Patient safety culture among healthcare professionals in Bhutan

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ABSTRACT

Introduction: There is dearth of information regarding the status of patient safety culture in Bhutanese healthcare system. The aim of the study was to assess the baseline patient safety culture among the healthcare professionals working in different levels of hospitals in Bhutan. **Methods:** A cross-sectional study was conducted using the Hospital Survey on Patient Safety, version 2 (HSOPS2) questionnaire in 2021 in six District Hospitals (DHs), two Regional Referral Hospitals (RRHs), and one National Referral Hospital (NRH) in Bhutan. A total of 782 healthcare professionals were recruited into the study. EpiData version 3.0 and Statistical Package for Social Science (SPSS) version 28.0 were used to process data and conduct the statistical analysis on survey data including descriptive statistics and validity and reliability of survey. The internal consistency reliability of each composite measure was assessed by calculating Cronbach's alpha score. **Results:** The overall level of patient safety culture was 61.28% (95% CI: 113.26, 115.27) and the percentage scores for the ten patient safety dimensions ranged from 45.13% to 82.65%. The dimension, "Teamwork within the hospital units" had the highest positive score while the dimensions, "Staffing and work pace" and "Reporting patient safety events" had the lowest positive scores. **Conclusions:** The healthcare professionals working in hospitals in Bhutan had average patient safety culture. To improve patient safety culture, more emphasis should be given on human resource management, patient safety event reporting system, hospital management support for patient safety and quality improvement initiatives and creating an environment that promote just and learning culture.

Keywords: Patient safety; Patient safety culture.

INTRODUCTION

The landmark publication by the Institute of Medicine, USA "To err is human: Building a safer health system" in the year 2000 broke the silence regarding the extent of harm caused to patients by unsafe healthcare[1]. The publication revealed that between 44,000 and 98,000 people in the US hospitals have been killed by preventable medical errors each year[1]. It not only revealed a high prevalence of harm caused by medical errors and adverse events but also identified the main causes as systemic defects rather than individual healthcare professional's faults. Subsequent studies from other countries also revealed similar findings[2,3]. Results suggested that about 1 in 10 hospitalized patients were injured and that at least 50% of cases were preventable, with about two-thirds of all patient safety events occurring in low and middle-income countries[4,5]. Of these preventable safety events, 30% were associated with patient mortality i.e., almost a third of patients impacted by harmful incidents died[6].

One of the most important factors that contribute to patient safety and quality of care is the patient safety culture among the healthcare professionals. Kumbi et al. defines patient safety culture as "the values shared among organizational members about what is important, their beliefs about how things operate in the organization, and the interaction of these within a work unit and organizational structures and systems, which together produce behavioural norms in the organization that promote safety"[7]. Open communication, good information flow, adequate staffing, shared perceptions of safety communication, organizational learning/continuous improvement, and top leadership commitment are predictors of a good patient safety culture in healthcare organizations[8]. The presence of a more positive patient safety culture in hospitals is reported to be associated with fewer patient safety events[9,10]. As per recent studies, poor patient safety culture in healthcare system is not only associated with increased incidences of harms to patients but also adversely affect the wellbeing of the healthcare professionals[11,12].

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Other impact include additional financial burden from disability, loss of work time and cost of care[13-15].

The main strategy to improve patient safety culture in the healthcare facilities is to assess the various dimensions of patient safety culture periodically and institute mechanisms to address areas that need attention and sustain the dimensions that achieved desirable levels. However, in Bhutan, while several programs and protocols of patient safety have been put in place, patient safety culture is not being stressed as an essential component of safety and quality improvement strategy. There is no record of evaluation of patient safety culture across any level of healthcare facility in the country. Therefore, the main purpose of this study was to assess the baseline patient safety culture among the healthcare professionals working in hospitals in Bhutan.

METHODS

As the aim of the study was to assess the baseline patient safety culture among the healthcare professionals working in hospitals, the study was conducted as a descriptive cross-sectional study using a survey questionnaire in 2021.

Setting and sample
The study was conducted in three different levels of hospitals in Bhutan – the District Hospitals (DHs), the Regional Referral Hospitals (RRHs), and the National Referral Hospital (NRH) - the study included six DHs, two RRHs and one NRH. The research sites were selected through convenience sampling which entails using the most conveniently available and accessible research sites. Apart from support staff all healthcare providers who have worked at least for six months prior to data collection in different units at each of the selected hospitals were included in this study. Assuming 30% of healthcare professionals will not respond, with a confidence level of 95%, 3% margin of error and 10% return of incomplete questionnaires, based on the sample selected from a finite population of 1993 healthcare professionals working in nine selected hospitals, the sample size was calculated at 695.

Data collection
Patient safety culture was measured using a modified version of the Hospital Survey on Patient Safety, version 2 (HSOPS2) questionnaire designed by the Agency of Healthcare Research and Quality [AHRQ][16]. It consists of ten composite measures and thirty two items with two to four items per dimension; and some items are negatively worded. The questionnaire is based on Likert 'matrix format' with the choice of six response categories to tick from strongly agree to strongly disagree (strongly agree = 5, agree = 4, neither agree nor disagree = 3, disagree = 2, strongly disagree = 1) or never to always (never = 1, rarely = 2, sometimes = 3, most of the time = 4, always =5) or poor to excellent (poor = 1, fair = 2, good = 3, very good = 4, excellent = 5).

Data were collected from all categories of healthcare professionals in the selected hospitals: NRH, RRHs, and DHs. The questionnaire along with the approval letter Ref. No. REBH/ Approval/2021/058 from Ethics Board of Health (REBH) and information from the researcher explaining the purpose of the study, assurance of confidentiality and anonymity, use and storage of the data collected, their rights to withdraw without prejudice and the timeframe for data collection were sent by e-mail or delivered in person to the research participants. The entire process took at least one and half months.

Data processing and analysis
Data were checked, edited, coded and entered into database using EpiData version 3.0, and exported and analyzed using Statistical Package for Social Sciences (SPSS) version 28.0. All items in the survey responses were coded in between 1 and 5. Negatively worded items were reverse coded so that a higher score would indicate a more positive response[7,17]. Most of the variables were described using descriptive statistics. The mean and standard deviation (SD) of each item was calculated.

As recommended by AHRQ, the percentages of positive responses were calculated for each item and each composite measure[7]. The percent positive was the proportion of positive responses to positively worded items or negative responses to negatively worded items[7,18]. The domain responses of "agree" or "strongly agree" were considered positive responses, while the domain responses of "disagree" or "strongly disagree" were considered to be negative[18]. Accordingly, composite scores were computed by summation of the items within the composite scales and dividing by the number of items[7]. The researchers defined areas of strength as those responses for which 75% of the respondents answered positively; between 50% and 75% was considered an average response whereas areas requiring improvement were those responses that scored below 50%[7].

The internal consistency reliability of each of the composite measure was assessed by calculating Cronbach's alpha score to give an indication of the integrity of the questionnaire[7]. For the 10 dimensions, the internal consistency (Cronbach's alpha) ranged from 0.41 to 0.76, and the Cronbach's alpha of the total scale was 0.84 as shown in Table 2. The dimensions with the Cronbach's alpha ≥0.6 were subjected to principal component analysis (PCA). The item deletion was done to ensure that the Cronbach's alpha value for each composite is at least 6. Even though there was no change on the overall reliability, elimination of the items "there is a problem with disrespectful behaviour by those working in this unit"; "Staff in this unit work longer hours than is best for patient safety"; and "My supervisor, manager, or clinical leader wants us to work faster during busy times, even it means taking shortcuts" resulted in "Teamwork within hospital units"; "Staffing and work pace"; and "Supervisor, manager, or clinical leader support for patient safety" dimensions' reliability increasing from 0.49 to 0.58; from 0.27 to 0.41; and from 0.42 to 0.59, respectively. Also elimination of the items "This unit lets the same patient safety problems keep happening"; "In this unit, staff are afraid to ask questions when something does not seem right"; "Hospital management seems interested in patient safety only after an adverse event happens"; and "During shift changes, there

is adequate time to exchange all key patient care information" resulted in "Organizational learning – continuous improvement"; "Communication openness"; "Hospital management support for patient safety"; and "Handoffs and information exchange" dimensions reliability increasing from 0.53 to 0.62; from 0.69 to 0.75; from 0.55 to 0.76; and from 0.59 to 0.72, respectively. For other patient safety dimensions, an item elimination did not improve the overall score of reliability. Simple and multivariable linear regression analysis were performed. Variables with P-value of less than 0.05 in multivariate analysis were declared as statistically significance at 95% Confidence Interval (CI).

RESULTS

Characteristics of participants

All healthcare professionals who met the inclusion criteria participated in this study. Of the 900 questionnaires distributed to nine hospitals, 782 (86.8%) completed questionnaires were returned. Of 782 returned questionnaires, 88 (11.2%) were excluded due to incompleteness of the questionnaires and/or the respondents did not meet inclusion criteria. So, 694 responses were included in the final analysis. The response rate achieved in this study was 77.11%.

Of the 694 responses 304 (43.8%) were staff nurses/clinical nurses. The breakdown of unit/work area and hospitals, 80 (11.5%) participants were from general hospital/unit, while 251(36.2%) were from RRHs. Three hundred and forty-three (49.4%) participants had worked in the current hospital for one to five years, and 380 (54.8%) worked one to five years in current unit/work area. Four hundred and six participants (58.8%) worked 30 to 40 hours per week and 672 (96.8%) participants had direct interaction or communication with the patients (Table 1).

Patient safety culture

The average percentage of positive response for each of the items in this study ranged from 13.11% for "staff in this unit work longer hours than is best for patient care" to 92.50% for "in this unit, we work together as an effective team". There are seven items (of 32 patient safety culture items) with less than 50% of the average positive scores altogether (Table 2).

Table 1. Characteristics of health care professionals working in hospitals in Bhutan in 2021 (*n*=649)

Variables	Response category	*n* (%)
Staff position	Staff Nurse/Clinical Nurse	304 (43.8)
	Assistant Nurse	36 (5.2)
	Clinical Officer/Assistant Clinical Officer/Health Assistant	37 (5.3)
	Resident, Intern	7 (1.0)
	Doctors (Specialist/Consultants/General Medical Officer	49 (7.1)
	Dietician	5 (0.7)
	Pharmacist, Pharmacy Technician	48 (6.9)
	Physiotherapist	29 (4.2)
	Technologist, Technician (e.g. EKG*, Lab†, Radiology, Eye Technician)	118 (17.0)
	Ward In-Charge/Chief Nurse, Nursing Superintendents, Chief Medical Officer, Medical Superintendent, Administrator, Director	17 (2.4)
	Other (Dentists, Dental Hygienists, and Emergency Medical Responders)	44 (6.3)
Unit/ Work area	Medical Unit	32 (4.6)
	Surgical Unit/Minor OT‡	33 (4.8)
	Emergency Department, Observation, Short Stay	53 (7.6)
	ICU§ (All adult types)	31 (4.5)
	Labour & Delivery, Obstetrics & Gynaecology	37 (5.3)
	Oncology	4 (0.6)
	Paediatrics (including NICU‖, PICU¶)	50 (7.2)
	Psychiatry	5 (0.7)
	Physiotherapy/Rehabilitation	37 (5.3)
	Dermatology	5 (0.7)
	Eye, Ear, Nose and Throat	31 (4.5)

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	Dialysis	11 (1.6)
	Orthopaedic	15 (2.2)
	Cabin/Private Paying	4 (0.6)
	Anaesthesiology	3 (0.4)
	Endoscopy, Colonoscopy	0 (0.0)
	Pre Op**, Operating Room/Suite, PACU††/Post Op‡‡, Peri OP §§	26 (3.7)
	Pathology	48 (6.9)
	Pharmacy	48 (6.9)
	Radiology, Imaging	31 (4.5)
	Blood Transfusion	1 (0.1)
	Maternal and Child Health	46 (6.6)
	General hospital/unit	80 (11.5)
	Administration, Management	11 (1.6)
	Other (Dental)	52 (7.5)
Hospitals	NRH‖‖	241 (34.7)
	RRHs¶	251 (36.2)
	DHs ***	202 (29.1)
Duration of work in current hospital (years)	Less than 1 year	66 (9.5)
	1 to 5 years	343 (49.4)
	6 to 10 years	177 (25.5)
	11 or more years	108 (15.6)
Duration of work in current unit/ work area (years)	Less than 1 year	84 (12.1)
	1 to 5 years	380 (54.8)
	6 to 10 years	153 (22.0)
	11 or more years	77 (11.1)
Hours worked per week (hours)	Less than 30 hours per week	15 (2.2)
	30 to 40 hours per week	406 (58.5)
	More than 40 hours per week	273 (39.3)
Direct interaction or contact with the patients	Yes	672 (96.8)
	No	22 (3.2)

*Electrocardiogram, †Laboratory, ‡Operation theatre, §Intensive care unit, ‖Neonatal intensive care unit, ¶Paediatric intensive care unit, **Preoperative, ††Post anaesthesia care unit, ‡‡Postoperative, §§ Perioperative, ‖‖National referral hospitals, ¶Regional referral hospitals, ***District hospitals

Table 2. Percentage of Average Positive Response for an Item-level and Patient Safety Composite Scores for healthcare professionals in Bhutan, 2021 (*n*= 649)

Composite and Items	Average Percent Positive	Mean (SD)
Teamwork within hospital units (Cronbach's a = 0.58)		
1. In this unit, we work together as an effective team	92.50	4.36(0.77)
2. During busy times, staff in this unit help each other	89.76	4.27(0.85)
3. There is a problem with disrespectful behaviour by those working in this unit (R)	65.70	3.71(0.96)
Staffing and work pace (Cronbach's a = 0.41)		
1. In this unit, we have enough staff to handle the workload	46.97	3.11(1.20)
2. Staff in this unit work longer hours than is best for patient care (R)	13.11	2.27(0.99)
3. This unit relies too much on temporary, float, or PRN staff (R)	61.09	3.62(1.01)
4. The work pace in this unit is so rushed that it negatively affects patient safety (R)	59.36	3.48(1.10)
Organisational learning – continuous improvement (Cronbach's a =0.62)		
1. This unit regularly reviews work processes to determine if changes are needed to improve patient safety	73.19	3.78(0.90)
2. In this unit, changes to improve patient safety are evaluated to see how well they worked	66.28	3.62(0.88)
3. This unit lets the same patient safety problems keep happening (R)	78.67	4.01(0.89)
Response to error (Cronbach's a =0.61)		
1. In this unit, staff feel like their mistakes are held against them (R)	46.82	3.29(1.03)
2. When an event is reported in this unit, it feels like the person is being written up, not the problem (R)	40.20	3.09(1.01)
3. When staff make errors, this unit focuses on learning rather than blaming individuals	70.89	3.71(1.01)
4. In this unit, there is a lack of support for staff involved in patient safety errors (R)	52.88	3.35(1.00)
Supervisor, manager, or clinical leader support for patient safety (Cronbach's a =0.59)		
1. My supervisor, manager, or clinical leader seriously considers staff suggestions for improving patient safety	77.80	3.85(0.86)
2. My supervisor, manager, or clinical leader wants us to work faster during busy times, even if it means taking shortcuts (R)	66.57	3.68(0.97)
3. My supervisor, manager, or clinical leader takes action to address patient safety concerns that are brought to their attention	76.08	3.80(0.78)
Communication about error (Cronbach's a =0.76)		
1. We are informed about errors that happen in this unit	62.10	3.76(1.04)
2. When errors happen in this unit, we discuss ways to prevent them from happening again	74.06	4.03(1.03)
3. In this unit, we are informed about changes that are made based on event reports	64.69	3.80(1.04)
Communication openness (Cronbach's a = 0.75)		
1. In this unit, staff speak up if they see something that may negatively affect patient care	70.46	3.97(0.97)
2. When staff in this unit see someone with more authority doing something unsafe for patients, they speak up	56.62	3.58(1.16)
3. When staff in this unit speak up, those with more authority are open to their patient safety concerns	56.19	3.57(1.05)
4. In this unit, staff are afraid to ask questions when something does not seem right (R)	57.78	3.69(1.16)

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Reporting patient safety events (Cronbach's a =0.68)

1. When a mistake is caught and corrected before reaching the patient, how often is this reported?	48.99	3.38(1.15)
2. When a mistake reaches the patient and could have harmed the patient, but did not, how often is this reported?	48.27	3.32(1.20)

Hospital management support for patient safety (Cronbach's a =0.76)

1. The actions of hospital management show that patient safety is a top priority	72.19	3.84(0.96)
2. Hospital management provides adequate resources to improve patient safety	51.44	3.35(0.99)
3. Hospital management seems interested inpatient safety only after an adverse event happens (R)	31.12	2.85(1.07)

Handoffs and information exchange (Cronbach's a =0.72)

1. When transferring patients from one unit to another, important information is often left out (R)	51.58	3.35(1.00)
2. During shift changes, important patient care information is often left out (R)	56.19	3.48(0.97)
3. During shift changes, there is adequate time to exchange all key patient care information	68.58	3.74(0.92)
Overall level of patient safety culture dimensions (Cronbach's a =0.84)	61.28	3.58 (0.99)

*Negatively worded items were reverse coded (R). * The mean inter-item correlation was calculated for the dimensions that consisted of three items or less.

Level of patient safety culture dimensions

The overall level of patient safety culture in this study was 61.28% (95% CI: 113.26, 115.27) and the ten patient safety dimensions ranged from 45.13% to 82.65%. "Teamwork within hospitals units" has the highest average percentage positive response with 82.65% followed by "supervisor, manager, or clinical leader support for patient safety" and "organizational learning – continuous improvement" with 73.48% and 72.71% respectively. The lowest average percentage positive responses were "staffing and work pace" (45.13%) and "reporting patient safety events" (48.63%) (Table 3).

Table 3. Patient safety culture composite level results of the healthcare professionals in Bhutan, 2021 (*n*=694)

Patient safety culture dimensions	Number of items	Cronbach's Alpha	Positive safety culture score (%)
Teamwork within hospital units	3	0.58	82.65
Staffing and work pace	4	0.41	45.13
Organisational learning – continuous improvement	3	0.62	72.71
Response to error	4	0.61	52.69
Supervisor, manager, or clinical leader support for patient safety	3	0.59	73.48
Communication about error	3	0.76	66.95
Communication openness	4	0.75	60.26
Reporting patient safety events	2	0.68	48.63
Hospital management support for patient safety	3	0.76	51.58
Handoffs and information exchange	3	0.72	58.78
Overall level of patient safety culture	**32**	**0.84**	**61.28**

DISCUSSION

This study successfully assessed the baseline patient safety culture among the healthcare professionals working at three levels of hospitals in Bhutan using the HSOPSC instrument. The study revealed that healthcare professionals in those hospitals had average patient safety culture and that there are some areas that require urgent attention for improvement. The overall level of patient safety culture of this study is comparable to findings from Nigeria, China, Taiwan, and Iran[19-23].

The dimension "Staffing and work pace" had the lowest positive score of 45.13%. The item "Staff in this unit work longer hours than is best for patient care" had the lowest positive score (13.12%) from all the 32 items. It indicates either shortage of human resource in hospitals or mismanagement of human resource. Mismanagement of human resource usually involve releasing of staff for trainings and workshops haphazardly without proper planning. Sometimes, different programs from ministry organize various trainings and workshops almost at the same time. The incidences of medical errors and patient safety events are more frequent in healthcare facilities with overworked and fatigued staff[24,36]. Therefore, it is critically important to have optimal numbers of healthcare professionals at workplace at any given point of time by appropriate recruitment and management. The second lowest positive score was the "Reporting patient safety events" dimension. This finding was not unexpected as there is lack of a national patient safety event reporting system in Bhutan, although some hospitals have instituted patient safety event reporting mechanism in their respective hospitals. Having a robust national patient safety event reporting system in the country will generate useful information regarding the nature, extent and underlying causes of patient safety events. Information generated from the review of these patient safety events can be used for improving the healthcare system. In addition, to encourage voluntary reporting of patient safety event by staff, the focus needed to be on learning from the events to improve the standards of care and not on blaming and taking punitive actions against the staff. Punitive actions should be restricted to cases in where there have been gross and conscious disregard of hospital norms and standards. However, the low positive score (46.82%) for the item "In this unit, staff feel like their mistakes are held against them" under the dimension "Response to error" indicates that staff are blamed for the mistakes.

The low positive score (31.12%) for the item "Hospital management seems interested in patient safety only after an adverse event happens" under the dimension "Hospital management support for patient safety" indicates the reactive nature of response rather than a wholesome proactive mechanism to prevent patient safety events from occurring in the first place. The hospital management needs to be fully involved and visibly supportive of the patient safety and quality improvement initiatives in his/her hospital. An important component of patient safety culture is the presence of an articulated management's commitment to patient safety with shared values, beliefs and behavioural norms translated to all levels within hospitals and healthcare organization[18]. Such commitment from management will also encourage reporting of patient safety events without fear and will help to create a culture that emphasizes on learning from the mistakes rather than blaming[25-27].

On the positive side, the average positive response score for the dimension "Teamwork within hospital units" had the highest positive score (82.65%). This finding is consistent with the findings of studies in Ethiopia, Turkey, Iran, Kuwait, India, Peru and Ghana[28-34]. This finding may imply one of the core values of Bhutanese culture i.e., working in harmony as a team. The high positive scores for items "In this unit, we work together as an effective team" and "During busy times, staff in this unit help each other" great indications that staff are supporting each other and working as a team to compensate the shortage of workforce in the hospitals. The Bhutanese, by nature, are warm and willing to help each other and place emphasis on working with cooperation and harmony to achieve a common goal[35].

The study and its findings have limitations which need to be taken into consideration. One major limitation is the selection of study sites which was not randomized, and therefore, may limit the generalizability of the findings.

CONCLUSIONS

The result of this study demonstrated that Bhutanese hospitals have an average patient safety culture and there are gaps that need urgent attention. Majority of the participants felt that they were over worked. Therefore, it is important to manage the work hours of staff by optimizing the staff number at workstation by appropriate recruitment and management. Rationalizing staff release for various trainings and workshops is critically important in our context.

There is also a need to improve the patient safety event reporting mechanism in the hospitals with the main purpose being learning from these events to prevent similar occurrence in future. The hospital management needs to take more proactive roles in improving the patient safety culture. For this, the hospital managers should equip themselves with some basics of patient safety and quality improvement science.

It is also recommended that patient safety culture of respective hospital is periodically assessed to evaluate the situation and undertake actions to improve the positive scores of the ten dimensions of patient safety culture. Increasing the positive scores of the dimensions will surely result in safer care. An additional study to identify the nature, extent, and risk factors of patient safety events at different levels of hospital is also recommended.

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AUTHORS CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under:

RP: Concept, design, data collection and analysis, manuscript writing and review.

N: Concept, design, data collection and analysis, manuscript writing and review.

KJ: Concept, design, data collection and analysis, manuscript writing and review.

Author agree to be accountable for all respects of the work in ensuring that questions related to the accuracy and integrity of any part of the work are appropriately investigated and resolved.

CONFLICT OF INTEREST

None

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