RESEARCH ARTICLE

Safety huddles in paediatric intensive care unit: Implementation and staff perception in a resource limited setting

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Abstract

Objective: To evaluate the perception, knowledge, empowerment and comfort level of critical care staff in relation to the implementation of safety huddles in paediatric intensive care unit of a tertiary care hospital.

Method: The descriptive cross-sectional study was conducted at the Aga Khan University Hospital, Karachi, from September 2020 to February 2021, and comprised physicians, nurses and paramedics who were part of the safety huddle. Staff perception regarding this activity was evaluated using open-ended questions that were scored on a Likert scale. Data was analysed using STATA 15.

Results: Of the 50 participants, 27(54%) were females and 23(46%) were males. Overall, 26(52%) subjects were aged 20-30 years age, while 24(48%) were aged 31-50 years. Of the total, 37(74%) subjects strongly agreed that safety huddle had been routinely held in the unit since initiation; 42(84%) felt comfortable sharing their concerns about patient safety; and 37(74%) considered the huddles worthwhile. Majority 42(84%) felt more empowered through huddle participation. Moreover, 45(90%) participants strongly agreed that daily huddle helped them in becoming clearer about their responsibilities. For safety risk assessment, 41(82%) participants acknowledged that safety risks had been assessed and modified in routine huddles.

Conclusion: Safety huddle was found to be a powerful tool to create a safe environment in a paediatric intensive care unit where all team members can speak up freely about patient safety.

Keywords: Safety huddle, Staff perception, Staff empowerment, Patient safety in PICU. (JPMA 73: 258; 2023)

DOI: https://doi.org/10.47391/JPMA.5308

Submission completion date: 09-11-2021 **- Acceptance date:** 12-09-2022

Introduction

To promote safe hospital culture, an open communication between unit level staff and leadership is significant. Improved team dynamics are seen where daily meetings discuss safety issues[1,2] Coordination between the frontliners and the leadership also builds trust at both ends, which results in better care provision to the patients.[3,4]

Over time, hospitals have started considering huddle as a well-functioning communication tool. It was realised that safety huddles can help in creating a safety culture by providing a platform for frontline personnel to deal with safety issues, create plans and celebrate success.[5-7]

While huddle plays a pivotal role in all hospital departments, the level of stress in intensive care units (ICUs) attracts more attention. In 2014, Saudi Arabia's Ministry of National Guard-Health Affairs (MNGHA) conducted a nationwide culture survey in all health institutions, which showed weakness in their paediatric ICU (PICU) from the safety aspect. Majority of the staff complained that they had not received proper feedback from their leadership over performance, while also expressing fear and difficulty in addressing issues to their seniors. Moreover, some staff members also pointed out that the existing culture is limiting them to learn from incurring errors.[3,8] This reflects that remaining abreast of the latest developments among critically ill and more complex patients is vital for all health professionals ranging from staff to intensivists.[9,10]

The Aga Khan University Hospital (AKUH) in Karachi adopted the practice of safety huddles in 2018 and they are held on a daily basis in the morning shift under the supervision of the attending physicians/fellows. This consideration was taken to address the safety and communication problems while dealing with more complex patients. The huddles include nurses, nursing assistants, unlicensed assistant personnel, attending physician, residents, fellows,and physical therapists, who quickly discusses every patient's concerns, safety concerns and updates.[11,12] It differs from team meetings in the manner that it is a brief daily discussion, focusing on the plan of action for the day ahead.[13,14] Daily huddles can promote optimal patient outcome.[2,14-16] It is the huddle leader's responsibility to keep huddles short, focused and task-oriented, making sure every topic is discussed.

Since teamwork is imperative for patient safety, huddles

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influence the entire approach of the team. Discussing patients' problem as a team reminds every member that patient safety is a shared responsibility, and that they are not alone in creating a safe and effective plan[12,17,18] Nurses who make it a routine daily practice have smoother workdays and lesser amount of stress all around.[1,19,20]

There is a paucity of data on safety huddles in units from resource-limited settings. The current study was planned to evaluate the perception, knowledge, empowerment and comfort level of critical care staff in relation to the implementation of PICU safety huddles in a tertiary care setting.

Subjects and Methods

The descriptive cross-sectional study was conducted from September 2020 to February 2021 in the 8-bed multidisciplinary PICU of AKUH, Karachi, which caters to a large city of around 20 million people and patients come from the whole province. Daily huddles at the PICU were implemented on October 1, 2018.

The current study focused on the first two steps of Donabedian's three-step model of quality healthcare; structure and process.[21] The third component, outcome, was not part of the current study.

In this journey, a step-wise approach was taken where the staff members were introduced to the huddle toolkit. It was followed by a learning and development programme to make them aware of its usage. Later, a huddle folder was established at the central nursing station for recording purpose. These folders constituted date-specific printouts, having start and end dates of precise tasks and responsibilities.

The next step was the implementation of daily huddle at PICU, which starts with the announcement by the leader (clinical nurse instructor/nursing team leader/attending physician), who requests all members to gather at PICU nursing station and pay attention to the speaking staff. Everyone gets an opportunity to speak and to share any concerns related to patient safety and care processes.

The toolkit was designed in such a manner that each PICU member could contribute to making the delivery of patient care safe and effective. It consisted of the following components: Introduction of all participants and their respective roles (for example, team leader, attending physician, etc.); unit census with active bookings for that day (operation theatre, emergency room, ward); patient with extended length of stay and strategies to help expedite discharge and shifting; infection status of patient with plastic lines and their need assessment, and ventilation-assisted devices; patients on high-alert medications; any procedure planned for the next 24 hours at the bedside; any shifting of patient to outside of PICU, for any procedure or intervention (radiology or operation room); individualised plan of care of each patient; identifying barriers to progress, discharge or transfer; unit-specific operational issues, such as shortage of supplies or changes in policies, equipment issues etc.; reinforcement of infection control bundles, like hand washing, central line-associated blood stream infection (CLABSI) bundle, ventilator-associated pneumonia (VAP) bundle, catheter-associated urinary tract infection (CAUTI) bundle, skincare bundles; discussion and information about quality data on any hospital notification with regards to patient care; and any other business (open for participants to share their observations, suggestions etc.).

These components were developed based on published literature and consensus among nursing and physicians to meet the local unit needs and requirements. All bedside nurses, nursing assistants, unit receptionist, nurse team leader, physicians (residents, fellows, attending physicians) were mandated to be a part of the team. Meanwhile, other members, like pharmacists, physiotherapists etc., were also encouraged to participate.

The activity was planned at around 0800 hours (around an hour after the start of a usual day in PICU, when everyone had taken over from the night shift, had assessed the patients, and had resolved acute issues. Duration of the activity was kept limited to maximum 15 minutes, which was ensured by the nurse team leader. As per plan, once the activity is successfully implemented, it is being expanded to cover evening and night shifts.

After approval from the institutional ethics review committee, the sample was raised using universal sampling strategy. All nurses and residents rotating in the PICU who had participated in at least five huddles were approached through the PICU nurse lead. The identity of each participant was kept confidential. The participants submitted their filled-up questionnaires in a sealed envelope at the PICU reception. All participants who filled the questionnaire were supposed to have consented for the study.

Data was collected using a questionnaire that was adopted and modified from an earlier study.[11] As such, the validation of the questionnaire was not done.

The questionnaire comprised 15 questions. Response options were to choose one on a Likert scale or to fill in the field for open-ended questions. The initial questions constituted demographic data and professional experience in PICU.

There was one question each for the knowledge of huddle, staff comfort level for asking questions/raising concerns during huddles, two questions each for their willingness to participate in huddles, and empowerment. And the three questions were on the perception of participant about daily huddles. In the end, the participants were asked to give written suggestions for improvement in the process and making it a valuable activity.

Data was entered into Microsoft Excel and analysed using STATA 15. Likert scale questions were further broken into below-median (strongly disagree to neutral) and equal or above-median (agree and strongly agree). Frequency and percentages were computed. Chi-square test was used to assess significant association of each item with gender, age group and work experience. Additive scores of willingness, empowerment and perception were also calculated. Shapiro Wilk's test was applied to assess the normality of each score. Mean with standard deviation or median with interquartile range (IQR) were computed, as appropriate. Independent sample t-test or Mann-Whitney U test, as appropriate, were applied to assess significant difference in relation to gender, age group and work experience. P<0.05 was considered statistically significant.

Results

All the 50(100%) participants approached completed the study. Of them, 27(54%) were females and 23(46%) were males. Overall, 26(52%) subjects were aged 20-30 years, while 24(48%) were aged 31-50 years. Besides, 16(32%) subjects had PICU work experience <2 years, and 34(68%) had >2 years of experience.

Of the total, 37(74%) subjects strongly agreed that safety huddle had been routinely held in the unit since initiation; 42(84%) felt comfortable sharing their concerns about patient safety; and 37(74%) considered the huddles worthwhile. Majority 42(84%) felt more empowered through huddle participation. Moreover, 45(90%) participants strongly agreed that daily huddle helped them in becoming clearer about their responsibilities. For safety risk assessment, 41(82%) participants acknowledged that safety risks had been assessed and modified in routine huddles. All components of the questionnaire were

Table-1: Participants' responses to different huddle components and their stratification by age, gender and experience.

	By Gender			By Age group (in Years)			By Year of Experience in PICU		
	Female	**Male**	***p*-value**	**20-30**	**31-50**	***p*-value**	**< 2 years**	**2 ≥ years**	***p*-value**
	n (%) n=27	n (%) n=23		n (%) n=26	n (%) n=24		n (%) n=16	n (%) n=34	
Routine Huddles									
Below median	7 (26)	6 (26)	0.990	11 (42)	2 (8)	0.006	4 (25)	9 (26)	0.910
Equal or above median	20 (74)	17 (74)		15 (58)	22 (92)		12 (75)	25 (74)	
Staff Comfort									
Below median	6 (22)	2 (9)	0.190	7 (27)	1 (4)	0.028	3 (19)	5 (15)	0.720
Equal or above median	21 (78)	21 (91)		19 (73)	23 (96)		13 (81)	29 (85)	
Willingness									
Below median	7 (26)	6 (26)	0.990	8 (31)	5 (21)	0.420	4 (25)	9 (26)	0.910
Equal or above median	20 (74)	17 (74)		18 (69)	19 (79)		12 (75)	25 (74)	
Adequacy									
Below median	7 (26)	5 (22)	0.730	6 (23)	6 (25)	0.870	5 (31)	7 (21)	0.410
Equal or above median	20 (74)	18 (78)		20 (77)	18 (75)		11 (69)	27 (79)	
Empowerment									
Below median	4 (15%)	4 (17)	0.800	6 (23)	2 (8)	0.160	2 (13)	6 (18)	0.640
Equal or above median	23 (85)	19 (83)		20 (77)	22 (92)		14 (88)	28 (82)	
Team Responsibilities									
Below median	2 (7)	3 (13)	0.510	2 (8)	3 (13)	0.570	0	5 (15)	0.110
Equal or above median	25 (93)	20 (87)		24 (92)	21 (88)		16 (100)	29 (85)	
Perception									
Below median	6 (22)	6 (26)	0.750	7 (27)	5 (21)	0.610	4 (25)	8 (24)	0.910
Equal or above median	21 (78)	17 (74)		19 (73)	19 (79)		12 (75)	26 (76)	
Safety Risk Assessment									
Below median	6 (22)	3 (13)	0.400	5 (19)	4 (17)	0.810	4 (25)	5 (15)	0.380
Equal or above median	21 (78)	20 (87)		21 (81)	20 (83)		12 (75)	29 (85)	
Family Concerns									
Below median	11 (41)	4 (17)	0.073	12 (46)	3 (13)	0.009	5 (31)	10 (29)	0.890
Equal or above median	16 (59)	19 (83)		14 (54)	21 (88)		11 (69)	24 (71)	

PICU: Paediatric intensive care unit.

Table-2: Additive scoring of huddle variables.

Score Analysis	By Gender			By Age group			By Year of Experience in PICU		
	Female n=27	Male n=23	*p*-value	20-30 n=26	31-50 n=24	*p*-value	< 2 years n=16	≥ 2 years n=34	*p*-value
Routine Huddles	4 (3-5)	4 (3-5)	0.420†	4 (3-5)	4.5 (4-5)	0.019*†	4 (3.5-4)	5 (3-5)	0.110†
Staff Comfort	4.1±0.8	4.3±0.6	0.370ǂ	4.0±0.8	4.4±0.6	0.050ǂ	3.9 ± 0.7	4.4 ± 0.7	0.036*ǂ
Additive Score of willingness to participate in huddles	8 (7-8)	8 (7-9)	0.690†	7.7±1.6	8.0±1.2	0.450ǂ	8 (7-8.5)	8 (7-9)	0.680†
Additive Score of Empowerment	8 (8-8)	8 (8-9)	0.420†	8 (8-9)	8 (8-9)	0.390†	8 (8-8)	8 (8-9)	0.850†
Additive Score of perception about daily huddles	11.4±1.7	12.2±1.5	0.120ǂ	11.4±1.7	12.2±1.5	0.110ǂ	11.5 ± 1.7	11.9 ± 1.6	0.410ǂ

PICU: Paediatric intensive care unit; **p*-value<0.05, ***p*-value<0.0001,† Mann-Whitney U test, ǂ Independent sample t test; * Median value of each question is 4; * Chi Square test was used for categorical analysis; * Mean ± SD and Median (IQR); * T-test or Mann–Whitney U test was used for Score analysis after checking normality; Additive Score of willingness = Willingness + Adequacy; Additive Score of Empowerment = Empowerment + Team_Responsibilities; Additive Score of perception = Perception+Safety_Risk_Assessment + Family_Concerns.

stratified with respect to gender, age group and work experience (Table 1).

The mean score of staff comfort in the daily huddle was 4.2±0.8, mean score of willingness to participate was 7.8±1.4, and the mean additive score of empowerment was 8.1±1.1 (Table 2).

Discussion

Th study gauged the perception of PICU team regarding safety huddles in the hospital. While the findings are in conformity with other studies where it was observed that huddle implementation resulted in improved outcomes, including close-looped communication and collaboration among team members,[17,22-25] it also received feedback from the participants that these huddles should take place in each shift instead of once per day. The study focussed on compliance, comfort, willingness of participants towards huddles continuation, and their sense of empowerment.

In terms of compliance, 74% participants were above the median, which is comparable with a study in Saudi Arabia that revealed initial huddle compliance of 73%, which grew up to 97%.[3] Hence, it is felt there is a major room of improvement in this area at the study site.

With respect to comfort level, it was observed that 84% participants reached above-median level in sharing their thoughts during the huddles. They sensed that the activity was an effective mode of communication among team members. This observation is in line with a study on staff members' perceptions and challenges of the huddle which reported that because of the huddle, nursing and medical staff members had felt more like one team working together in the PICU, rather than separate teams.[2 6]

Regarding participants' view pertaining to huddle continuation, 74% of the team members described that safety huddles were worth the time, and they were willing to continue the huddles in PICU. In their comments, the staff mentioned that ever since the huddle had commenced, they did not have to spend time trying to contact other team members, especially physicians, at the beginning of the day for early decisions. On the other hand, from doctors' perspective, taking part in the huddle had ensured them that they would know from the nursing team which patients they needed to see on an urgent basis, which, in return, helped them effectively organise their rounds and procedures in PICU according to patients' need.

The current study showed that 76% staff thought that matters discussed in the huddles were adequate. These matters included patients' census, shifting from PICU or new expected admissions to PICU, any errors in the preceding 24 hours, documentation and review of infection control bundles, any radiology procedure, like magnetic resonance imaging (MRI), that require patient's movement out of the PICU, or bedside procedure planned for the day, staff concerns, involvement of multidisciplinary teams, any issue affecting patients or employees, and any achievement of department's unit in terms of hospital-based quality indicators. Besides, 90% team members agreed that they felt clearer and more accountable about their responsibilities for the day. They felt much comfortable in early identification and timely resolution of safety issues. The accountability factor was in line with an earlier study which observed it in two ways; at first through coaching and training of relevant participants, and later through establishing processes that required the participants to utilise their skills as patient-related issues emerged before they turn into a serious safety event.[22]

The current study also showed impressive level of empowerment, where 84% of participants felt empowered while participating in huddle. They acknowledged that through huddles they had more credible voice that had led to a higher degree of trust from fellow participants, including the senior management. This coincides with the huddle journey shared by Kylor, a nurse serving at Chambersburg Hospital's ICU. She stated that communication is challenging factor in busy critical care setting. She reported that huddle not only had increased effective communication within the healthcare team, but

had also supported patient safety culture in the hospital. The nurse also mentioned that during huddles when managers encouraged feedback from frontline staff, and adapted to that feedback, the staff felt empowered and was more likely to participate in new initiatives.[27] Another study, focussing on the clinical staff's perspective towards safety huddles, reported that 97% participants agreed that the huddles provided an effective communication system among team members.[6]

With regards to patient safety, the current study observed that before the huddles, time constraint and work pressure were the greatest barriers for the staff to meet and discuss safety concerns. However, its implementation helped 82% of the team members in identifying patient safety risks and highlighting clinical issues in a timely manner. Consistent with this, a comparable study showed that all its participants agreed that the huddles helped them to accentuate the patients' problems accurately.[6]

After discussing patient problems as a team, staff members know that patient safety is a shared responsibility and that they are not alone in developing a safe and effective plan. The same observation was reported by a study which emphasized that patient's safety started with teamwork. Huddles impact the entire team's approach to providing care by emphasising the value of each co-worker in contributing to the care to all patients.[15,18,28]

The participants in the current study were also provided an opportunity to offer their feedback regarding the huddles. The participants stressed over the regularity of these huddles in all three shifts, as it brought ease in their daily tasks. They also felt enthusiastic towards their job due to collaborative teamwork.

The current study, with a 100% response rate, is the first to report staff empowerment at a PICU in a resource-limited setting. The study assessed the first two components, structure and process, of Donabedian's model of quality improvement.[21] The final component, outcome, will be evaluated in a separate study.

However, the study was done at a single centre which affects the generalisability of the findings. Although every effort was made to conduct the safety huddle daily, there were days when it was not possible. Sometimes the time coincided with new admissions or procedures, and sometimes the staff had to attend to some patients. In such situations, the cancellation of the huddle was documented, and justification was noted. Finally, the questionnaire was adopted from literature and, therefore, its validity and reliability were not checked.

Conclusion

Safety huddle was found to be an effective tool to create a safe environment where all members of the team could speak up freely about patient safety concerns, especially in a fast-paced and stressful environment. The PICU staff found it to be a useful platform to share their knowledge, appreciate teamwork and welcome recommendations.

Acknowledgement: We are grateful to all our PICU staff and team members for making this activity a success through their dedication and contribution.

Disclaimer: None.

Conflict of Interest: None.

Source of Funding: None.

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