



St. Paul Hospital Millennium Medical College Graduate Study Program

Staff Attitude towards Patient Safety Culture and Working Environment in

St. Paul Hospital Millennium Medical College Pediatrics Department

Investigator: Meklit Girma (MD, Pediatric Resident)

Addis Ababa, Ethiopia

October 2022



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St. Paul Hospital Millennium Medical College Pediatrics Department**

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**A Thesis submitted to the Department of Pediatrics and Child Health;
Presented in Partial fulfillment of the Requirements for the Certificate of
Pediatrics and Child Health; St. Paul Hospital Millennium Medical College**

October, 2022

Addis Ababa, Ethiopia

Academic Research Proposal Submission Guide

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Duration of thesis research	March to August, 2022
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Abstract

Background: There are significant numbers of patients dying for medical and medication errors each year. Staff attitude towards patient safety culture plays main role in preventing these errors. Working environment also contributes to the safety of the patients. Despite these facts there are little published research evaluating attitudes towards patient safety culture and working conditions in Ethiopia.

Objectives: The study aims to assess staff attitude towards patient safety culture and working environment in St. Paul Hospital Millennium Medical College Pediatrics department, a referral hospital in Addis Ababa, Ethiopia.

Methods: Institution based cross- sectional descriptive and analytical study design was used to assess staff attitude towards patient safety culture and working environment in St. Paul Hospital Millennium Medical College Pediatrics department. A standardized Hospital survey on patient safety culture (HSoPSC) was used to conduct the research from March to August 2022.

Results: A total of 175 health professionals responded with response rate of 76%. Overall, the mean positive response rate for the 12 patient safety culture dimensions of the HSOPSC survey was 13.78%. The percentage of positive responses was highest for ‘Teamwork within units’ (37.1%), ‘Non punitive response to error’ (37.1%), ‘Hospital handoffs and transitions’ (33.1%) and ‘Organizational learning – continuous improvement’ (32.6%) and lowest for ‘Staffing’ (0.6%) and ‘Overall perception of safety’ (0.6%).

Conclusion: Majority of the staffs working in SPHMMC, pediatrics department have negative attitude towards patient safety culture of the department. The study high point that safety culture is yet to be fully developed, as there are several areas for improvement including error reporting, response to errors, communication, and leadership across hospital units.

Key Words: Patient safety culture, working environment, medical error

Acknowledgment

I will like to thank St. Paul Hospital Millennium Medical College Pediatrics and Child Health department for giving me the opportunity to conduct this research proposal. They have also been cooperative in providing me with official data for this proposal. My heartfelt gratitude goes to Dr. Mahlet Abayneh for advising this paper and opening my eyes to the different dimensions of this paper.

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Acronyms and Abbreviations

EDHS.....	Ethiopian Demographic Health Survey
FMOH.....	Federal Ministry of Health, Ethiopia
HSoPSC.....	Hospital Survey on Patient Safety Culture
NICU.....	Neonatal Intensive Care Unit
PEOPD.....	Pediatrics Emergency Out Patient Department
PI.....	Primary Investigator
PICU.....	Pediatric Intensive Care Unit
PW.....	Pediatrics Inpatient Ward
WHO.....	World Health Organization

1. Introduction

1.1 Background

Around 98,000 people die in a year from medical and medication errors that befall in hospitals, despite this patient safety culture gets less consideration. The economic cost on the top of the human calamity makes safety attitude culture a public health concern (1). Patient safety is defined as the “Reduction of risk of unnecessary harm associated with healthcare to an acceptable minimum. An acceptable minimum refers to the collective notions of given current knowledge, resources available and the context in which care was delivered weighed against the risk of non-treatment or other treatment” (2).

Medical errors can broadly be categorized into diagnostic, treatment, preventive and other errors. Diagnostic errors occur in about 5% of adults in outpatient care settings, more than half of which have the potential to cause severe harm. Most people will suffer a diagnostic error in their lifetime. These errors can be due to error or delay in diagnosis, failure to order proper tests, using outdated investigations and delay or failure to decide upon the results (3).

Treatment errors occur when there is faulty operation procedure or test. Medication errors are a leading cause of injury and avoidable harm in health care systems globally. It is caused by error in dose or method of giving medication. Unsafe injection practices cause 9.2 million years of life lost to death and disability worldwide. Delay in initiation of treatment and treatment without indication are other types of treatment errors(3).

Failure to provide prophylactic treatment and insufficient monitoring of treatments result in preventive errors. Failure in prevention causes health care associated infections. These

infections occur in 7 out of 100 hospitalized patients in high income countries and 10 out of 100 hospitalized patients in low- and middle-income countries (3).

Errors like failure of communication, equipment failure and other system failures are components of other medical errors (3).

Patient safety culture is a new topic in Ethiopia. There is not much knowledge on the current condition of patient safety culture in government managed hospitals. One hospital survey on patient safety culture in Ethiopian public hospitals was done in 2017. It demonstrated that there is severe shortcoming in regards to patient safety culture in government hospitals (4).

This research aimed at assessing the staff attitude towards patient safety and working condition in Saint Paul Hospital and Millennium Medical College neonatal intensive care unit, pediatric intensive care unit, and pediatrics emergency OPD and pediatrics ward.

1.2 Statement of the problem

One of the main components of health care quality is patient safety. It is a stern global public health issue. Insecure patient care is associated with serious morbidity and mortality all over the world.

Despite the fact that there are significant advances in technology and skill in the health care system over the past decades patients are still suffering from injuries caused by the system. It was reported that 3.7% of all patients were affected by medical errors(5). These errors caused prolonged hospitalization, disability at discharge or both(5).

Based on studies that discovered the incidence of adverse events is a global health problem, the 55th World Health Assembly in 2002 demanded that the WHO should pioneer the development of common standards to aid countries in their trials to develop policies that ensure patient safety. This led to the establishment of the World Alliance for Patient Safety in 2004 at the 57th World Health Assembly. The alliance has the task of coordinating, disseminating and accelerating improvements for the safety of patients all over the planet (2).

The study of patient safety in developing and emerging countries is inadequate (6). In Africa, the absence of adequate data has been an obstacle to understand the problems associated with patient safety. Many countries have taken steps to stop healthcare-associated infection to improve patient safety in Africa after adopting Resolution WHA55.18 of the Fifty-fifth World Health Assembly. Most African countries don't have policies on patient safety attitude. This is in part due to lack of funding and absence of strategies, guidelines, tools, and safety standards. There is high probability of high magnitude of adverse events because of insufficient human resources, substandard infrastructures which are not fully equipped, frail health-care delivery system and poor leadership(7).

This research assessed the staff attitude towards patient safety culture. It tried to point the strength of the units toward medical error preventions. In addition it tried to identify areas that need improvement.

1.3 Significance of the study

Ethiopia stands 4th in highest number of neonate deaths in 2019 (8). Since the NICU is the place where the most fragile human beings are treated it should have better patient safety

culture. Despite the depth of the problem there are not adequate researches in staff attitudes towards patient safety in Ethiopia.

The purpose of this study was to assess staff attitude towards patient safety culture and working condition in SPHMMC NICU, PICU, pediatrics ward and pediatrics emergency OPD. It addressed the different parameters of the safety assessment and compared it to international standards. The findings of this research can serve as a baseline data for future assessments.

The pediatrics department can use the findings to address the factors that affect patient safety issues. It also gave awareness to the staffs in the strengths and the gaps on protecting patients from medical harm.

2. Literature review

Medical errors affect 1 in 10 patients worldwide (WHO). The effects range from psychosocial harm to the patient and the caregiver, financial loss, temporary or long-lasting injury to death. Patient safety aims at preventing these errors(9).

Research done in German University Hospital on the effect of working conditions and patient safety culture with objective workload and patient outcomes found out that Physicians' overtime correlated strongly with perceived quantitative demands (0.706, 95% CI: 0.634 to 0.766), emotional demands (0.765; 95% CI: 0.705 to 0.814), and perceived role conflicts (0.655, 95% CI: 0.573 to 0.724). Nurses' work-intensity measures were associated with decreasing physician job satisfaction and with less favorable perceptions of the appropriateness of staffing (-0.527, 95% CI: -0.856 to 0.107). Both professional groups showed medium to strong associations between the morbidity measure and role conflicts; between occupancy rates and role clarity (-0.482, 95% CI: -0.782 to -0.02) and predictability of work (-.62, 95% CI: -0.848 to -0.199); and between length of stay and internal team functioning (-.555, 95% CI: -0.818 to -0.101). Higher readmission rates were associated with lower perceived patient safety (-.476, 95% CI: -0.779 to 0.006), inadequate staffing (-.702, 95% CI: -0.884 to -0.334), and worse team functioning (-.520, 95% CI: -0.801 to -0.052). Shorter disease-related length of stay was associated with better teamwork within units (-.555, 95% CI: -0.818 to -0.101) and a lower risk of physician burnout (-.588, 95% CI: -0.846 to -0.108). This research concluded perceptions of hospital personnel regarding sub-optimal workplace safety and teamwork issues correlated with worse patient outcome measures. Furthermore, objective measures of overtime work as well as objective measures of workload correlated clearly with subjective work-related stress and strain. This suggests that objective workload measures (such as overtime worked) could be used

to indirectly monitor job-related psychosocial strain on employees and, thus, improve not only staff wellbeing but also patient outcomes. On the other hand, listening to their personnel could help hospitals to improve patient and employee safety(10).

A study done in a district hospital in South Africa concluded that the respondents felt that patient safety incidents were not investigated and that there was a lack of commitment to quality issues. Furthermore, the medical doctors both permanent and community service had negative perceptions about all the safety dimensions, with personnel management on safety issues scoring less poorly than the other dimensions. (11).

In one research done in 4 Jimma Zone Hospitals, in South west Ethiopia patient safety culture was assessed by using Hospital Survey on Patient Safety Culture. In this study the overall level of patient safety culture was found to be 46.7 % (95 % CI: 43.0, 51.2). This result showed that the hospitals had poor patient safety culture. In this study ‘teamwork within department’ and ‘organizational learning’ dimensions were area of strength with average positive response rate of 82 % and 71.3 % respectively. This indicates respondents are positive in supporting one another, working together as a team and doing things to improve patient safety (12). Another study done at Assela Teaching and Referral Hospital concluded that more than half of the nurse’s had good knowledge and positive attitude towards patient safety. However, only half of the nurses had good practice towards patient safety(13).

Tawfik et al tried to examine the relationship between Safety climate, safety climate strength, and length of stay in the NICU. Observational study of safety climate from 2073 health care providers in 44 NICUs was conducted. A consistent perception among a NICU’s respondents, i.e., safety climate strength, was determined via intra-unit standard deviation of

safety climate scores. The relation between safety climate PPR, safety climate strength, and LOS among VLBW (< 1500 g) infants was evaluated using log-linear regression. Secondary outcomes were infections, chronic lung disease, and mortality. NICUs had safety climate PPRs of $66 \pm 12\%$, intra-unit standard deviations 11 (strongest) to 23 (weakest), and median LOS 60 days. NICUs with stronger climates had LOS 4 days shorter than those with weaker climates. In interaction modeling, NICUs with weak climates and low PPR had the longest LOS, NICUs with strong climates and low PPR had the shortest LOS, and NICUs with high PPR (both strong and weak) had intermediate LOS. Stronger climates were associated with lower odds of infections, but not with other secondary outcomes. The research concluded that safety climate strength is independently associated with LOS and moderates the association between PPR and LOS among VLBW infants. Strength and PPR together provided better prediction than PPR alone, capturing variance in outcomes missed by PPR. Evaluations of NICU safety climate consider both positivity (PPR) and consistency of responses (strength) across individuals(14).

A Retrospective observational study on burn out in the neonatal intensive care unit and its relation to healthcare-associated infections was done on 2073 nurse practitioners, physicians, registered nurses and respiratory therapists, using a validated four-item questionnaire based on the Maslach Burnout Inventory. The relation between burnout and HAI rates among VLBW (1500 g) neonates from each NICU was evaluated using multi-level logistic regression analysis with patient-level factors as fixed effects. This research concluded that there is prevalent but variable burnout among this cohort of NICUs, with non-physicians and more experienced providers reporting the highest burnout prevalence. Perception of working too hard was associated with increased HAI. NICUs with higher volumes showed a moderate correlation between burnout prevalence and HAI, and HAI rates associated most strongly with symptoms of

fatigue and perceptions of working too hard. Interventions to prevent and reduce burnout among NICU providers may be important for reducing HAIs in these fragile patients(15).

Research was done in India comparing the safety culture difference between pediatric postgraduates and nurses in NICU using the SAQ. Overall mean scores for the SAQ were 70.2 for PGs and 63.8 for nurses, suggesting an overall negative response. Mean scores for PGs ranged from 63 (working condition) to 82.8 (stress recognition) and for nurses 48.6 (working conditions) to 82.8 (job satisfaction). There was statistically significant difference between the PGs and nurses in the domain of job satisfaction with p value of 0.03. Rest of the domains showed no significant difference. This study revealed a predominantly negative response of safety attitudes in all the SAQ subscales and identified opportunities for improving the patient safety culture in NICUs. Shortage of staff, increased workload and absence of standard protocols for reporting errors and getting feedback were the items that had the poorest positive response. Hence there is an urgent need to plan and implement programs and policies mainly in the domains of safety climate, working conditions and perception of management to improve safety culture in the NICU. There is a variation in attitudes towards safety among the PGs and nurses which should be kept in mind while planning a safety improvement strategy, but at the same time focusing on team work to create an error free healthcare system for the neonates(16).

A multicenter cross-sectional study done on Safety Culture in Neonatal Intensive Care Units in the Gaza Strip, using the safety attitude Questionnaire (SAQ) assessed nurses and physicians. The scores fell below 75 out of a possible score of 100. It also revealed that there is considerable difference in safety culture domain scores among the different NICUs(17).

Profit J, Etchegaray J, Petersen LA, concluded that there are huge variations in safety culture domains among NICUs. The NICU variation was similar to variation in adult ICUs, but NICU scores were generally higher. Future studies should validate whether safety culture measured with the SAQ correlates with clinical and operational outcomes in NICUs(18).

J H Simpson, R Lynch, J Grant, Alroomi and et al conducted a study on reducing medication errors in the neonatal intensive care unit in tertiary unit NICU. Errors were identified using critical incident reporting forms. Forms were completed either by nursing or medical staff involved in the error or by the clinical pharmacist. The pharmacist reviewed all medication orders in the NICU for legality (adherence to the Greater Glasgow Health Board Prescribing Policy) and accuracy (adherence to the neonatal unit formulary). A total of 105 errors were identified, four serious, 45 potentially serious, and 56 minor. Most (75%) were reported by the clinical pharmacist, but all four serious errors were reported by medical or nursing staff involved in the error. Parenteral medicines were involved in 63 errors (60%), oral medicines in 41 errors (39%), and topical medicines in one error(19).

3. Objectives

3.1 General objective

To assess staff attitude towards patient safety culture and working environment at Saint Paul Hospital and Millennium Medical College NICU, PICU, PEOPD, and pediatrics ward, Addis Ababa, Ethiopia.

3.2 Specific objectives

To assess staff attitude towards patient safety at NICU, PICU, PEOPD, and pediatrics ward

To assess staff perception of the working environment and its relation to patient safety

4. Methodology

4.1 Study Area

This study was conducted in St. Paul's hospital millennium medical college which is found in Addis Ababa, the capital city of Ethiopia. St. Paul millennium medical college is the leading teaching and tertiary referral hospital under the federal ministry of health of Ethiopia. It's built in 1961 by emperor Haileselese in collaboration with German evangelical church, as a source of medical care for underserved populations. Currently, it has 392 beds and gives service for about 200,000 patients per year. Its catchment population is more than 5 million. The medical school opened in 2007 and has grown quickly in a short period of time from 3 to 250 faculty members. The postgraduate program has also recently expanded.

The pediatrics department has ICU, NICU, Emergency OPD Ward and OPD. Currently there are twenty six pediatricians working in the different units of the pediatric department. They are both involved in patient care and teaching activities. There are 50 second and third year residents that work in the department with rotation. A total of 123 nurses work in the NICU, PICU, ward and EOPD.

4.2. Study Period

The study was conducted for March to August 2022.

4.3 Study Design

A descriptive and analytical cross-sectional study was conducted and included the total population of permanent staffs; and temporarily employed health professionals. Hospital Survey on Patient Safety Culture (HSoPSC) questionnaire was used.

4.4 Study Population

All health professionals working in NICU, PICU, PEOPD, and ward who consented for the participation were included in the research.

4.5. Eligibility Criteria

Inclusion criteria

All pediatric seniors, pediatric residents and nurses working in SPHMMC NICU, PICU, EOPD and ward for greater than six months.

Exclusion criteria

All health professionals who were on leave.

4.6. Measurement

4.6.1 Study Variables

Dependent variable

- The attitude of staffs on patient safety culture and working environment

Independent variable

- Age

- Sex
- Marital status
- Monthly income
- Year of experience
- Years of experience in the department
- Level of education
- Type of profession (physician \non-) physician

4.6.2 Instruments

Hospital survey on patient Safety culture (HSoPSC) was used. HSoPSC has specific scoring system. There are 42 items grouped into 12 composite measures, or composites. Each has a choice between strongly agree to strongly disagree and neither.

4.7. Data Collection and Procedure

Data collection was by using Hospital survey on patient Safety culture (HSoPSC). Data was collected from all staffs working in the NICU, PICU, PEOPD, and ward by a trained general practitioner. The primary investigator rechecked the data collection and entry forms to ensure their completeness and accuracy.

4.8. Operational Definition

Staff - Health professionals working in the NICU, PICU, PEOP and ward

4.9. Data Quality Control and Management

A trained general practitioner administered a pretested and validated questionnaire. The principal investigator supervised the data collection. Each day the collected data was checked for accuracy and completeness.

4.10. Data Analysis Plan and Procedures

After data collection, each data set was checked for completeness based on the code given during data collection. The data was entered in to SPSS version 26 statistical package. Coding of individual questionnaires was checked before data entry into the software. Further data cleaning was performed to check for outliers, missed values and any inconsistencies before the data were analyzed using the software.

HSOPSC has specific scoring system. There are 42 items grouped into 12 composite measures, or composites. Each has a choice between strongly agree to strongly disagree and neither. If respondents answered 'strongly disagree' or 'never' to a negatively worded item, then the answers were recoded from 1 to 5. If respondents answered 'disagree' or 'rarely' to a negatively worded item, answers were recoded from 2 to 4. The neutral response categories neither 'agree' nor 'disagree' and 'sometimes' are not affected by negatively worded items and were always coded as 3. If respondents answered 'most of the time' or 'agree' to a negatively worded item, then the answers were recoded from 4 to 2. If respondents answered 'always' or 'strongly agree' to a negatively worded item, the answers were recoded from 5 to 1.

Descriptive statistics for each item on the HSOPSC were calculated. For each positively worded item, the percentage of positive responses was calculated, i.e. the percentage of respondents answering the question as 'strongly agree' and 'agree' or 'always' or 'most of the time'. Similarly, for each negatively worded item, the percentage of negative responses was

calculated. In addition, the mean for each subscale used in the HSOPSC was calculated. Subscale scores were calculated by taking the average score of the subscale items. In all cases, the possible range of scores is from 0 to 100%, with higher scores indicating a more positive response.

The HSOPSC instrument includes questions asking respondents to give an overall grade to their safety environment and how many incident reports have been generated in the past 12 months. The relationship between demography factors and patient safety culture score was examined using a linear multivariate analysis with mean percentage reporting a positive score as the dependent variable. A chi-squared test was used to compare health professions on each of the safety culture items.

4.11 Ethical Consideration

The proposal was submitted and clearance was sought from the ethical committee of SPHMMC. During the data collection, the aim of the study was explained to all the study participants and written consent was obtained. Participants were informed that they are free to withdraw at any time without giving any reason. A decision not to participate was respected and the participants were assured that non-participation would not affect their working environment.

4.12. Result Dissemination Plan

After the data was analyzed, the results of the research were presented to SPHMMC's department of pediatrics and child health. The findings will be published in a relevant scientific journal and disseminated online so that they can be of use for other academic researchers and clinical practitioners. It will also be presented on different conferences, and professional society meetings like Ethiopian Society of pediatrics and child health. The data can also serve as a base line for future studies.

5. Result

In total, 175 healthcare staff members provided survey feedback (response rate 76%). Fifteen (8.6%) of the participants were senior pediatricians, 91 (52%) were nurses, 23 (13.1%) were 1st year residents, 26 (14.9%) were 2nd year residents and 20 (11.4%) were 3rd year residents. Eighty eight (88%) of the nurses had pre-bachelor's degree while seven percent of them had diploma and 5% had master's degree. The mean age of the participants was 28.9, and 52.6% of them were single. Forty two (42.9%) of the participants worked in different areas of the pediatrics department while 22.9% of them worked in NICU. Respondents working in PICU and ward each accounted for 9.1%. One hundred twenty three (70.3%) of the participants have a 1 to 5 years total experience in the health care. 75.4% of the participants worked one to five years in their current work place. Majority of the participants (86.3%) work 60 to 79 hours per week. The median income of the participants is 8,031 Birr. (Table 1)

Table 1: Demographic Characteristics of Respondents

<u>Gender</u>	<u>Total Number</u>	<u>Percentage</u>	<u>Educational Status</u>	<u>Total Number</u>	<u>Percentage</u>
Male	72	41.14%	Diploma	6	3.43%
Female	102	58.86%	Bachelor Degree	80	45.71%
			Master's Degree	11	6.29%
<u>Marital Status</u>					
Single	92	52.57%	Medical Doctor	63	36%
Married	78	44.57%	Specialization	15	8.57%
Divorced	3	1.71%			
			<u>Profession</u>		
Widowed	1	0.58%	1 st year resident	23	13.14%
Separated	1	0.58%	2 nd year resident	26	14.86%
			3 rd year resident	20	11.43%
<u>Religion</u>					
Orthodox	120	68.57%	Pediatrician	15	8.57%
Protestant	30	17.14%	Nurse	91	52%
Muslim	18	10.23%			
			<u>Primary Work Unit</u>		
Others	7	4.06%	Different Work area	75	42.86%
			NICU	40	22.86%
<u>Years of Experience in this hospital</u>					
Less than 1 year	24	13.71%	PICU	16	9.14%
1 - 5 years	123	70.29%	Ward	16	9.14%
6 – 10 years	24	13.71%	Emergency	24	13.71%
11 – 15 years	3	1.71%	PHO	4	2.29%
16 – 21 years	0	0			
			<u>Years of Experience in Current Working Area</u>		
			Less than 1 year	29	16.57%
Greater than 21 years	1	0.58	1 - 5 years	132	75.43%
<u>Working Hours per Week</u>					
20 – 39 Hours	1	0.58	6 – 10 years	12	6.86%
40 – 59 Hours	23	13.14%	11 – 15 years	2	1.14%
60 – 79 Hours	151	86.28%	16 – 21 years	0	0
			Greater than 21 years	0	0

The percentage of positive responses was highest for ‘Teamwork within units’ (37.1%), ‘Non punitive response to error’ (37.1%), ‘Hospital handoffs and transitions’ (33.1%) and ‘Organizational learning – continuous improvement’ (32.6%) and lowest for ‘Staffing’ (0.6%) and ‘Overall perception of safety’ (0.6%).

Comparison of scores for the dimensions of safety culture revealed lower results for those who worked less than 1 year in their current working place compared with those who worked greater than 1 year in terms of 'hospital handoffs and transitions' (P, 0.039) and 'hospital management support for patient safety' (P, 0.035).

First year residents scored lowest compared to the other staffs on the parameter 'hospital handoffs and transitions' (P, 0.021). Residents and seniors had the lowest score for the dimension 'team work' compared to the nurses working in different sections of the department (P, 0.035).

Pediatric ward nurses scored the highest in this parameter. Being a nurse in the Emergency was associated with negative response in 'organizational learning while hematology and oncology ward nurses had positive response (P, 0.045). There was a strong association between primary work unit and work place characteristic. Being a NICU nurse is associated with lowest score (P, 0.017). The parameter 'hospital management support for patient safety' got the highest positive response from respondents that worked less than 1 year in the health service sector (P, 0.004). There was relationship between genders, occupation, marital status or weekly work hours and total patient safety culture score.

One hundred fifty five respondents (88%) didn't report any adverse event in the past 12 months.

Forty two percent (74 respondents) graded the total patient safety of the department as 'acceptable' while 54 respondents (30.9%) labeled it as poor. Being a NICU nurse, physician and emergency nurse was associated with higher negative response to the total patient safety score (P, 0.018).

Among the respondents seventy six percent claimed that they have never participated in patient safety program. Hundred fifty of the participants (86.2%) have never been trained on patient safety. Majority of them believe work load in the unit and inadequacy of logistic and other resources in the hospital affect patient safety culture. Only 41.1% of them are convinced that the hospital management encourages reporting events. One hundred thirty seven (78.3%) of the respondents thing the hospital management blame when medical errors happen.

Table 2: Percentage of respondents giving their work area/unit a patient safety grade by professions

Patient safety grade	Physicians	NICU Nurses	PICU Nurses	Ward Nurses	Emergency Nurses	PHO Nurses
Excellent	0%	33.3%	33.3%	0%	33.3%	0%
Very good	47.1%	11.8%	8.8%	2.9%	17.6%	11.8%
Acceptable	37%	18.9%	8.1%	10.8%	12.2%	0%
Poor	20%	31.5%	11.1%	11.1%	9.3%	0%
Failing	42.9%	40%	0%	10%	30%	0%

6. Discussion

Change of safety culture has become an imperative viewpoint by pointing for high quality and secure healthcare. Healthcare pioneers ought to maintain an organizational culture that underpins and promotes patient safety.

The HSOPSC study by AHRQ has been utilized to meet the expanding request for patient safety culture assessment within the Western nations, particularly within the US. In this consider, we utilized HSOPSC to assess patient safety culture in SPHMMC pediatrics department. Data form 175 health professionals was taken and analyzed.

Overall, the mean positive response rate for the 12 patient safety culture dimensions of the HSOPSC survey was 13.78%, significantly lower than the AHRQ data (61%) and Assela(52.9%) (20). The results show that hospital staffs feel negatively toward patient safety culture in their organization. The dimension that received the highest positive response rate was "Teamwork within units", which is similar to the results reported in Dutch(21), Turkey(22), and Taiwan(23). On the other hand, the dimension that had the lowest percentage of positive responses was "Staffing", meaning that most of the respondents feel that staff allocation is not adequate to handle patient safety related workload. A similar finding was reported by -Chi Chen and Hung-Hui Li (23). The other dimension that had the lowest percentage of positive response was overall perception of safety. This shows that the respondents feel patient safety is sacrificed, procedures and systems are not good at preventing errors from happening and it is by chance that more serious mistakes don't happen.

The result of our study showed significantly lower safety culture attitude score which might be due to lack of safety culture knowledge. ‘Staffing’, the parameter that got the lowest positive response (0.6%) might be due to high patient load and turnover rate in the department.

First year residents and those who worked in their current work area for less than 1 year had the highest positive score for the parameter “hospital handoffs and transitions”. This can be due to increasing staff awareness of safety problems or greater willingness to admit to safety problems on a survey as staff gain more experience on a unit.

7. Conclusion

The present study showed that majority of the staffs working in SPHMMC, pediatrics department have negative attitude towards patient safety culture of the department. The parameters ‘overall perception of safety’ and ‘staffing’ had the highest negative score while ‘teamwork within hospital units’ and ‘non punitive response to error’ had the highest positive score.

The study high point that safety culture is yet to be fully developed, as there are several areas for improvement including error reporting, response to errors, communication, and leadership across hospital units.

8. Recommendations

Trainings on patient safety culture should be given and we should strive to create safe environment for event reporting

9. Strength and limitation of the Study

8.1. Strength of the study

It was a prospective study

8.2. Limitation of the study

The achievements of this study were not without restrictions. In spite of patient safety culture being a basic subject, most of the participants were never trained on this subject, thus making it difficult to understand the concept and in turn resulting in contradictory responses.

10. References

1. Hendee WR. To Err is Human: Building a Safer Health System. Vol. 12, Journal of Vascular and Interventional Radiology. 2001. p. P112–3.
2. World Health Organization (WHO). The Conceptual Framework for the International Classification for Patient Safety v.1.0 for Use in Field Testing in 2007-2008 (ICPS). WHO Publ [Internet]. 2007;2008:1–48. Available from: <http://www.who.int/patientsafety/ICPS - July 2007.pdf>
3. Smith DS. Patient safety. Vol. 16, Case Manager. 2005. p. 74–9.
4. Mekonnen AB, McLachlan AJ, Brien JE, Mekonnen D, Abay Z. Hospital survey on patient safety culture in Ethiopian public hospitals: a cross-sectional study. Vol. 3, Safety in Health. 2017.
5. Brennan TA, Leape LL, Laird NM, Hebert L, Localio AR, Lawthers AG, et al. Incidence of adverse events and negligence in hospitalized patients: results of the Harvard Medical Practice Study I. 1991. Qual Saf Health Care. 2004;13(2):370–6.
6. Carpenter KB, Duevel MA, Lee PW, Wu AW, Bates DW, Runciman WB, et al. Measures of patient safety in developing and emerging countries: A review of the literature. Vol. 19, Quality and Safety in Health Care. 2010. p. 48–54.
7. World Health Organization. Report of the Regional Director. 2008;(54):1–9. Available from: www.who.int/patientsafety/implementation/apps/.../afr_rc58_8.pdf
8. World Health Organization. Newborns: improving survival and well-being [Internet]. World Health Organisation. 2019. p. 1–5. Available from: [https://www.who.int/news-room/fact-sheets/detail/newborns-reducing-mortality#:~:text=thermal protection \(e.g. promoting skin,have an HIV-infected mother](https://www.who.int/news-room/fact-sheets/detail/newborns-reducing-mortality#:~:text=thermal protection (e.g. promoting skin,have an HIV-infected mother)
9. Samra HA, McGrath JM, Rollins W. Patient safety in the NICU: A comprehensive review. Vol. 25, Journal of Perinatal and Neonatal Nursing. 2011. p. 123–32.
10. Sturm H, Rieger MA, Martus P, Ueding E, Wagner A, Holderried M, et al. Do perceived working conditions and patient safety culture correlate with objective workload and patient outcomes: A cross-sectional explorative study from a German university hospital. Vol. 14, PLoS ONE. 2019.
11. Mayeng LM, Wolvaardt JE. Patient safety culture in a district hospital in South Africa: An issue of quality. Curationis. 2015;38(1):1–7.
12. Wami SD, Demssie AF, Wassie MM, Ahmed AN. Patient safety culture and associated factors: A quantitative and qualitative study of healthcare workers' view in Jimma zone Hospitals, Southwest Ethiopia. BMC Health Serv Res. 2016;16(1):1–10.
13. Wake AD, Tuji TS, Gonfa BK, Waldekidan ET, Beshaw ED, Mohamed MA, et al. Knowledge, attitude, practice and associated factors towards patient safety among nurses working at Asella Referral and Teaching Hospital, Ethiopia: A cross-sectional study. Ashkenazi I, editor. PLoS One [Internet]. 2021 Jul 1 [cited 2021 Jul 26];16(7):e0254122. Available from: <https://dx.plos.org/10.1371/journal.pone.0254122>
14. Tawfik DS, Thomas EJ, Vogus TJ, Liu JB, Sharek PJ, Nisbet CC, et al. Safety climate, safety climate strength, and length of stay in the NICU. BMC Health Serv Res. 2019;19(1):1–11.
15. Tawfik DS, Sexton JB, Kan P, Sharek PJ, Nisbet CC, Rigdon J, et al. Burnout in the neonatal intensive care unit and its relation to healthcare-Associated infections. J

- Perinatol. 2017;37(3):315–20.
16. Kunde P, Sreekumar K, Mp S. Safety Culture in the Neonatal Intensive Care Unit : Comparing the Pediatric Postgraduates and Nurses Using the Safety Attitude Questionnaire. :1–5.
 17. Abu-El-Noor NI, Hamdan MA, Abu-El-Noor MK, Radwan AKS, Alshaer AA. Safety Culture in Neonatal Intensive Care Units in the Gaza Strip, Palestine: A Need for Policy Change. Vol. 33, *Journal of Pediatric Nursing*. 2017. p. 76–82.
 18. Profit J, Etchegaray J, Petersen LA, Sexton JB, Hysong SJ, Mei M, et al. Neonatal intensive care unit safety culture varies widely. Vol. 97, *Archives of Disease in Childhood: Fetal and Neonatal Edition*. 2012.
 19. Simpson JH, Lynch R, Grant J, Alroomi L. Reducing medication errors in the neonatal intensive care unit. *Arch Dis Child Fetal Neonatal Ed*. 2004;89(6):480–2.
 20. Wake AD, Tuji TS, Gonfa BK, Waldekidan ET, Beshaw ED, Mohamed MA, et al. Knowledge, attitude, practice and associated factors towards patient safety among nurses working at Asella Referral and Teaching Hospital, Ethiopia: A cross-sectional study. *PLoS One* [Internet]. 2021;16(7 July). Available from: <http://dx.doi.org/10.1371/journal.pone.0254122>
 21. Smits M, Christiaans-Dingelhoff I, Wagner C, Wal G Van Der, Groenewegen PP. The psychometric properties of the “Hospital Survey on Patient Safety Culture” in Dutch hospitals. *BMC Health Serv Res*. 2008;8:1–9.
 22. Bodur S, Filiz E. A survey on patient safety culture in primary healthcare services in Turkey. 2009;21(5):348–55.
 23. Chen IC, Li HH. Measuring patient safety culture in Taiwan using the Hospital Survey on Patient Safety Culture (HSOPSC). *BMC Health Serv Res*. 2010;10.

Annex: Instrument

Hospital Name _____ Bed Numbers _____

Working department _____

Part I: - SOCIO-DEMOGRAPHIC

S.NO	Questions	Response	Code				
101	ID	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> </table>					
102	Sex	Female-----0 Male-----1					
103	Age in Year	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> </table>					
104	Marital Status	Single-----0 Married-----1 Divorced-----2 Widowed-----3 Separated-----4					
105	Religion	Orthodox-----0 Muslim-----1 Protestant-----2 Others _____					
106	Educational status	Below and High school -----0 Diploma-----1 Bachelor Degree-----2 Master Degree-----3 Medical doctor-----4 Specialization-----5 Doctorate (PhD)-----6 Other _____					
107	Profession	Medical doctor-----0 Dentist-----1 Nurse-----2 Pharmacist-----3 Midwife-----4 Radiology -----5 Lab technician -----6 Anesthetist-----7 Psychiatry-----8 Physiotherapy -----9 Health officer-----10 Env'tal/Occupational health---11 Others _____					
108	What is your primary work unit/ department or clinical area of the hospitals where you spent most of the	Many different work area-----0 Medicine/non surgical-----1 Surgery-----2 Obstetrics-----3 Pediatrics-----4					

S.NO	Questions	Response	Code
	work time or provides most of the clinical service?	Emergency dept.-----5 Psychiatry/mental health-----6 Rehabilitation-----7 Pharmacy-----8 Laboratory-----9 Radiology-----10 Anesthesiology-----11 Other_____	
109	Years of experience in this hospital	_____	
110	How long have you worked in your current hospital work area?	_____	
111	In average how many hours per week do you work in this hospital?	_____	
112	In your staff position do you typically have direct interaction or contact with patients?	No-----0 Yes -----1	

Part II: Patient safety culture dimensions

Section A: Your work area/unit (Please answer the following about your work area)

Team work within Hospital Units							
S.NO	Questions	Response					Code
		Strongly Disagree (SD)	Disagree (D)	Neutral(N)	Agree(A)	Strongly Agree(SA)	
201	People support one another in this unit	1	2	3	4	5	
202	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	
203	In this unit, people treat each other with respect.	1	2	3	4	5	
204	When one area in this unit gets really busy, others help out	1	2	3	4	5	
Organizational learning – Continuous improvement							
S.NO	Questions	Response					Code
		SD	D	N	A	SA	
205	We are actively doing things to improve patient safety	1	2	3	4	5	
206	Mistakes have led to positive changes here	1	2	3	4	5	
207	After we make changes to improve patient safety, we evaluate their effectiveness	1	2	3	4	5	
Non Punitive response to error							
S.NO	Questions	Response					Code
		SD	D	N	A	SA	

208	Staff feel like their mistakes are held against them	1	2	3	4	5	
209	When an event is reported, it feels like the person is being written up, not the problem	1	2	3	4	5	
210	Staff worry that mistakes they make are kept in their personnel file	1	2	3	4	5	
Staffing							
S.NO	Questions	Response					Code
		SD	D	N	A	SA	
211	We have enough staff to handle the workload	1	2	3	4	5	
212	Staff in this unit work longer hours than is best for patient care	1	2	3	4	5	
213	We use more agency/temporary staff than is best for patient care	1	2	3	4	5	
214	We work in “crisis mode,” trying to do too much, too quickly	1	2	3	4	5	
Overall Perception of safety							
S.NO	Questions	Response					Code
		SD	D	N	A	SA	
215	Patient safety is never sacrificed to get more work done	1	2	3	4	5	
216	Our procedures and systems are good at preventing errors from happening	1	2	3	4	5	
217	It is just by chance that more serious mistakes don’t happen around here	1	2	3	4	5	
218	We have patient safety problems in this unit	1	2	3	4	5	

Section B: Your supervisor/Manager (Please answer the following about your immediate supervisor/Manager or person to whom you directly report)

Supervisor/ Manager expectations and actions promoting safety							
S.NO	Questions	Response					Code
		SD	D	N	A	SA	
219	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	

220	My supervisor/manager seriously considers staff suggestions for improving patient safety	1	2	3	4	5	
221	Whenever pressure builds up, my supervisor/manager wants us to work faster, even if it means taking shortcuts	1	2	3	4	5	
222	My supervisor/manager overlooks patient safety problems that happen over and over	1	2	3	4	5	

Section C: Communication (How often do the following happen in your work area?)

Communication openness							
S.NO	Questions	Response					Code
		Never (N)	Rarely	Some times	Most of the time	Always	
223	Staff will freely speak up if they see something that may negatively affect patient care	1	2	3	4	5	
224	Staff feel free to question the decisions or actions of those with more authority	1	2	3	4	5	
225	Staff are afraid to ask questions when something does not seem right	1	2	3	4	5	
Feedback and communication about error							
S.NO	Questions	Response					Code
		Never (N)	Rarely	Some times	Most of the time	Always	
226	We are given feedback about changes put into place based on event reports	1	2	3	4	5	
227	We are informed about errors that happen in this unit	1	2	3	4	5	
228	In this unit, we discuss ways to prevent errors from happening again	1	2	3	4	5	

Section D: Frequency of Events reported (When mistakes happen in your hospital work area, how often are they reported)

Event: Any type of error, mistakes, incident, near misses, accident or deviation regardless of whether or not it results in patient harm

Frequency of Event reporting			
S.NO	Questions	Response	Code

		Never (N)	Rarely	Some times	Most of the time	Always	
229	When a mistake is made, but is caught and corrected before affecting the patient, how often is this reported?	1	2	3	4	5	
230	When a mistake is made, but has no potential to harm the patient, how often is this reported?	1	2	3	4	5	
231	When a mistake is made that could harm the patient, but does not, how often is this reported?	1	2	3	4	5	
Section E: Patient safety grade							
S.NO	Questions	Response					Code
232	Please give your work area/unit in this hospital an overall grade on patient safety	Excellent-----1 Very good-----2 Acceptable-----3 Poor-----4 Falling-----5					

Section F: Hospital-Wide (please answer the following about your hospital)

Hospital Management support for patient safety							
S.NO	Questions	Response					Code
		SD	D	N	A	SA	
233	Hospital management provides a work climate that promotes patient safety	1	2	3	4	5	
234	The actions of hospital management show that patient safety is a top priority	1	2	3	4	5	
235	Hospital management seems interested in patient safety only after an adverse event happens	1	2	3	4	5	
Team work across hospital unit							
S.NO	Questions	Response					Code
		SD	D	N	A	SA	
236	There is good cooperation among hospital units that need to work together	1	2	3	4	5	
237	Hospital units work well together to provide the best care for patients	1	2	3	4	5	
238	Hospital units do not coordinate well with each other	1	2	3	4	5	
239	It is often unpleasant to work with staff from other hospital units	1	2	3	4	5	
Hospital Handoffs and Transitions							
S.NO	Questions	Response					Code
		SD	D	N	A	SA	
240	Things “fall between the cracks” when transferring patients from one unit to another	1	2	3	4	5	
241	Important patient care information is often lost during shift changes	1	2	3	4	5	

242	Problems often occur in the exchange of information across hospital units	1	2	3	4	5	
243	Shift changes are problematic for patients in this hospital	1	2	3	4	5	
Section G: Number of events Reported							
S.NO	Questions	Response					Code
244	In the past 12 months, how many event reports have you filled out and submitted?						

Part III: Factors associated with patient safety culture*

Workplace characteristics							
S.NO	Questions	Response					Code
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
301	There is good cooperation and teamwork while we give patient care	1	2	3	4	5	
302	We have adequate staff that is best for patient safety	1	2	3	4	5	
303	There is good communication with each other	1	2	3	4	5	
304	We always give feedback for each other when we saw mistakes happened	1	2	3	4	5	
S.NO	Questions	Response					Code
305	Had you ever participated in patient safety program?	Never-----0 Several times a year-----1 At least monthly-----2					
306	Extent of participation in patient safety issue	Never-----0 Several times a year-----1 At least monthly-----2					
307	Have you ever reported adverse events?	No-----0 Yes-----1					
308	Do you believe work load in this work unit increase risk for error?	No-----0 Yes-----1					
309	Did you taken any patient safety training?	No-----0 Yes-----1					
310	Do you think inadequacy of logistic and other resource in this hospital affect patient safety culture?	No-----0 Yes-----1					
311	Does hospital management encourage reporting events?	No-----0 Yes-----1					
312	Doe the hospital management blame when medical errors happened?	No-----0 Yes-----1					

Reference

1. Sorra J, Nieva V: **Hospital survey on patient safety culture.**(Prepared by Westat, under contract no. 290-96-0004). **AHRQ publication no. 04-0041.** Rockville, MD: Agency for Healthcare Research and Quality 2004.