Enhancement of Pediatric Patients' Safety Culture: Effect ofImplementing,a Guideline Plan in Pediatric Nurses' Performance

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Abstract

Background: *Pediatric safety is standard healthcare, many adverse events that result from medical or nursing errors, which can be reduced by basic principles in improving the quality of clinical services and satisfaction of the pediatric and their families.* ***Aim of the study:*** *Investigate the pediatric nurses' perception of patients' safety culture and to evaluate the effect of implementing a guideline plan on nurses' performance.****Research design****: A quasi-experimental design was used.* ***Settings:****five inpatients/ outpatient pediatric units in Children's Hospital affiliated to Ain Shams University Hospitals.* ***Subjects:*** *A convenience sample of 127 nurses, from the previous setting during three months. Tools, two tools were used to collect data.1) A structured interview questionnaire. 2) Hospital Pediatric Patients' Safety Culture Scale 3) National Patients' Safety Goals Guideline* ***Results:*** *shows that there was a statistically significant improvement was shown post guideline plan implementation (p=<0.05). It is evident also that a statistically significant improvement in nurses' performance as after applying of national patients' safety goals with P<0.05. In addition positive correlation between satisfactory performances of the studied nurses as regards applying the national patients' safety goals and their perceptions* ***Conclusion:****Studied nurses showed an improvement in their performance as regards applying of national patients' safety goals in their work places.****Recommendations:****Emphasize the importance ofimprove negative nurses' perception as regards pediatric patient safety dimensions to provide a best safe culture for pediatric patients care, further research to assess pediatric nurses' perception of patient safety as important issue for pediatric health care should be done in all pediatric hospitals.*

Keywords: *Pediatric, Patients' safety, Guideline plan, Safety culture.*

I. Introduction

Patients' safety culture is an issue for all countries that deliver health services, whether they are privately commissioned or funded by the government. It is not a traditional stand-alone discipline; instead, it isone that integrates into all areas of health care[1].The safety culture of a healthcare organization defined as theindividual and group attitudes,values, perceptions, competencies, and patterns of behavior that support safe practices among nurses in healthcare settings [2].

Safety in healthcare has received substantial attention and developmental challenge worldwide since the late 1990s. In recent years, the issues of patient safety culture have become essential topics in health policyand healthcare practice in several countries. Rapid changes in healthcare aremore considerable attention to safety, which is essential to the efficient, competent of quality care. Safety is considered acondition or state of being resulting from the modification of human behavior and, or designing of the physical environment to reduce hazards, herewith reducing the chance of accidents [3, 4&5].

Sound safety system depends on having a culture that supports and encourages employees to report their errors and near misses. Also, every patient has the right to be treated using the safest procedures available in health facilitiesthat implies freedom from unnecessary or potential harm associated with health care.Therefore, ability to improve the safety of patient care delivery is dependent on the safety culture, or the norms surrounding reactions following an error, the learning that takes place, and the proactive strategies in place to avoid unintentional harm to patientandto prevent future errors[6,7].

International accreditation agencies require patients' safety culture assessment. Such assessment ismost comfortable to conduct thorough surveys that evaluate the perception of healthcare staff on manycomponents of patients' safety culture such as open communication, teamwork, management, and leadershipsupport to patient safety, staffing, incident reporting, and other issues about safety. Consequently,health institution with positive safety culture and understanding of nurses' perceptions about safety culture isessential, because it helps organizations to find the factors that threaten patient safety,

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determine thewillingness of the nurses to improve safety and report. Also, the impact of a positive patient safety culture in changing behavior among nurses is stronger than any rules or regulations [8, 9].

Hospital national patient safety goals include: improvement the accuracy of patient identification, the effectiveness of communication among caregivers, safety of using medications; infection control;implement best practices to surgical site of infections;minimize mistakes in surgery; make sure that the correct surgery is done on the correct patient and at the correct place on the patient's body; mark the procedure site; a time-out is managed immediately before starting procedures; verify that documents and equipment are correct and functioning correctlybefore surgery; decrease the risksof patient harm resulting from falls; motivate patients' active involvement in their care as a patient safety strategy; and identify patient safety risks[10].

Pediatric nurses the first care provider in hospitals, has crucial role in forming the safety culture. Therefore, their understanding of workplace safety would help hospital managers and officials in evaluating programs topromote pediatric patient safety culture. Determining perceptions of nurses about patient safetyculture is also extremely important since it can result in identifying factors threatening pediatricpatient safetyand estimating the preparation and participation of nurses in promoting pediatric safety and providing high quality care as the final product [11, 12].

Pediatric nurses play a vital role in improving the safety and quality of pediatric patient care. Safe and effective care is not dependent only on the knowledge, skills, and behaviors of nurses but also on how those nurses cooperate and communicate in the work environment, which itself is usually part of a larger organization. Nurses, subsequently, play an important role in pediatric patients' safety by monitoring the children for clinical deterioration, detecting errors and near misses, understanding care processes, weaknesses inherent in some systems, and performing countless other tasks to ensure pediatric patients receive high-quality care in different pediatric healthcare settings [13, 14].

Significance of the Study

Patients' safety culture is the cornerstone of high-quality health care; it is one of the crucial aspects thequality of healthcare and a determinant factor in patients' health and lives. Also, it is a global problem,affecting countries at all levels of development [15]. The adverse medical events have still remained as a global challenge, and no country has yet overcome all of its patients' safety problems [16]. So, evaluating the patients' safety culture in the pediatric health care settings will provide a context for action & improvement, and it isvital to implementpatients' safety policies and procedures [17&10].

Everyyear, tens of millions of pediatric patients suffer disabling injuries or death due tounsafe medicalcare. Indeveloped countries 1 in 10 pediatric patients are harmed while receiving hospitalhealthcare. In Egypt, several researches in the patient safety field were going on. But,less attention hasconcentrate on the handling of safety culture issues from the nurses' perception [18].

In Egypt, medical errors and adverse events have been undergoing to increasing media attention and public concern. As a result, the number of legal cases related to medical errors increased from 729 cases in 2010 to 1035 cases in 2013. The health organizations continually strive to reduce medical errors and improvethe quality of health care. Several initiatives carry out to create a culture of pediatric patients' safety mainly through establishing standards and initiating accreditation schemes[19, 20]

Aim of the study
The study aimed to investigate the pediatric nurses' perception of patients' safety cultureand to evaluate the effect of implementing a guideline plan on nurses' performance

Research Hypothesis
The present study hypothesized that the studied nurses will show an improvementin their performance in their workplaces post implementation of the guideline plan.

II. Subjects and Methods
Research design
A quasi-experimental research design.
Research Setting
The study was conducted at five inpatient outpatient pediatric units namely, Neonatal Intensive Care Unit (NICU), Pediatric Intensive Care Unit (PICU), Medical/Surgical Departments, Outpatient Clinics, and Pediatric Emergency Units in Children's Hospital affiliated to Ain Shams University Hospitals.

Research Subjects
A convenience sample of 127 nurses from previously mentioned settings during three months started from the 2nd week of April 2019 to the 2nd week of June 2019.The nurseswere representative from different

units/departments as follows; 33 nurses were working in NICU, 29 nurses were working in PICU, 31 nurses were working in Pediatric Medical & Surgical departments, 18 nurses from Outpatient Clinics, and 16 nurses working in Pediatric Emergency.

Tools of data collection: using the following tools:
Structured Interview Questionnaire: It wasdesigned by the researchers after reviewing literature in this field andused to collect data related to studied nurses' characteristics such as: age, qualifications, gender,years of experience in the units,workplaces, and attendance of training programs about pediatric patients' safety.

Second tool:
Hospital Pediatric Patients' Safety Culture Scale: It adopted from[21]. It included open and closed-end questions to assess the nurses' respondents ofpediatric patient safety grade in their workplaces. Also, it usedto investigate the nurses' perceptions of patients' safety culture, medical errors, and event reporting on their respective units over the precedingthreemonths as nurses' reportedpre/post guideline plan implementation.The scale includes48 items that cover 12 dimensions of pediatric patient safety culture to measure eight areas namely; work area (18 items), supervisor/ manager (4 items), communication (6 items), frequent of events reported (3 items), patient safety grade (1item), hospital (11items), number of events reported (1item), background information (4 items).

The components included in the literature through the twelve following dimensions: open communication; feedback & communication about error; frequency of event reported (in the past three months, how many event reports have filled out and submitted); internal transfers & shift changes; management support for patient safety; non-punitive response to error; organizational learning/continuous improvement; overall perceptions of patient safety; staffing/number of staff;expectations and actions of supervisors/ management for promoting patient safety; teamwork across units andteamwork within units.Time consumed to fill in this scale for each nurse was 10-15 minutes.

Scoring system:
Nurses asked to rate their responses on a 4- point rating scale ranging fromexcellent to poor response. Scoring system ranged between "3" for excellent, "2" for very good, "1" for good, and "zero" for poorresponse. As regards nurses' perception scorewas calculated, whereas nurses' positive perception is the combined percentage of respondents who answered ranged from "3" for excellent, "2" for very good, and "1" for good. Meanwhile,nurses' negative perception is the combined percentage of respondents who answered"zero" for poorresponse.

Third tool:
National Patients' Safety Goals Guideline: Itwas adoptedfrom[22]**World Health Organization, (2016)**and used to assess nurses' performance as regards applying the national patients' safety goals pre and post guideline plan implementation. It covers nine National Patients' Safety Goals (NPSGs):Improve the accuracy of pediatric patientidentification, improve effectiveness of communication among caregivers, improve the safety of using medications, reduce the risks of health care-associated with infections, reconcile patient medications across the continuum of care, prevent health care-associated pressure ulcers, reduce the risk of pediatric patient harm resulting from falls, encourage pediatric patient's active involvement in their care, and identify safety risks inherent inpatient population. Time consumed for assessing each, goal items took 5-10 minutes. For **Scoring**, the total number of goals was 9, each goal scored from five to ten according to a total number of items for each goal that made a total score of 50 grades (equal 100%) for all goals. Accordingly, the scoring system of nurses' actual performance was categorized into either satisfactory done (scored 80%and more) or unsatisfactory done (less than 80 %).

Validity and reliability
The tools were validated by five academic expertsin the field of pediatric nursing and pediatric medicine professor staff; they reviewed the tools for its clarity, relevance, comprehensiveness, and simplicity. The tools were tested for reliability using Cronbach's alpha test which revealed a very good internalconsistency, where the test value reached 0.89 for Hospital Pediatric Patients' Safety Culture Scale.

1. Preparatory Phase
After reviewing the past and currentregional and international related literature covering all aspects of the studyusing available books, journals, articles, and magazines to get acquainted with the research problem and guide the researchers in tools preparation.The study tools were evaluated for its content validityand reliability.

2. Exploratory Phase
A. Pilot study

A pilot study was carried out, including 10% (13) nurses of the studied sample to test the applicability, feasibility of the research tools. Nurses involved in the pilot were included in the primary study sample since there were no radical modifications in the research tools. The final form of the tools obtained and the time needed for completing each tool was also determined.

B. Fieldwork

The actual fieldwork was carried out over three months period, startedfrom the second week of April 2019 till the second week of June 2019, the researchers were available three days per week from 10.00 am to 2.00 pm. The study was carried out through four phases as follow:

*Assessment phase:*The researchers carried out an initial visit and introduced themselves to the nursesin the previous study settings, explained the purpose of the visit, and gave them a simple explanation about the nature of the study, its expected outcomes.Collected data from nurses using the study tools for assessing the nurses' perceptions of patients' safety culture; also assess their performance as regards applying the national patients' safety goals. Data collected were considered as pre-implementation database information (Pre-test)that took two weeks period.

Guideline Plan Development Phase: The guideline plan was aiming to improve the awareness of studied nurses as regards pediatric patients'safety culture that reflected on improving their performance regarding applying of nationalpatients safety goals in their workplaces. It emphasized on the areas of significant deficiency in nurses' perception about all components of patient safety dimensions, the guideline plan involved and confirmed that pediatric nurses must incorporate patient safety culture issues into their clinical and professional work through applied specific objectives in regards to patient safety goals as the following:

- Identify National Patient Safety Goals (NPSGs) which apply to pediatric hospital settings.
- Indicate the importance of the National Patient Safety Goals
- Improve the safety and quality of care delivered to pediatric patients in different pediatric healthcare settings continuously.
- Evaluate the implementation of NPSG's as appropriate to the services provided by nurses in different pediatric healthcare settings.

In implementing the guideline plan, different and suitable teaching methods were considered such as group discussions, role-playing, and demonstrations. Also, audio-visual materials; data show and video were used, in addition to handout for the guideline plan contents.

Guideline Plan Implementation Phase:
Implementing the guideline plan for studied nurses was carried out during this phase. Participants divided into eightgroups; each group composed of eight to ten nurses. The plan lasted for 12 weeks, according to the guideline plan schedule. One week for each group to cover the theoretical parts and practical parts. The duration of each was two days. Each day included two sessions, and each, session took about 30-60 minutes. Sessions started according to nurses' physical and mental readiness taking into consideration the mitigating circumstances of their work at the study settings. At the end of each session, participants nurses' questions were answered to correct any miss understanding.

*Evaluation Phase:*Evaluation of the study outcomes were done after implementing the guideline plan to determine the effect of guideline plan on the nurses' performance as regards applying of patients' safety goals(Post-test) that took two weeks period.

Administrative Design:
Official permission obtained to conduct the study from the hospital manager and head of pediatric nursing departments in the previously mentioned study setting. Also, voluntary acceptance of the study subjects was a pre-requisite to participate in the study.

Statistical Design:
Data were coded and transferred into specially designed formats for data entry, then data were analyzed and computed. The collected data in pre-test and post-test were organized, categorized, tabulated in tables using numbers and percentage, mean percentage, and standard deviation. Chi-square (x^2), t-test and r-test were used to test the associations among the understudied qualitative variables, the statistical package for social sciences (SPSS version 20) used for statistical analysis. Statistical significance was considered at p-value < 0.05 and statistical insignificance at p-value > 0.05.

Ethical Consideration:

Research approval for data collection at the previously mentionedsetting was obtained from hospital administration. Meeting and discussions between the researchers and nursing administration to make them aware of the aims, objectives, and expected outcomes, as well as to get better cooperation during the implementation phase, abright and straightforward clarification to each study subject. They were secured that all the gathered information would be confidential, and used for research purpose only. They were allowed to withdraw from the study at any time and informed consent was gained before their inclusion in the study.

III. Results

Table (1) showed that, 37.8% of the studied nurses were aged ranged from 20 - < 30years with mean ±SD 28.16 ± 4.51 year. As regards the educational level, found that 59% of the studied nurses had a diploma while 41% of them had bachelor degrees. Concerning to their gender, it was found that 72.4% of them were females. Concerning their years of experience, nearly less than half (42.5%) of the studied nurses reported that they had from five : less thanten years of experience working in children's hospitals. Also, the majority of studied nurses had not attended the previous training program for patient safety.

Figure (1) illustrated that, 26% of the studied nurses' working in neonatal intensive care unit, 22.8% of them working in pediatric intensive care unit, 24.4% working in medical & surgical pediatric departments, 14.2% of them working in pediatric outpatient clinic and 12.6% of the studied nurses working in pediatric emergency units.

Figure (2): The score of the studied nurses' respondents of pediatric patients' safety gradeindicates that 42.4% and 33% of the studied nurses'respondents assessed patient safety in their work settings scored as very good and acceptable respectively post guideline plan implementation.

Table (2): illustrated that there were differences in the mean score of studied nurses' positive perceptions concerning to all dimensions of patient safety pre and post guideline plan implementation, which indicated statistically significant differences at p < 0.05. Statistically insignificant difference P > 0.05 found as regards patient safety dimensions, namely management support for patient safety and teamwork across units.

Table (3): clarified that the majority (94.5%) of the studied nurses not reported events pre guideline plan implementation compared to approximately one third (31.5%) of them post the guideline plan implementation over the past three months. 16.6 % acknowledged reporting 11 to 20 events pre the guideline plan implementation compared to 83.4% of them post the guideline plan implementation that reflected highly statisticallysignificant differences pre and post the guideline plan implementation in the number of events reported (P < 0.001).

Table (4): demonstrated that there were differences in the mean score of the satisfactory nurses' performance as regards applying national patients' safety goals pre and post guideline plan implementation that reflected a statistical significant improvement in studied nurses' performance at p< 0.05.

Table (5): Illustrated that there was significant positive correlation between satisfactory performances ofthe studied nurses as regards applying national patients' safety goals and their perceptionsabout patient safety dimensions pre and post guideline plan implementation. Whereas, studied nurses' satisfactory performance was associated with positive perception of them post guideline plan implementation.

Table (1): Characteristics of the studied nurses (n=127)

Items	No	%
Age (in years)		
• 20 - < 30	48	37.8
• 30 - < 40	42	33.1
• 40 – 50	37	29.1
Mean± SD	**28.16 ± 4.51**	
Qualification:		
• Diploma	75	59.0
• Technical Institute	32	25.3
• Bachelor	20	15.7
Gender:		
• **Male**	35	27.6
• **Female**	92	72.4
Years of experience in the Units:		
• <5 year		33.0
• 5:<10 years	42	
• > 10 years	54	42.5
	31	24.5
Mean± SD	**10.4 ± 4.3**	
Attending Training Program related to Pediatric Patients'		

Safety:		
• **Yes**	15	11.8
• **No**	112	88.2

Figure (1): Distribution of the studied nurses as regards their working places (n=127)
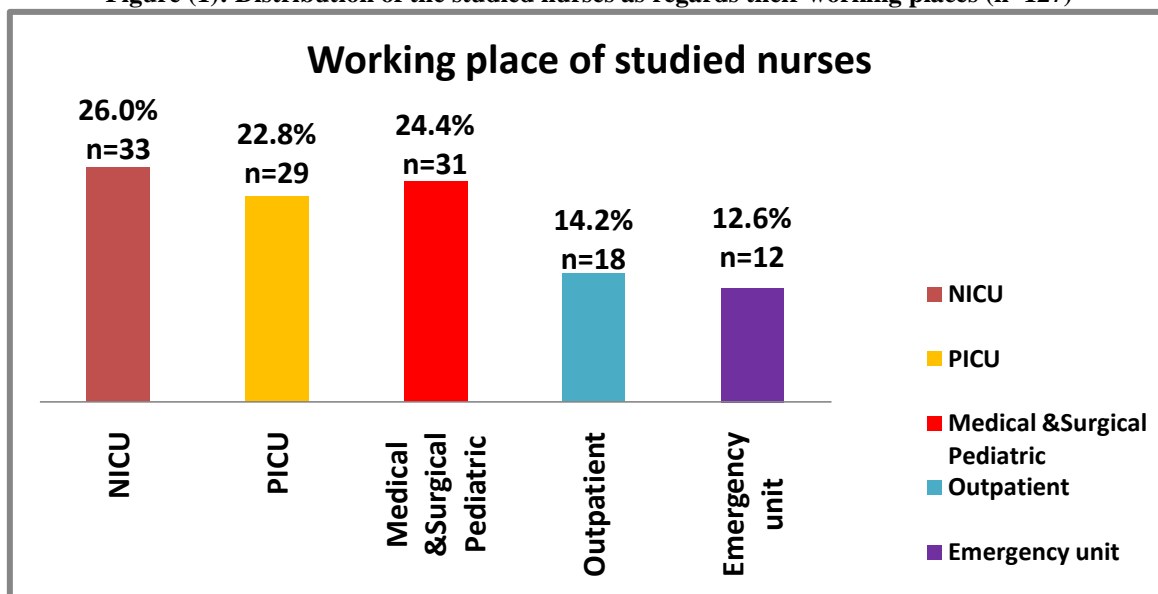

Figure (2): Distribution of studied nurses' respondents of pediatric patients' safety grade post guideline plan implementation.
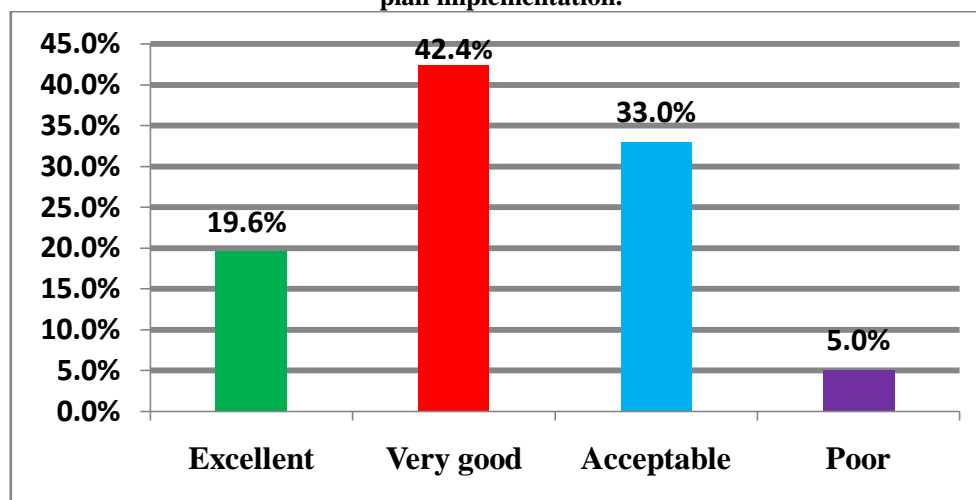

Table (2): Mean score of the studied nurses' positive perception in relation to patient safety dimensions pre and post guideline plan implementation

Patient Safety Dimensions	Nurses' positive perception		Paired t- test	P-Value
	Pre **Mean ±SD**	**Post** **Mean ±SD**		
1. Open communication.	3.3 ± 0.57	3.9 ± 0.73	3.2	0.05*
2. Feedback and communication about error.	3.2 ± 0.58	4.1 ± 0.83	6.7	0.01*

3.	Frequency of events reported.	3.1± 0.88	4 ± 0.92	4.4	0.03*
4.	Internal transfers and shift changes.	3 ± 0.73	3.7 ± 0.82	3.1	0.05*
5.	Management support for patient safety.	3.8 ± 0.44	3.7 ± 0.42	.96	0.07
6.	Non-punitive response to error.	3.1 ± 0.70	4.01± 0.93	6.6	0.01*
7.	Organizational learning—continuous improvement.	4.14 ± 0.64	4.4 ± 0.77	1.9	0.06
8.	Overall perceptions of patient safety.	3.5 ± 0.50	3.9 ± 0.74	3.1	0.05*
9.	Staffing/ number of staff.	3.1 ± 0.88	4.0± 0.92	4.4	0.03*
10.	Expectations and actions of supervisors/ management for promoting patient safety.	3.3 ± 0.62	4.2 ± 0.92	7.1	0.00*
11.	Teamwork across units.	3.6 ± 0.61	3.9 ± 0.86	.87	0.09
12.	Teamwork within units.	3.0± 0.73	3.7 ± 0.82	3.1	0.05*

*Statistical Significant Difference P<0.05
Statistical Insignificant Difference P> 0.05

Table (3): Number of reporting events regarding patients' safety in the past 3month's pre and post guideline plan implementation as reported by studied nurses

Number of events reported over last3 months	Total number of nurses n=127 (100%)				Test of significance	
	Pre		Post			
	No	%	No	%	X^2	P-Value
No events reported	120	94.5	40	31.5	20.1	0.0**
1 to 2 events reported	23	18.2	104	81.8	14.9	0.0**
3 to 5 events reported	56	44.0	81	63.8	8.7	0.0*
6 to 10 events reported	34	26.4	102	80.3	21.5	0.0**
11to 20 events reported	21	16.6	106	83.4	12.2	0.0**
21 events reported or more	35	20.5	89	70.1	17.01	0.0**

** Highly statistically significant p < 0.001

Table (4): Mean score of the satisfactory nurses' performance as regards applying national patients' safety goals pre and post guideline plan implementation.

National Patients' Safety Goals	Satisfactory Nurses' Performance		Test of significance	
	Pre Mean ±SD	Post Mean ±SD	t- test	P-Value
1. Improve accuracy of patient identification.	3.5 ± 0.50	3.9 ± 0.74	3.1	0.05*
2. Improve the effectiveness of communication among caregivers.	3.3± 0.62	4.2 ± 0.92	7.1	0.00*
3. Improve the safety of using medications	3.1± 0.88	4 ± 0.92	4.4	0.03*
4. Reduce the risks of health care associated infections.	3.1 ± 0.70	4.01± 0.93	6.6	0.01*
5. Reconcile patient medications across the continuum of care.	3.1 ± 0.88	4 ± 0.92	4.4	0.03*
6. Prevent health care-associated pressure ulcers	3.3± 0.62	4.2 ± 0.92	7.1	0.00*
7. Reduce the risk of patient harm resulting from falls.	3.3 ± 0.57	3.9 ± 0.73	3.2	0.05*
8. Encourage patient's active involvement in their care.	3.1 ± 0.70	4.01± 0.93	6.6	0.01*
9. Identify safety risks inherent in patient population.	3.7 ± 0.62	4.0 ± 0.69	2.3	.02*

*Statistical Significant Difference P< 0.05

Table (5): Correlation between the studied nurses positive perception of pediatric patients' safety dimensions and their satisfactory performance as regards applying of national patients' safety goals pre/post guideline plan implementation.

Satisfactory Nurses' Performance	Nurses' Positive Perception		Test of significance	
	Pre (%)	Post(%)	r- test	P-Value
1. Improve accuracy of pediatric patient identification.	13.4	86.6	0.356	<0.001**
2. Improve the effectiveness of communication among caregivers.	3.9	96.1	0.343	<0.001**
3. Improve the safety of using medications	35.4	64.6	.486	<0.05*
4. Reduce the risks of health care associated infections.	23.6	76.4	.305	<0.001**
5. Reconcile patient medications across the continuum of care.	26.8	73.2	.290	1.626**
6. Prevent health care-associated pressure ulcers	43.3	56.7	0.294	<0.05*
7. Reduce the risk of patient harm resulting from falls.	18.9	81.1	.245	<0.001**
8. Encourage patient's active involvement in their care.	6.3	93.7	.196	<0.001**
9. Identify safety risks inherent in pediatric patient population.	22.0	78.0	0.327	<0.001**

*Statistically significant at P<0.05

**Highly statistically significant at P <0.01

IV. Discussion

Worldwide over 875,000 children less than 18 years old die annually as results of injuries that are considered consequences of the nursing care errorsand poor quality of care. Where many practical procedures carried out by a nurse can be a source of injuries that is resulting from negligent or substandard care. So nurses should have broad knowledge, demonstrate expert clinical practice regarding pediatric patient'ssafety [23&15]. Consequently, each pediatric health care setting should develop and adopt a written, comprehensive plan for pediatric patient safety during the time of hospitalization, which must be reviewed and updated annually [24].

The current study aimed to investigate the pediatric nurses' perception of patients' safety culture and to evaluate the effect of implementing a guideline plan on nurses' performance as regards applyingnational patient safety goals.

As regards the characteristics of studied nurses, the present study (Table 1) revealed that the mean age was 28.16 ± 4.51 years. This result was similar with the study of[15], about "Patient safety culture in hospitals within the nursing perspective" in Brazil, who found that the mean age of participant' nurses in their study was 28 years, ranging between 22 to 46 years old.

According to nurses' qualification and their gender, the results of the present study illustrated that more than half of the studied nurses had a diploma of nursing, and near to three-quarters of them were females. These results were supported by the study of[25], who studied "Hospital disaster prepared: meeting the requirement for the worst and pre-hospitaland disaster" found that more than two-thirds of nurses had a diploma. On the other hand, this finding not supported by [26],who carried out "a hospital survey on patient safety culture" in the upper west region of Ghana, found thatthe educational degree of thevast majority of studied nurses in their study was bachelor's degree.

Concerning nurses' years of experience, the present study revealed that nearly less than half of the studied nurses reported that they had from five to less than ten years of experience working in children's hospital;This may have been due to that the majority of studied sample had nursing diplomas and were more than 30 years old. This result was contradicting with the results of[27],studied"The culture of safety" in Karachi; found that three quarters of studied nurses had less than ten years of experience.

Moreover, the current study revealed that the majority of the studied nurses did not attend any previous training program about pediatric patients' safety. It could be due to the hospital budget, is not enough to establish training courses for nurses, as well as due to increased workload and limited time to attend the training courses. While,[28], studied "A baseline assessment of patient safety culture among nurses at student university hospitals" mentioned that, it is crucial to provide orientation and continuous in-service educational programs especially for newly hired nurses on safety which vital for nurses in order to maintain a safe work environment for a pediatric patient.

As regards theworkplace of studied nurses, more than a quarter working in neonatal intensive care, less than a quarter of studied nurses working in pediatric intensive care and medical & surgical

units,respectively. The rest of them were working in outpatient & emergency units respectively. This result was in accordance with[29], who studied "effect of nursing intervention on child safety at pediatric health care units" mentioned that two hundred of participants' nurses were working in medical/surgical wards and critical care units at Tanta university hospital From the researchers point of view, the highest number of nurses and positive response must obtained in critical care units because the nurses were working in critical care units having workload more than nurses working in the general wards.

As regards the studied nurses' respondents in patients safety gradepost guideline plan implementation, results of the current study (figure 2) showed that less than half and slightlyone-third of the studied nurses respondto patient safety in their work settings scored as very good and acceptable respectively post guideline plan implementation. These results were supported by[30], who studied "patient safety: Assessing nurses' perception and developing an improvement plan" Egypt, mentioned thatmost nursesassessed the patient safety less than half were average, more than one third were very good, and the rest of them were excellent.

In the same line, another study carried out by[31], who found that more than two-thirds of participants nurses in pediatric patient safety werescored as average, less than one-quarter of them scored very good &excellent, and the rest of nurses were scored poor and very poor in Dutch study conducted in twenty-sixemergency units with 730 professionals observer. It can stimulate reflection by professionals, thereby influencing patient safety evaluation in the places where they work. From the researchers' point of view, continuous supervision, and applying non-punitive culture in hospitals will lead to an increase in the nurses' respondents to pediatric patients' safety.

On investigating nurses positive perception about patient safety dimensions pre and post guideline plan implementation, the present study (table 2) showed thatthere were differences in the mean score of studied nurses' positive perceptions concerning twelve dimensions of patient safety pre and post guideline plan implementation which indicated statistically significant differences at $p < 0.05$.While statistically insignificant difference with P-value > 0.05.As regards patient safety dimensions, namely management support for patient safety and teamwork across units.Similar study was in agreement with[32], who studied"the culture of patient safety from the perspective of the pediatric emergency nursing team," reported thatthe overall percentage of nurses have positive responses to patient safety culture than negative responses.However this contradicted with[33], who studied"the perception of healthcare providerstoward patient safety at university hospitals" in Egypt who reported that, negative perception of nurses toward patients' safety culture.

Concerning the numberof error reported by studied nurses in the past three months, the current study (table 3) clarified thatlittle percentage of nurses were reported events at the beginning of this study while by the time it was found a highly statistically significant differences in the number of events were reported by the studied nurses post guideline plan implementation. Similar studies were done by[34], entitled "Hospital survey on patient safety culture and perception of patient safety in public hospitals" in Turkey&[34], entitled "Measuring teamwork and patient safety attitudes of high-risk areas" theyconcluded, not all incident events are reported, due toactual harm occurs, and the incident events were a close call or near missing. From the researchers' point of view, responses to errors arean important determinant of safety culture,especially for pediatric patients. Also, the reasons for unreported events may be due to punishment culture or afraid the nurses to report errors due to untrusted their management, so nurses choose not to report the events to avoid punishment. Besides, events reportedwere influenced by feedback, open safety communication about error, teamwork, non- punitive response to the error, supervisor expectations, actions promoting pediatric patients' safety, and type of hospital.

By observing the satisfaction of nurses' performanceregards national patient' safety goals, the current study findings (table 4)revealed, significant improvement in nurses' satisfactory performance between pre and post guideline plan implementation. This finding was supported by the study of[31], who studied"culture associated with patient safety in the emergency department" mentioned , critical departments where the safety culture is already better structured present and evaluations regarding patient safety. Additionally, illustrated how much the safety culture of pediatric emergencies needed to improve, seeking to reduce hierarchy gradients, strengthen the communication processes, and the work between the staff, with a sufficient quantity of appropriate working and professional conditions. From the researchers' points of view, discuss training aspects related to pediatric patients, replace the punitive approach and strengthen the notification systems these lead to the nurses learn from the mistakes that occur in the institution, and improving patient safety.

According to the correlation between thenurses positive perception and their satisfactory performance as regards applying of national patients' safety goals pre/ post guideline plan implementation. Current study results (Table5), revealed that there was significant positive correlation between nurses' performance and their perceptionsaboutpediatric patients' safety dimensions pre and post guideline plan implementation. Whereas, studied nurses' satisfactory performance was associated with positive perception of them post guideline plan implementation, findingsweresupported by[36], who studied "Nursing performance and Perception by implementing team steps in an emergency department" reported, the highest positive response of studied nurses

was achieved in four items of nurses' performance; overall perception of patient identification, communication with patient and caregiver, decrease the risk of infection and potential harm to patient and share the patient is in care. While the lowest percentage were using prescribed medication,therefore, there is a need for training on patient safety for nursing staff, and this training could include strategies.

V. Conclusion

The present study concluded that, results ofthe implementation of the guideline plan, the studied nursesshowed an improvement in their performance as regards applying national patients' safety goals in their workplaces. These study findings were supported the study hypotheses.

VI. Recommendations

Based on the study findings, the following recommendations are:

1. Emphasize the importance ofimprove negative nurses' perception as regards pediatric patient safety dimensions to provide the best safe culturefor pediatric patients care.
2. Pediatric Health care organizations should focus on continuous systems improvement through continuous educational sessions in order to effectively minimize errors and improve pediatric patient safety.
3. Written guidelines regarding pediatric patients' safety should be available in all pediatric health care settings,and the patients should be closely monitored for potential errors.
4. All nurses working in pediatric health care settings should complete regular periodic in-services training programs to keep them up to date regarding patients' safety culture.
5. Orientation programs about pediatric patients' safety culture for newly enrolled staff nurses working in different pediatric health care settings.
6. Further studies to assess pediatric nurses' perception of patient safety as an important issues for pediatric health care in pediatric hospitals.
7. Replicated the study with a large sample size to be generalized.

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