo, Egypt (19.5% positive response for non-punitive response to errors (69) it is considerably high. This difference might be due to socio-cultural differences between these countries.

In this study, hospital handoffs and transitions of patients have a positive response of 20.4% (95%CI=16.04, 27). Another study conducted in US hospitals showed 44 %( 68) positive response for handoffs and transitions dimension. This difference could be due to the difference in perception of patient handoffs and transition between the two countries. Based on that, there is high risk for health care providers to miss information and data related to patients' situations during shift change or during the transfer of the patient from one department to the other. Ineffective handoffs can contribute to gaps in patient care and breaches failures in patient safety, like medication errors, wrong-site surgery and patient

deaths. This depends on the communication between the sender and the receiver and their responsibilities.

The overall positive response for the dimension "Communication openness and feedback" was 32.6% (95%CI=24.1, 38.8). According to the study undertaken in New York, communication openness scored 60.5% of positive responses(18). In Ethiopian culture, open communication about adverse events can possibly be hindered by formality, respect, and interpersonal harmony. One of the most problematic points is that subordinates do not normally express disagreement or uncertainty, especially with persons of higher status, to avoid confrontation or signs of disrespect. The other reason could be avoidance of conflict and fear of legal liability for mistakes done. Another study conducted in two East African hospitals identified obstacles to patient safety, among those obstacles, was poor communication along different hierarchies. Although staff generally felt there was a good level of cooperation within departments, week communication between professions and across hierarchies was frequently described. According to this study, hierarchical dynamics contributes to elite groups, such as doctors, feeling that they could flout patient safety rules with impunity, since they did not recognize those beneath them as having the authority to control are sanction their conduct (56).

In this study the dimension "Organizational Learning - Continuous Improvement" has positive response of 49.1%(95%CI=42.7, 56) which is lower than the study conducted in New York Hospital that was 68.37% (18). Organization learning – continuous improvement scored (82%) highest positive responses in a study carried out in an Acute Hospital Setting in Dubai(64), and the second rank in Sri Lankan set up (82.5%)(63). This might be due to the difference in the hospital and health care providers' culture. This study insight that the hospitals are proactive compared with the other studies. This could be either the hospitals in this study are good at anticipating errors and prevention of errors rather than reaction to errors after they occur or the hospitals did not use errors as an opportunity to learn from mistakes. The study conducted in Cairo, Egypt showed 78.2% positive response for the organizational learning- continuous improvement. That means there is a learning culture only when mistakes are disclosed (69).

In this study the dimension 'staffing' has score of positive responses 57.7 %(95%CI=47.9, 62.6) which is higher as compared to the New York hospitals (39.12%)(58) , that in Taiwan

(39%)(65) and in Dubai (32%)(56). This might be due to the special attention paid by the Ethiopian government on training of health care providers to achieve the goal "health for all by 2020". The other possible explanation could be the difference in health care utilization behavior of the population of these countries may differ and this may have effect on the workload of staff. The study conducted in two government hospitals of East African countries on 57 hospital staffs showed low staffing level (56). This difference might be due to the difference in the research design and the small sample size employed in the former study conducted in East African countries or time period difference between the studies.

Overall positive response to incident reporting was 30.4% (95%CI=26.4, 33.9). According to AHRQ guideline frequency of incidents reported in these hospitals is area that needs to be improved. Frequency of incident reporting found in the study in New York was 47.72%, which is higher than this study(18). This could be due to the difference in the perception of the importance of error reporting by health care providers and the difference in legal liabilities and punitive culture of the health care organizations involved in this study. This view is supported by 36.2% positive responses to non-punitive response to errors. In other words staff is scared to report errors. Not having a non-punitive response to errors causes under reporting. This indicates there may be a strong blame culture in the hospitals where the active end is blamed and errors are not seen as opportunities to learn. When compare with the study conducted in Dubai, the least positive response was obtained by non-punitive response to errors (22%) while in this study it received a higher positive response (30.4%). This might be the cultural differences between countries. In both cases, the findings suggest that there is less attention for incident reporting in the studied hospitals.

Our study also provides partially support for our adapted conceptual model that enabling and elaborating actions can influence incident reporting. We found that enabling and elaborating stage of this model had at least two factors that were statistically significantly associated with incident reporting. First, we found that three of the six activities (hospital management support for patient safety, Supervisors expectations and actions promoting safety and non-punitive response to errors) we classified as enabling were significantly associated with incident reporting. The activities we classified as enacting exhibited no statistically significant associations with incident reporting. Finally, the activity we classified as elaborating, feedback and communication about errors and organizational learning was also significantly associated with higher frequency of incident reporting.

Among the enabling patient safety cultures for incident reporting, the hospital management support for patient safety, Supervisors expectations and actions promoting safety and non-punitive response to errors, were significant predictors of incident reporting frequency.

This was in line with the study conducted in Norwegian Hospital Trust on association of incident reporting culture and dimensions of patient safety culture (66). These findings are consistent with previous research conducted in USA that examined these relationships in hospital employees and found positive relationships between the patient safety culture dimensions and incident reporting behavior(67).

Hospital management support for patient safety is the second strongest predictor of incident reporting behavior. Many organizations have been challenged to provide an environment in which it is safe to admit errors and understand why the errors occurred(11). When strong hospital leaders and managers create a culture and commitment to solve underlying system causes of medical errors and harm to patients, the whole organization will follow and thus disclosing real or potential adverse events and finding their root causes will become an organizational process(45). The positive associations between safety practices and reporting of incidents by health care providers in this study support that theoretical premise.


The study shows that non-punitive response to errors is the third strongest predictor of incident reporting behavior. Other studies shows that health care professionals report feeling worried, guilty, and depressed following serious errors, as well as being concerned for patient safety and fearful of disciplinary actions and they are aware of their direct responsibility for errors(6). Self-reporting errors can be thwarted by several factors. First, clinicians fear career-threatening disciplinary actions and possible malpractice litigation and liability(7,8). Health care leaders who do not protect reporters of errors from negative consequences reinforce this fear, as does the criminalization of fatal health care mistakes (9). Fear of these negative consequences can lead to reporting errors only when a patient is harmed or when the error could not be "covered up"(10). Second, clinicians working in a culture of blame and punishment do not report all errors, primarily because they fear punishment. Many organizations have been challenged to provide an environment in which it is safe to admit errors and understand why the errors occurred(11).

This study showed that there is no statistically significant association between the enacting activities of patient safety culture with incident reporting behavior of the health care providers. But, the study conducted in US Hospitals showed that enacting activities are relevant even though they do not have as much effect as the elaborating activities of patient safety culture dimensions. This difference might be due to the smaller sample drawn for this study compared with the previous study(68).

The elaborating actions, error feedback and communication about errors, and organizational learning, had the greatest effect on high frequency of error reporting. The study conducted in American Hospitals by Jason Paul Richter also identified these elaborating patient safety culture dimensions as a key predictor of incident reporting behavior of health care providers(68).

Feedback about error and communication openness has previously shown to be a predictor for incident reporting in a survey of the safety culture in a Swiss University Hospital(69). In a survey among pharmacists in the US hospitals, communication openness was conductive to reporting medical error(67). Another study conducted in Norwegian community hospitals and on perception of just culture have shown that lack of feedback is perceived as a barrier for incident reporting(65). Another study conducted in Saudi Arabia Hospitals showed that Feedback & communication about error, Non-punitive response to error, and communication openness dimensions were significant predictors of frequency incidents reported(56).

## Limitations of the study

- One of the possible limitations of this study could be its cross-sectional nature in which it does not confirm definitive cause and effect relationships between the outcome variable and associated factors.

- The quantitative assessment of patient safety culture using a self-administered questionnaire can be associated with a declaration bias. Indeed, self-administered questionnaire may influence the reaction of those who, for fear of reprisal or prosecution, will give social answers that do not reflect reality.

- Furthermore, HSOPSC does not calculate an overall score of patient safety culture as a one variable. Because, the validation of such score is complex and raises the problem of choosing the dimensions to be considered and their weightings.

# CHAPTER SEVEN: CONCLUSIONS AND RECOMMENDATIONS

## 7.1. Conclusions

The study highlights the importance of enabling and elaborating activities of patient safety culture in encouraging staff to report incidents.

Patient safety culture dimensions: Feedback about error, management support for safety, non-punitive response, hospital manager/supervisor expectation and actions promoting patient safety and communication openness were the most predictive patient safety culture dimensions for the outcome assessing the incidence reporting. From this finding, the safety culture problems for under reporting of incidents are under enabling conditions of the framework.

The findings of this study provide insights for hospital leaders as they work to improve incident reporting rates. To increase the frequency of reported incidents, this study suggests prioritizing efforts to improve event reporting feedback mechanisms, communication regarding systems and process changes made in response to submitted event reports, voicing support for safety by top-level hospital leadership and non-punitive response to errors.

## 7.2. Recommendations

**To health professionals**

- o Should communicate clinical information in clear and timely manner

**To the hospital manager**

- o The hospital manager should create a non-punitive environment and blame-free culture in which people are prepared to report their errors and near-misses.
- o The hospital administration must reduce the fear of blame culture and create a climate of open communication and continuous learning. Error-reporting should not be viewed as a closing stage in itself, but rather as a way of learning from mistakes and the foot step towards elimination of harm and improvement of patient safety.
- o The hospital manager should give feedback to the reporter especially in the form of change resulting from the reports, allowing the reporter to feel valued.
- o Mangers/supervisors should spend time visiting front line situations, meeting with staff on different shifts on a regular basis, and creating appropriate channels for staff to discuss safety issues freely.

- o Should encourage a culture which encourages and rewards the identification, notification and resolution of problems related to safety.
- o Should promote organizational learning following the occurrence of incidents rather than blaming the individual.
- o Should enlist the champion to prevent the barriers for incident reporting.
- o Should provide regular written and/or evaluation and feedback on the successes and failures of the staffs.

**To ministry of health (FMoH)**

It should create a culture which prioritizes safety above financial and operational goals. It should provide resources and structure for the effective maintenance of patient safety.

- o The ministry of health should give training for hospital managers on leadership and communication skill.
- o Should establish a system which encourages health care providers to report incidents in a way that they are protected from administrative sanctions and legal penalties.

**To researchers**

- o Although factors associated with incident reporting behaviour of heath care professionals have been identified in this study, further large scale study is required (if possible triangulated with qualitative design) to assess the situation across the country.

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**Annexes**
**Questionnaire**

<u>Jimma University College of Health Sciences, Department of Health Economics,</u>

<u>Management and Policy in Health Service Management</u>

A questionnaire prepared on the title; Assessment of incident reporting and its relationship with perception of patient safety culture among health care professionals of public hospitals, Addis Ababa, central Ethiopia.

**Questionnaire cover letter:**

Hello, my name is _____ and I am research assistant and working with Mr. Wubetu Agegnehu from Jimma University. He is doing a research on the Assessment of incident reporting and its relationship with perception of patient safety culture among health care professionals as partial fulfillment for Master's Degree in Public Health/ Health Service Management. I would like to ask you to complete self-administered questionnaire about your opinion about patient safety issue, medical errors and event reporting in your Hospital and will take about 10-15 minutes. If you do not have time to complete the questionnaire right now, please complete and return it within 3 days. If for any reason you do not want to answer a question, leave it blank. We hope that the results can be used further improve quality of patient care and working conditions.

**Patient safety**: - is defined as the avoidance and prevention of patient injuries or adverse events resulting from the processes of healthcare delivery.

**An event**: - is defined as any type of error, mistakes, 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 ------------------ (Thank you, give the questionnaire)

No ------------------- (Thank you stop)

1. Hospital name -------------------------

2. Questionnaire code ---------------------------

3. Name and signature of research assistant

4. Date of offering -------------------

This questionnaire asks you about your opinion on different aspects of patient safety culture in your Hospital. Please complete your survey and return it within the next 3 days to the same person and location when you are signing in to hospital.

## *General Instructions:*

Do not write or sign your name on the questionnaire.

Answer each question by selecting the response that best applies to you or best represents your opinion.

If for any reason you do not want to answer a question, leave it blank.

No staff member at your hospital including the manager will ever see or have access to your questionnaire.

Only authorized staff from the research team will have access to the survey data.

Data results will be presented in a manner so that neither individuals nor small groups can be identified.

Results may be published; however, no individuals or small groups will be identified.

The scientific value of the survey depends upon the reliable and accurate representation of the individual views of practitioners. Therefore, your participation is very important and greatly appreciated.

Please contact Wubetu Agegnehu if you have any questions regarding the results of the study, and contact the data collector if you have any doubt and unclear question.

E-mail address- wubetuagegnehu@gmail.com

Phone number-+251 92 13 07 12 8

**Hospital Survey on Patient Safety Culture: Items and Dimensions**

In this document, the items in the Hospital Survey on Patient Safety Culture are grouped according to the safety culture dimensions they are intended to measure. The item's survey location is shown to the left of each item.

**Background information of the participants**

1. How old are you?

2. Sex

    A. Male

    B. Female

3. What is the highest level of education you have completed?

    A. Diploma level    B. Bachelor degree   D. Master & above

4. How long have you worked in this hospital?

| | |
|---|---|
| A. Less than 1 year | D. 11-15 year |
| B. 1-5 year | E. 16-20 year |
| C. 6-10 year | F. 21 year or more |

5. How long have you worked in your current hospital work area/unit?

| | |
|---|---|
| A. Less than 1 year | D. 11-15 year |
| B. 1-5 year | E. 16-20 year |
| C. 6-10 year | F. 21 year or more |

6. Typically, how many hours per week do you work in this hospital?

| | |
|---|---|
| A. Less than 20 hours per week | D. 60-79 hours per week |
| | E. 80-99 hours per week |
| B. 20-39 hours per week | F. 100 hours per week or more |
| C. 40-59 hours per week | |

7. What is your staff job role in this hospital?

| | |
|---|---|
| A. Medical doctor | D. Pharmacy assistant |
| B. Nurse/nurse assistant | E. Administration/ Managemt |
| C. Technician (e.g. lab, Radiology) | F. Other; specify |

**Perception of Patient Safety culture assessment tool**

For each item, please circle the single most appropriate number. 1-strongly disagree, 2-disagree, 3-neutral, 4-agree, 5-strongly agree

| Items of the dimension | Score | | | | |
|---|---|---|---|---|---|
| Teamwork within units/departments | 1 | 2 | 3 | 4 | 5 |
| 1. People support one another in this unit. | 1 | 2 | 3 | 4 | 5 |
| 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 |
| 3. In this unit, people treat each other with respect. | 1 | 2 | 3 | 4 | 5 |
| 4. When one area in this unit gets really busy, others help out. | 1 | 2 | 3 | 4 | 5 |
| *I.* *Supervisor/Manager Expectations & Actions Promoting Patient Safety* | | | | | |
| 5. 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 |
| 6. My supervisor/manager seriously considers staff suggestions for improving patient safety. | 1 | 2 | 3 | 4 | 5 |
| 7. Whenever pressure builds up, my supervisor/manager wants us to work faster, even if it means taking shortcuts. (negatively worded) | 1 | 2 | 3 | 4 | 5 |
| 8. My supervisor/manager overlooks patient safety problems that happen over and over.(negatively worded) | 1 | 2 | 3 | 4 | 5 |
| *II.* *Organizational Learning—Continuous Improvement (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)* | | | | | |
| 9. We are actively doing things to improve patient safety. | 1 | 2 | 3 | 4 | 5 |
| 10. Mistakes have led to positive changes here. | 1 | 2 | 3 | 4 | 5 |
| 11. After we make changes to improve patient safety, we evaluate their effectiveness. | 1 | 2 | 3 | 4 | 5 |
| III. Management Support for Patient Safety | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 12. Hospital management provides a work climate that promotes patient safety. | 1 | 2 | 3 | 4 | 5 |
| 13. The actions of hospital management show that patient safety is a top priority. | 1 | 2 | 3 | 4 | 5 |
| 14. Hospital management seems interested in patient safety only after an adverse event happens. (negatively worded) | 1 | 2 | 3 | 4 | 5 |
| **IV.    Overall Perceptions of Patient Safety** | | | | | |
| 15. Patient safety is never sacrificed to get more work done. | 1 | 2 | 3 | 4 | 5 |
| 16. Our procedures and systems are good at preventing errors from happening. | 1 | 2 | 3 | 4 | 5 |
| 17. It is just by chance that more serious mistakes don't happen around here. (negatively worded) | 1 | 2 | 3 | 4 | 5 |
| **V.    Feedback & Communication About Error** | 1 | 2 | 3 | 4 | 5 |
| 18. We are given feedback about changes put into place based on event reports. | 1 | 2 | 3 | 4 | 5 |
| 19. We are informed about errors that happen in this unit. | 1 | 2 | 3 | 4 | 5 |
| 20. In this unit, we discuss ways to prevent errors from happening again. | 1 | 2 | 3 | 4 | 5 |
| **VI.    Communication Openness (Never, Rarely, Sometimes, Most of the time, Always)** | | | | | |
| 21. Staff will freely speak up if they see something that may negatively affect patient care. | 1 | 2 | 3 | 4 | 5 |
| 22. Staffs feel free to question the decisions or actions of those with more authority. | 1 | 2 | 3 | 4 | 5 |
| 23. Staffs are afraid to ask questions when something does not seem right. (negatively worded) | 1 | 2 | 3 | 4 | 5 |
| **VII.    Teamwork Across Units** | | | | | |
| 24. There is good cooperation among hospital units that need to work together. | 1 | 2 | 3 | 4 | 5 |
| 25. Hospital units work well together to provide the best care for patients. | 1 | 2 | 3 | 4 | 5 |
| 26. Hospital units do not coordinate well with each other. (negatively worded) | 1 | 2 | 3 | 4 | 5 |
| 27. It is often unpleasant to work with staff from other hospital units. (negatively worded) | 1 | 2 | 3 | 4 | 5 |

| III. | Staffing | | | | | |
|------|----------|---|---|---|---|---|
| 28. We have enough staff to handle the workload. | | | | | | |
| 29. Staff in this unit work longer hours than is best for patient care. (negatively worded) | | 1 | 2 | 3 | 4 | 5 |
| 30. We use more agency/temporary staff than is best for patient care. (negatively worded) | | 1 | 2 | 3 | 4 | 5 |
| 31. We work in "crisis mode" trying to do too much, too quickly. (negatively worded) | | 1 | 2 | 3 | 4 | 5 |
| IX. | Handoffs & Transitions | | | | | |
| 32. Things "fall between the cracks" when transferring patients from one unit to another. (negatively worded) | | 1 | 2 | 3 | 4 | 5 |
| 33. Important patient care information is often lost during shift changes. (negatively worded) | | 1 | 2 | 3 | 4 | 5 |
| 34. Problems often occur in the exchange of information across hospital units. (negatively worded) | | 1 | 2 | 3 | 4 | 5 |
| 35. Shift changes are problematic for patients in this hospital. (negatively worded) | | 1 | 2 | 3 | 4 | 5 |
| X. | Non punitive Response to Errors | | | | | |
| 36. Staffs feel like their mistakes are held against them. (negatively worded) | | 1 | 2 | 3 | 4 | 5 |
| 37. When an event is reported, it feels like the person is being written up, not the problem. (negatively worded) | | 1 | 2 | 3 | 4 | 5 |
| 38. Staff worry that mistakes they make are kept in their personnel file. (negatively worded) | | 1 | 2 | 3 | 4 | 5 |

**Incidence reporting assessment tool**

| Items of dimension | Scale of agreement | | | | |
|---|---|---|---|---|---|
| | Never | Rarely | Sometimes | Most of the time | Always |
| 1. When a mistake is made, but is caught and corrected before affecting the patient, how often is this reported? | 1 | 2 | 3 | 4 | 5 |
| 2. When a mistake is made, but has no potential to harm the patient, how often is this reported? | 1 | 2 | 3 | 4 | 5 |
| 3. When a mistake is made that could harm the patient, but does not, how often is this reported? | 1 | 2 | 3 | 4 | 5 |

# Annex II Amharic version questionnaire

በጅማ ዩኒቨርሲቲ በጤናሳይንስ ኮላጅ የጤናኢኮኖሚ ማናጅመንትና ፖሊሲ የጤና አመራርትምህርት ክፍሌ መጠይቀየተዘጋጀበት ርዕስ:- <u>ወቅታዊ የታካሚዎችን ደህንነት ሁኔታ መለካት</u>

<u>መግቢያ</u>

ጤናይስጥሌን፡ስሜ ---------------------------------- ይባላል። በጅማ ዩኒቨርሲቲ ከአቶዉበቱ አገኘሁ ጋር በጥናት ስራ ላይ እየተሳተፍኩ ስሆን ወቅታዊ የታካሚዎችን ደህንነት ሁኔታ መለካት እና የህክምና ስህተቶች ለመማማሪያ ሲባልምን ያክል ጊዜ ለሚመለከተው አካል ሪፖርት እንደሚደረጉ በማጥናት ላይ የ2ኛ ድግሪያቸውን ለመመረቅ እየተሰራይገኛል። ከ10-15 ደቂቃዎች ለሚፈጀው ጊዜ የሚወስደውን መጠይቅ በታካሚዎች ደህንነት፣ በህክምና ስህተት እና ክስተቶችን ሪፖርት በማድረግ ረገድበ ሆስፒታሉ ምን መልክ እንዳለ የእርሶን አመለካከት በሚመለከት እንድሞለበአክብሮትእንጠይቃለን።

በአሁኑ ሰዓት የጊዜ እጥረት ካለቦት ቤት ወስደው ወይም በሶስትቀን ውስጥ በሚመቸው ሁኔታ ሞልተው እንድመልሱልን እንጠይቃለን።ለመመለስ የማይመች ወይም የማይፈልጉትት ጥያቄ ካጋጠመዎት መዝለል ይቻላል።የዚህ ጥናት ውጤት በሆስፒታሉ ውስጥ በሚሰሩ የስራ ሁኔታዎችና በታካሚዎች ደህንነት ጥራት ላይ መሻሻል እንደሚያመጣ ተስፋ እናደርጋለን።

**Patient safety**: - is defined as the avoidance and prevention of patient injuries or adverse events resulting from the processes of healthcare delivery.

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

የሚሰጡን መረጃ ሙለበሙለ በምስጥር ይጠበቃሌ፣ ልዚህ ጥናት አላማ ብቻ ይዉላል።ከጥናቱ ቡድን ውጭ ለሶስተኛ ወገን ተላልፎ አይሰትም። በመረጃው ላይ ስምዎትን እናአድራሻዎትን አይጥቀሱ።የትኛውም ግልፅ ያልሆነ ጉዳይ ላይ የጥናቱን አስተባባሪ ይጠይቁ።

አዎ----------------- (እናመሰግናለን ይቀጥሉ)

አይደለሁም ------------------- (እናመሰግናለን ያቁሙ)

Hospital name (የሆስፒታሉ ስም)---------------------------------

Questionnaire code (የመጠይቁ መለያ) ---------------------------

## 1. የመልስ ሰጪው አጠቃላይ መረጃ

| | | |
|---|---|---|
| 101. | ዕድሜዎት ስንትነው? | |
| 102 | ያታዋ/ት ምንድን ነው? | 1. ወንድ<br>2. ሴት |
| 103 | የደረሱበት ከፍተኛ የትምህርት ደረጃ | 1. ድፕሎማ ደረጃ<br>2. ዲግሪ<br>3. ማስትሬትና በላይ |
| 104 | ምን ያክል ጊዜ በዚህ ሆስፒታል አገልግለዋል? | 1. ከ1 ዓመት በታች<br>2. 1-5 ዓመት<br>3. 6-10 ዓመት<br>4. 11-15 ዓመት<br>5. 16-20 ዓመት<br>6. ከ 21 ዓመትበላይ |
| 105 | አሁን ባሉበት የስራ ክፍል/ኬዝቲም ለምን ያህል ጊዜ አገልግለዋል? | 1. ከ1 ዓመትበታች<br>2. 1-5 ዓመት<br>3. 6-10 ዓመት<br>4. 11-15 ዓመት<br>5. 16-20 ዓመት<br>6. 21 ዓመትና በላይ |
| 106 | በሆስፒታሉ በ1 ሳምንት ውስጥ ስንት ሰዓታት ያገለግላሉ? | 1. በ1 ሳምንት ከ 20 ሰዓታት በታች<br>2. በ1 ሳምንት 20 39 ሰዓታት<br>3. በ1 ሳምንት 40-59 ሰዓታት<br>4. በ1 ሳምንት 60-79 ሰዓታት<br>5. በ1 ሳምንት 80-99 ሰዓታት<br>6. በ1 ሳምንት 100 ሰዓታት እና በሊይ |
| 107 | በዚህ ሆስፒታል የስራ ሙያዎ ምንድንነው? | 1. ሐኪም<br>2. ነርስ<br>3. ላብራቶሪ ባለሙያ<br>4. ፋርማሲ |

| | | | 5. የአስተዳዳር ክፍል |
| | | | 6. ሌላ (ይገለጽ) |

እባክዎትንከታችባለትእርስዎስለሚሰሩበትሆስፒታልበተገለጹሀሳቦችመስማማት/አለመስማማትዎንይጠቁሙለእያንዳንዱ ጥያቄየሚስማማዎትንያክብቡ

| **1.** Supervisor/Manager expectations and actions promoting patient safety | | | | | |
|---|---|---|---|---|---|
| | መለኪያ ጥያቄዎች | በጣም አልስማማም | አልስማማም | ገለልተኛ | እስማማለሁ | በጣም እስማማለሁ |
| 201 | አለቃዬ የታካሚን ደህንነት በጠበቀ መልኩ ስራ ሲተገበር ደስ ይለዋል | 1 | 2 | 3 | 4 | 5 |
| 202 | አለቃዬ ከስራተኞቹ የሚመጡትን የታካሚዎችን ደህንነት ለማስጠበቅ የሚረዱ ሀሳቦችን ይቀበላል | 1 | 2 | 3 | 4 | 5 |
| 203 | የስራጫና በሚፈጠርበት ጊዜ ስራውን በፍጥነት እንድነሰራ ያደርጋል አማራጭ መንገዶችንም ተጠቅመን ቢሆን እንኳን | 1 | 2 | 3 | 4 | 5 |
| 204 | አለቃዬ በታካሚዎች ደህንነት ላይ የሚፈጠሩ ችግሮችን ችላ ይላል | | | | | |
| **2.** Organizational learning and continuous improvement (ተቋማዊ ለውጥን በተመለከተ) | | | | | |
| 301 | የታካሚዎችን ደህንነት ለማሻሻል በንቃት እየሰራን ነው | 1 | 2 | 3 | 4 | 5 |
| 302 | ግድፈቶች/ስህተቶች ለአወንታዊ ለውጦች ያመሩናል | 1 | 2 | 3 | 4 | 5 |
| 303 | የታካሚዎችን ደህንነት ለማሻሻል ለውጥ ካደረግንም በኋላ ውጤታማነቱንም እንገመግማለን | 1 | 2 | 3 | 5 | 5 |
| **3.** Teamwork within units/dep't (በስራ ክፍላችን ተባብረን የመስራት ሁኔታ | | | | | |
| 401 | በስራ ክፍላችን እርስበርስ እንደጋፋለን | 1 | 2 | 3 | 4 | 5 |
| 402 | የስራ ጫና ሲኖር በጋራ ተባብረን እንሰራለን | 1 | 2 | 3 | 4 | 5 |

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| 403 | በስራ ክፍላችን ተከባብረን እንስራለን | 1 | 2 | 3 | 4 | 5 |
| 404 | በተቋማችን በሌላ ስራ ክፍል ክፍተት ሲኖር እንተጋገዛለን | 1 | 2 | 3 | 4 | 5 |

### 4. communication openness (በግልጽ ስለመነጋገር)

| 501 | ሰራተኞቻችን የታካሚዎችን አገሌግልት የሚጎዳ ነገር ባዩ ጊዜ በነጻነት ይገሌጻለ | 1 | 2 | 3 | 4 | 5 |
| 502 | ሰራተኞቻችን በኃሊፊዎች ውሳኔ ወይም ድርጊት ያልገባቸውን በነጻነት ይጠይቃለ | 1 | 2 | 3 | 4 | 5 |
| 503 | አንድ ድርጊት ትክክል ካልመሰላቸው ሰራተኞች ደፍረው አይጠይቁም | 1 | 2 | 3 | 4 | 5 |

### 5. Feedback and communication about error(ስህተቶች ሲከሰቱ ግብረመልስ ስለመስጠት እና ስለመወያየት)

| 601 | በስራችን ስለመጣው ለውጥ ግብረመልስ ይሰጠናል | 1 | 2 | 3 | 4 | 5 |
| 602 | በስራ ክፍላችን ስህተት ሲከሰት እንድናውቅ ይደረጋል | 1 | 2 | 3 | 4 | 5 |
| 603 | በስራ ክፍላችን ስህተት ዳግም እንዳይፈጠሩ መከላከያ መንገዶችን እንወያያለን | 1 | 2 | 3 | 4 | 5 |

### 6. Non-punitive response to error (ቅጣትየሌለበትግብረመልስስለመስጠቱ)

| 701 | ሰራተኞቹ ስህተቶቻቸው የሚያስወቅሳቸው መስሎ ይሰማቸዋል | 1 | 2 | 3 | 4 | 5 |
| 702 | አንድ ድርጊት ሲፈጸም ለችግሩ መፍትሄ ከመስጣት ይልቅ የችግሩ ፈጣሪ ግለሰብ ተወቃሽ መስሎ ይሰማናል | 1 | 2 | 3 | 4 | 5 |
| 703 | ሰራተኞቻችን ስህተቶቻቸው በማህደራቸው የሚቀመጥ ይመስላቸዋል | 1 | 2 | 3 | 4 | 5 |

### 7. Staffing (የሰውሃ ይልን በተመለከተ)

| 801 | የስራ ጫናውን ለመወጣት የሚያችለን በቂ ሰራተኞች አለን | 1 | 2 | 3 | 4 | 5 |
| 802 | በዚህ ክፍል ሰራተኞች ረጅም ሰዓት መስራት ለታካሚዎች ጥንቃቄ በጣም ጥሩ ነው | 1 | 2 | 3 | 4 | 5 |
| 803 | ጊዜያዊ ሰራተኞች መጠቀም ለታካሚዎች | 1 | 2 | 3 | 4 | 5 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | የተሻለ ደህንነት ጥሩ ነው | | | | | |
| 804 | ብዙ ስራ በፍጥነት ለመስራት ጫና ውስጥ እንገባለን | 1 | 2 | 3 | 4 | 5 |

## 8. Hospital management support for patient safety (የሆስፒታሉ አመራር ለታካሚዎች ደህንነት የሚያደርገው ድጋፍ)

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|---|---|---|---|---|---|---|
| 901 | የሆስፒታሉ አስተዳደር የታካሚችን ደህንነት የሚያበረታታ ምቹ የስራ ሁኔታ የመፍቸፈል | 1 | 2 | 3 | 4 | 5 |
| 902 | የአስተዳደሩ ድርጊቶች ለታካሚዎች ደህንነት ቅድሚያ መስጠቱን ያሳያል | 1 | 2 | 3 | 4 | 5 |
| 903 | አስተዳደሩ ስለታካሚዎች ደህንነት የሚያሳኣው ችግሮች ከተከሰቱ በኋላ ነው | 1 | 2 | 3 | 4 | 5 |

## 9. Teamwork across hospital dep't (የሆስፒታሉ ሰራተኞች ከሌላ የስራ ክፍል ጋር አብረው ይሰራሉ)

| | | | | | | |
|---|---|---|---|---|---|---|
| 101 | የሆስፒታሉ የስራ ክፍልች በቅንጅት አይሰሩም | 1 | 2 | 3 | 4 | 5 |
| 102 | በሆስፒታሉ የስራ ክፍሎች ጥሩ የሆነ ተባብሮ የመሰራት ሁኔታአለ | 1 | 2 | 3 | 4 | 5 |
| 103 | ከሌላ የስራ ክፍሌ/ኬዝቲም/ ሰራተኞች ጋር መስራት አይመችም | 1 | 2 | 3 | 4 | 5 |
| 104 | ለታካሚዎች የተሻለ የህክምና አገልግሎት ለመስጣት ኬዝቲሞች በጋራ ይሰራሉ | 1 | 2 | 3 | 4 | 5 |

## 10. Hospital handoffs and transition

| | | | | | | |
|---|---|---|---|---|---|---|
| 111 | ህመምተኞች ከአንድ የስራ ክፍል ወደሌላ ክፍል ሲዘዋወሩ ክፍተት አለ | 1 | 2 | 3 | 4 | 5 |
| 112 | አስፈላጊ የታካሚዎች መረጃ በፈረቃ ልውውጥ ጊዜ ይጠፋል | 1 | 2 | 3 | 4 | 5 |
| 113 | በመረጃ ልውውጥ ጊዜ በአብዛኛው ችግር ይከሰታል | 1 | 2 | 3 | 4 | 5 |
| 114 | በሆስፒታላችን የፈረቃ ልውውጥ ለታካሚዎችን አስቸጋሪ ነው | 1 | 2 | 3 | 4 | 5 |

## 11. Overall perceptions of safety (አጠቃላይየታካሚዎችደህንነትበተመለከተ)

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| | እዚህ የጤና ችግር ያልተከሰተው | | | | | |
|---|---|---|---|---|---|---|
| 121 | የአጋጣሚ ጉዳይ ሆኖ ነው | 1 | 2 | 3 | 4 | 5 |
| 122 | የታካሚዎች ደህንነት ብዙ ስራ ለመሥራት ሲባል አደጋ ላይ አይወድቅም | 1 | 2 | 3 | 4 | 5 |
| 123 | እዚህ የስራ ክፍል የህመምተኛ ደህንነት ችግር አለ | 1 | 2 | 3 | 4 | 5 |
| 124 | የስራ ሂደታችንና ደንባችን ችግሮች እንዳይፈጠሩ ለማድረግ ጥሩ ናቸው | 1 | 2 | 3 | 4 | 5 |

## 12. .Frequency of Events Reported ከዚህ ቀጥሎ የሚቀርቡ ጥያቄዎች ምንያህል ጊዜ በሆስፒታሊቸሁ ይከሰታሌ፣ለእያንዳንዱ ጥያቄ የሚስማማዊትን ያክብቡ

| No | የመለኪያ ጥያቄዎች | የስምምነትደረጃ | | | | |
|---|---|---|---|---|---|---|
| | | ምንም | በጣምአልፎአልፎ | አንዳንድጊዜ | ብዙውንጊዜ | ሁልጊዜ |
| 131 | የተፈጠረው ስህተት በህመምተኛው ላይ ጉዳት ከማድረሱ በፊት ቢታወቅ እና እርማት ቢደረግ ምን ያህል ሪፖርት ይደረጋሉ? | 1 | 2 | 3 | 4 | 5 |
| 132 | ስህተት ቢፈጠርእና ህመምተኛችን የማይጎዳ ቢሆን እንኳ ምን ያህል ሪፖርት ይደረጋሉ? | 1 | 2 | 3 | 4 | 5 |
| 133 | ህመምተኞችን የሚጎዳ ስህተት ቢፈጠር ጉዳት ባያደርስ እንኳን ምን ያህል ሪፖርት ይደረጋሉ? | 1 | 2 | 3 | 4 | 5 |

**ስለተባበሩን እናመሰግናለን!!**

**ASSURANCE OF PRINCIPAL INVESTIGATOR**

The undersigned agrees to accept responsibility for the scientific ethical and technical conduct of the research project and for provision of required progress reports as per terms and conditions of the Institute of Health in effect at the time of grant is forwarded as the result of this application.

Name of the student: _____

Date. _____                Signature _____

**APPROVAL OF THE FIRST ADVISOR**

Name of the first advisor: _____

Date. _____                Signature _____

**APPROVAL OF THE SECOND ADVISOR**

Name of the second advisor: _____

Date. _____                Signature _____