EFFECTIVENESS OF TIME OUT PROCEDURE PROTOCOL ON KNOWLEDGE AND SKILL REGARDING PATIENT SAFETY AMONG OPERATING ROOM NURSES AT SELECTED HOSPITALS, CHENNAI, 2018

DISSERTATION SUBMITTED TO

THE TAMIL NADU Dr. M.G.R. MEDICAL UNIVERSITY, CHENNAI

IN PARTIAL FULFILMENT OF REQUIREMENT FOR THE DEGREE OF

MASTER OF SCIENCE IN NURSING

OCTOBER 2018

Internal Examiner:

External Examiner:

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LIST OF ABBREVIATIONS

ANOVA	-	Analysis of Variance
AORN	-	Association Peri-Operative Registered Nurses
CINAHL	-	Cumulative Index to Nursing & Allied Health Literature
CMPA	-	Canadian Medical Protective Association
DALYs	-	Disability Adjusted life Years
ICCR	-	International Centre for Collaborative Research
JC	-	Joint Commission
MEDLINE	-	Medical Literature Analysis and Retrieval System Online
NPSGs	-	National Patient Safety Goals
OR	-	Operating Room
PUBMED	-	Public/ Publisher Medline
SD	-	Standard Deviation
SSC	-	Surgical Safety Checklist
SSI	-	Surgical Site Infection
WHO	-	World Health Organization
WSS	-	Wrong Site Surgery
USA	-	United States of America

LIST OF SYMBOLS

& - And

F - ANOVA

’ - Apostrophe or Single Quote

* - Asterisk or Star

‘r’ - Coefficient of correlation

] - Closed bracket

) - Close parenthesis

: - Colon

, - Comma

. - Dot or Full Stop

= - Equals to

/ - Forward Slash

- - Hyphen

X - Intervention

< - Less than

> - More than

≥ - More than or equal to

p - Level of Significance

n - Number of samples

O - Observation or measurement of the dependent variable/outcome

[- Open bracket

(- Open parenthesis

% - Percentage

+/- - Plus or Minus

? - Question mark

“ - Quotation mark

; - Semicolon

‘t’ - Test statistic for t-tests

N - Total number of samples

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ABSTRACT

Effectiveness of time out procedure protocol on knowledge and skill regarding patient safety among operating room nurses at selected hospitals, Chennai.

ABSTRACT:

Background: Patient safety is a discipline that emphasize safety culture in health care through the prevention, reduction, reporting, and analyzing of medical and surgical error that often leads to adverse effects. ***Aim and Objective*****:** To assess and compare the effectiveness of time out procedure protocol on knowledge and skill regarding patient safety among operating room nurses. ***Methodology***: A Pre - experimental post test only design and a Quantitative approach was adopted to assess the effectiveness of time out procedure protocol on knowledge and skill regarding patient safety among 60 operating room (OR) nurses (30) each in study and control group, who were working as a OR nurse holds > 6 months of working experience at SIMS Hospital, Vadapalani and Nungambakkam, Chennai. Lottery method was used to divide the setting. Need assessment was performed and OR nurses who scored ≥ 3/6 and who fulfilled the inclusion and exclusion criteria using non - probability purposive sampling technique were selected as samples. Timeout procedure protocol was administered and the level of knowledge and skill was assessed by using structured knowledge questionnaire and observational checklist. ***Results*****:** The study findings revealed that the post test mean knowledge score was 14.60 with SD of 2.66 in study group and 9.40 with SD of 1.93 in control group, and their post test mean skill score was 9.77 with SD of 1.17 in study group and 4.63 with SD. 1.82 in control group. The calculated student independent 't' value (8.66 and 12.96) for knowledge and skill among the study and control group. indicates that there was a very high statistical significance at $p<0.001$. ***Conclusion*****:** The results unfolds that the time out procedure protocol was effective in improving the knowledge and skill regarding timeout procedure in OR and can be utilized as a tool to evaluate the knowledge and skill of OR nurses.

Keywords: *timeout procedure, patient safety in operating room, surgical safety checklist*

INTRODUCTION

Patient safety is a discipline that emphasize safety culture in health care through the prevention, reduction, reporting, and analyzing of medical and surgical error that often leads to adverse effects. Patient safety is a fundamental principle of health care delivery system. Every point in the process of care-giving contains certain degree of inherent unsafety. Organization should bring up a patient safety environment with clear policies, leadership

training, safety improvements through quality markers, skilled health care professionals and their effective involvement of patients in their care, all these ingredients are needed to ensure sustainable and significant improvements in patient safety of health care. Patient safety helps doctors, nurses and all other health care professionals practice safe and better health care. Therefore, it is good not only for patients but for everyone in healthcare team.

The World Health Organization calls patient safety an endemic concern as there is an impact of health care errors lies 1 in every 10 patients around the world. despite many advances in the surgical environment, there is still a lot of work to do to improve patient safety in operating room and throughout pre and post-operative care, death and illness still arises as a result of surgical site infections, patient misidentification, wrong site surgery, mistakes and omissions.

The major purpose of the research study is to create patient safety environment in operating room and to update the operating room nurse's knowledge and skill on accurately performing timeout procedure and follow Surgical safety checklist, recommended by WHO.

Objectives

1. To assess the level of need for time out procedure protocol regarding patient safety among operating room nurses in study and control group.
2. To assess the effectiveness of time out procedure protocol on knowledge and skill regarding patient safety among operating room nurses between study and control group.
3. To correlate the post test mean knowledge score with skill score regarding time out procedure protocol among operating room nurses in the study group and control group.
4. To associate the selected demographic variables with post test mean of knowledge and skill score regarding time out procedure protocol among operating room nurses in the study group and control group.

Null Hypotheses

NH_1: There is no significant difference in the post test level of knowledge regarding time out procedure protocol on patient safety among operating room nurses between study and control group.

NH_2: There is no significant correlation between the post test level of knowledge with skill regarding time out procedure protocol among operating room nurses in the study group and control group.

NH_3: There is no significant association of the selected demographic variables with post test mean score of knowledge and skill regarding time out procedure protocol among operating room nurses in the study group and control group.

METHODOLOGY

A pre-experimental research design and a quantitative approach was adopted. The independent variable was Timeout procedure protocol and the dependent variables were knowledge and skill regarding patient safety in OR among OR nurses. The main study was conducted at SIMS Hospital, Vadapalani (setting I – study group) and Nungambakkam (setting II – control group) setting was divided using lottery method. Need assessment was performed to screen the samples and those who scored ≥ 3/6 and who full filled inclusion criteria using Non-probability purposive sampling technique 60 OR nurses (30 in each study and control group) were selected as samples.

The investigator administered Time out procedure protocol to the study group through a lecture cum discussion (30 minutes) and through role play demonstration and return demonstration (15 minutes) on timeout procedure was performed by the samples and the total duration of intervention was about 45 minutes and usual hospital routine for control group.

On the seventh day, the post test level of knowledge and skill was assessed using structured knowledge questionnaire and observational checklist for both the group. After completion of post test, on the same day Timeout procedure protocol was executed to the control group.

Similarly, OR nurses from both the groups were reinforced with help of a booklet and poster and reminder was sent daily through WhatsApp technology. The collected data was analyzed using descriptive statistics such as mean and standard deviation and inferential statistics such as 't-test, chi-square test, Spearman rank correlation' was used to show the statistical significance.

RESULTS

- The findings of the study revealed that, the comparison of post test mean knowledge score showed that, the mean knowledge score in study group was 14.60 with standard deviation 2.66, whereas in control group the mean knowledge score was 9.40 with standard deviation 1.93 and the mean difference was 5.20. The calculated 't'value was 8.66 using student independent t-test, which was found to have a very high statistical significance at $p<0.001$

level. This inference unveils the effectiveness of the intervention in improving the knowledge in study group.

- In study group while comparing the post test level of skill, the mean skill score was 9.77 with standard deviation of 1.17, whereas in control group the mean post test level of skill score was 4.63 with standard deviation and the mean difference was 1.82. The calculated 't'value was 12.96 using student independent t-test, which was found to be very high statistical significance at $p<0.001$ level. Thus, evidently proves that the OR nurses in study group had performed the timeout procedure better when compared with the control group. This ascertains the effectiveness of the demonstration of Timeout Procedure Protocol by the investigator.
- The correlation between the post test mean knowledge score with skill score revealed that, the calculated 'r' value among study and control group, $r = 0.48$ and 0.18 respectively, which showed a very high statistical significance that there was a positive moderate correlation between knowledge and skill at $p<0.001$ level. Hence improving knowledge regarding Timeout procedure protocol has also enhanced the skill in study group.
- The association of selected demographic variables with post test mean knowledge and skill score in the study group revealed that there is a statistical significant association with regard to the demographic variables such as age in years (41 – 50), experience (> 5 years), overall clinical experience (>5 years). None of the variables in the control group showed any statistically significant association with knowledge and skill.

DISCUSSION

The study findings revealed that the Timeout procedure protocol improved the level of knowledge and skill regarding patient safety in OR among OR nurses.

CONCLUSION

The findings proved that the Timeout procedure protocol was effectively improved the knowledge and skill regarding patient safety in OR among OR nurses.

IMPLICATION

- **Implementation of Timeout procedure:**

- Prevents harm in operating room.
- Improves quality patient care in operating room.
- Enhanced performance of the surgical team.
- Improves communication between the surgical team members.
- All aspects of the operation can be monitored in a standardized way.
- Brings new concept of patient-centered safety culture in operating room.
- It is an opportunity for other members of the team to share their thoughts regarding surgical intervention.
- Ultimately adheres to the code of ethics- ***"Do no harm"***
- Builds an environment of trust in staff who were empowered to report patient safety events without fear of reprisal.
- It enables, the team to comes together and increases the chances that all members will have the situational awareness needed to prevent harm.
- Establishes leadership training within the team and empowers all the members need to be empowered to work on behalf of the patients.
- Nurses has to be empowered to act as a ***"Nurse Advocate"*** role.

CHAPTER – 1

INTRODUCTION

INTRODUCTION

Thousand years back, The Greek Healers in the fourth century BC, drafted a Hippocratic promise and vow to "endorse regimens which is useful for patients based on their capacity and judgement and never do harm to anybody". From that point onwards, they inferred primum non nocere (first do no harm) which turned out to be the primary need in health care industry.[1, 2]

Patient safety is a discipline that emphasize safety culture in health care through the prevention, reduction, reporting, and analyzing of medical and surgical error that often leads to adverse effects. [3] The frequency and magnitude of near and never miss events experienced by patients were not revealed until 1990's, even when various countries from different health care agencies reported number of patients were harmed and killed by medical and surgical errors.[2]

Patient safety is a fundamental principle of health care delivery system. Every point in the process of care-giving contains certain degree of inherent unsafety. Few countries have published studies showing that significant number of patients are harmed while receiving health care facility. This may result in permanent injury, increased length of stay in health care facility, or even death.[4]

Patient safety helps doctors, nurses and all other health care professionals to practice safe and better health care. Therefore, it is good not only for patients but also for everyone in healthcare team.[5]

"World Patient Safety Day" is celebrated annually on 17th September, the financially imperative of patient safety was stressed greatly, seeking prioritization and unwavering support and commitment Globally from all delegates for patient safety [5]

The impact of health care errors lies 1 in every 10 patients around the world, the world health organization calls patient safety an endemic concern.[6]

The magnitude and impact of errors in health care was not appreciated until the 1990's, in 1999, the Institute of Medicine (IOM) of the National Academy of science released a report, To Err is Human: Building a Safer Health system. They made efforts to establish a center for patient safety, expanded reporting of near and never miss events, development of safety programs in health care organization. The media focused on statistics from 44,000 to 98,000 preventable deaths annually due to medical error in hospitals, 7000 preventable deaths related to medication errors alone. [7]

Despite many advances in the surgical environment, there is still a lot of work to do to improve patient safety in operating room and throughout pre and post operative care, death and illness still arises as a result of surgical site infections, patient misidentification, wrong site surgery, mistakes and omissions. [8]

1.1 BACKGROUND OF THE STUDY

WHO, (2018) [6] reported that 1 in 10 hospitals admission lead to an adverse event and 1 in 300 admissions in death. An adverse event could range from the patient spending extra day in hospital and also adds unintended medical and surgical errors are the big threat to patient safety.

British Medical Journal, quoted that 5.2 million errors happening in India annually, like any other developing country a lot of medical errors are recorded in India, the reason behind is that due to lack of trained doctors and nurses to measure the clinical outcomes. **[Source: - A Harvard study by Prof. Dr. Giridhar J.Gyani, (2017)]** [9]

More than 200 million surgeries are performed worldwide each year and recent reports revealed that adverse event rates for surgical conditions remain unacceptably high, despite multiple patient safety initiatives. These include '100,000 lives campaign' (2005/2006); and '5 million lives campaign' (2007/2008), by institute of health care improvement, the surgical care improvement project' (2006) and universal protocol (2009) by joint commission and WHO, "safe surgery saves lives" (2009). They say patient care must be delivered safely by utilizing safety guidelines, and patient safety system should focus on building a culture of safety that encourages communication, trust and honesty. **[Source: - An Abstract proposed By Fernando J.kin, Rodrigo Donalisio da silva, Diedra Gustafson, Leticia nogueria, thimothy harlin and David Paul (2016)]** [10]

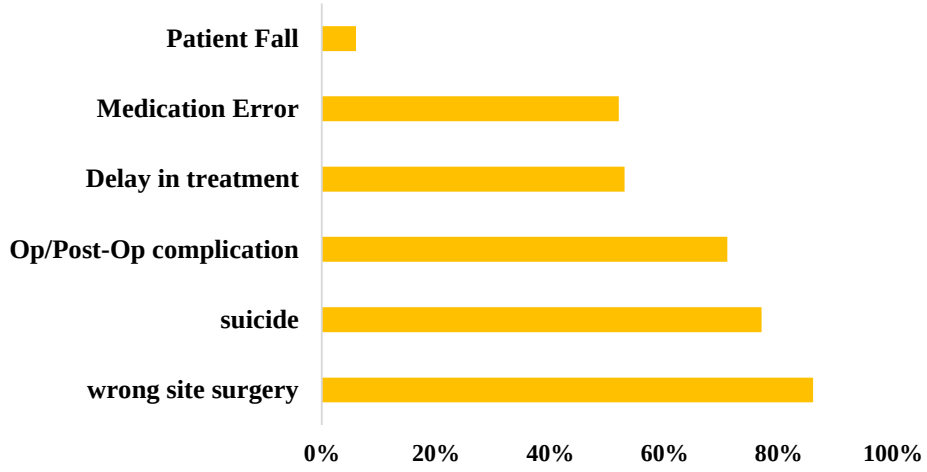

Figure 1.1.1 Most frequently reported sentinel events by joint commission.

[Source: The Joint Commission, 2009] [11]

The above figure depicts that wrong site surgery was the most frequently reported sentinel event which indicates an urgent need for call towards the preventive actions against the occurrence of wrong site surgery

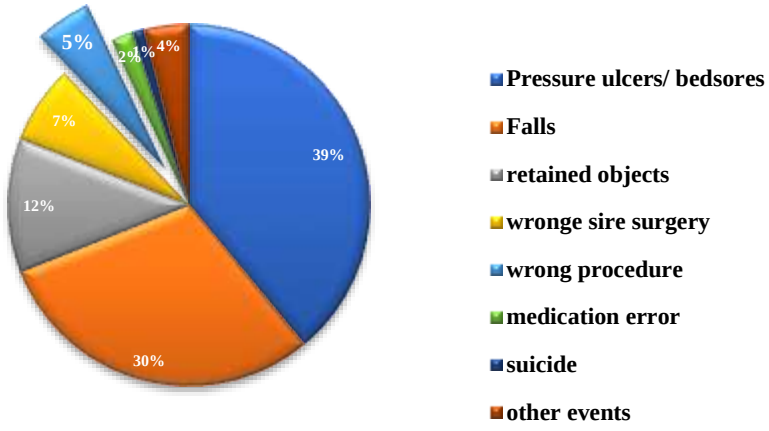

Figure 1.1.2 Most frequently reported Adverse events.

[Source: Adverse Health Events in Minnesota, Fifth Annual Public Report. St. Paul, MN: Minnesota department of health; January 2009] [12]

The above figure depicts that wrong procedure was one of the most frequently reported adverse event in Minnesota during the period of 2009.

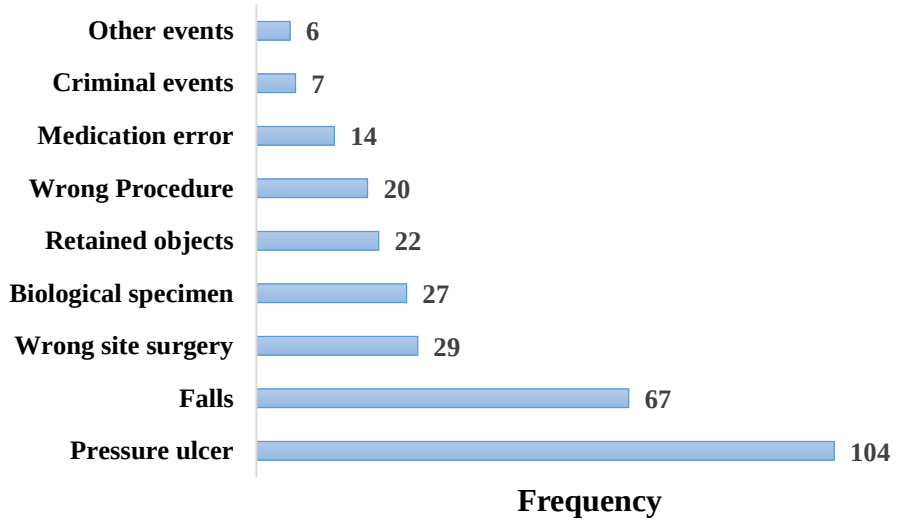

Figure 1.1.3 No. of Adverse events in 2015.

[Source: Adverse Health Events in Minnesota, Twelfth Annual Public Report. St. Paul, MN: Minnesota department of health; October 2015] [13]

The above figure depicts The No. of Adverse events in Minnesota, 29 cases of wrong site surgeries were reported in 2015.

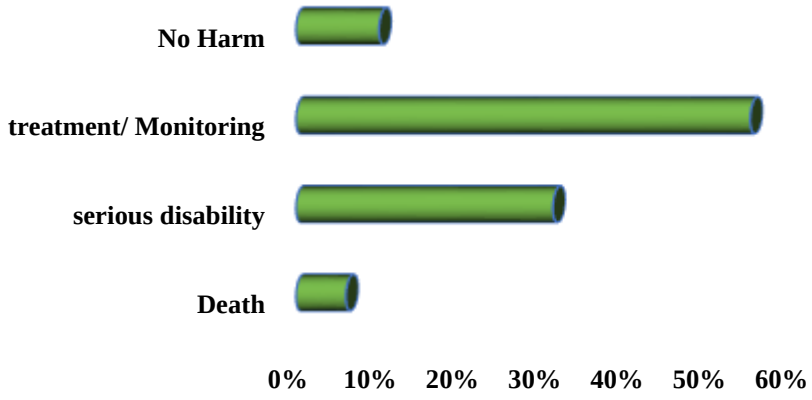

Figure 1.1.4 Outcomes of Adverse Events.

[Source: Adverse Health Events in Minnesota. Fifth Annual Public Report. St. Paul, MN: Minnesota department of health; January 2009] [12]

The above figure depicts that treatment or monitoring was the major outcome of adverse events in 2009.

Table 1.1.1 Root Causes for adverse events in OR

S.No	Root Causes for Adverse events in OR	Percentage
1	Rules/ Policies/ Procedures	63
2	Communication	58
3	Environment/ Equipment	45
4	Training	38
5	Barriers	20
6	Fatigue/ Scheduling	6

[Source: Adverse Health Events in Minnesota. Fifth Annual Public Report. St. Paul, MN: Minnesota department of health; January 2009] [12]

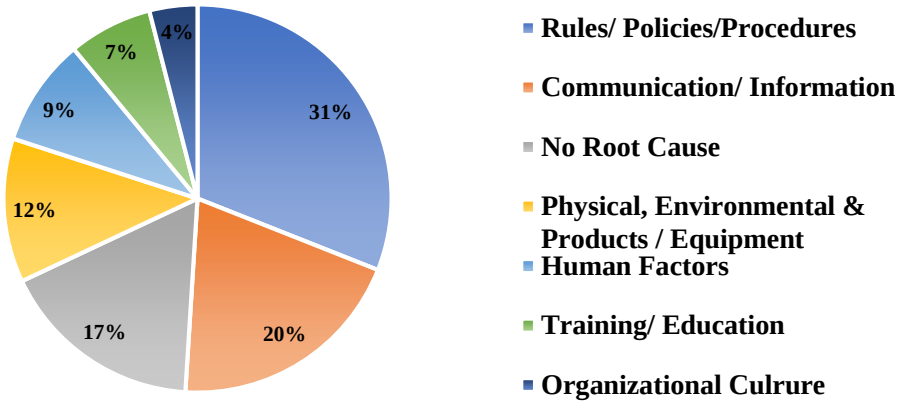

Figure 1.1.5 Root Cause Analysis for the occurrence of Adverse events

[Source: Adverse Health Events in Minnesota, Twelfth Annual Public Report. St. Paul, MN: Minnesota department of health; October 2015] [13]

The above figure depicts improper adherence to rules, policies, and procedures were the top reason for occurrence of adverse events and communication breakdown occupies the second reason for adverse events.

In the previous Table 1.1.1 Training causes 38% of Adverse events in 2009, whereas in 2015 Training holds only 7%. variations were found in causes such as new cause like Organizational Culture in 2015.

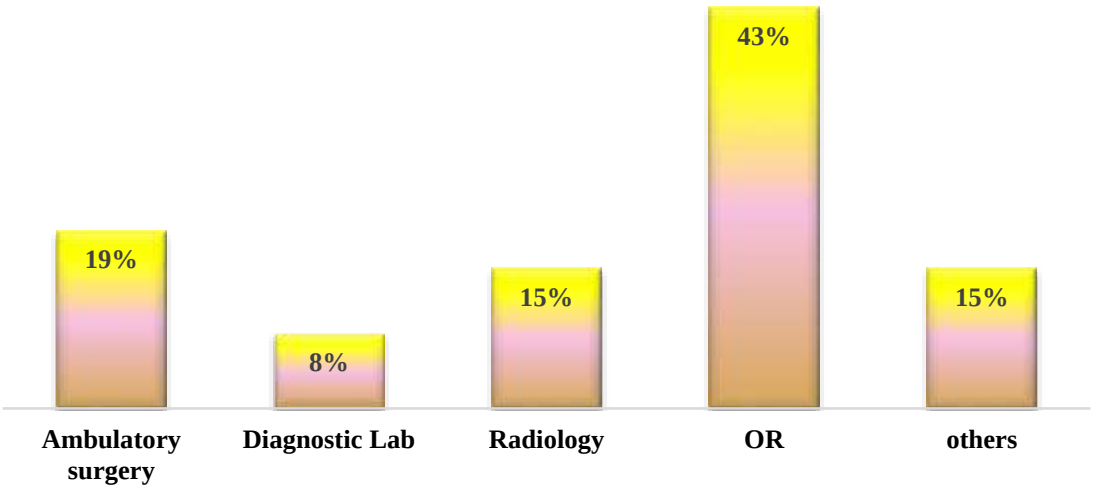

Figure 1.1.6 Locations of wrong site surgery.

[Source: Adverse Health Events in Minnesota. Fifth Annual Public Report. St. Paul, MN: Minnesota department of health; January 2009] [12]

The above figure depicts that operating room holds highest place where wrong site surgery occurs.

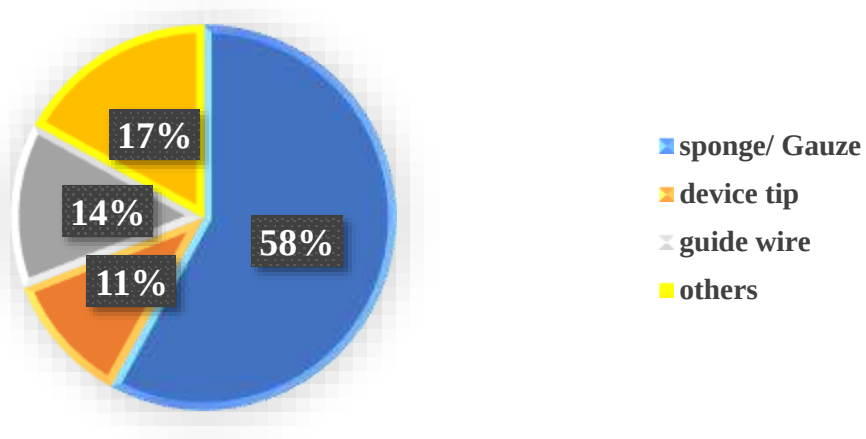

Figure 1.1.7 Types of objects retained during surgery.

[Source: Adverse Health Events in Minnesota. Fifth Annual Public Report. St. Paul, MN: Minnesota department of health; January 2009] [12]

The above figure depicts that sponges or gauze are the frequent type of objects retained during surgeries.

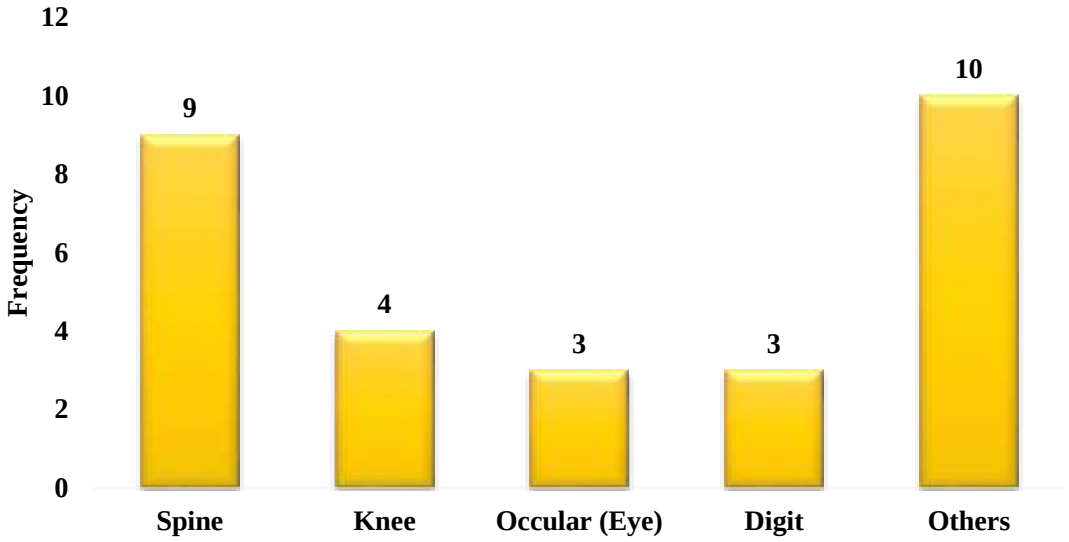

Figure 1.1.8 Wrong site surgery / procedure

[Source: Adverse Health Events in Minnesota, Twelfth Annual Public Report. St. Paul, MN: Minnesota department of health; October 2015] [13]

The above figure depicts that in the patient's body where wrong site or procedure was performed, the spine and other areas were noted high risk of operating wrong site.

Table 1.1.2 Surgical Adverse events (October 7,2014 – October 6, 2015)

S.No	Types of Events	No. of Events
1	Wrong body part	29
2	Wrong patient	1
3	Wrong procedure	20
4	Foreign object	22
5	Intra/ post – op death	0
Total No. of Events		**72**

[Source: Adverse Health Events in Minnesota, Twelfth Annual Public Report. St. Paul, MN: Minnesota department of health; October 2015] [13]

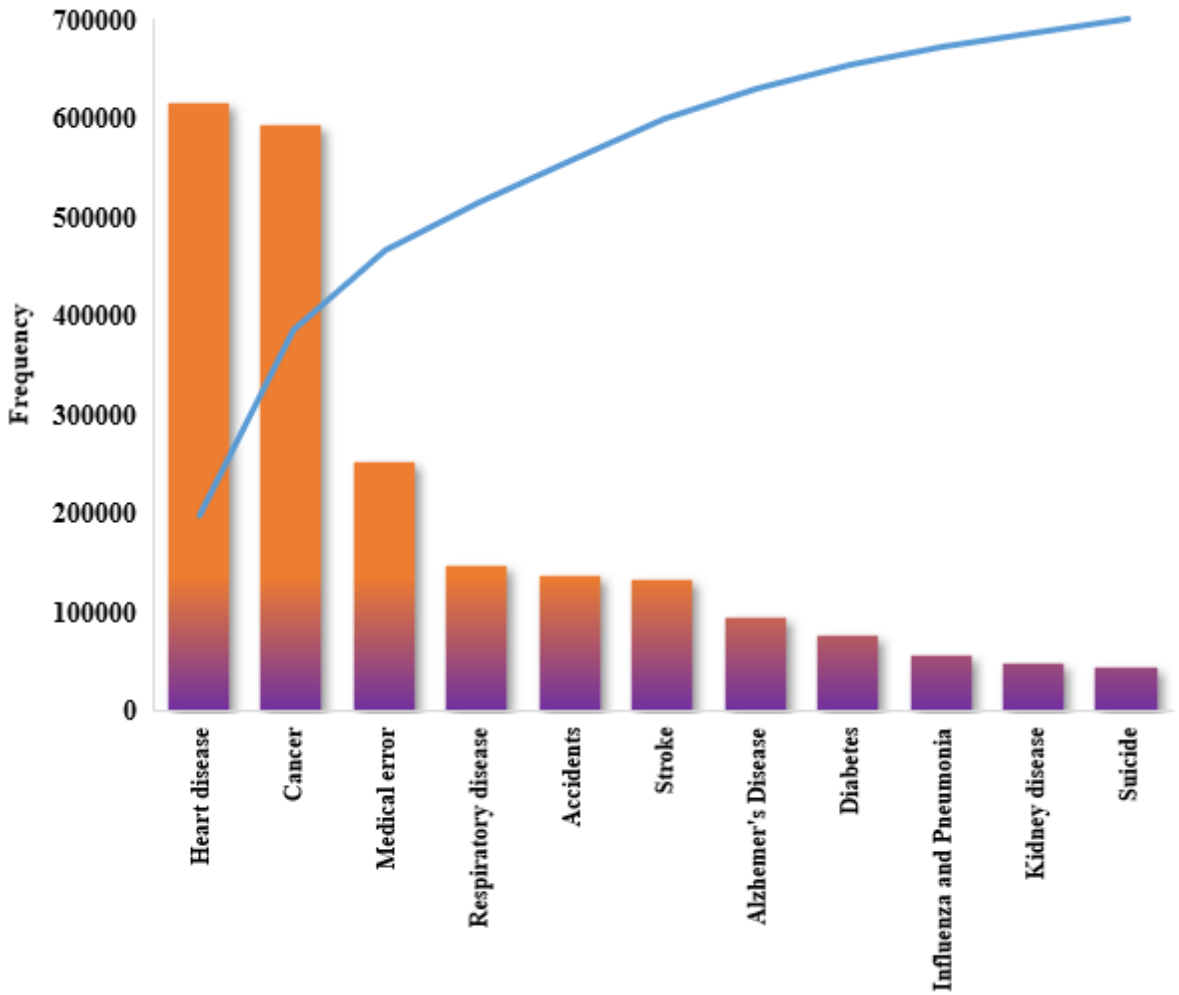

Fig. 1.1.9 Number of leading causes of death in U.S, 2014

[Source: CDC, National Centre for Health statistics, 2014] [14]

The above figure depicts that Medical error is third leading cause of Death in US.

The cumulative line on the secondary axis shows the percentage of the total number of deaths due to various causes.

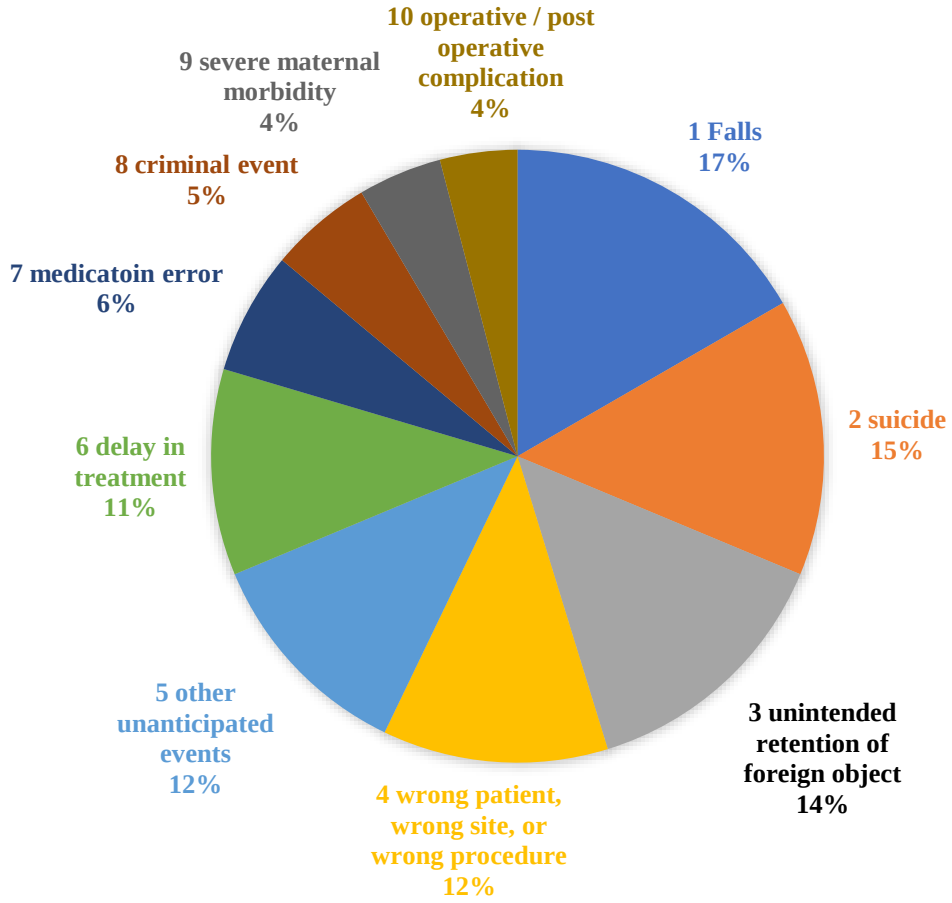

Figure 1.1.10 The top 10 most frequently reported sentinel events from Jan. 1, 2017 to June 30, 2017.

[Source: WHO, Sentinel events statistics report, 2018] [15]

Figure 1.1.1, 1.1.2, 1.1.3 depicts sentinel events report from Joint commission and also in Adverse Health events from Minnesota 2009 and 2015. The above figure depicts, in 2017 wrong site or wrong procedure stands in fourth place in top 10 sentinel events reports by WHO within 6 months of duration. This indicates the magnitude of the problem still holds its place strongly since following years. From this we could suggest the alarming need for prevention of wrong site surgery / procedure.

World Health Organization; 2018 report on safe surgery says; [16]

Medical procedure is regularly considered as the treatment which decreases disabilities and lessens the risk of death. Millions of people undergo any form of surgical intervention every year, surgical interventions which accounts for an estimated 13% of the world's aggregate of Disability Adjusted Life Years (DALYs)

While surgeries are indented to spare lives, unsafe care can land up in serious life-threatening issues to patients, this has significant ramifications:

- The crude mortality rate reported after major surgery was 0.5 – 5 %.
- Complication after inpatient operation happens up to 25% of patients.
- In Industrialized nations, almost 50% of every adverse events in hospitalized patients are identified with surgical care.
- At slightest portion of the cases in which surgical procedure prompted hurt are viewed as preventable;
- Mortality from general anesthesia alone is accounted for to be as high as 1 out of 150 patients.

- Annually, 4,000 people who undergo surgery are injured from a surgical error; preventable mistakes called "never events, the term "never events" is used because they represent shocking surgical errors that should never have happened like when a surgeon performs the wrong procedure.
- Surgical errors cause a wide range of issues; 59% of victims suffered temporary injury, 33% had permanent injuries and 6.6% of cases lead to wrongful death.
- Determining the exact number of surgical errors can be difficult, Besides the fact that hospitals are required by law to report "never events" that result in a settlement or judgment. This means that hospitals are not required to report medical errors that do not result in a lawsuit.
- In addition, all patients do not realize that an error has been committed. Unless patient doesn't experience complications from an object being left inside their body, and hence no one will ever know that an error has occurred.
- Surgeon leaves a foreign object each week like a sponge inside a patient's body after surgery (39 times)
- Perform the wrong procedure (20 times)

- Operate on the wrong part of the body (20 times)

Based on this data, researchers estimate that every year 4,044 surgical "never events" happen in the U.S, Researchers noted that if all surgical error is obtained the numbers raises to peak, since it is an iceberg phenomenon, the exact estimation was not possible. **[Source: - Seattle malpractice lawyers, 16th feb, 2017]** [17]

1.2 SIGNIFICANCE AND NEED FOR THE STUDY

The joint commission established its National Patient Safety Goals (NPSGs) in 2002 in order to help accredited organization to address specific areas of concern in regard to patient safety. The patient safety advisory group is a panel of nurses, physicians, pharmacists, risk managers, clinical engineers and other professionals who have hands on experience in addressing patient safety issues in a wide variety of health care settings.

National Patient Safety Goals: 2017,

Goal 01:01:01 :- Identify patient; correctly

Goal 02:03:01:- Improve staff communication

Goal 01:02:01 :- Prevent mistakes in surgery

- Correct surgery
- Correct patient
- Correct place (patient body)
- Site marking
- Time out before invasive procedure

The joint commission strongly supports to improve accuracy of patient identification by using two patients identifiers and a time out procedure before invasive procedure and to eliminate wrong site, wrong patient, wrong procedure, surgery using a preoperative identification process by following surgical safety checklist. [18]

The CMPA (Canadian Medical Protective Association) [19] reviewed medico-legal cases involving surgical safety issues in hospital operating rooms between 2004 and 2009. A total of 174 cases were identified, of which 155 were closed. Medico-legal difficulties crossed a broad

range of surgical specialties, with general and orthopaedic surgeons and health care professionals (e.g., nurses, anaesthesia assistants), were also key players. In many of these cases, surgical safety processes were inadequate, non-existent or not followed by the operating room team. The CMPA analysis reveals that safety issues occurred before induction of anaesthesia and/or before skin incision in 96 of the 155 closed medico-legal cases, and just before the patient left the Operating Room in 59 of the cases. Identified issues are patient-related issues, medication issues, equipment issues, issues with surgical counts resulting in retained foreign bodies, issues with equipment and/or instruments resulting in retained foreign bodies.

Multiple Researchers Pearse R M, Moreno R P, e.tal, (2012) [20] conducted a cohort study revealed that, out of 46 539 patients, of whom 1855 (4%) died before hospital discharge and 3599 (8%) patients were admitted to critical care after surgery with a median length of stay of 12 days. variations in mortality between countries suggest the need for use of surgical checklist and national and international strategies to improve patient safety care for the patients who under go any form of surgical intervention.

According to Deebashree (2014) [21] conducted a cohort study, measured the growth of the health care industry in India, there are as many as 98,000 patients die every year due to surgical errors. >20% lead a comfortable life if not for that one gross medical negligence, in this 37% were children under 15 years of age, and 11% were senior citizens. only 20 – 27% approached consumer court for claim. while 12% had withdrawn in midway due to tedious process and time taken for action, only 2% hung to a low chance of getting money from hospital.

Sunil Kumar and Sujata Chaudhary (2009) [22] conducted a prospective study in patients with trauma, presenting to surgery findings showed that, adverse events were present in 185 (31.5%) and 183 (31.2%) patients, respectively. Consequences followed by the adverse events were: disability 157 (85%), increased hospital stay and / or increased visit 28 (15.3%) and death 62 (40%), temporary disability 90 (58%) and permanent disability 05 (3.1%). Adverse events in 133 (71.8%) patients was definitely due to the error in health care management. All Adverse events were preventable – error of omission accounted for 122 (65.9%) patients, operative errors were the commonest, 84.3% and 82.7% respectively.

A crew of researchers (2017) [23] performed a prospective observational cohort study data from the international surgical outcomes study (ISOS), findings revealed that, there were 40,245 (89.8%) patients exposed to surgical safety checklist, whilst 7508 (16.8%) sustained >1 postoperative complications and 207 (0.5%) died before hospital discharge and in addition to that patients exposed to a surgical safety checklist experience better postoperative outcomes.

A prospective interventional study was conducted by S Erestam, e.tal., (2017) [24] in operating room after implementation of WHO's Surgical Safety Checklist (SSC), which recorded a good teamwork improves patient safety in operating room and adherence to SSC has improved safety climate in operating room.

The concept of patient safety is the significant health concern within health care delivery system, hence the surgical environment should encompass of higher level of standardization and safety process to decrease human mistakes.

The investigator had encountered many near and never events during clinical experience in OR, hence through Timeout procedure implementation the likelihood of occurrence of adverse events can be decreased, "there is no single root cause for failure- events are frequently the result of a cascade of small errors" hence proper training on Timeout Procedure Protocol should be embedded in every operating room nurses who acts as an advocate. Their voice should lead the surgery and create a patient safety climate in operating room.

1.3 STATEMENT OF THE PROBLEM

A pre-experimental study to assess the effectiveness of time out procedure protocol on knowledge and skill regarding patient safety among operating room nurses at selected hospitals, Chennai.

1.4 OBJECTIVES

1. To assess the level of need for time out procedure protocol regarding patient safety among operating room nurses in study and control group.
2. To assess the effectiveness of timeout procedure protocol on knowledge and skill among operating room nurses between study and control group.
3. To correlate the post test mean knowledge score with skill score regarding time out procedure protocol among operating room nurses in the study group and control group.
4. To associate the selected demographic variables with post test mean of knowledge and skill score regarding time out procedure protocol among operating room nurses in the study group and control group.

1.5 OPERATIONAL DEFINITIONS

1.5.1 Effectiveness

It refers to the outcome of time out procedure protocol, assessed in terms of changes in the level of knowledge and skill regarding patient safety among operating room nurses. It is evaluated by using structured knowledge questionnaire for knowledge and observational checklist for skill respectively within the study period.

1.5.2 Timeout procedure

It refers to an immediate pause by the entire surgical team to confirm the correct patient, procedure, and site.

1.5.3 Time out procedure protocol

It refers to the interventions, developed by the investigator, aimed at promoting patient safety in operating room by educating 5 to 6 operating room nurses in groups. It comprises of,

- **Lecture cum discussion** on definition, purpose of performing time out, members involved, do's and don'ts, National timeout day, errors related to misuse of timeouts, steps involved in time out and use of WHO surgical safety checklist, advantages of performing timeout procedure for 30 mins.

- **Demonstration** of time out procedure by the investigator through role play and **Return demonstration** of time out procedure by the operating room nurses for about 15 mins.
- The total duration of the interventions was for 45 minutes.

1.5.4 Patient safety

It refers to the protection from physical harm of the patients undergoing surgical interventions in the operating room.

1.5.5 Knowledge regarding patient safety

It refers to the state of knowing facts regarding time out procedure protocol regarding patient safety among operating room nurses, evaluated after a period of 7 days using a structured questionnaire which is devised by the investigator.

1.5.6 Skill regarding patient safety

It refers to the capability of the operating room nurses to perform time out procedure to maintain patient safety, evaluated after a period of 7 days using observational check list, devised by the investigator based on WHO's SSC.

1.5.7 Operating room nurses

It refers to the health care personnel with educational qualification of Masters in Nursing, Baccalaureate in nursing, Post basic B.sc nursing, Diploma in nursing, and working as circulatory or scrub nurse in operating room with > 6 months of experience.

1.6 NULL HYPOTHESES

NH_1: There is no significant difference in the post test level of knowledge regarding time out procedure protocol on patient safety among operating room nurses between study and control group.

NH_2: There is no significant correlation between the post test level of knowledge with skill regarding time out procedure protocol among operating room nurses in the study group and control group.

NH_3: There is no significant association of the selected demographic variables with post test mean score of knowledge and skill regarding time out procedure protocol among operating room nurses in the study group and control group.

1.7 DELIMITATIONS

The study is delimited to:

- ✓ Period of 4 weeks.
- ✓ Registered nurses who have more than 6 months of experience in the operating room.
- ✓ Post test only design, since the samples are professionals and conducting pretest itself can create bias, considering this the research investigator have chosen post only control group design.

1.8 CONCEPTUAL FRAMEWORK

According to **Betty M. Johnson and Pamela B. Webber**, (2015)[25] Conceptual framework is the abstract and logical structure of meaning that guides the development of the study which enables the researcher to link the findings of the nursing body of knowledge. It is the symbolic depiction of the reality, providing a schematic representation of relationships among the phenomena and concepts.

The current research study aimed at developing and evaluating the effectiveness of the Timeout procedure protocol on knowledge and skill among operating room nurses working in selected settings. The research investigator had adopted conceptual framework by integrating the concepts of **Stuffle beam Model and Von Berttalannfy's General System Model.** It provides a comprehensive, systematic and continuous ongoing framework for programme evaluation. This system model focuses on the organizing, interacting and interaction of parts and subparts and the interdependence of the parts on each other.

CONTEXT EVALUATION

This describes the plan for decisions and collection of the data apart from providing rationale for the determination of the objectives. The present study was carried out to determine the effectiveness of Timeout procedure protocol on knowledge and skill among operating room nurses working in selected hospitals, based on the research investigator's clinical experience, extensive review of literatures and expert opinion, it was assumed that the nurses may have some previous knowledge and practice regarding Timeout procedure protocol.

DESIGN EVALUATION

In this study input refers to the

- Development of Timeout procedure protocol.
- Development of tool: Structured knowledge questionnaire and observational checklist.
- Validation of the tool and preparation of teaching module.
- Establishment of Reliability of tool by test retest method and interrater method.
- Framing research design- Pre-Experimental post test only design.
- Selection of samples- Non-Probability purposive sampling technique.

Input

It refers to an open system that exchange energy with environment and continually attempts to adapt holistically.

In the present study it refers to the assessment of demographic variables and OR nurses screened for their need for participating in the study using a need assessment tool based on the scores (≥ 3/6) in need assessment samples were selected for the study.

Process

It refers to the different operational procedure of the programme.

It denotes the administration of Timeout procedure protocol for 4 – 5 OR nurses in group, thereby improving knowledge and skill regarding patient safety in operating room. Here the investigator executed the Timeout procedure protocol through lecture cum discussion on Timeout procedure, demonstration on performing Timeout procedure using surgical safety checklist by the investigator through role play and return demonstration by the OR nurses.

Output

After processing the input, the system returns output to the environment in the form of practicing the intervention in their daily lives.

In this study, the investigator assesses the post-test level of knowledge and skill regarding Timeout procedure protocol among operating room nurses using structured knowledge questionnaire for knowledge and observational checklist for skill. If there is

adequate and moderately adequate knowledge, good and fair skill, this will help the operating room nurses in adjusting well to practice timeout procedure as their daily routine and knowledge and skill can be enhanced, with a view to reinforce a booklet and poster was issued regarding Timeout procedure protocol and daily reminders were sent through WhatsApp technology. whereas inadequate knowledge and those who needed improvement in skill may perform ineffective operating room safety practices, for whom reassessment was done.

Feedback

The feedback is the process by which the output of the system is redirected as a part of the input of the same system. Inadequate knowledge and needs improvement in skill can be rectified by reassessment, which serves as an input. Hence this is a cyclic process.

The adopted integrated **Stuffle Beam Model and Von Berttanlannfy's General System Model** provided the comprehensive, systematic guidelines and an ongoing evaluation throughout the study process to evaluate the effectiveness of timeout procedure protocol among operating room nurses regarding patient safety in OR.

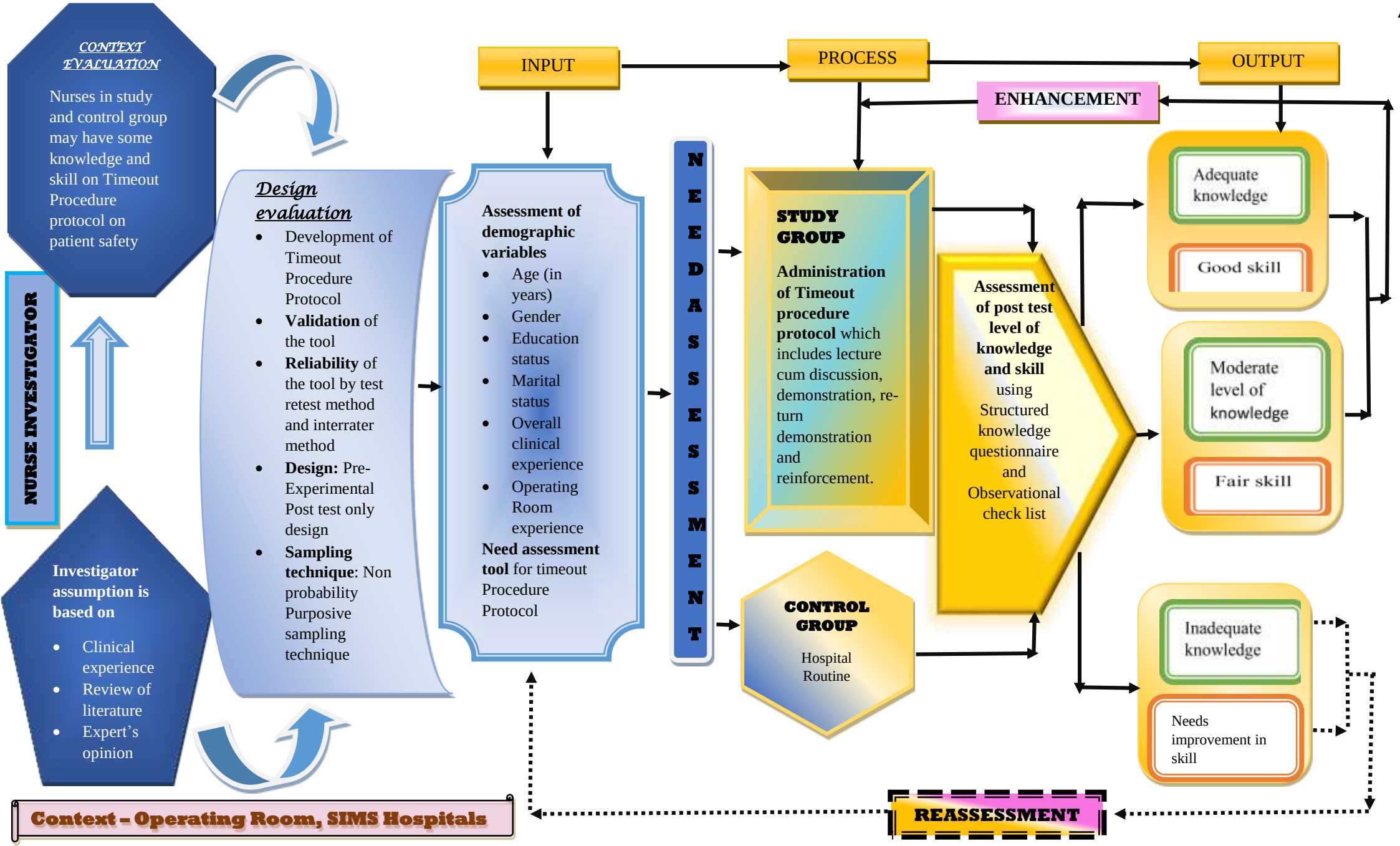

Figure 1.8.1 INTEGRATED CONCEPTUAL FRAMEWORK BASED ON STUFFLE BEAM'S MODEL AND VON BERTALANFFY'S GENERAL SYSTEM THEORY

1.9 OUTLINE OF THE REPORT

Chapter 1: Deals with the Introduction, background of the study, significance and need for the study, objectives, operational definitions, assumptions, null hypotheses, delimitation and conceptual framework.

Chapter 2: Contains the scientific critical reviews related to the present study.

Chapter 3: Presents the methodology of the study and plan for data analysis.

Chapter 4: Focuses on data analysis and interpretation.

Chapter 5: Enumerates the discussions and findings of the study.

Chapter 6: Gives the summary, conclusion, implication, and limitation of the study.

The study report ends with selected references and appendices.

CHAPTER – 2

REVIEW OF LITERATURE

REVIEW OF LITERATURE

A literature review in a research study is a written summary of evidence on a research problem. It is defined as a broad, comprehensive, in depth systematic and critical review of scholarly publication, unpublished scholarly print materials, audio visual materials, and personal communications. This process is termed as critical review. [26]

A critical review is the summarization and evaluation of the ideas and information in an article. It expresses the researcher's point of view. Reviewing critically means the investigator considers both the strength and weakness in the material under review. [26]

The researcher critically reviewed numerous articles related to the research problem from books, published articles in print and electronic sources such as PubMed, Medline, Google Scholar and other popular scientific websites to obtain in-depth understanding insight into research problem.

SOURCES OF REVIEW OF LITERATURE

The literature review was collected from various sources such as primary: from research reports, conference manual and theses, secondary: reviews from internet, national and international journal of articles and the tertiary sources: Peri-operating nursing books.

This review of literature was done using key words such as surgical error, Operating Room error, patient safety in operating room, timeout procedure in OR, surgical safety checklist. These data was searched on the standard data base such as COCHRANE library, Cumulative index to Nursing and Allied Health literature (CINAHL), Google Scholar, Medical literature Analysis and Retrieval system Online (MEDLINE), Public/ Publisher Medline (PUBMED), and other unpublished studies from dissertations. Collectively 94 studies were searched out of which 78 relevant and updated studies were utilized to support current research topics in which 4 national and 74 international studies.

ORGANISATION OF REVIEW OF LITERATURE

SECTION 2.1 Critical reviews related to patient safety

2.1.1 Importance of patient safety

2.1.2 Importance of patient safety in operating room

2.1.3 Tools used in OR for patient safety

a) Communication tool

b) Safety culture assessment tool

c) Surgical safety checklist as a tool to improve patient safety in operating room

2.1.4 Effect of SSC in improving patient safety

2.1.5 Organizational safety culture

SECTION 2.2 Critical reviews related to Burden of Surgical error

2.2.1 Global burden of surgical error

a) Surgical safety checklist to reduce mortality and morbidity in global population

2.2.2 Burden of surgical error in India

SECTION 2.3 Critical reviews related to Surgical safety checklist

2.3.1 WHO's SSC

2.3.2 Implementation of surgical safety checklist

2.3.3 Role of SSC in reducing post operative complication

2.3.4 SSC in reducing surgical error

2.3.5 Barriers and facilitators towards implementation of SSC

SECTION 2.4 Critical reviews related to Communication Failure in OR

2.4.1 Communication failure a 'bane' in OR

a) Types of communication failure in OR
b) Causes of communication failure in OR
c) Training to improve communication

SECTION 2.1 CRITICAL REVIEWS RELATED TO PATIENT SAFETY

2.1.1 Importance of patient safety:

Hippocratic oath drafted first "do no harm" for the patient. Patient safety is a discipline that emphasize safe culture in health care through various aspects of prevention, reduction, reporting and analyzing medical error. [1,2]

Patient safety is a fundamental principle of health care delivery system. [3] "world patient safety day" is celebrated annually on 17th of September.[5] This impact of health care errors is 1 in every 10-patient safety as an endemic concern.[6]

2.1.2 Importance of patient safety in operating room:

An abstract proposed by Fernando J K, Rodrigo e.tal [27] states that, more than 200 million surgeries are performed worldwide each year and recent reports revealed that adverse events rates for surgical condition remain unacceptably high, despite of multiple patient safety initiatives.

Operating room is a complex environment where the team work and communication are essential ingredient and patient safety in an operating room is the worldwide concern. Surgical error is an alarming health care concern.[28]

A Harvard based group called safe surgery, led by Gawande[28] aims to have all operating rooms in the world using health organization's surgical safety checklist program.

Alfreds dottir H e.tal [29] conducted a longitudinal study found that operating room nurses should have a core concept, which is to ensure patient safety during operations securing patient safety and preventing mistakes were the key element in operating room. Nurses should recognize their crucial role in enhancing safety in operating room.

Samir S Awad e.tal [30] carried out a prospective minute to minute observations of 10 complex general case surgery a qualitative analysis identified that problems in communication and information flow and work load and competing tasks were found to have measurable negative impact on surgical team performance and adverse events which pose the greatest threat to patient safety in operating room.

Research studies in health care shows that work experience, communication and the organization of work are key factors in patient safety. [29] According to Samir S A e.tal,[31] states

that in the operating room (OR) poor communication among surgeons, anaesthesiologists, and nurses may lead to adverse events which can undermine patient safety.

2.1.3 Tools used in OR for patient safety:

a) Communication tool

Columbas A B[32] pointed out communication error is one of the major cause for adverse events[31] and revealed that intraoperative communication tool that increases team communication and focuses mainly on a newer trend of shared awareness among intraoperative personnel, which further suggested that communication skill training is a need among surgical team.

b) Safety culture assessment tool

A legion of researchers conducted a longitudinal study which assessed the existing safety practices among health care team and found that some measurement tool focuses only on management aspect of patient care in their organization like safety checklist usage, feedback forms which did not assess the safety culture in an organization from patient's point of view. In addition to that, the leaders in health care organizations should take a step to generate awareness about patient safety practices and motivate the organization to take action on areas which needs improvement. [33]

c) Surgical safety checklist as a tool to improve patient safety in operating room

An assemblage of researchers[34] stated in a prospective study, that approximately 2700 patients were harmed by wrong site surgery every year. The world health organization created surgical safety checklist to reduce the incidence of wrong site surgery. A project team conducted a narrative review of literature to determine the effectiveness of surgical safety checklist in correcting and preventing errors in OR.

Team members used "swiss cheese model of error by reason" to analyses the findings indicated the effectiveness as well as suggested successful implementation requires perioperative stakeholders to understand the nature of errors and encourages a shared vision of patient safety. [34]

On reviewing the evidence on the use of checklists in surgery, highlighted how the tool is helpful in reducing adverse events in operating room.[34] literature shows implementation of

such protocols has improved patient safety. The joint commission made the universal protocol mandatory for all institution.[35]

Some studies gave insight into the effect of the checklist on preventing wrong site surgery.[34] Panesar et. al,[36] showed that the proper use of a surgical safety checklist could have prevented 28 of 133 wrong site surgeries, although this finding supported the use of checklist.

A recent protocol required surgical instruments to be kept back of the OR, away from patient, until the completion of time- out. This practice helps to ensure that team members were not distracted or preoccupied during time out, as described by Vats et. al,.[37]

2.1.4 Effect of SCC in improving patient safety

A Meta-analysis [38] study summarized that the use of the WHO surgical safety checklist improves patient safety in operating rooms by decreasing postoperative complications and surgical mortality.

The use of checklist has also been shown to improve processes such as timely use of prophylactic antibiotics. [37,39] Perhaps one of the way that WHOs SSC improves patient safety through their effect on team communication.[38] Surgical team communication is pivotal in OR environment because most of the clinical error and adverse instances of wrong site surgery result due to lack of communication among team members. [36,40] The literature is consistent in reporting that, surgical safety checklist helped in improving team communication and decreased communication failures. [41-44]

2.1.5 Organizational safety culture

Team of researchers[45] generated the data from systemic analysis which revealed that safety culture in an organization is increasingly recognized as an important strategy and perhaps a mandatory precursor which improves the shortfalls in patient safety and error management. Many organizations have embarked on efforts to measure safety culture, although these efforts are laudable, the budding nature of culture assessment tool in health care lack consensus and clarity.

Based on the review of existing safety climate surveys in health care organization identified 9 contructs, which demonstrated substantial convergent and discriminant validity in

the multitrait analysis. The principle findings showed that it is possible to measure salient features of hospital's safety climate. [46]

Multiple researchers[47,48] conducted a survey which was identified through a systemic review that yielded 13 instruments, covering a total of 23 individual dimensions of the patient safety grouped into broad categories like

- Supervision/ management
- Risk
- Work pressure
- Competence
- Rules
- Miscellaneous

The desire to address safety culture in the hope of improving patient safety will continuously motivate the researchers and organizational policy makers to make use of safety culture surveys as a choice of instruments. [48]

SECTION 2.2 CRITICAL REVIEWS RELATED TO BURDEN OF SURGICAL ERROR

2.2.1 Global burden of surgical error

"Of all the forms of inequality, injustice in health care is the most shocking and in humane"-Dr.Martin Luther King.Jr.

A cohort study [49] identified provision of high quality surgical care is essential for health care delivery system worldwide. Even though, globally developing countries carry the cross of surgical error, and accessing high quality surgical care issues like lack of staffing, lack of funding, infrastructure and lack of resources to implement international validated programs and health care guidelines to ensure safe surgical care. The degree and magnitude of unsafe surgical care in developing countries is not well known, since it is an ice berg phenomenon, and non-translucent in reporting the errors and unsound measuring tools of patient outcomes.

A circle of researchers[50] organized a numerous observational studies which generated through a comprehensive search of over 16,000 articles derived to contextualize the degree of harm that occurs from unsafe medical care, the findings revealed that there was 421 million

hospitalizations in the world annually, in which 42.7 million adverse events took place, out of which 23 million DALYs lost per year, and also showed that these evidence represents a major source of morbidity and mortality globally and these data should alarm the global health policy makers to make patient safety as an international priority.

An interdisciplinary study[51] estimated incidence of adverse events, in which adverse events occurred in 3.7% of the hospitalizations and 27.6% of were due to negligence. Although 70.5% of the adverse events gave rise to disability lasting less than six month, 2.6% caused permanent disabling injuries and 13.6% led to death.

a) Surgical safety checklist to reduce mortality and morbidity in global population:

Few researchers[52] conducted a prospective study which unveiled that surgery has become an integral part of global health care which estimated 234 million operations performed yearly. which showed the rate of death was 1.5% before checklist was introduced and declined to 0.8% after introduction of checklist.

Worldwide volume of surgery is large. In view of the high death and complication rates of major surgical procedures, surgical safety should now be a substantial global health concern.[53]

2.2.2 Burden of surgical error in India

A prospective study was conducted by team of researchers, Sunil Kumar and Sujata Chaudhary[54] for patients with trauma, presenting to surgery at university college of hospital, Delhi, revealed the consequences following the surgery were disability 157 (185%), increased hospital stay or increased visit 28(15.3%), death 62 (40%), temporary disability 90 (58%), permanent disability 90 (58%) and in addition to it, all adverse events were preventable and error of omission accounted for 122 (65.9 %) which was the commonest among all adverse events, this study proves that medical error and adverse events are serious life threatening problems in India.

SECTION 2.3 CRITICAL REVIEWS RELATED TO SURGICAL SAFETY CHECKLIST

2.3.1 WHO's SSC

A longitudinal and prospective study[55] was conducted among patients who underwent any form of surgical intervention, which inferred that a statistical significant reduction of mortality in major surgeries by 47%, from 56 in 3733 cases (1.5%) to 32 in 3955 cases (0.8%) and a statistical significant reduction in major morbidity by 36 % from 411 in 3733 cases (11%) to 288 in 3955 cases after exposure to SSC, therefore world health organization strongly recommends to use surgical safety checklist for any surgical interventions or invasive procedures.

A series of systemic reviews analyzed using current evidence with regards to effectiveness of SSC in reducing post-operative complication, was based on their main outcomes (any complications, mortality and SSI) This highly recommends WHO 's SCC as there was an marked reduction in post operative complication mortality and improvement in post operative outcomes were associated with improved perception of team work.[56]

Thus, a positive safety attitude among surgical team members directly proportional to perioperative patient care outcomes.[57]

2.3.2 Implementation of surgical safety checklist

Dante M C e.tal,[58,59] performed observational studies which showed that implementation of the checklist helped in reducing surgical complications and it is also feasible in urgent operation and suggested that safety checklist can reduce surgical mortality and other post-operative complication.

Few researchers conducted retrospective cohort studies[60, 61] which included 25,513 patients undergoing surgery data generated from electronic patient records revealed after implementation of checklist, the crude mortality rate decreased from 3.13% to 2.85% a significant reduction was observed. Use of this comprehensive surgical safety checklist is feasible and it generated a measurable development in perioperative patient care outcomes.

Linsey A B[62] proposed an abstract which emphasized on the concept of using checklist in operating room by routinely checking the common safety issues, and effective team communication which improved peri operative health of patient, furthermore, Axel Fudickar e.tal[63] states implementation of surgical safety checklist requires leadership qualities, flexibility

and teamwork. communication error and poor team work attributes to the major errors in safety culture.

2.3.3 Role of SSC in reducing post operative complication

A prospective observational studies[64-66] was conducted on successful completion of SSC findings showed, that compliance with SSC domains (sign in, time out, sign out) were poorly adhered, there should be a proper training to OR team members for proper completion of the safety checklist. Metanalysis of observational studies[67,68] have shown significant improvement in postoperative patient outcomes after implementation of SSC. even though only few randomized control trails have studied the effectiveness of SSC[69-71]. Even, further studies have shown, that implementation and outcomes of the SSC needed a stepped – wedge cluster design, as it would be no longer be deemed ethically withhold to control group.[70,72]

Pickering et. al,[73] conducted an observational study in which the observation was conducted for 294 surgeries, out of which 257 operations timeout and sign out was attempted and they identified surgical specialty operations did not affect timeout and sign out frequency. In addition to it they found that, sign out compliance is poor there was difference in theatre work practice and further the nurse managers should ensure, all three components of WHO's SSC was completed without hasty and not as a rushed procedure. Consistency in performing timeout should be ensured universally. Hence the proper use of SSC has a direct impact on patient's post operative health.

2.3.4 SSC in reducing surgical error

Numerous researchers conducted prospective studies, which revealed that the rate of death was 15% before the checklist was introduced and reduced to 0.8%, inpatient complications occurred in 11% of patient at baseline and declined to 7% after introduction of checklist. This data represents the major role of SSC in reducing the volume of surgical error.[74-78]

An epidemiological study[79] which estimated that, 164 million disabilities – adjusted life years, representing 11% of the entire disease burden, were belongs to surgical care. It is also related to risk of complications and death, the perioperative rate of death from inpatient surgery was 0.4 to 0.8% and rate of major complications was 3% to 17%. In developing countries, the rates are even more higher, which concludes this burden of disease is worthy of its attention from worldwide.

WHO (2011)[77] designed SSC to reduce the rate of surgical error. Use of checklist changes both organizational system of practice and changes in behavior among surgical team and it has also improved safety process and attitude and the rate of complication and death declined to 80%. which brought new concept of administering antibiotics in the OR rather than preoperative wards, where delay is possible, also provides extra details regarding the usage of appropriate antibiotic and other lifesaving issues were also verified like airway evaluation and use of pulse oximetry and evaluation of blood loss preoperatively.[78]

Surgical complications are major cause for death and disability globally. It is a biggest burden to patients, and also to health care systems. These surgical errors are commonly preventable, for their prevention they need changes in hospital routine and behavior. there was a significant decline in rate of death and complication after use of checklist. [79]

2.3.5 Barriers and facilitators towards implementation of SSC:

A longitudinal interview studies[80-82] assessed among OR nurses, which pointed out the barrier in organizational factors: the implementation approach of SSC and lack of cultural change. Where by in system factor: time wasting and repetition was identified and in team factors: resistance and noncompliance was seen. On the other hand, education/ training, feedback on data, accountability for noncompliance, and support from noncompliance were facilitators in organizational factors. Integrating with existing process was found to be a facilitator in system factors, senior clinical buy-in, leadership skills, entire team involvement was categorized under team factors. Improving customization of checklist based on surgical specialty context were identified as tool specific factors. The most common barrier is resistance and noncompliance.

The evolved facilitators showed positive and proactive steps which can mitigate following barriers and improves to complete implementation of SSC. It also encourages to modify the tool to specific area of context. The evidence generated from this study are parallel with previous literature reviews.[83]

Similar barriers and facilitators for checklist implementation have been identified earlier as a factor influencing SSC implementation. exclusive attention is essential to focus on barriers and facilitators for further deveplopent.[84-86]

Qualitative evidence of systemic reviews[87,88] generated data has been collected over >700 health care professionals across 18 different countries which revealed the major themes

were staff perception of checklist and patient safety, workflow adjustments, checklist content, implementation process and local context and also found that checklist collides with already existing hospital routine[87] which created a conflict with existing organizational priorities[89-91] and this conflict perplexed doctors and nurses and put them under a dilemma to use or not to use checklist, the level of motivation is different to implement SSC between health care providers and hospital management.[92-94] hence the investigator strongly recommends the managers to motivate and guide the healthcare team for proper use of SSC.

Aside from the fact, implementing SSC is also a requirement for hospital accreditation, keeping that in mind, the management forces the OR team to use SSC[89,90], yet the ultimate goal of SSC in patient safety may not be stressed thus causing improper compliance among OR team. because of the pressure from the organization nurse feels it is a part of requirement rather than a safety procedure.[95-97]

Carrying out timeout needs a complex social interaction and cooperation between surgeon, anesthetist and nurses.[91,95,97] Surgical team cooperation is a cardinal aspect which is often poorly addressed. Team learning is a promising approach to tackle with the pitfalls associated with changing routines.[98,99]

Adopting a new workflow practice or technology standard may be difficult to practice unless entire surgical team agrees, empowering OR nurses is more important in OR management and bringing in line with leadership skills empowers nurses in performing timeout procedure. senior staff nurse and chief surgeon both play key role in successful implementation of SSC, for the reason that out of fear the staff will obey senior's command.[100-102]

Since the implementation needs a multidisciplinary team involvement, this hampers the team work and communication. structural changes to be brought in OR. leaders must facilitate team learning to foster teamwork, through this the barriers for implementation of SSC can be curtailed and it can help to build a patient friendly OR.[103-105]

SECTION 2.4 CRITICAL REVIEWS RELATED TO COMMUNICATION FAILURE IN OR

2.4.1 Communication failure a 'bane' in OR

Few researchers[106] conducted longitudinal studies which identified that improper communication among team members contributes to maximum number of errors.[107,108] As a matter of fact communication failure is the root cause for over 60% of sentinel events which was reported to joint commission on accreditation of health care organizations.[109] Communication difficulties was expressed at all the levels of health care personnel.[110] The germinating literature of interconnected relationship between team work and patient safety points out that communication breakdown are the common cause of surgical error in OR, hence a significant solution for communication error was formulated using checklist system.[111,112]

d) Type of Communication failure in OR

Intraoperative observational study[113] analyzed the field note records of 421 events among which 129 were categorized as communication failures. which was 30.6% of total events within the communicational error the following types was categorized as occasional failures which contributes to 45.7% of total communication failures. The occasional failures, which means, the situation where error has occurred. Next type is content failure comes up with 35.7% which pertains to the error happened during transformation of the information. Following type is purpose failures which contributed to 24% which denotes that the purpose is unclear, not achieved or inappropriate. Last failure is audience failure that consists of 20.9% which means gaps in composition of the surgical team those who are involved in communication.

In addition to these data, which found that visible effect has higher percentage of 63.6% and procedural error is the minimal percentage 0.8%. and OR communication failures occur frequently around 30%. These failures identified that communication is very late to be effective, content is not consistent, complete and accurate, team members are ignored, problems are unaddressed and unresolved. These generated results delineate that communicating failure is a “tip of an ice burg” in terms of its nature and effects.[113]

b) Causes of communication failure in OR

Amy L H et. al,[114] describes communication errors in OR are more frequently related to equipment and keeping team members updated to the progress of operation. These failures often land up in procedural delay and inefficiencies. In addition to that training to team build up and communication is one effective strategy to improve sense of team work among OR.

Good team work always associated with better job satisfaction.[115] Good team work related behaviors have shown a better patient outcome.[116]

In OR, willingness to speak up about any patient safety concern is an important role, nurses are often hesitant to confront a surgeon. furthermore, social economic status, also hinders the nurses to speakup.[115,117]

Peter mills et. al,[118] revealed a pattern of discrepancies among physicians and nurses in which, surgeon perceives a better organizational culture of safety, effective communication and better team work than either nurses or anesthesiologist.

An array of researchers[118] done prospective studies which unveiled that among OR team, problems in communication and information flow, and workload and competing task were found to have measurable negative impact on team performance and patient safety.[119]

c) Training to improve communication

A crew of researchers[120] studied on a simulation training that can be instilled to novice OR nurses to foster communication. The team members created a mimicked working venue which portrayed a genuine working theater, with OR members feel completely drenched in the emergency situations. Rehearsing the skill of OR nurses even specific skill can be monitored, this will empower the group to work in a more secure and more effective way to improve the OR nursing communication skill.

SUMMARY

The above literatures were chosen to provide enriched evidence regarding patient safety, burden of surgical error, surgical safety checklist, communication failure in OR there by it will support the need for the study and serves as a strong background.

Gaps in the review of literature:

The above literature exhibits the gap in reviews regarding knowledge and skill of nurses in performing Timeout procedure, which may directly deal regarding the prime need. Exact statistics regarding surgical error and death due to surgical error remains unknown, few developed countries had a mandatory reporting law, out of which the data was generated, developing countries like India and Tamilnadu state failed to give appropriate number of surgical error and implementation of SSC. Moreover, the collected volume of surgical error may be the tip of an ice berg, the exact numbers remains buried or unreported. The above literature search has also found the lack of literature evidence in regards to nursing discipline.

CHAPTER - 3

RESEARCH METHODOLOGY

RESEARCH METHODOLOGY

The methodology is the significant part of any research study which will enable the researcher to project a blue print of the research. It is a Master plan for obtaining answers to research questions being studied.[26]

This chapter deals with the methodology adopted for the study to assess the effectiveness of timeout procedure protocol on knowledge and skill regarding patient safety in operating room among OR nurses at selected settings, Chennai.

It describes the research design, variables, setting of the study, population, sample, inclusive and exclusive criteria for sample selection, sample size, sampling technique, development and description of the tool and plan for data analysis.

3.1 RESEACH APPROACH

The research approach used in this study was quantitative research approach.

3.2 RESEARCH DESIGN

The research design adopted for this study was Pre-experimental post-test only control group design.[26]

The Post-test only control group design was specially adopted unlike other designs it has several benefits as it allows researcher to draw causal inference because researcher treat the study group prior to the measurement of the dependent variable, and it shows a significant difference between the dependent variables for the two groups resulted from the exposure to the independent variable, In addition to it, post test only design reduces the pretest bias among both study and control group, since the samples are professionals.[26]

SCHEMATIC REPRESENTATION OF THE PRE-EXPERIMENTAL STUDY

<table>
<tr><th>Need assessment</th><th>Group</th><th>Intervention (X)</th><th>Posttest (O_1)
(DAY 7)</th><th rowspan="3">Reinforcement on timeout procedure protocol through brochure and Poster, Daily Reminder was sent through Whats App</th></tr>
<tr><td rowspan="2">Assess the level of need for Time Out Procedure Protocol using a Observational checklist prepared by the investigator.</td><td>Study group</td><td>Time out procedure protocol comprising of
Lecture cum discussion on definition, purpose of performing time out, members involved, do’s and don’ts, National timeout day, errors related to misuse of timeouts, steps involved in time out and use of WHO surgical safety checklist, advantages of performing timeout procedure with the aid of power point presentation for 30 mins.
Demonstration of time out procedure by the investigator and samples through Role play for 10mins.
Return demonstration of time out procedure by the operating room nurses for 5 mins. Total 45 minutes for intervention.</td><td rowspan="2">Assessment of post test level of knowledge and skill using structured knowledge questionnaire and checklist respectively.</td></tr>
<tr><td>Control group</td><td>Hospital routine</td></tr>
</table>

3.3 VARIABLES

3.3.1 Independent variable:

The independent variable is the time out procedure protocol regarding patient safety.

3.3.2 Dependent variables:

The dependent variables are knowledge and skill on time out procedure protocol regarding patient safety among OR nurses.

3.3.3 Extraneous variables:

Demographic variables: Age (in years), gender, marital status.

Professional variables: Professional educational status, total years of experience, and attended in-service education, educational program obtained from private or government sector.

3.4 SETTING

The research setting for the study group was SIMS hospital, Vadapalani, and for the control group was SIMS hospital, Nungambakkam.

- **SIMS (SRM Institutes of Medical Science) – Hospitals (Vadapalani And Nungambakkam)**
  - A total of 60 OR nurses were employed in SIMS – Vadapalani and 33 OR nurses in Nungambakkam respectively.
  - Aggregate of approximately > 400 surgeries performed every month from various specialties at the time research study.
  - This hospital has not attained NABH accreditation at the time of study period, which makes the setting more suitable for research study.

3.5 POPULATION

3.5.1 Target population

All Operating room nurses

3.5.2 Accessible population

Registered Operating room nurses who were employed at selected hospitals, Chennai

3.6 SAMPLE

Registered operating room nurse who fulfilled the sample selection criteria

3.7 SAMPLE SIZE

Sample of 60 OR nurses (30 each in study and control group), who fulfilled the inclusion criteria.

3.8 CRITERIA FOR SAMPLE SELECTION

3.8.1 Inclusion criteria

Operating room nurses who

- had educational professional qualification of M.Sc Nursing, B.Sc Nursing, Post Basic B.Sc Nursing or Diploma in Nursing.
- were functioning as a circulatory nurse for any surgery.
- had experience of more than 6 months in the operating room as a circulatory or scrub nurse.
- had scored ≥3/6 in Need assessment.

3.8.2 Exclusion criteria

Operating room nurses who

- were not willing to participate in the study.
- had attended in-service education on timeout procedure within 6 months of time period.

3.9 SAMPLING TECHNINQUE

Non probability purposive sampling technique was used in the study, OR nurses who fulfilled the inclusion criteria were selected as samples.

3.10 DEVELOPMENT AND DESCRIPTION OF THE TOOL

After an extensive review of literature, discussion with the experts and with the investigators professional experience, and based on WHO's Surgical Safety Checklist, the investigator developed a questionnaire to assess knowledge level and Observation checklist to assess the skill of the OR nurses regarding patient safety in operating room.

The tool constructed in this study has two parts:

PART - A: DATA COLLECTION TOOL

PART - B: INTERVENTION TOOL

3.10.1 PART – A: DATA COLLECTION TOOL: this part consists of

Tool 1: Need Assessment Tool

Need assessment tool consisted of 6 questions, out of which 5 positive questions and 1 negative question. The level of need for time out procedure protocol is calculated when OR nurses score more than or equal to 3 out of 6 were considered to be needed and selected them as samples.

Tool 2: Structured Questionnaire

This part consisted of two sections as,

Section –I Demographic Data: which consists of demographic variables and professional variables.

- ✓ **Demographic variables**: Age in years, gender, marital status
- ✓ **Professional variables**: Professional educational status, total years of experience, and attended in-service education, educational program obtained from private or government sector.

Section – II Structured Knowledge Questionnaire: this part consisted of structured knowledge questionnaire to assess the level of knowledge regarding Timeout procedure protocol in operating room. It consists of 20 multiple choice questions with one correct answer and three alternatives.

S.No	Content	No. of questions
1	Meaning of time out procedure	**2**
2	General information regarding timeout procedure	**6**
3	Importance of timeout procedure	**3**
4	Knowledge on surgical safety checklist	**3**
5	Components of surgical safety check list	**6**
	TOTAL	**20**

Scoring key:

Each correct answer was given '1' mark, and wrong answers and unattended question was given '0' mark. The raw score was converted to percentage to interpret the level of knowledge, the overall score was 20, maximum score was 20 and the minimum score will be 0.

Interpretation of knowledge:

The level of knowledge will be categorized as

Score	Level of knowledge
≤50%	Inadequate level of knowledge
51-75%	Moderate level of knowledge
>75%	Adequate level of knowledge

Tool 3: Observation Checklist: This part consists of structured checklist based on WHO's Surgical Safety Checklist regarding patient safety in operating room. This checklist is constructed with 12 steps of time out procedure.

Scoring key:

Each correct answer was given "1" mark, when it is performed correctly and "0" for performing inappropriately. The raw score was converted to percentage that interpret the level of skill, the overall skill score was 12, maximum score was 12 and the minimum score will be 0.

Interpretation of level of skill:

The overall score percentage will be categorized as

Score	Level of skill
12 – 9	Good skill
8-5	Fair skill
< 5	Needs improvement in skill

3.10.2: Intervention Tool:

The intervention tool prepared by the investigator is Time Out Procedure Protocol, consisting of

- Resource material on information regarding

- **Lecture cum discussion** on definition, purpose of performing time out, members involved, do's and don'ts, National timeout day, errors related to misuse of timeouts, steps involved in time out and use of WHO surgical safety checklist, advantages of performing timeout procedure, with the aid of power point presentation for a group of 4-5 OR nurses for about 30 mins.
- **Demonstration** of time out procedure protocol through Role play for 10 mins.
- **Return demonstration** of time out procedure by the registered operating room nurses for 5 mins. A total of 45 mins of intervention.

3.11 CONTENT VALIDITY

The content validity of the data collection tool and intervention tool was ascertained with the expert's opinion in the following field of expertise;

- Surgeons – 2
- Anesthetist – 1
- Medical – Surgical Nursing experts – 3

Experts suggested to refine research design to Pre-experimental post test only design and advised to take hospitals (study and control) either both government or corporate hospitals. The alternatives of the multiple-choice questions were also refined. The modification was made in the data collection and intervention tool as per the expert's suggestion after which the tool was finalized.

3.12 ETHICAL CONSIDERATION

Ethics is a system of moral values that is concerned with the degree to which the research procedure adhere to the professional, legal and social obligations to the study participants.[26]

The ethical principles followed in the study were:

1) BENEFICIENCE AND NON-MALEFFICIENCE

The investigator followed the fundamental ethical principle of beneficence which includes the right to freedom from harm and discomfort and right to protection from exploitation.

a) The Right to freedom from harm and discomfort

The study was beneficial for the samples as it enhances their knowledge and skill on Time out procedure protocol regarding patient safety in operating room.

b) The Right to protection from exploitation

The investigator explained the nature of study to the samples and ensured that none of the samples were exploited or denied.

2) RESPECT FOR HUMAN DIGNITY

a) The Right to self determination

The investigator gave full freedom to the samples to decide voluntarily whether to participate or to withdraw from the study at any point of time and right to ask question.

b) The Right to full disclosure

The investigator explained the nature of the study, its purpose and steps involved; and obtained the oral and written informed consent from the samples. The investigator concealed the information that OR nurses were observed while performing Timeout to prevent Hawthorne effect.

3) JUSTICE

a) The Right to fair treatment

The investigator selected the samples based on research requirements. After completion of the post test the time out procedure protocol was administered to the control group. Reinforcement on Timeout procedure protocol was given through booklet and poster. Daily reminder was given through Whats App social media for both the groups.

b) The Right to privacy

The investigator provided and maintained the privacy where there is need in the study. OR nurses were given separate room to demonstrate timeout procedure. The researcher collected data individually from each sample and maintained privacy by not revealing each nurse's score.

4) CONFIDENTIALITY

The investigator maintained confidentiality of the data generated from the samples. Each OR nurse was assigned with an identification number as S-1 (study group, sample number 1) and as C-1 (control group, sample number 1). The collected data was not revealed through Whats App.

3.13 RELIABILITY OF THE TOOL

Variables	Method	Value	Inference
Knowledge	Test retest	'r'= 0.80	**Highly reliable**
Skill	Inter-rater	'r'=0.82	**Highly reliable**

- The Correlation coefficient values are very high.
- The tool was considered to be highly reliable, hence it was utilized to evaluate the effectiveness of time out procedure protocol on knowledge and skill regarding patient safety among operating room (OR) nurses at selected hospitals, Chennai.

3.14 PILOT STUDY

The pilot study is a trial study carried out before a research design is finalized and to test feasibility, reliability and validity of the proposed research design.[26]

The pilot study was conducted at Sir Ivan Stedeford Hospital, Chennai and St.Antony's hospital, Madhavaram after getting formal permission from Medical Director of the respective hospitals and after obtaining ethical committee clearance from International Centre for Collaborative Research (ICCR). A Formal written permission was sought from the Principal, Omayal Achi College of Nursing.

The setting for study group was St. Antony's hospital, Madhavaram , and for the control group was Sir Ivan Stedeford Hospital, Chennai. The investigator screened the OR nurses for their need to participate in the study by using need assessment tool which was devised by the investigator and selected 05 samples (in each study and control group) of operative room nurses who fulfilled the inclusion criteria through Non probability purposive sampling technique. Informed written consent was obtained from the operating room nurses after thorough and clear explanation of the intervention was given by the investigator and the skill observation was concealed to prevent Hawthorn effect.

On the 1st day of study the OR Nurses in the study group were gathered and seated comfortably in a well ventilated room. demographic details were obtained from the samples through structured demographic profile. The investigator administered the Timeout procedure

protocol regarding patient safety in OR, through lecture cum discussion for 30 mins, demonstration through role play performed by the investigator and return demonstration as role play was performed by the samples for about 15 mins. Similarly, post-test was administered to the control group, and routine procedure was followed. After 7 days, the post test was conducted using same tools for both study and control groups respectively. The Timeout procedure protocol regarding patient safety in OR was taught to control group after completion of the post test.

The analysis of the study revealed that:

- Level of need assessment for Time out procedure protocol among study and control group was 100%. both the groups were in need for Time out procedure protocol.
- Comparison of the post-test knowledge score among study and control group was, 60% of them had moderate level of knowledge and 40% had adequate level of knowledge in study group, whereas most of them in control group had inadequate knowledge and none of them had adequate knowledge. using Chi square the statistical significance was drawn at $p = 0.03$ level, which infers the OR nurses in study group had better knowledge when compared with OR nurses in control group which shows the effectiveness of the intervention.
- The calculated 'r' value to correlate between post-test mean knowledge score with skill score in study and control group was $r= 0.38$ which shows a highly statistical significance, at $p < 0.01$ which infers that there is a significant positive fair correlation between posttest knowledge score and posttest skill score. which concludes that, as the knowledge increases their skill score also increases moderately.

The result of the pilot study revealed that the assessment and intervention tool was reliable, feasible and practicable to conduct main study.

3.15 PROCEDURE FOR DATA COLLECTION

The main study was conducted after obtaining formal permission from the Principal, Omayal Achi College of Nursing and the Medical Directors of the respective Hospitals.

The study was conducted over a period of 4 weeks in the month of December 2017. The investigator used lottery method to divide the study setting into I and II. setting I (SIMS hospital, Vadapalani) was considered as study group and setting II (SIMS hospital, Nungambakkam) was considered as control group respectively and both the settings are under same management, hence hospital routine was same. The research investigator screened the

OR nurses and administered need assessment tool and selected 60 samples, those who scored more ≥ 3 out of 6, who also fulfilled the inclusion criteria and using a Non probability purposive sampling technique 60 OR nurses (30 OR nurse in each study and control group) were selected as samples.

The investigator organized a timing schedule to meet the OR nurses during their morning, evening and night shift. After a formal permission was obtained from the HOD of the operating room department. The investigator seated the samples in a well ventilated OR room which was allotted to the investigator, introduced about the self and briefly explained regarding the purpose of the study, yet concealed the information that OR nurses were observed while performing Timeout procedure. After obtaining a written consent form from the OR nurses and the pledge of confidentiality, their demographic variables were collected using a structured questionnaire and on the same day, intervention was administered to the study group. The samples were assigned with identity numbers to maintain their confidentiality

The investigator administered Timeout procedure protocol through a lecture cum discussion (30 minutes) and through role play demonstration and return demonstration (15 minutes) on patient safety in operating room. The investigator explained in detail about the definition, purpose, importance, surgical safety checklist, do's and don'ts while performing a Timeout procedure using power point presentation. Role play on how to perform a better time out procedure was enacted by the investigator with other few OR nurses. approximately it took around 45 minutes to complete the power point presentation and the role play on demonstration and return demonstration of Timeout procedure. The same sequence was repeated for the control group, but Timeout procedure protocol was not executed instead they carried out their routine hospital procedure.

On the seventh day, the post test level of knowledge and skill was assessed using structured knowledge questionnaire and observational checklist for both the group. After completion of post test, on the same day Timeout procedure protocol was executed to the control group.

Similarly, OR nurses from both the groups were reinforced with help of a booklet and poster and reminder was sent daily through WhatsApp technology. All ethical principles were adhered by the research investigator throughout the course of the study.

3.16 PLAN FOR DATA ANALYSIS

Data was analyzed by using descriptive and inferential statistics.

3.16.1Descriptive statistics:

1. Frequency and percentage distribution was used to analyze the demographic distribution of the study and control group of operating room nurses.
2. Mean and standard deviation was used to assess the level of knowledge and skill of operating room nurses.

3.16.2 Inferential statistics:

1. Student Independent ‘t’ test was used to compare the data between the groups.
2. Spearman rank correlation coefficient was used to find out the relationship between knowledge and skills in study group.
3. Chi- square was used to find association between the selected demographic variables with knowledge and skill score.

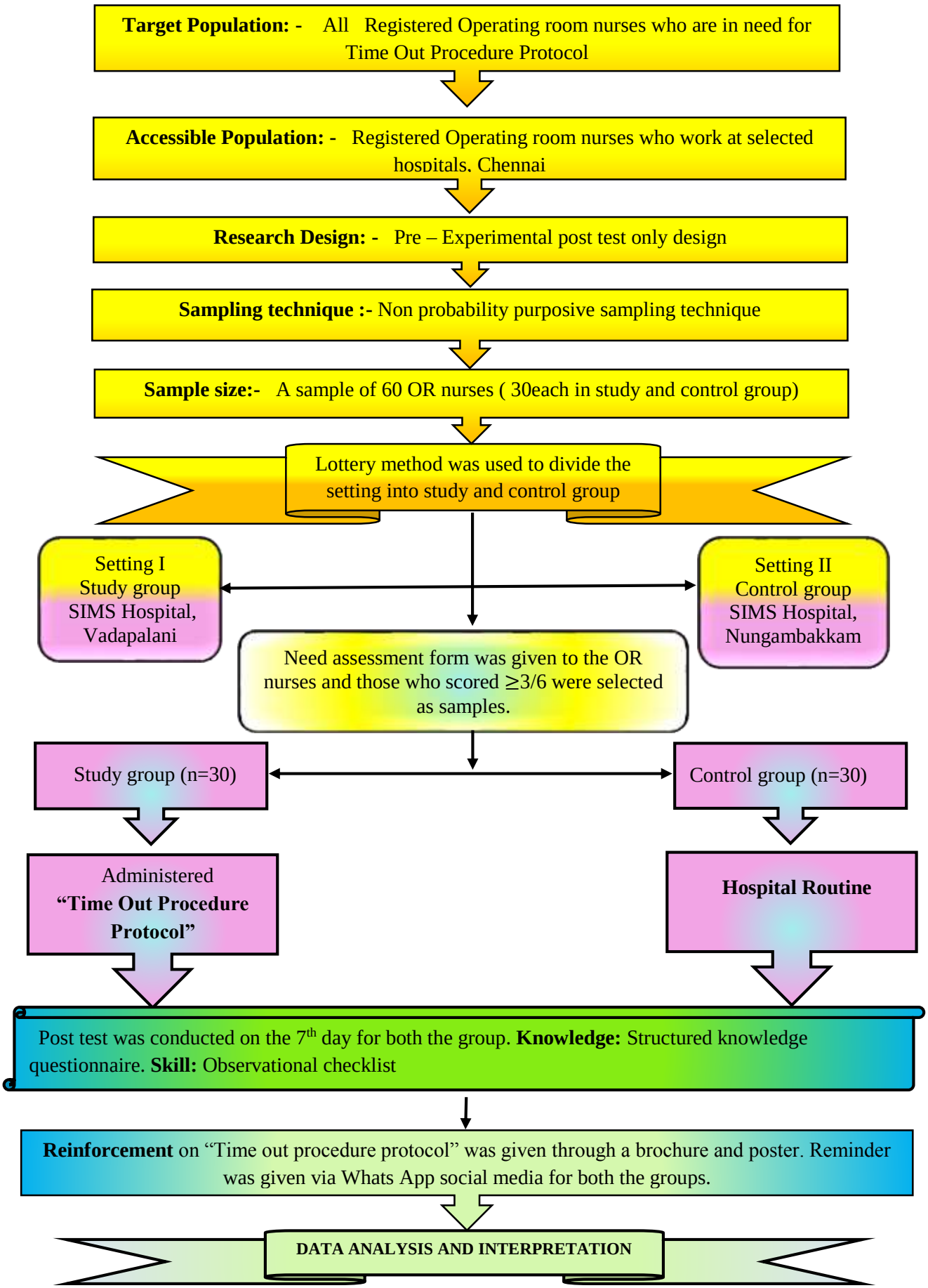

Figure 3.1 SCHEMATIC REPRESENTATION OF RESEARCH METHODOLOGY

CHAPTER 4

DATA ANALYSIS AND INTERPRETATION

DATA ANALYSIS AND INTERPRETATION

The word analysis refers to the process of organizing and synthesizing the date in such a way that the research question can be answered and hypothesis tested.[26]

This chapter deals with analysis and interpretation of the data collected from 60 operating room nurses at selected hospitals, Chennai. To assess the effectiveness of time out Procedure Protocol on knowledge and skill among operating room nurses regarding patient safety.

The collected data was organized, tabulated and analyzed according to the objectives. The findings based on the descriptive and inferential statistical analysis are presented under the following sections.

ORGANISATION OF THE DATA

Section 4.1: Description of demographic variables of operating room nurses in the study and control group.

Section 4.2: Assessment of the level of need for time out procedure protocol regarding patient safety in the study and control group among operating room nurses.

Section 4.3: Assessment of effectiveness of timeout procedure protocol on knowledge and skill regarding patient safety between study and control group among operating room nurses.

Section 4.3.1 Assessment of post test level of knowledge and skill regarding timeout procedure protocol between study and control group among operating room nurses.

Section 4.3.2 Comparison of the post test level of knowledge and skill regarding timeout procedure protocol between study and control group among operating room nurses.

Section 4.4: Correlation of the post test mean knowledge score with skill score regarding timeout procedure protocol in the study and control group among operating room nurses.

Section 4.5: Association of selected demographic variables with post test mean knowledge and skill score regarding timeout procedure protocol in the study and control group among operating room nurses.

SECTION 4.1: DESCRIPTION OF DEMOGRAPHIC VARIABLES OF OPERATING ROOM NURSES IN THE STUDY AND CONTROL GROUP.

Table 4.1.1a: Frequency and percentage distribution of demographic variables with respect to age in years, gender, marital status and educational qualification in study and control group.

N=60

Demographic variables		Group			
		Study (n=30)		Control (n=30)	
		n	%	n	%
Age (years)	21 -30	17	56.67	16	53.33
	31 -40	10	33.33	12	40.00
	41-50	3	10.00	2	06.67
Gender	Male	6	20.00	6	20.00
	Female	24	80.00	24	80.00
Marital status	Married	11	36.67	9	30.00
	Unmarried	19	63.33	21	70.00
Educational qualification	Diploma	12	40.00	14	46.67
	Post Basic	18	60.00	16	53.33

Table 4.1.1a reveals that with regards to age of the OR nurses, in the experimental group, majority of operating room nurses **17** (**56.67%)** were aged between 21 – 30 years. In control group most of them **16 (53.33%)** also belongs to the same age group. Most of them **24** (**80%)** were female gender and unmarried **21** (**70%)** holds Nursing qualification of Post Basic **18** (**60%)** in both study and control group

Table 4.1.1b: Frequency and percentage distribution of demographic variables with respect to year of passing, state, experience and education obtained through private or government sector in study and control group.

N=60

Demographic variables		Group			
		Study (n=30)		Control (n=30)	
		N	%	n	%
Year of passing	≤2013	20	66.67	21	70.00
	2014-2016	10	33.33	9	30.00
State	Tamil Nadu	22	73.33	23	76.67
	Others	8	26.67	7	23.33
Experience	6months - <1 year	1	03.33	1	03.33
	1-3 years	7	23.33	15	50.00
	4-5 years	5	16.67	4	13.34
	> 5 years	17	56.67	10	33.33
Education obtained through	Private	28	93.33	27	90.00
	Government	2	06.67	3	10.00

Table 4.1.1b denotes that most **20** (**66.67%)** of the OR nurses passed out in the year ≤2013 in both the group. Maximum number of OR nurses **23** (**76.67%)** were graduated from Tamil Nadu and **28** (**93.33%)** obtained education through private sector, with regards to experience most **17** (**56.67%)** of them had >5 years in study group whereas in control group majority **15** (**50%)** of them had 1-3 years of experience.

Table 4.1.1c: Frequency and percentage distribution of demographic variables with respect to overall clinical experience, experience in OR and attended in-service education in study and control group.

N=60

Demographic variables		Group			
		Study (n=30)		Control (n=30)	
		N	%	n	%
Overall clinical experience	6months - <1 year	1	03.33	1	03.33
	1-3 years	8	26.67	14	46.67
	4-5 years	4	13.33	6	20.00
	> 5 years	17	56.67	9	30.00
Experience in OR	6months - <1 year	2	06.67	7	24.14
	1-3 years	9	30.00	10	34.48
	4-5 years	8	26.66	8	27.58
	> 5 years	11	36.67	5	16.66
Attended in-service education	No	30	100	30	100

Table 4.1.1c reveals that, with regards to overall clinical experience in the study group majority of the OR nurses **17** (**56.67%)** had >5 years, whereas in control group maximum **14** (**46.67%)** had 1-3 years. Considering experience in OR in the study group mostly **11** (**36.67%)** had >5 years, while in control group majority **10** (**34.48%)** of them had 1-3 years of experience.

None of the OR nurses have attended in-service education on Timeout Procedure. This signifies the need for education and training on Timeout Procedure.

SECTION 4.2: ASSESSMENT OF THE LEVEL OF NEED FOR TIME OUT PROCEDURE PROTOCOL REGARDING PATIENT SAFETY BETWEEN STUDY AND CONTROL GROUP AMONG OPERATING ROOM NURSES.

Table 4.2.1: Frequency and percentage distribution of level of need for time out procedure protocol in study and control group.

N=60

Need assessment tool items	Group			
	Study (n=30)		Control (n=30)	
	n	%	n	%
Updating knowledge will improve the skill.	30	100	30	100
It is necessary to update the knowledge regarding timeout procedure.	30	100	30	100
OR nurse opinion about taking part in this research study.	30	100	30	100
OR nurse previous knowledge regarding timeout procedure.	11	36.7	8	26.7
Taking part in this study will improve the knowledge and skill.	30	100	30	100
Knowledge and skill regarding timeout procedure will improve surgical team's communication.	30	100	30	100

The table 4.2.1 points out the need for timeout procedure protocol among operating room nurses.

Findings shows that almost all the OR nurse scored **(100%)** 5 out of 6 questions which showed the great need for timeout procedure protocol and only **18** OR nurses from study and control group had previous knowledge regarding timeout procedure.

Every OR nurses expresses their need to update their knowledge and skill in timeout procedure, they all think this study is need and almost every OR nurse feels knowing about timeout procedure improves their communication and team work. Thus, this assessment strongly suggests the need of the research study on timeout procedure protocol.

SECTION 4.3: ASSESSMENT OF EFFECTIVENESS OF TIMEOUT PROCEDURE PROTOCOL ON KNOWLEDGE AND SKILL REGARDING PATIENT SAFETY BETWEEN STUDY AND CONTROL GROUP AMONG OPERATING ROOM NURSES.

SECTION 4.3.1 ASSESSMENT OF THE POST TEST LEVEL OF KNOWLEDGE AND SKILL REGARDING TIME OUT PROCEDURE PROTOCOL BETWEEN STUDY AND CONTROL GROUP AMONG OPERATING ROOM NURSES.

Table 4.3.1a: Comparison of domain wise percentage of knowledge on time out procedure protocol among operating room nurses

N=60

Domains	No. of questions	Study		Control	
		Mean	%	Mean	%
Meaning of time out procedure	2	1.63	81.50	1.37	68.50
General information regarding timeout procedure	6	4.47	74.50	2.70	45
Importance of timeout procedure	3	2.50	83.33	1.33	44.33
Knowledge on surgical safety checklist	3	2.27	75.67	1.47	49
Components of surgical safety check list	6	3.73	62.17	2.53	42.17

The table 4.3.1a shows domain wise percentage of knowledge score, the findings revealed that in the study group, OR nurses gained utmost knowledge **(83.33%)** in **Importance of time out procedure** and in control group, OR nurses had maximum **(68.50%)** knowledge in **Meaning of time out procedure**. Considering minimum knowledge score OR nurses have scored comparatively less in **Components of surgical safety check list** in both study **(62.17%)** and control group **(42.17%).** Control group had adequate knowledge in Meaning of timeout procedure, and improvement needed in all other components. In study group they had better knowledge in Importance aspect. Similarly, both the groups showed their need to improve knowledge in components of SSC.

N=60

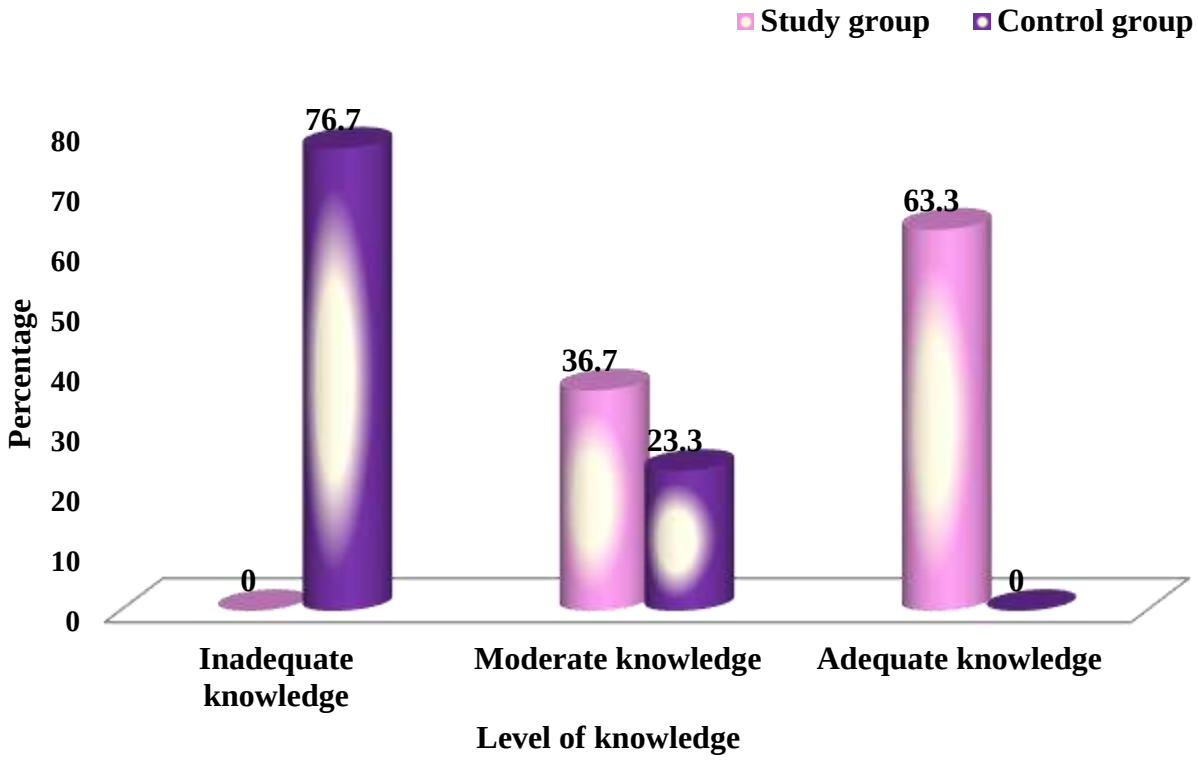

Figure 4.3.1a Frequency and percentage distribution of post test level of knowledge regarding timeout procedure protocol in the study and control group among OR nurses.

The figure 4.3.1a depicts the frequency and percentage distribution of post test level of knowledge regarding timeout procedure protocol, the results found a marked variation between study and control group among OR nurses. In study group it shows **19 (63.3%)** of the OR nurses had gained adequate level of knowledge and **11 (36.7%)** gained moderate level of knowledge, whereas most of them **22 (76.7%)** in control group had inadequate knowledge. very high statistical significance was drawn using chi square test at **p<0.001.**

Hence, it concludes that study group have gained better knowledge when compared with control group. Thus, revealed the effectiveness of Timeout procedure protocol in enhancing the knowledge of OR nurses in the study group

N=60

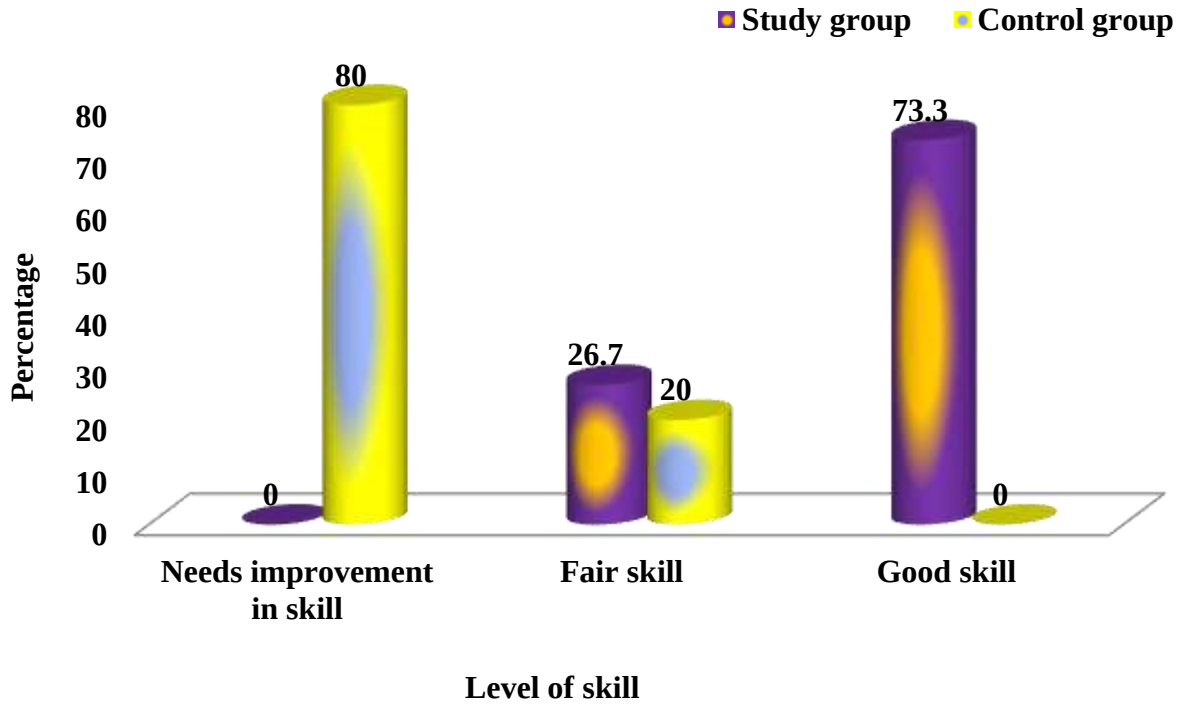

Figure 4.3.1b Frequency and percentage distribution of post test level of Skill regarding timeout procedure protocol in the study and control group among OR nurses.

The figure 4.3.1b signifies the frequency and percentage distribution of post test level of skill regarding timeout procedure protocol, the results revealed that, in the study group most of them **22 (73.3%)** had good skill and only few had fair skill. In control group many **24 (80%)** of them needed improvement in skill, only **20%** had fair skill and none of them had good skill. very high Statistical significance was calculated using chi square test at **$p < 0.001$.**

Thus, evidently proves that the OR nurses in study group had performed the timeout procedure better when compared with the control group. This ascertains the effectiveness of the demonstration of Timeout procedure protocol by the investigator.

SECTION 4.3.2 COMPARISON OF THE POST TEST LEVEL OF KNOWLEDGE AND SKILL REGARDING TIME OUT PROCEDURE PROTOCOL BETWEEN STUDY AND CONTROL GROUP AMONG OPERATING ROOM NURSES.

Table 4.3.2a Comparison of post test mean knowledge score on timeout procedure protocol between study and control group.

N=60

Group	n	Mean	Standard Deviation	Mean Difference	Student independent t-test
Study	30	14.60	2.66	5.20	**t=8.66 p=0.001*** S**
Control	30	9.40	1.93		

***p<0.001, S- Very highly significant

Table 4.3.2a shows the comparison of post test knowledge score on timeout procedure protocol between study and control group.

In study group while comparing the post test level of knowledge, the mean score of knowledge was **14.60** with standard deviation of **2.66**, whereas in control group the mean post test knowledge score was **9.40** with standard deviation of **1.93** and the mean difference was **5.20**. the calculated **'t' value** was **8.66** using student independent t-test, which was found to have a very high statistical significance at **p<0.001** level.

This inference suggests the effectiveness of the intervention in improving the knowledge in study group.

Table 4.3.2b Comparison of post test mean skill score on timeout procedure protocol between study and control group.

N=60

Group	N	Mean	Standard Deviation	Mean Difference	Student independent t-test
Study	30	9.77	1.17	5.13	**t=12.96 p=0.001*** S**
Control	30	4.63	1.82		

***p<0.001, S- Very highly significant

Table 4.3.2b shows the comparison of post test skill score on timeout procedure protocol between study and control group.

In study group while comparing the post test level of skill, the mean skill score was **9.77** with Standard deviation of **1.17**, whereas in control group the mean post test level of skill score was **4.63** with standard deviation and the mean difference was **1.82**. The calculated **'t' value** was **12.96** using student independent t-test, which was found to be very high statistical significance at **p<0.001** level.

Thus, evidently proves that the OR nurses in study group had performed the timeout procedure better when compared with the control group. This ascertains the effectiveness of the demonstration of Timeout procedure protocol by the investigator.

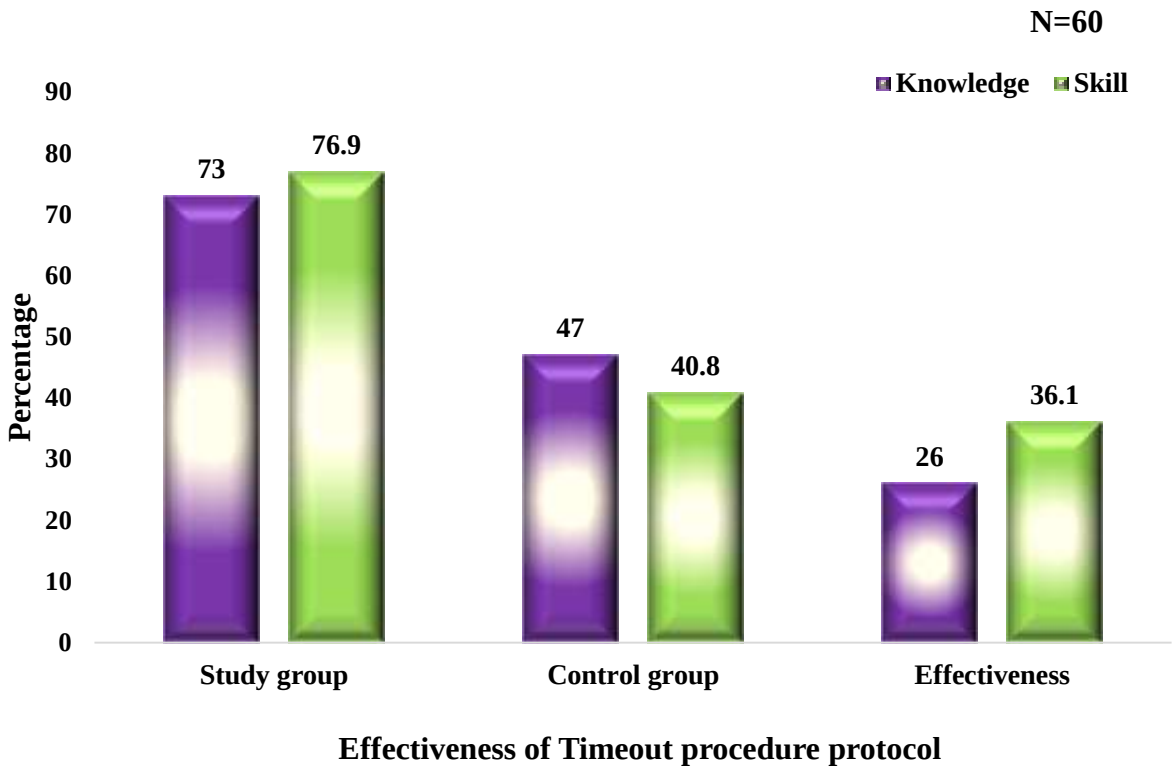

Fig. 4.3.2a Effectiveness of timeout procedure protocol on post test level of knowledge and skill in study and control group.

The figure 4.3.2a points out the effectiveness of timeout procedure protocol, the findings showed that, in study group OR nurses gained 73% of knowledge, whereas in control group they gained 47% of knowledge, the variation between study group and control group was 26%. This variation proves the effectiveness of administration of timeout procedure protocol in the study group by the investigator.

Considering, skill score study group OR nurses gained 76.9% and control group OR nurses gained 40.8% and the difference between study group and control group was 36.1%. Marked variation was found between the groups. This difference evidently proves the effectiveness of demonstration of time out procedure protocol in the study group by the investigator.

SECTION 4.4: CORRELATION BETWEEN THE POST TEST MEAN KNOWLEDGE SCORE WITH SKILL SCORE REGARDING TIME OUT PROCEDURE PROTOCOL IN THE STUDY AND CONTROL GROUP AMONG OPERATING ROOM NURSES.

Table 4.4.1: Correlation between post test mean knowledge score with skill score in the study and control group among OR nurses.

N=60

Group	Variables	Post test		Spearman rank Correlation coefficient	Type of correlation
		Mean	**SD**		
Study	Knowledge Vs Skill	14.60	2.66	r = 0.48 **p=0.001*** S**	**Moderate +**
		9.23	1.30		
Control	Knowledge Vs Skill	9.40	1.93	r =0.18 **p=0.26 N.S**	**Poor +**
		4.90	2.01		

***p<0.001 S- very highly significant, N.S-Not Significant

Table 4.4.1 depicts the correlation between mean knowledge score with skill score among study and control group, analyzed using Spearman rank Correlation coefficient. This indicates that, in the study group there was a significant positive moderate correlation between post test knowledge score and post test skill score, which infers that as knowledge increases their skill also increases moderately.

In contrast to the above result, in control group no significant and poor correlation was identified between post test knowledge score and post test skill score, which infers that as knowledge increases their skill score also increases poorly.

The calculated ‘r’ value among study and control group, r =0.48 and 0.18 respectively thus, revealed a high statistical significance and a positive moderate correlation between knowledge and skill at p<0.001 level.

Hence improving knowledge regarding Timeout Procedure Protocol has also enhanced the skill in study group.

N=60

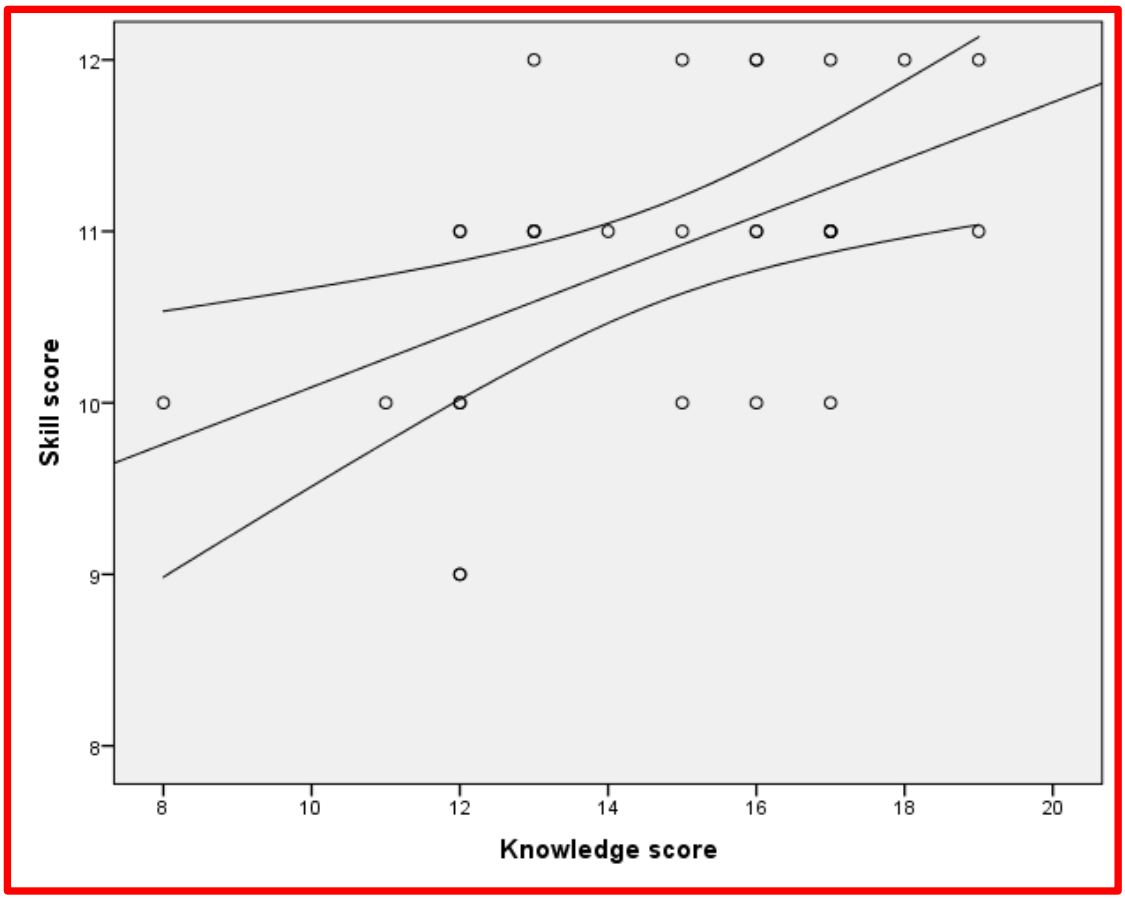

Fig. 4.4.1 Correlation between post test mean knowledge score with skill score among OR nurses in the study and control group.

SECTION 4.5: ASSOCIATION OF SELECTED DEMOGRAPHIC VARIABLES WITH POST TEST MEAN OF KNOWLEDGE AND SKILL SCORE REGARDING TIME OUT PROCEDURE PROTOCOL IN THE STUDY AND CONTROL GROUP AMONG OPERATING ROOM NURSES.

N=60

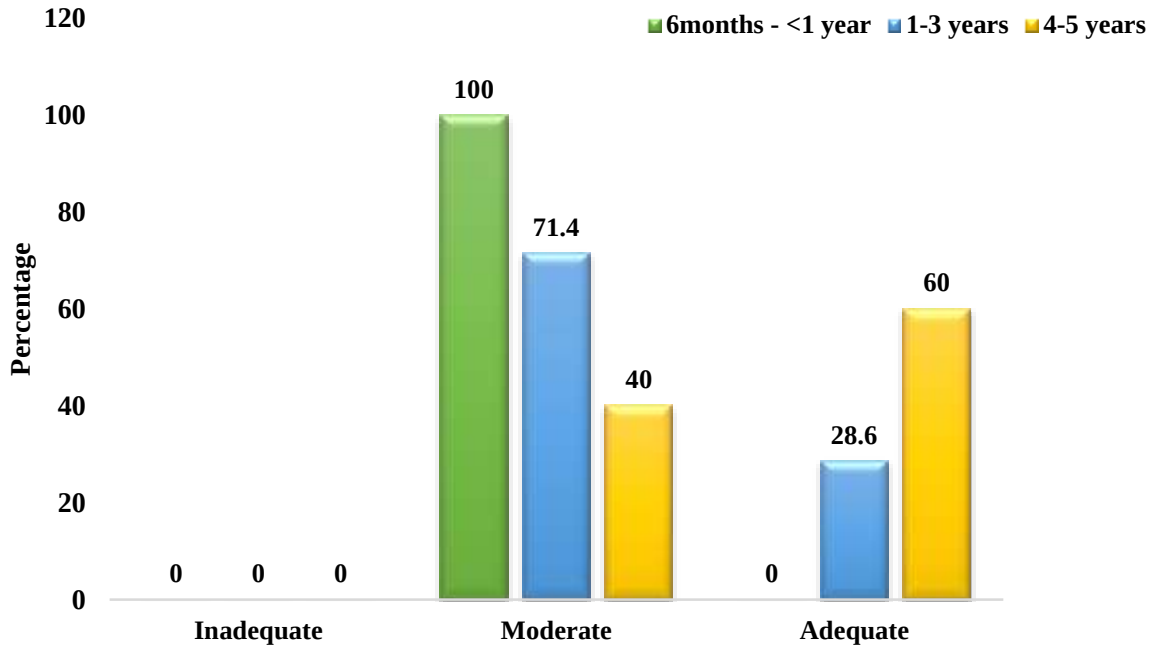

Fig. 4.5.1 Association of post test level of knowledge with Nurse's age in study group

The figure 4.5.1 reveals a significant association for selected demographic variables of OR nurses in study group using Chi square test. The findings showed that high statistical significance at $p < 0.05$ level was identified for OR nurses those who aged >40 years have gained more knowledge when compared with other OR nurses. This may be due to their level of maturity and experience in OR and better understanding of Timeout procedure than other nurses.

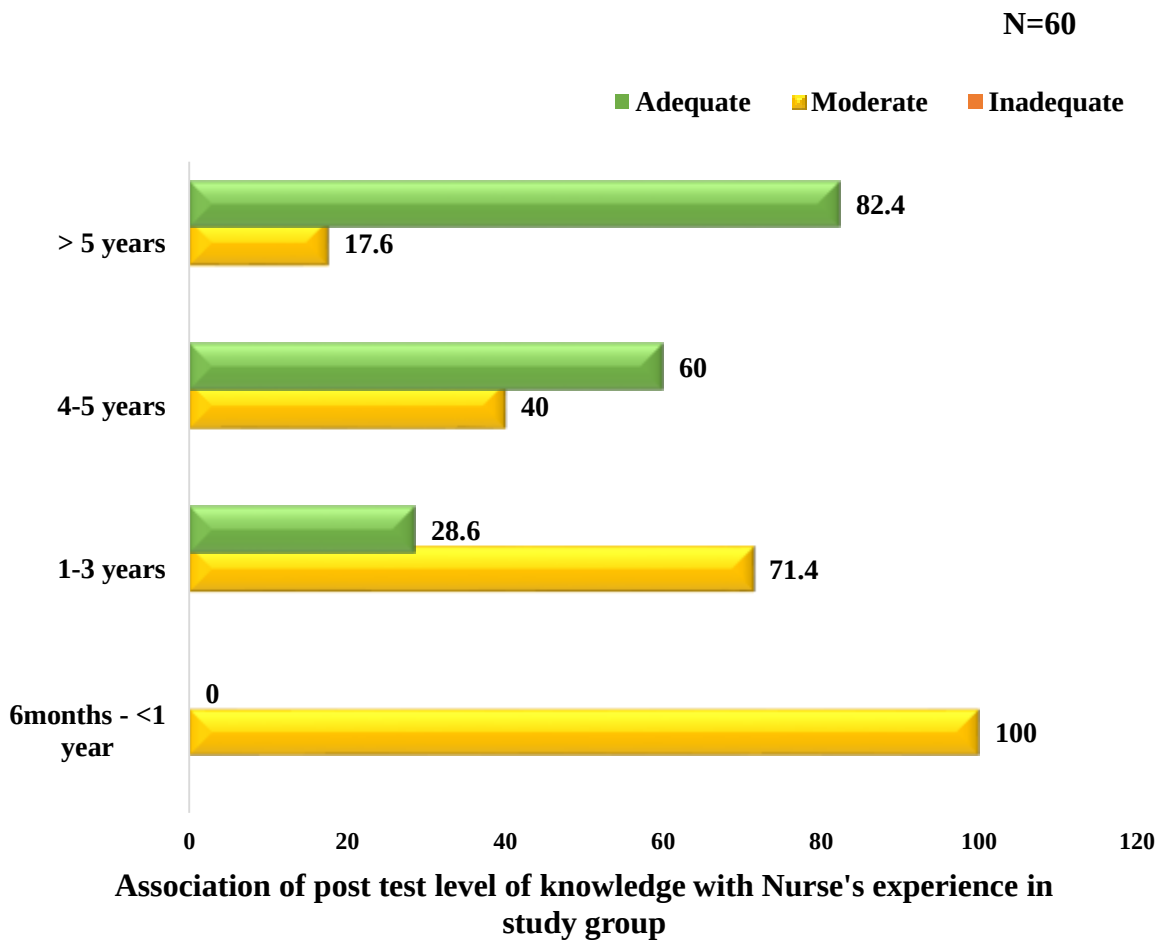

Fig. 4.5.2 Association of post test level of knowledge with Nurse's experience in study group

The figure 4.5.2 reveals significant association for OR nurses who had >5years of experience have gained more knowledge when compared with other OR nurses, shows the statistical significance at the level of $p < 0.05$. the reason may be due to the work experience they had in OR.

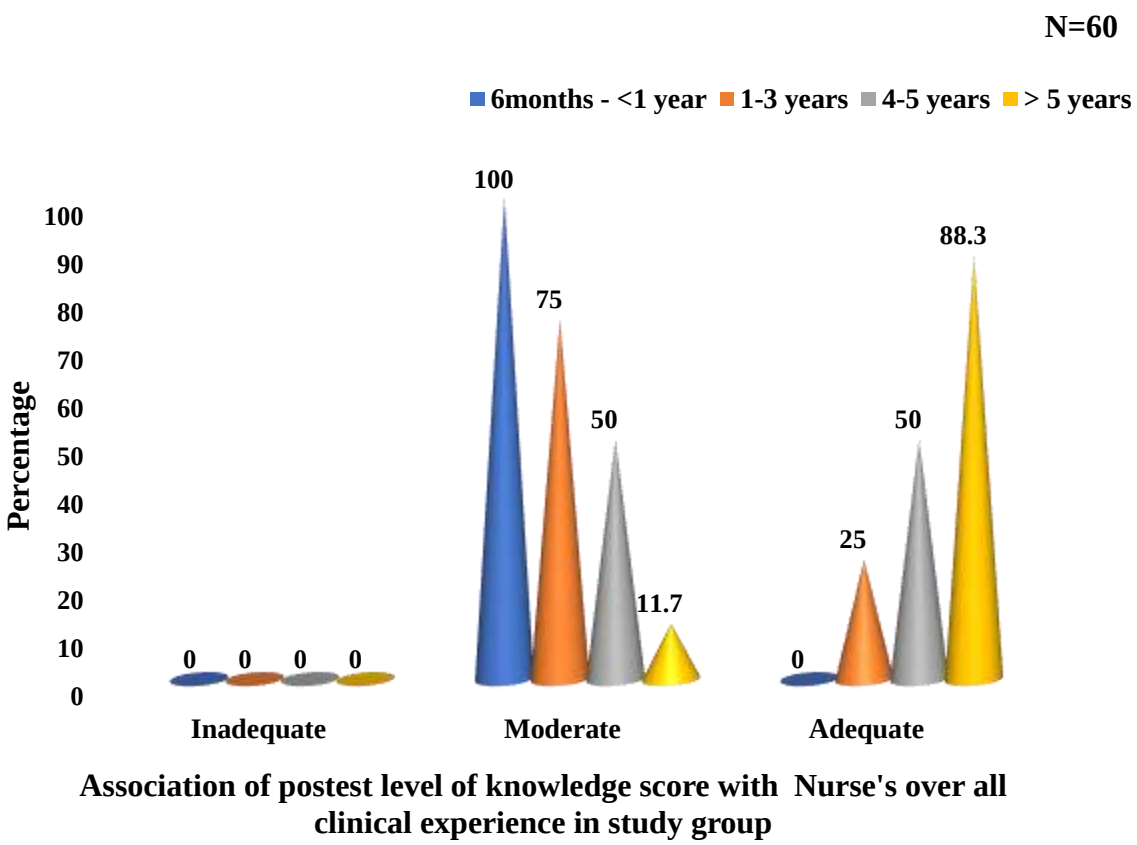

Fig. 4.5.3 Association of post test level of knowledge with Nurse's over all clinical experience in study group

The figure 4.5.3 reveals significant association for OR nurses who had >5years of overall clinical experience have gained more knowledge when compared with other OR nurses, the statistical significance drawn at $p < 0.05$ level. The generated association was also due to the overall broad experience and exposure in OR.

The figures 4.5.1 – 4.5.3 dealt about the association between post test level of knowledge with selected demographic variables such as OR Nurse's age, experience and overall clinical experience and none of the other variables in the study group has shown any statistically significant association with post test mean knowledge score.

Considering control group none of the demographic variables showed statistical significant association with post test mean knowledge score.

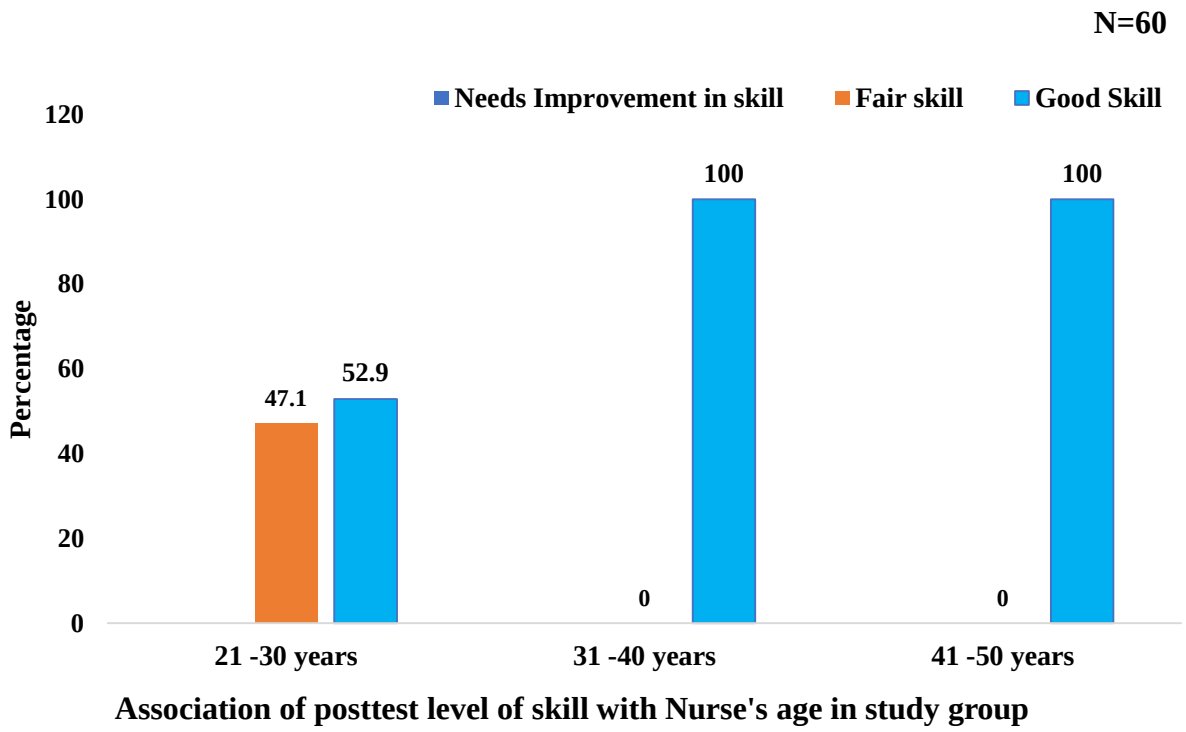

Figure 4.5.4 Association of post test level of skill score with Nurse's age in the study group.

The figure 4.5.4 reveals significant association for OR nurses aged >30 years have performed timeout procedure well, when compared with other OR nurses, the statistical significance drawn at $p < 0.05$ level, this association may be due to their involvement in performing Timeout procedure effectively.

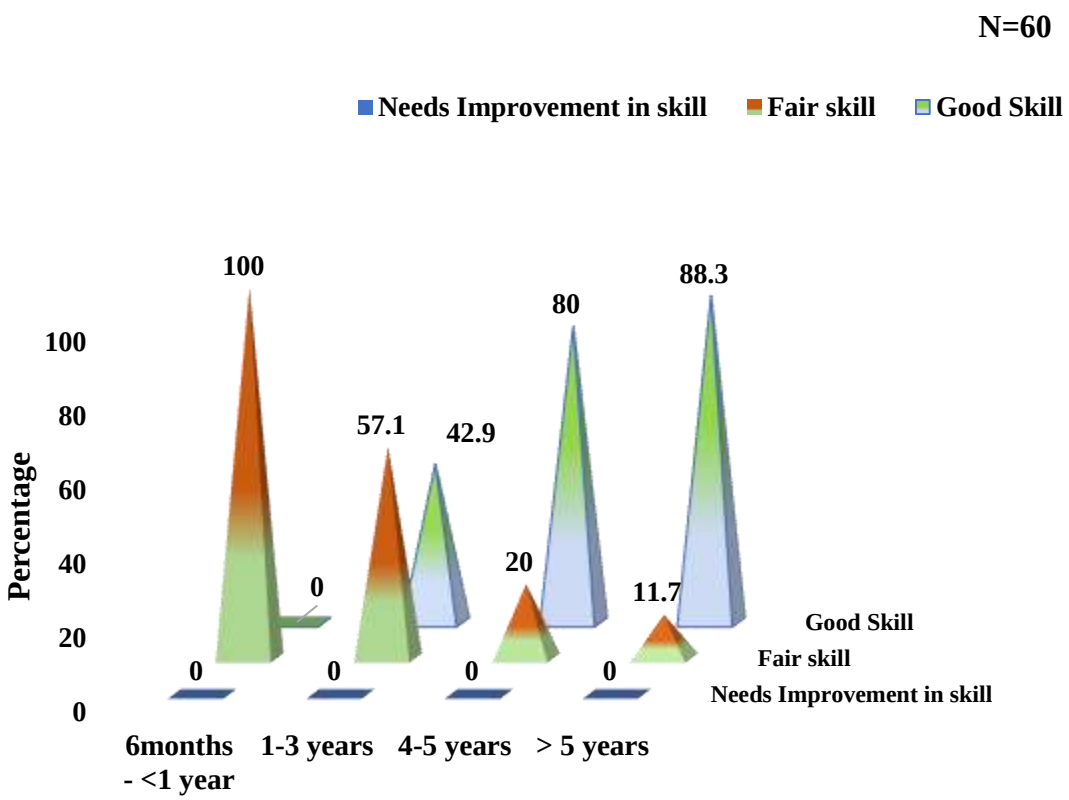

Figure 4.5.5 Association of post test level of skill score with Nurse's Experience in the study group.

The figure 4.5.5 reveals significant association for OR nurses who had Experience >5 years have performed timeout procedure well, when compared with other OR nurses, the statistical significance drawn at $p < 0.05$ level, the association may be due to their previous knowledge and exposure to timeout procedure.

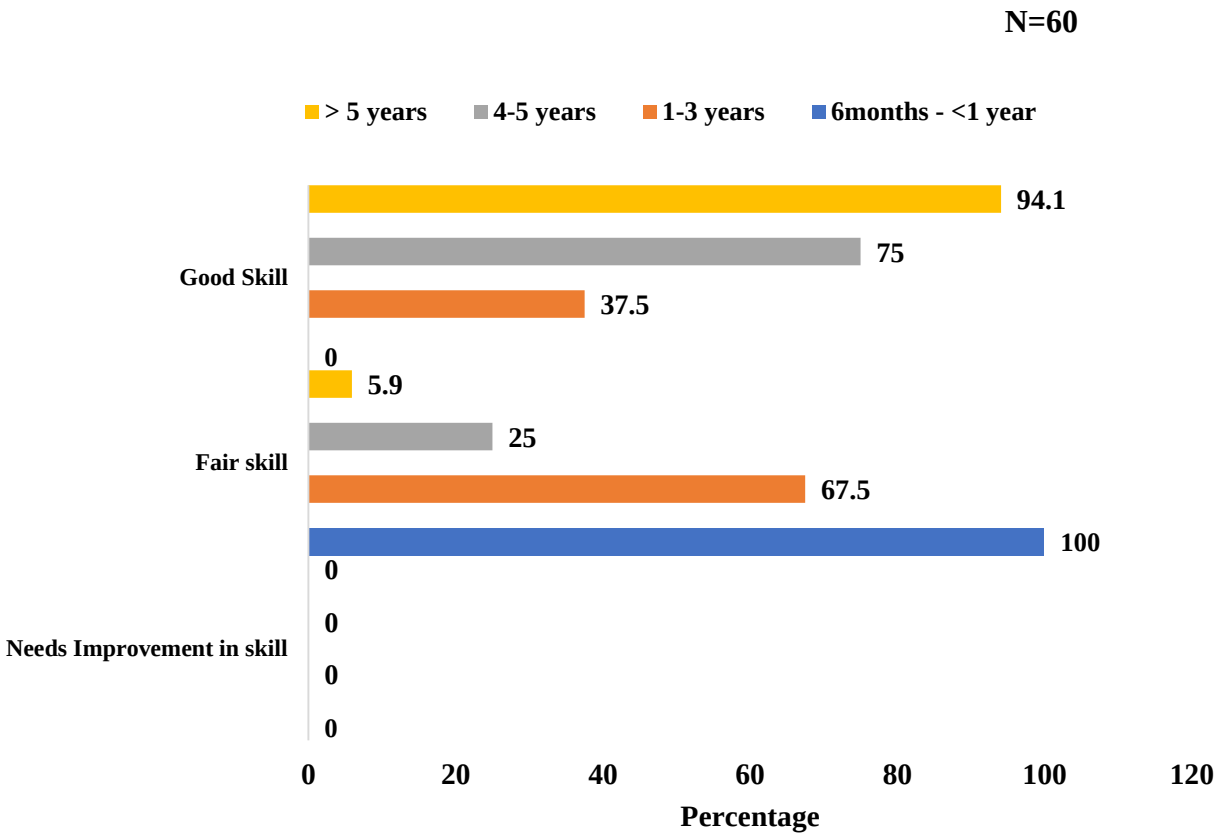

Figure 4.5.6 Association of post test level of skill score with Nurse's Overall clinical experience in the study group.

The figure 4.5.6 reveals significant association for OR nurses who had Over all Clinical experience >5 years have performed timeout procedure well, when compared with other OR nurses, shows a very high statistical significance drawn at $p < 0.001$ level.

The figures 4.5.4 – 4.5.6 dealt about the association between post test level of skill with selected demographic variables such as OR Nurse's age, experience and overall clinical experience and none of the other variables in the study group has shown any statistically significant association with post test mean skill score and none of the other variables in the study group has shown any statistically significant association with post test mean skill score.

Considering control group none of the demographic variables showed statistical significant association with post test mean skill score.

CHAPTER – 5

DISCUSSION

DISCUSSION

This chapter discusses in detail about the finding of the analysis in relation to the objectives of the study and further discussion will illustrate the fulfilment of the objectives. The present study aimed at assessing the effectiveness of timeout procedure protocol regarding patient safety among operating room nurses.

The following were the objectives of the study and further discussion will exemplify how these objectives were satisfied by the study findings.

5.1 The findings of the demographic variables of the OR Nurses.

The demographic variables which included were age in years, gender, marital status, professional educational status, total years of experience, and attended in-service education, educational program obtained from private or government sector.

The frequency and percentage distribution of demographic variables were depicted in table 4.1.1a to 4.1.1c. the findings showed that,

Majority of operating room nurses 17 (56.67%) belonged to the age group of 21 – 30 years, most of them 24 (80%) were female gender and unmarried 21 (70%) holds Nursing qualification of Post Basic 18 (60%) in both study and control group.

Most of the OR nurses passed out in the year ≤2013 20 (66.67%) of the OR nurses passed out in the year ≤2013 and maximum OR nurses 23 (76.67%) were graduated from Tamil Nadu and 28 (93.33%) obtained education through private sector, with regards to experience most 17 (56.67%) of them were >5 years in study group whereas in control group majority 15 (50%) of them had 1-3 years of experience.

Majority of the OR nurses 17 (56.67%) had >5 years of overall clinical experience in study group, whereas in control group maximum 14 (46.67%) had 1-3 years. Considering experience in OR mostly 11 (36.67%) had >5 years in study group, while in control group majority 10 (34.48%) had 1-3 years. All the OR nurses has never attended in-service education on Timeout Procedure. This reveals the need for education and training on Timeout Procedure.

5.2 The first objective of the study was to assess the level of need for time out procedure protocol regarding patient safety among operating room nurses in study and control group.

Table 4.2.1 pointed out the need for timeout procedure protocol among operating room nurses.

The findings showed that almost all the OR nurse scored (100%) 5 out of 6 questions which showed the great need for timeout procedure protocol and only 18 OR nurses from study and control group had previous knowledge regarding timeout procedure.

Every OR nurses expressed their need to update their knowledge and skill in timeout procedure, they all believed that this study was needed and almost every OR nurse felt that knowledge and skill on timeout procedure had improved their communication and team work. A prospective interventional study was conducted by S Erestam, e.tal., (2017) [24] in operating room after implementation of WHO Surgical Safety Checklist (SSC), which recorded a good teamwork improves patient safety in operating room and adherence to SSC has improved safety climate in operating room.

Thus, the above need assessment strongly suggests the need of the research study on timeout procedure protocol.

5.3 The second objective of the study was to assess the effectiveness of time out procedure protocol on knowledge and skill between study and control group among operating room nurses.

5.3.1 Assessment of the post test level of knowledge and skill regarding timeout procedure protocol between study and control group:

The table 4.3.1a showed domain wise percentage of knowledge score, the findings revealed that in the study group, OR nurses gained utmost knowledge (83.33%) in Importance of time out procedure and in control group OR nurses had maximum (68.50%) knowledge in Meaning of time out procedure.

Considering minimum knowledge score OR nurses have scored comparatively less in Components of surgical safety check list in both study (62.17%) and control group (42.17%). Control group had adequate knowledge in Meaning of timeout procedure, and improvement

needed in all other components. In study group they had better knowledge in Importance aspect. Similarly, both the groups showed their need to improve knowledge in components of SSC.

The figure 4.3.1a depicted the frequency and percentage distribution of post test level of knowledge regarding timeout procedure protocol, the results found a marked variation between study and control group among OR nurses. In study group it shows 19 (63.3%) of the OR nurses had gained adequate level of knowledge and 11 (36.7%) gained moderate level of knowledge, whereas most of them 22 (76.7%) in control group had inadequate knowledge. very high statistical significance was drawn using chi square test at $p<0.001$. Hence, it concludes that study group have gained better knowledge when compared with control group. Thus, revealed the effectiveness of Timeout procedure protocol has enhanced the knowledge of OR nurses in the study group

The figure 4.3.1b signifies the frequency and percentage distribution of post test level of skill regarding timeout procedure protocol, the results revealed that, in the study group most of them 22 (73.3%) had good skill and only few had fair skill. In control group many 24 (80%) of them needed improvement in skill, only 20% had fair skill and none of them had good skill. very high Statistical significance was calculated using chi square test at $p < 0.001$. Thus, the above results evidently proved that the OR nurses in study group had performed the timeout procedure better when compared with the control group. This ascertains the effectiveness of the demonstration of Timeout procedure protocol by the investigator.

5.3.2 Comparison of the post test level of knowledge and skill regarding timeout procedure protocol between study and control group:

Table 4.3.2a showed the comparison of post test knowledge score on timeout procedure protocol between study and control group, the results revealed that, in study group while comparing the post test level of knowledge, the mean score of knowledge was 14.60 with standard deviation of 2.66, whereas in control group the mean post test knowledge score was 9.40 with standard deviation of 1.93 and the mean difference was 5.20. the calculated ‘t’ value was 8.66 using student independent t-test, which was found to have a very high statistical significance at $p<0.001$ level. This inference suggests the effectiveness of the intervention in improving the knowledge in study group.

Table 4.3.2b showed the comparison of post test skill score on timeout procedure protocol between study and control group, the results showed that, in study group while comparing the post test level of skill, the mean skill score was 9.77 with Standard deviation of 1.17, whereas in control group the mean post test level of skill score was 4.63 with standard deviation and the mean difference was 1.82. The calculated 't' value was 12.96 using student independent t-test, which was found to be very high statistical significance at $p<0.001$ level.

Thus, evidently proves that the OR nurses in study group had performed the timeout procedure better when compared with the control group. This ascertains the effectiveness of the demonstration of Timeout procedure protocol by the investigator.

The figure 4.3.2a pointed out the effectiveness of timeout procedure protocol, the findings showed that, in study group OR nurses gained 73% of knowledge, whereas in control group they gained 47% of knowledge, the variation between study group and control group was 26%. This variation proves the effectiveness of administration of timeout procedure protocol in the study group by the investigator.

Considering, skill score study group OR nurses gained 76.9% and control group OR nurses gained 40.8% and the difference between study group and control group was 36.1%. Marked variation was found between the groups. This difference evidently proves the effectiveness of demonstration of time out procedure protocol in the study group by the investigator.

Hence the, $\mathbf{NH_1}$ stated earlier that **"There is no significant difference in the post test level of knowledge regarding time out procedure protocol on patient safety between study and control group" was not accepted for the study group and accepted for the control group.**

The following findings of the study were found to be consistent with the report of the study Ms.Roopali patel (2016)[121] study findings revealed that OR nurses need to upgrade knowledge on timeout procedure and SSC.

The research investigator had adopted conceptual framework by integrating the concepts of **Stuffle beam Model and Von Berttalannfy's General System Model.** It provided a comprehensive, systematic and continuous ongoing framework for programme evaluation. In this present study it referred to the assessment of demographic variables and OR nurses screened for their need for participating in the study using a need assessment tool based on the scores (≥ 3/6) in need assessment samples were selected for the study.

The timeout procedure protocol was administered for 4 – 5 OR nurses in group, thereby improving knowledge and skill regarding patient safety in operating room. Here the investigator executed the Timeout procedure protocol through lecture cum discussion on Timeout procedure, demonstration on performing Timeout procedure using surgical safety checklist by the investigator through role play and return demonstration by the OR nurses.

The investigator assessed the post-test level of knowledge and skill regarding Timeout procedure protocol among operating room nurses using structured knowledge questionnaire for knowledge and observational checklist for skill. If there is adequate and moderately adequate knowledge, good and fair skill, this will help the operating room nurses in adjusting well to practice timeout procedure as their daily routine and knowledge and skill can be enhanced, with a view to reinforce a booklet and poster was issued regarding Timeout procedure protocol and daily reminders were sent through WhatsApp technology. whereas inadequate knowledge and those who needed improvement in skill may perform ineffective operating room safety practices, for whom reassessment was done.

The adopted integrated **Stuffle Beam Model and Von Berttanlannfy's General System Model** provided the comprehensive, systematic guidelines and an ongoing evaluation throughout the study process to evaluate the effectiveness of timeout procedure protocol among operating room nurses regarding patient safety in OR.

5.4 The third objective of the study was to correlate the post test mean knowledge score with skill score regarding time out procedure protocol between the study group and control group among operating room nurses.

Table 4.4.1 depicted the correlation between mean knowledge score with skill score among study and control group, analyzed using Spearman rank Correlation coefficient. This indicates that, in the study group there was a significant positive moderate correlation between

post test knowledge score and post test skill score, which infers that as knowledge increases their skill also increases moderately.

In contrast to the above result, in control group no significant and poor correlation was identified between post test knowledge score and post test skill score, which infers that as knowledge increases their skill score also increases poorly.

The calculated 'r' value among study and control group, r =0.48 and 0.18 respectively thus, revealed a high statistical significance and a positive moderate correlation between knowledge and skill at $p<0.001$ level.

Hence improving knowledge regarding Timeout procedure protocol has also enhanced the skill in study group.

Hence the, $\mathbf{NH_2}$ stated earlier that **"There is no significant correlation between the post test level of knowledge with skill regarding time out procedure protocol among operating room nurses in the study group and control group" was not accepted for the study group and accepted for the control group.**

5.5 The fourth objective of the study was to associate the selected demographic variables with post test mean of knowledge and skill score regarding time out procedure protocol between the study group and control group among operating room nurses.

The figure 4.5.1 to 4.5.6 revealed that, there is a significant association for those OR nurses aged >40 years, had >5years of experience and overall clinical experience have gained more knowledge when compared with other OR nurses, the statistical significance was drawn using Chi square test and for those OR nurses aged >30 years, and who had experience and over all clinical experience >5 years have performed timeout procedure well, when compared with other OR nurses, the statistical significance was drawn using Chi square test.

The overall findings of the association of the selected variables showed that the demographic variables such as age in years, experience and overall clinical experience was found to be statistically associated in the study group with both knowledge and skill mean score, and other variables has not shown any statistical association.

In contrast all the variables in the control has not shown any statistical association with both knowledge and skill mean score.

Hence, NH_3 stated earlier that **"There is no significant association of the selected demographic variables with post test mean score of knowledge and skill regarding time out procedure protocol among operating room nurses in the study group and control group" was not accepted** for the above mentioned variables in the study group and **accepted** for the other variables in the study group and all variables in the control group.

CHAPTER – 6

SUMMARY, CONCLUSION, IMPLICATION, RECOMMENDATIONS AND LIMITATIONS

SUMMARY, CONCLUSION, IMPLICATION, RECOMMENDATIONS AND LIMITATION

The current study focused on the effectiveness of timeout procedure protocol regarding patient safety among operating room nurses at selected hospitals, Chennai.

This chapter elaborates about the summary, conclusion, implication, recommendations, and limitations of the study based on the objectives.

6.1 SUMMARY

Patient safety is a discipline that emphasize safety culture in health care through the prevention, reduction, reporting, and analyzing of medical and surgical error that often leads to adverse effects. Patient safety is a fundamental principle of health care delivery system. Every point in the process of care-giving contains certain degree of inherent unsafety. Organization should bring up a patient safety environment with clear policies, leadership training, safety improvements through quality markers, skilled health care professionals and their effective involvement of patients in their care, all these ingredients are needed to ensure sustainable and significant improvements in patient safety of health care. Patient safety helps doctors, nurses and all other health care professionals practice safe and better health care. Therefore, it is good not only for patients but for everyone in healthcare team.

The world health organization calls patient safety an endemic concern as there is an impact of health care errors lies 1 in every 10 patients around the world.

Despite many advances in the surgical environment, there is still a lot of work to do to improve patient safety in Operating Room and throughout pre and post-operative care, death and illness still arises as a result of surgical site infections, patient misidentification, wrong site surgery, mistakes and omissions.

The major purpose of the research study is to create patient safety environment in operating room and to update the operating room nurse’s knowledge and skill on accurately performing timeout procedure and follow recommended WHO Surgical Safety Checklist.

The objectives of the study were

1. To assess the level of need for time out procedure protocol regarding patient safety among operating room nurses in study and control group.
2. To assess the effectiveness of time out procedure protocol on knowledge and skill between study and control group among operating room nurses.
3. To correlate the post test mean knowledge score with skill score regarding time out procedure protocol among operating room nurses in the study group and control group.
4. To associate the selected demographic variables with post test mean of knowledge and skill score regarding time out procedure protocol among operating room nurses in the study group and control group.

The study was based on the assumptions that,

1. Operating room nurses may have some knowledge and skill on time out procedure.
2. Providing information on timeout procedure protocol to the operating room nurses may enhance their level of knowledge and skill.
3. Adequate information regarding time out procedure may promote Intra-Operative patient safety.
4. Implementing timeout procedure protocol may enhance communication between circulatory nurse and other health care professionals like anaesthetist, surgeon and OR technicians.

The Null Hypotheses formulated were,

NH_1: There is no significant difference in the post test level of knowledge regarding time out procedure protocol on patient safety among operating room nurses between study and control group.

NH_2: There is no significant correlation between the post test level of knowledge with skill regarding time out procedure protocol among operating room nurses in the study group and control group.

NH_3: There is no significant association of the selected demographic variables with post test mean score of knowledge and skill regarding time out procedure protocol among operating room nurses in the study group and control group.

The study was strongly rooted on the extensive review of literature, researcher's clinical experience and expert guidance from the field of Medical – Surgical Nursing. It also provided a platform to integrate theories into conceptual framework aiding to design the methodology and in developing the tool for data collection.

To provide aerial view regarding the relation of various aspects of the study, the investigator has adopted and integrated a framework based on the concepts of **Stuffle beam Model and Von Berttalannfy's General System Model.**

Pre-experimental post test only design was chosen to assess the effectiveness of timeout procedure protocol on knowledge and skill regarding patient safety among operating room nurses in the selected hospitals, Chennai. The timeout procedure protocol was the independent variable, knowledge and skill was the dependent variable. The sample size was 60 (30 OR nurses in each study and control group). Non-probability purposive sampling technique was used to select the samples who fulfilled the inclusive criteria.

The tool which is constructed in the study has two parts (Data collection tool and intervention tool). After a comprehensive critical review from the literature and scrutiny with experts in the field of Medical Surgical nursing, surgeons and anaesthetist, and WHO's surgical safety checklist recommended steps were incorporated in the tool, based on this the structured knowledge questionnaire for assessment of knowledge and observational checklist for the assessment of skill was devised as a tool for data collection procedure.

Section A: Assessment of demographic variables

Structured knowledge questionnaire was used to assess the demographic data. It includes demographic variables and professional variables. **Demographic variables**: Age in years, gender, marital status. **Professional variables**: Professional educational status, total years of experience, and attended in-service education, educational program obtained from private or government sector.

Section B: Assessment of knowledge

This part consisted of structured knowledge questionnaire to assess the level of knowledge regarding Timeout procedure protocol regarding patient safety in operating room. It consisted of 20 multiple choice questions with one correct answer and three alternatives.

Categorized under the following components:

A. Meaning of time out procedure
B. General information regarding timeout procedure
C. Importance of timeout procedure
D. Knowledge on surgical safety checklist
E. Components of surgical safety check list

Section B: Assessment of skill

This part consisted of structured checklist based on WHO's Surgical Safety Checklist regarding patient safety in operating room. This checklist is constructed as12 steps of time out procedure

The experts in the nursing and medical field validated the tool. Pilot study was conducted at Sir Ivan Stedeford hospital, Ambattur and St.Antony's hospital, Madavaram. Pilot study analysis proved the practicability and feasibility of the research study. Hence, it can be proceeded to main study. Reliability of the tool was assessed by using Test-retest method for knowledge and inter-rater method for skill. Its correlation coefficient r –values were (**0.80) knowledge and (0.82) skill.** Which was considered to be high statistical significance. hence it is utilized for main study.

The investigator adhered to the ethical principles of beneficence (the right to freedom from harm and discomfort and the right to protection from exploitation); respect for human dignity (right to self-determination and the right to full disclosure); justice (the right to fair treatment and the right to privacy). Ethical clearance certificate was obtained by the ICCR, formal permission was obtained from respective authorities. Collected data was used only for the research purpose.

Main study was conducted at SIMS Hospital, Vadapalani and Nungambakkam. Using Non-probability purposive sampling technique 60 samples were selected (30 OR nurses for each study and control group), Need assessment was done to select the samples and after which using lottery method the setting was divided into study and control group. Timeout procedure protocol intervention was given to the study group and post test was done on the 7^{th} day using structured knowledge questionnaire for level of knowledge and observational checklist to

assess the level of skill of OR nurses in the study and control group. The data collection was done for a period of 4 weeks. The collected data was analyzed using descriptive statistics such as mean and standard deviation and inferential statistics such as 't-test, chi-square test, Spearman rank correlation' was used to show statistical significance.

The major findings of the study were:

- In the post test level of knowledge 63.3% OR nurses had gained adequate level of knowledge and 36.7% gained moderate level of knowledge in study group, whereas most of them (76.7%) in control group had inadequate knowledge and none of them had adequate knowledge.
- The comparison of domain wise knowledge score in study group, OR nurses are having utmost knowledge (83.33%) in Importance of time out procedure and in control group, OR nurses has maximum (68.50%) knowledge in Meaning of time out procedure. On the other hand, OR nurses have scored less in Components of surgical safety check list in both study group (62.17%) and control group (42.17%).
- The post test analysis on the level of skill between study and control group revealed that most of them in study group had good skill (73.3%). Only few had fair skill. Whereas in control group 80% of them Needed improvement in skill, only 20% had fair skill and none of them had good skill. very high Statistical significance was at $p< 0.001$ level. Which evidently proves that the OR nurses in study group had performed the timeout procedure better when compared with the control group. This ascertains the effectiveness of the demonstration of Timeout procedure protocol.
- The comparison of post test means knowledge score between study and control group showed that the mean score of knowledge in study group was 14.60 with standard deviation 2.66, whereas in control group the mean post test level of knowledge score was 9.40 with standard deviation 1.93 and the mean difference was 5.20. the calculated 't' value was 8.66 using student independent t-test, which was found to be highly statistical significance at $p<0.001$ level. This inference unveils the effectiveness of the intervention in improving the knowledge in study group.
- The comparison of post test skill score on timeout procedure protocol between study and control group, the results showed that, in study group while comparing the post test level of skill, the mean skill score was 9.77 with Standard deviation of 1.17, whereas in control group the mean post test level of skill score was 4.63 with standard deviation and the mean

difference was 1.82. The calculated 't' value was 12.96 using student independent t-test, which was found to be very high statistical significance at $p<0.001$ level. Thus, evidently proves that the OR nurses in study group had performed the timeout procedure better when compared with the control group. This ascertains the effectiveness of the demonstration of Timeout procedure protocol by the investigator.

- The correlation between the post test mean knowledge score with skill score revealed that, the calculated 'r' value among study and control group, r =0.48 and 0.18 respectively, which showed a very high statistical significance that there was a positive correlation between knowledge and skill at $p<0.001$ level. Hence improving knowledge regarding Timeout procedure protocol has also enhanced the skill in study group.
- The association of selected demographic variables with post test mean of knowledge and skill score in the study group revealed a statistical significant association with regard to the demographic variables such as age in years (41 – 50), experience (> 5 years), overall clinical experience (>5 years). None of the variables in the control group showed any statistically significant association with knowledge and skill.

6.2 CONCLUSION

The present study assessed the effectiveness of timeout procedure protocol on knowledge and skill regarding patient safety among operating room nurses. The study findings revealed that, while comparing the post test level of knowledge and skill showed a significant improvement in study group, after administration of timeout procedure protocol which has been devised by the investigator. Hence it was an effective tool to update knowledge and improve the skill of operating room nurses. To conclude as a operating room nurse we have to:

"**Raise Awareness, Increase Engagement: Be a Time Out Super Hero"**

Speak up; let your VOICE lead the surgery.

6.3 IMPLICATIONS: The researcher has drawn the following implications from the study which is of pressing concern in the arena of nursing practice, nursing education, nursing administration and nursing research.

6.3.1 Nursing practice

- The implementation of Timeout procedure:
- Prevents harm in operating room.

- Improves quality patient care in operating room
- Enhances the performance of the surgical team.
- Improves communication between the surgical team members.
- It helps to monitor all aspects of the operation in a standardized way.
- Establishes Patient-centered safety culture in operating room.
- It is an opportunity to other members of the team to share their thoughts regarding surgical intervention.
- Ultimately adheres to the code of ethics- ***"Do no harm"***
- It builds an environment of trust in staff who were empowered to report patient safety events without fear of reprisal.
- During the time-out, the team comes together and develops a shared mental model of what the procedure will be like, increasing the chances that all members will have the situational awareness needed to prevent harm.
- It establishes leadership training within team and empowers all the members need to be empowered to work on behalf of the patients.
- Empowered the nurses to act as a *"Nurse Advocate"* Role.

6.3.2 Nursing education

- Nursing curriculum should be upgraded the changes in health care especially concerned with operating room procedures.
- Seminars, workshop and conference can be conducted for nursing students to gain knowledge and skill in operating room procedures.
- Specific courses can be obtained to upgrade their competence level in operating room.
- Simulation training programme can be organized in induction programme for novice OR nurses.
- Nursing tutors should inculcate novice nurses regarding the importance of performing timeout procedure and patient safety culture.

6.3.3 Nursing Administration

- Nurse managers can train leadership skills and communication skills in OR nurses to perform timeout procedure effectively.
- Nurse preceptors, nursing officers, charge nurses should upskill their knowledge on timeout procedure.

- Institution policy makers can build a timeout team which specially perform safety procedures inside OR.
- Nurse managers supervises on OR nurses whether they adhere to protocol to perform standardized intra operative care.
- Nurses administrators can evaluate positive patient care outcome measures.

6.3.4 Nursing research

- The research findings can be disseminated through conferences, seminar, and publishing in journals and websites.
- Nurse researchers can conduct a qualitative research study to assess the effectiveness of the timeout procedure protocol.
- Nurse researchers can develop a new surgical safety checklist based on the needs.
- Nurse researchers can strongly encourage every OR nurses to maintain the standards of care in OR to perform timeout procedure.
- Nurses researchers can motivate the nursing students to more research studies in field of patient safety.
- Nurse researchers can develop new theories like ‘error prevention theories’ and ‘error management theories’ based on findings.

6.4 PLANS FOR RESEARCH DISSEMINATION

The research findings will be disseminated through Indian Journal of Surgery, International journal of surgery and surgical science (IJSSS), The American Journal of Surgery, AORN- Association of periOperating room Registered Nurses journals, British Journal of Nursing, ICCR Journal of Nursing, the Nursing Journal of India- Trained Nurses Association of India (TNAI) within 6 months period of time.

6.5 PLANS FOR RESEARCH UTILIZATION

The research findings will be communicated to the Medical Director of SIMS hospitals, Chennai for utilization by implementing Timeout procedure protocol which will enable them to attain NABH or JACHO Accreditation.

6.6 RECOMMENDATIONS

- The timeout procedure protocol can be utilized by the Operating room nurses in SIMS Hospitals.

- The researcher recommends the upcoming nurse researchers to conduct study on same topic in a time series design and evaluate the findings.
- The researcher recommends the hospital nursing director to utilize tools to impart knowledge during induction training programme for a novice OR nurse.
- The nurse researcher recommends the organization to bring up a patient safety environment with clear policies, leadership training, safety improvements through quality markers, skilled health care professionals and their effective involvement of patients in their care, all these ingredients are needed to ensure sustainable and significant improvements in patient safety of health care.

6.7 LIMITATIONS

- The researcher found difficult in getting Indian reviews and Nursing studies and proper statistical information regarding surgical error since it is an iceberg phenomenon unable to measure the accurate burden of surgical error.
- The researcher found it very difficult to gather samples, since the OR nurses are having busy schedule of duty shifts and workload. The researcher rectified it by arranging classes before and after each shift in OR dining room which was arranged by OR manager.
- Since, the samples are professionals and conducting post test can create pretest bias among the study and control group, the researcher had used post test only control group design.

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APPENDICES

25 YEARS OF EXCELLENCE
OMAYAL ACHI COLLEGE OF NURSING
1992 - 2017
Love to Serve
Approved by Govt. of Tamilnadu, Indian Nursing Council, New Delhi & Tamilnadu Nurses and Midwives Council, Chennai.
Affiliated to theTamilnadu Dr. M.G.R. Medical University, Guindy, Chennai

23.11.2017.

Dr. Sundari Edwin,
The Nursing Director,
SIMS Hospital
Vadapalani
Chennai – 600026.

Sir/Madam,

Sub: Request for permission conduct to main Study.

Ms. D Emily Joyce, is a bonafide M.Sc(Nursing) I year student studying at our College and she is conducting main study on "A STUDY TO ASSESS THE EFFECTIVENESS OF TIME OUT PROCEDURE PROTOCL REGARDING PATIENT SAFETY IN OPERATING ROOM AMONG OPERATING ROOM NURSES, AT SELECTED HOSPITAL, CHENNAI".

This is for her research project to be submitted to the Tamilnadu Dr.M.G.R. Medical University in partial fulfillment of the University requirement for the award of M.Sc (Nursing) Degree.

Further details of the proposed project will be furnished by the student personally. She will not hinder your routine in any way and she will abide by the rules and regulations of the Hospital. The information collected from your Hospital will be kept confidential.

I kindly request you to grant her permission to conduct Pilot study at your Esteemed Hospital.

Thanking you,

Yours Sincerely,
OMAYAL ACHI COLLEGE OF NURSING
Principal

She has done this study in SIMS Hospital.
S. Edwin.

Prof. Dr. SUNDARI EDWIN, M Sc(N), Ph.D
Nursing Director
SRM Institutes For Medical Science
No.1, Jawaharlal Nehru Salai,

From,

Ms. Emily Joyce
Msc (N) II year
Omayal Achi college of Nursing
puzhal,
Chennai - 66

To,

Medical Director,
SIMS hospital,
Vadapalani

Forwarded to DMS
Dr. VIJAYAKUMAR CHOCKKANATHAN
MBBS., M.Sc., Ph.D., Neuroscience (Canada)
Director of Medical Services
SRM Institutes for Medical Science
Vadapalani, Chennai - 600 026

Subject: Requisition to conduct Research study

Respected Sir,

This is to bring this to your kind notification, that I Ms. Emily Joyce pursuing Msc (N) II year in Omayal Achi college of Nursing,

As a part of my academic requirement, I would like to conduct Research study on "A study to assess the effectiveness of time out procedure protocol regarding patient safety in operating room among Operating room nurses".

Kindly grant permission to conduct study in your esteemed institution please do the needfull.

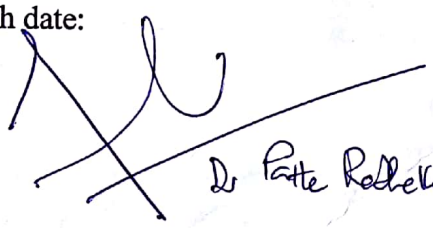
Thanking You,

Yours faithfully

CERTIFICATE FOR CONTENT VALIDITY

This is to certify that the data collection tool developed by Ms. Emily Joyce.D, MSc Nursing II Year (2016- 2018 Batch), student of Omayal Achi College of Nursing, for the study "**A study to assess the effectiveness of Time out Procedure Protocol on knowledge and skill regarding patient safety among operating room nurses at selected hospitals" Chennai**, is validated by the undersigned and she can proceed with this tool to conduct the main study.

Signature with date:



Seal:

Dr Patta Radhakrishna MS Mch

2/12/2017

Dr. PATTA RADHAKRISHNA,
MS, M.Ch(GE), FMAS, FAIS
Joint Director - Institute of Gastroenterology
and Senior Consultant Surgical Gastroenterology
Reg. No. 41110
SRM Institutes for Medical Science
Vadapalani, Chennai - 600 026.

25 YEARS OF EXCELLENCE
MAR OMAYAL ACHI
Love to Serve
அன்புசெய் விரும்பு
COLLEGE OF NURSING
1992 - 2017
Approved by Govt. of Tamilnadu, Indian Nursing Council, New Delhi & Tamilnadu Nurses and Midwives Council, Chennai.
Affiliated to theTamilnadu Dr. M.G.R. Medical University, Guindy, Chennai

11.11.2017.

The Director,
Sir.Ivan Stedeford Hospital,
Ambattur,
Chennai-600 053.

Sir/Madam,

Sub: Request for permission to conduct pilot Study.

Ms. D Emily Joyce, is a bonafide M.Sc(Nursing) I year student studying at our College and she is conducting a study on "EFFECTIVENESS OF TIME OUT PROCEDURE PROTOCOL ON KNOWLEDGE AND SKILL AMONG OPERATING ROOM NURSES AT SELECTED HOSPITALS, CHENNAI" from 13.11.2017 to 18.11.2017 at your Esteemed Hospital.

This is for her research project to be submitted to the Tamilnadu Dr.M.G.R. Medical University in partial fulfillment of the University requirement for the award of M.Sc(Nursing) Degree.

Further details of the proposed project will be furnished by the student personally. She will not hinder your routine in any way and she will abide by the rules and regulations of the Hospital. The information collected from your Hospital will be kept confidential.

I kindly request you to grant her permission to conduct Pilot study at your Esteemed Hospital.

Thanking you,

Yours Sincerely,

OMAYAL ACHI COLLEGE OF NURSING

Principal

CC to :
The Nursing Superintendent.

P.U. to Director for.
13/11/17

Permitted
13/11/17

No.45, Ambattur Road, Puzhal. Chennai - 600 066. Ph: 26591617, 26591618, Fax : 26591616
Email : oacn1992@gmail.com web : www.omayaln.com

CERTIFICATE FOR CONTENT VALIDITY

This is to certify that the data collection tool developed by Ms. Emily Joyce.D, MSc Nursing II Year (2016- 2018 Batch), student of Omayal Achi College of Nursing, for the study "**A study to assess the effectiveness of Time out Procedure Protocol on knowledge and skill regarding patient safety among operating room nurses at selected hospitals" Chennai**, is validated by the undersigned and she can proceed with this tool to conduct the main study.

Signature with date: 23/11/17

Seal: Dr. B. SREELEKHA
READER

SRI RAMACHANDRA COLLEGE OF NURSING
Sri Ramachandra University
Porur, Chennai-600 116.

CERTIFICATE FOR CONTENT VALIDITY

This is to certify that the data collection tool developed by Ms. Emily Joyce.D, MSc Nursing II Year (2016- 2018 Batch), student of Omayal Achi College of Nursing, for the study "**A study to assess the effectiveness of Time out Procedure Protocol on knowledge and skill regarding patient safety among operating room nurses at selected hospitals" Chennai**, is validated by the undersigned and she can proceed with this tool to conduct the main study.

Signature with date: 23.11.17.

Seal: HOD-MEDICAL SURGICAL NURSING
MMM COLLEGE OF NURSING
No. 191, SAKTHI NAGAR,
NOLAMBUR, CHENNAI-600 095.

CERTIFICATE FOR CONTENT VALIDITY

This is to certify that the data collection tool developed by Ms. Emily Joyce.D, MSc Nursing II Year (2016- 2018 Batch), student of Omayal Achi College of Nursing, for the study **"A study to assess the effectiveness of Time out Procedure Protocol on knowledge and skill regarding patient safety among operating room nurses at selected hospitals" Chennai,** is validated by the undersigned and she can proceed with this tool to conduct the main study.

Signature with date: 23/11/17

(M. KANIMOZHI, PROFESSOR)

Seal:

CERTIFICATE FOR CONTENT VALIDITY

This is to certify that the data collection tool developed by Ms. Emily Joyce.D, MSc Nursing II Year (2016- 2018 Batch), student of Omayal Achi College of Nursing, for the study "**A study to assess the effectiveness of Time out Procedure Protocol on knowledge and skill regarding patient safety among operating room nurses at selected hospitals" Chennai**, is validated by the undersigned and she can proceed with this tool to conduct the main study.

Signature with date: 23/11/2017

Seal:

Dr. K. Shyamnath Krishna Pandian,
DNB (Gen. Surg)., M.Ch (Plastic).
Consultant
Institute of Craniofacial, Aesthetic & Plastic Surgery
SRM Institutes for Medical Science
Reg. No. 61897

CERTIFICATE FOR CONTENT VALIDITY

This is to certify that the data collection tool developed by Ms. Emily Joyce.D, MSc Nursing II Year (2016- 2018 Batch), student of Omayal Achi College of Nursing, for the study **"A study to assess the effectiveness of Time out Procedure Protocol on knowledge and skill regarding patient safety among operating room nurses at selected hospitals" Chennai,** is validated by the undersigned and she can proceed with this tool to conduct the main study.

Signature with date:

Dr. K. RAGHAVENDRAN, M.D
Director, Anaesthesia & Pain Management
SRM Institutes for Medical Science
No.1, Jawaharlal Nehru Salai,
Seal: Vadapalani, Chennai - 600 026.
Reg. No. 30250

APENDIX – C

LETTER SEEKING EXPERT'S OPINION FOR CONTENT VALIDITY

From,

Ms. Emily Joyce. D

MSc Nursing II Year,

Omayal Achi College of Nursing,

No.45, Ambathur Road,

Puzhal, Chennai- 66.

To

Respected Madam/ Sir,

Sub: Requisition for expert opinion for content validity.

I am Ms. Emily Joyce . D, doing MSc Nursing II Year (2016- 2018 Batch), specializing in Medical Surgical Nursing at Omayal Achi College of Nursing, under the guidance of Dr. S. Kanchana, Principal and Research Director, ICCR, and Specialty Guide Mrs. Sasikala. S, Associate Professor. As a part of my Research project to be submitted to The Tamil Nadu Dr. M.G.R Medical University, Guindy, Nov 2017 session and in partial fulfillment of the university requirement for the award of M.Sc (N) degree, I am conducting **"A study to assess the effectiveness of Time out Procedure Protocol on knowledge and skill regarding patient safety among operating room nurses at selected hospitals" Chennai, 2018.**

I have enclosed my data collection and intervention tool for your expert guidance and validation. Kindly do the needful.

Thanking you

Yours faithfully

(D.Emily Joyce)

Enclosures:

1. Research Proposal
2. Data collection tool
3. Intervention tool
4. Content validity form
5. Certificate for content validity.

LIST OF EXPERTS FOR CONTENT VALIDITY

SURGICAL EXPERTS

1. **Dr. (Mr) Patta Radhakrishna,**
   MS, M.Ch(GE), FMAS, FAIS,
   Joint Director- institute of Gastroenterology and Senior Consultant Surgical Gastroenterology,
   Reg. No. 41110
   SRM Institutes for Medical Science
   Vadapalani, Chennai – 600 026.

2. **Dr. (Mr) Shyamnath Krishna Pandian,**
   DNB (Gen. Surg)., M.Ch (Plastic),
   Senior Consultant,
   Reg. No. 61897
   Institute of Craniofacial, Aesthetic & Plastic Surgery,
   SRM Institutes for Medical Science
   Vadapalani, Chennai – 600 026.

ANAESTHESIOLOGIST EXPERT

3. Dr. K. Raghavendran, M.D,
   Director, Anaesthesia & Pain Management,
   Reg. No. 30250
   SRM Institutes for Medical Science
   Vadapalani, Chennai – 600 026.

NURSING EXPERT

4. **Dr. B. Sreelekha,**
   Reader,
   Sri Ramachandra College of Nursing,
   Sri Ramchandra University,
   Porur,
   Chennai – 600 116

5. **Mrs. Shoba,**
   Head of the Department,
   Medical Surgical Nursing,
   MMM College of Nursing,
   Chennai – 600 095.

6. **Mrs. Kanimozhi,**
   Professor,
   Medical Surgical Nursing,
   Madha College of Nursing,
   Chennai – 600 069.

APENDIX – E

INFORMED CONSENT REQUISITION FORM

Good Morning,

I am Ms.D.Emily Joyce, M.Sc (Nursing) student from Omayal Achi College of Nursing**,** Chennai. As a partial fulfillment of M.Sc (Nursing) degree requirement under the Tamilnadu Dr. M.G.R. Medical University. I am conducting "**A study to assess the effectiveness of timeout procedure protocol on knowledge and skill regarding patient safety among operating room at selected hospitals" Chennai, 2018.**

I assure you that information provided by you will be kept confidential. So, I request you to kindly co-operate with me and participate in this study by giving your open and honest response to the questions being asked.

Thanking you

D. EMILY JOYCE

INFORMED WRITTEN CONSENT FORM

I understand that I am being asked to participate in a research study conducted by

Ms. D. Emily Joyce, M.Sc. (Nursing) student from Omayal Achi College of Nursing, Puzhal,

Chennai. This research study will evaluate **"A Pre- Experimental study to assess the effectiveness of timeout procedure protocol on knowledge and skill regarding patient safety among operating room nurses at selected settings, Chennai".** If I agree to participate in the study, I will be given questionnaire to answer; I understand that there is no risk associated with this study.

I realize that the knowledge gained from this study may help in upgrading knowledge and skill. I realize that my participation in this study is entirely voluntary and I may withdraw from the study at any time. I wish if I decide to discontinue my participation in this study, I will continue to be treated in the usual and customary fashion.

I understand that all study details will be kept confidential. However, this information

may be used in nursing publication and presentations. If I need to, I can contact Ms. D. Emily Joyce M.Sc. (Nursing) student, Omayal Achi College of Nursing, No.45, Ambattur

Road, Puzhal, Chennai, Phone no – 044 26501617, Personal no - 7358461063 at any time during the study.

The study has been explained to me. I have read and understood the consent form, my entire question has been answered and I agree to participate. I understand that I

will be given a copy of this signed consent form.

_____ _____

Signature of the participant data

_____ _____

Signature of the investigator date

APPENDIX – F

DATA COLLECTION TOOL

TOOL 1: NEED ASSESSMENT TOOL

NEED ASSESSMENT TOOL

Place: **Sample no_____**

1) Do you think updating knowledge will improve your skill?
    - Yes
    - No
2) Do you think it is necessary to update your knowledge regarding timeout procedure?
    - Yes
    - No
3) What is your opinion about taking part in this research study?
    - Useful
    - Not useful
4) Do you have previous knowledge regarding timeout procedure?
    - Yes
    - No
5) Do you think taking part in this study will improve your knowledge?
    - Yes
    - No
6) What do you feel, knowing about timeout procedure will improve your communication among surgical team?
    - Yes
    - No

TOOL 2: STRUCTURED KNOWLEDGE QUESTIONNAIRE

SECTION –I DEMOGRAPHIC DATA: **Sample No._____**

INSTRUCTIONS: *Kindly tick / fill in your data to all questions asked below.*

Personal variable:

1.Age (in years)

a) 21-30

b) 31-40

c) 41-50

d) >50

2. Gender

a) Male

b) Female

3. Marital status

a) Married

b) Unmarried

c) Others

Professional variable:

4.Educational qualification: *kindly fill the table respectively*

EDUCATIONAL QUALIFICATION					
DEGREE	**YEAR OF PASSING**	**INSTITUTE OF GRADUATION**	**STATE**	**EXPERIENCE**	**EDUCATION OBTAINED THROUGH PRIVATE OR GOVERNMENT SETUP**
Msc nursing					
Bsc nursing					

Post basic Bsc nursing					
Diploma in nursing					

5.Overall clinical experience

a) 6months - <1 year

b) 1-3 years

c) 4-5 years

d) >5 years

6. Experience in Operating Room

a) 6months - <1 year

b) 1 – 3 years

c) 4-5 years

d) >5 years

7. Attended in-service education on Timeout procedure within or before 6months of duration

a) Yes

b) No

SECTION – II: STRUCTURED KNOWLEDGE QUESTIONNAIRE

INSTRUCTIONS: *Specify the most suitable answers for the each of the following questions from the options given below:*

PART A: MEANING OF TIME OUT PROCEDURE

1.Time out procedure refers to an immediate pause by

a) an entire surgical team.
b) a scrub nurse
c) an anesthetist
d) a circulatory nurse

2.Purpose of performing time out

a) as a part of hospital routine
b) to prevent wrong patient, procedure and site
c) identify surgical team members
d) to provide psychological support for the patient

PART B: GENERAL INFORMATION REGARDING TIMEOUT PROCEDURE

3. Members involved in timeout procedure are

a) housekeeping, nursing assistant, circulatory nurse
b) circulatory nurse, CSSD technician, pharmacist
c) surgeon, radiologist, nurses, or technician
d) surgeon, anesthetist, nurses, or technician

4) Right time to perform timeout procedure is

a) before patient entering into OT
b) before skin incision / invasive procedure

c) after patient leaves the OT
d) after skin closure

5) Time out procedure is performed by

a) scrub nurse
b) surgeon
c) anesthetist
d) circulatory nurse

6) Documentation of timeout procedure is done through

a) checklist
b) rating scale
c) video recording
d) writing report

7) National timeout day commenced in the year

a) 2000
b) 2002
c) 2004
d) 2006

8) Expand AORN

a) Association of Operating Room Nurses
b) American Operating Room Nurses
c) Army of Operating Room Nurses
d) Association of PeriOperative Registered Nurses

PART C: IMPORTANCE OF TIMEOUT PROCEDURE

9) Timeout procedure is performed to

a) improve patient safety

b) improve team communication
c) compare patient outcome
d) maintain silence during surgery

10) Time out procedure are performed only for

a) pediatric patients
b) high risk patients
c) contact isolated patients
d) patient who undergo surgery

11) Select the common error which occurs during time out procedure

a) non-notifying equipment repair
b) distraction or rushed time outs
c) incomplete documentation of timeout
d) inadequate staffing

PART D: KNOWLEDGE ON SURGICAL SAFETY CHECKLIST

12) Surgical safety checklist formulated by

a) Surgical Safety Association
b) American Heart Association
c) Surgical Nurses Association
d) World Health Organization

13) Surgical safety checklist is initiated to

a) reduce the number of surgical deaths
b) reduce the number of surgical infections
c) reduce the number of surgical equipment
d) reduce the number of surgical medications

14) Main components of surgical safety checklists are

a) sign out, sign in, time out
b) sign in, timeout, wheel out
c) wheel in, timeout, wheel out
d) wheel out, wheel in, timeout

PART E: COMPONENTS OF SURGICAL SAFETY CHECK LIST

15) Sign in phase begins during the

a) period after induction of anesthesia
b) period after skin incision
c) period before induction of anesthesia
d) period before skin incision

16) Sign out phase begins

a) before removing the patient from operating room (OR)
b) after removing the patient from OR
c) before skin closure
d) after extubation

17) Risk of blood loss is verified under

a) timeout and wheel out
b) sign in and timeout
c) sign out and sign in
d) check in and check out

18) Nursing team reviews comes under

a) wheel out phase
b) sign out phase
c) sign in phase
d) timeout phase

19) Antibiotic prophylaxis should be given with in

a) 30 minutes
b) 60 minutes
c) 20 minutes
d) 10minutes

20) Sign out phase involves following aspects except:-

a) availability of pulse oximetry
b) labeling the specimen
c) recording the name of the procedure
d) instrument, sponge, needle counts are correct

KEY FOR STRUCTURED KNOWELDGE QUESTIONNAIRE

Q.NO	key	Q.NO	key	Q.NO	key	Q.NO	key
1	a	6	A	11	b	16	a
2	b	7	C	12	d	17	b
3	d	8	D	13	A	18	d
4	b	9	A	14	B	19	b
5	d	10	D	15	C	20	a

TOOL 3: OBSERVATION CHECKLIST

CHECKLIST FOR EVALUATION OF SKILL IN PERFORMING TIMEOUT PROCEDUR

SCORING KEY AND INTERPRETATION TABLE FOR DATA COLLECTION TOOL

1. **Need assessment tool:**

Scoring key:

Need Assessment Tool consists of 6 questions, out of which 5 positive questions and 1 negative question. the level of need for time out procedure protocol is calculated when OR nurses score more than or equal to 3 out of 6 were considered to be needed and selected them as samples.

Interpretation of Need Assessment Tool	
< 3	**Not selected as samples**
≥3	**Selected as samples**

2. **Structured knowledge questionnaire:**

Scoring key:

Each correct answer was given ‘1’ mark, and wrong answers and unattended question was given ‘0’ mark. The raw score was converted to percentage to interpret the level of knowledge, the overall score was 20, maximum score was 20 and the minimum score will be 0.

Interpretation of knowledge :

SNO	COMPONENTS	YES	NO
1	Confirms All team members have introduced themselves by Name and Role		
2	Circulatory Nurse verbally confirms • patient name		
3	• site of the procedure		
4	• name of the procedure		
5	Asks Anticipated critical events: A) Asks the Surgeon: • what are the critical or unexpected steps?		
6	• operative duration?		
7	• anticipated blood loss?		
8	B) Asks the Anesthesia team: • Are there any patient-specific concerns?		
9	C)Asks the Nursing team: • Whether sterility (including indicator results) been confirmed?		
10	• Are there equipment issues or any concerns?		
11	Confirms whether Antibiotic prophylaxis has been given within the last 60 minutes?		
12	Confirms whether essential imaging displayed?		

The level of knowledge will be categorized as

Score	Level of knowledge
>75%	Adequate level of knowledge
51-75%	Moderate level of knowledge
≤50%	Inadequate level of knowledge

3. **Observation checklist:**

Scoring key:

Each correct answer was given "1" mark, when it is performed correctly and "0" for performing inappropriately. The raw score was converted to percentage that interpret the level of skill, the overall skill score was 12, maximum score was 12 and the minimum score will be 0.

Interpretation of level of skill :

The overall score percentage will be categorized as

Score	Level of skill
12 – 9	Good skill
8-5	Fair skill
< 5	Needs improvement in skill

APPENDIX – G

CODING FOR DEMOGRAPHIC VARIABLES

DEMOGRAPHIC VARIABLES:	**CODE NO.**
PERSONAL VARIABLES:	
1.Age (in years)	
a) 21-30	1
b) 31-40	2
c) 41-50	3
d) >50	4
2. Gender	
a) Male	1
b) Female	2
3. Marital status	
a) Married	1
b) Unmarried	2
c) Others	3

PROFESSIONAL VARIABLE:

4.Educational qualification:

a) Degree

a) Msc nursing 1

b) Bsc nursing 2

c) Post basic Bsc nursing 3

d) Diploma in nursing 4

b) Year of passing

a) ≤2013 1

b) 2014-2016 2

c) State

a) Tamil Nadu 1

b) Others 2

d) Experience

a) 6months - <1 year 1

b) 1-3 years 2

c) 4-5 years 3

d) > 5 years 4

e) Education obtained through

a) Private 1

b) Government 2

5. Overall clinical experience

a) 6months - <1 year 1

b) 1-3 years 2

c) 4-5 years 3

d) >5 years 4

6. Experience in Operating Room

a) 6months - <1 year 1

b) 1 – 3 years 2

c) 4-5 years 3

d) >5 years 4

7. Attended in-service education on Timeout procedure within or before 6months of duration

a) Yes 1

b) No 2

APPENDIX – H

BLUE PRINT OF DATA COLLECTION TOOL

S.No.	CONTENT	ITEM	TOTAL ITEM	PERCENTAGE
1	Need Assessment tool	1-6	6	13.34
2	Demographic data	1 – 7	7	15.55
3	Structured knowledge questionnaire			
	• Meaning of time out procedure	1 – 2	2	4.45
	• General information regarding timeout procedure	3 – 8	6	13.33
	• Importance of timeout procedure	9 – 11	3	6.67
	• Knowledge on surgical safety checklist	12 – 14	3	6.67
	• Components of surgical safety check list	15 - 20	6	13.33
4	Observational checklist	1 - 12	12	26.66
5	TOTAL	45	45	100

LESSON PLAN

ON

TIMEOUT PROCEDURE

PROTOCOL

APPENDIX – I

INTERVENTION TOOL

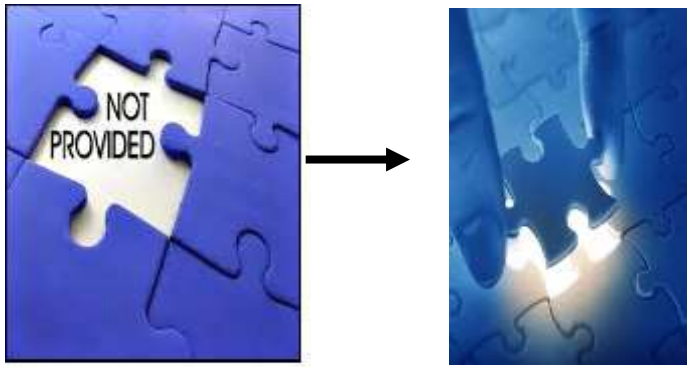
Topic	:	Time Out Procedure Protocol
Group	:	Operating Room Nurses
Place	:	Operating Room
Duration	:	45 minutes
Types of teaching	:	Group
Teaching method	:	Lecture cum discussion and Demonstration with Return demonstration
Instructor	:	Investigator
Instructional Aid	:	Power point presentation, Poster
Seating arrangement	:	Theater method
General objective	:	At the end of the intervention the Operating room nurses develops in depth knowledge regarding Timeout procedure protocol.

Specific objectives : At the end of the intervention the Operating room nurses will be able to

1. define Time out
2. list the purposes of performing time out.
3. name the members involved in time out procedure.
4. do's and don'ts of timeout procedure?
5. discuss regarding "The National Time out day"
6. enlist some of the errors related to misuse of time-outs as determined by The Joint Commission.
7. describe the Surgical Safety Checklist
8. explain the components of Surgical Safety Checklist – WHO
9. discuss the **SIGN IN** phase
10. enumerate the **TIME OUT** phase
11. explain the **SIGN OUT** phase
12. enlist the advantages of performing a Timeout Procedure
13. demonstrate Time Out procedure using demonstration tool

Time	Contributory objectives	Contents	Investigator and learner activity	AV AIDS	Evaluation
2 mins	Introduces the topic	**Introduction** Patient safety is a paramount consideration of all nurses, but now here is this greater priority than in the perioperative environment. This is directly related to patient safety prior to surgery (preoperatively) during (intraoperatively) and immediately after the procedure (postoperatively).	Researcher introduces the topic and the learner listens	Power point presentation	
2 mins	define Time out	**Timeout procedure:** ☺ The Joint Commission defines as "an immediate pause by the entire surgical team to confirm the correct patient, procedure, and 	Researcher defines and learner listens	Power point presentation	

Time	Contributory objectives	Contents	Investigator and learner activity	AV AIDS	Evaluation
		site," was introduced in 2003. The confirmation of patient and procedure happens at several stages of the patient's perioperative journey, with the final check occurring in the operating room immediately prior to surgery.			
2.	list the purposes of performing time out.	**Purposes of performing time out:** 1. The Time Out gives each member of the team for a last chance to ask questions or clear up any inconsistencies that may appear. 	Researcher enlist the purposes of timeout procedure	PowerPoint presentation	

Time	Contributory objectives	Contents	Investigator and learner activity	AV AIDS	Evaluation
		2. Addressing the missing information or discrepancies before starting the procedure. 			

Time	Contributory objectives	Contents	Investigator and learner activity	AV AIDS	Evaluation
		3. Last chance to verify correct procedure, for the correct patient, at the correct site.  			

Time	Contributory objectives	Contents	Investigator and learner activity	AV AIDS	Evaluation
		4. Identify items that must be available for the procedure.  5. Checking pre requisites for the procedure such as relevant documentation, consent form, radiological images, pathology reports, availability of blood products, devices, and special equipment. 			

Time	Contributory objectives	Contents	Investigator and learner activity	AV AIDS	Evaluation
3 mins	name the members involved in time out procedure	**Time out team:** 1. Surgeons 2. Anesthesia professional 3. Nurses 4. Operating room technicians 	Researcher list down the members involved in timeout procedure and learner listens	PowerPoint presentation	
5 mins	do's and don'ts of timeout procedure?	**Perform a time out:** ➢ The procedure is not started until all questions or concerns are resolved. ➢ Conduct a time out immediately before starting the invasive procedure or making the incision. ➢ A designated member of the team (circulatory nurse) starts the time out. ➢ The time out should be a standardized tool. ➢ The timeout involves the immediate members	Researcher list down the do's and don'ts of timeout procedure and learner listens	PowerPoint presentation	

Time	Contributory objectives	Contents	Investigator and learner activity	AV AIDS	Evaluation
		of the procedure team: the individual performing the procedure, anesthesia providers, circulatory nurse, scrub nurse, operating room technician – and other active participants. ➢ All relevant members of the procedure team actively communicate during the timeout ➢ During the timeout, the team members agree, at a minimum, on the following ✓ Correct patient ✓ Correct site ✓ Correct procedure ➢ When the same patient has two or more procedures, or if the person performing the procedure changes, another timeout need to be performed before starting each procedure. ➢ Document the completion of Timeout. (circulatory nurse's responsibility is proper documentation of Time out).			

Time	Contributory objectives	Contents	Investigator and learner activity	AV AIDS	Evaluation
3 mins	discuss regarding "The National Time out day"	**The Joint Commission supports the Association of Peri-Operative Registered Nurses' (AORN)**  • **National Time Out Day**, an initiative that began in 2004 that calls for surgeons and surgical teams to hit the pause button before starting an operation and to review the importance of creating a safe environment for every patient, every time. • This year 2017 **National Time Out Day** is Wednesday, June 14, and the theme is **"Be a SUPERHERO**—take a time-out for your	Researcher discusses regarding "The National Time out day" and learner listens	PowerPoint presentation	

Time	Contributory objectives	Contents	Investigator and learner activity	AV AIDS	Evaluation
		patients," which is an acronym that stands for  the following: • **S**upport a safety culture • **U**se The Joint Commission's Universal Protocol and Surgical Safety Checklist • **P**roactively reduce risk in the OR • **E**ffect change in your organization • **R**educe harm to patients • **H**ave frank discussions about hazardous situations • **E**mpower others to speak up when a patient is at risk • **R**espect others on the surgical team • **O**penly seek opportunities for improving patient			

Time	Contributory objectives	Contents	Investigator and learner activity	AV AIDS	Evaluation
		safety • National Time Out Day ties into safety culture development for surgical teams. • By opening the lines of communication between all members of the team, • And strengthening and empowering those relationships, • Every member of the team feels comfortable speaking up before, during, or after a procedure. • This will increase awareness of safe practices that lead to optimal outcomes for patients undergoing surgery and other invasive procedures • The time out is a powerful tool that supports a culture of safety and surgical team's ability to speak up for safe practices in the operating room.			

Time	Contributory objectives	Contents	Investigator and learner activity	AV AIDS	Evaluation
		 - The Joint Commission and AORN encourage health care organizations to commit to conducting a safe, effective time out for every patient, every time. - While National Time Out Day brings awareness to the importance of taking a time out, it's critical to recognize that wrong site, wrong procedure and wrong person surgeries are still happening every day.			
6.	enlist some of the errors related to misuse of time-outs as determined by	 ❖ Time-outs occurring before all staff members	Researcher enlist some of the errors related to misuse of time-outs and learner	PowerPoint presentation	

Time	Contributory objectives	Contents	Investigator and learner activity	AV AIDS	Evaluation
	The Joint Commission	are ready or before preparation and draping occurs ❖ Performing time-outs without full participation of the staff ❖ Lack of senior leadership engagement in the time-out ❖ Staff feeling passive or unable to speak up ❖ Inconsistent organizational focus on patient safety ❖ Policy changes made with inadequate or inconsistent staff education ❖ Distractions or rushed time-outs	listens		

Time	Contributory objectives	Contents	Investigator and learner activity	AV AIDS	Evaluation
5 mins	describe the Surgical Safety Checklist	**Surgical Safety Checklist: (World health organization)**  ☺ **The Safe Surgery Saves Lives** initiation was established by the World Alliance for Patient Safety as part of the World Health Organization's efforts to reduce the number of surgical deaths across the world.	Researcher enlist some of the errors related to misuse of time-outs and learner listens	PowerPoint presentation	

Time	Contributory objectives	Contents	Investigator and learner activity	AV AIDS	Evaluation
		☺ The aim of this initiative is to harness political commitment and clinical will to address important safety issues, including inadequate anesthetic safety practices, avoidable surgical infection and poor communication among team members. ☺ These have proved to be common, deadly and preventable problems in all countries and settings. ☺ To assist operating teams in reducing the number of these events, the Alliance —in consultation with surgeons, anesthesiologists, nurses, patient safety experts and patients around the world has identified a set of safety checks that could be performed in any operating room. ☺ The aim of the resulting WHO Surgical Safety Checklist First Edition at is to reinforce accepted safety practices and foster			

Time	Contributory objectives	Contents	Investigator and learner activity	AV AIDS	Evaluation
		better communication and teamwork between clinical disciplines. ☺ The Checklist is not a regulatory device or a component of official policy; it is intended as a tool for use by clinicians interested in improving the safety of their operations and reducing unnecessary surgical deaths and complications.			
3 mins	explain the components of Surgical Safety Checklist - WHO	**The Checklist divides the operation into three phases**: ❖ Each corresponding to a specific time period in the normal flow of a procedure—the period before induction of anesthesia (**Sign In**), the period after induction and before surgical incision (**Time Out**), and the period during or immediately after wound closure but before removing the patient from the operating room (**Sign Out**). ❖ In each phase, the Checklist coordinator	Researcher explain the components of Surgical Safety Checklist and learner listens	PowerPoint presentation	

Time	Contributory objectives	Contents	Investigator and learner activity	AV AIDS	Evaluation
		must be permitted to confirm that the team has completed its tasks before it Proceeds further. ❖ As operating teams become familiar with the steps of the Checklist, they can integrate the checks into their familiar work patterns and verbalize their completion of each step without the explicit intervention of the Checklist coordinator. ❖ Each team should seek to incorporate use of the Checklist into its work with maximum efficiency and minimum disruption, while aiming to accomplish the steps effectively.			
3 mins	discuss the **SIGN IN** phase	**Sign in phase:** - "the sign in is to be completed before induction of anesthesia in order to confirm the safety of proceeding". - The "sign in" requires the presence of the anesthetist and nursing personnel at the very	Researcher discuss the **SIGN IN** phase and learner listens	PowerPoint presentation	

Time	Contributory objectives	Contents	Investigator and learner activity	AV AIDS	Evaluation
		least. - The checklist coordinator may complete this section all at once or sequentially, depending on the flow of preparation for anesthesia. The details for each of the boxes in the "sign in" are as Follows: ***1. patient has confirmed identity, site, procedure and consent*** ***2. site marked/not applicable*** ***3. anaesthesia safety check completed*** ***4. pulse oximeter on patient and functioning*** ***5. does the patient have a known allergy?*** ***6. does the patient have a difficult airway/aspiration risk?*** ***7. does the patient have a risk of >500 ml blood loss (7 ml/kgIn children)?*** (note that the expected blood loss will be reviewed again by the surgeon during the "time out". This will			

Time	Contributory objectives	Contents	Investigator and learner activity	AV AIDS	Evaluation
		provide a second safety check for the anesthesia professional and nursing staff.) ***At this point the sign in is completed and the team may Proceed with anaesthetic induction.***			
10.	enumerate the **Time Out** phase	**The Time Out phase:** "The Time Out is a momentary pause taken by the team just before skin incision in order to confirm that several essential safety checks are undertaken and involves everyone on the team".	Researcher enumerates the **Time Out** phase and learner listens	PowerPoint presentation	

Time	Contributory objectives	Contents	Investigator and learner activity	AV AIDS	Evaluation
		Before skin incision (with nurse, anaesthetist and surgeon) ☐ **Confirm all team members have introduced themselves by name and role.** ☐ **Confirm the patient's name, procedure, and where the incision will be made.** **Has antibiotic prophylaxis been given within the last 60 minutes?** ☐ Yes ☐ Not applicable **Anticipated Critical Events** **To Surgeon:** ☐ What are the critical or non-routine steps? ☐ How long will the case take? ☐ What is the anticipated blood loss? **To Anaesthetist:** ☐ Are there any patient-specific concerns? **To Nursing Team:** ☐ Has sterility (including indicator results) been confirmed? ☐ Are there equipment issues or any concerns? **Is essential imaging displayed?** ☐ Yes ☐ Not applicable ***1. Confirm all team members have introduced themselves by Name and role*** ***2. surgeon, anaesthesia professional and nurse***			

Time	Contributory objectives	Contents	Investigator and learner activity	AV AIDS	Evaluation
		verbally confirm patient, site and procedure ***3. Anticipated critical events*** ***4. Surgeon reviews:*** • ***What are the critical or unexpected steps,*** • ***Operative duration, anticipated blood loss?*** ***5.Anaesthesia team reviews:*** • ***Are there any patient-specificConcerns?*** ***6.Nursing team reviews:*** • ***has sterility (including indicator results) been confirmed? Are there equipment issues or Any concerns?*** ***5. Has antibiotic prophylaxis been given within the last 60 minutes?*** ***6. Is essential imaging displayed?*** ***At this point the time out is completed and the team may Proceed with the operation***			

Time	Contributory objectives	Contents	Investigator and learner activity	AV AIDS	Evaluation
3 mins	explain The **SIGN OUT** PHASE	**The sign out phase:** "the sign out should be completed before removing the patient from the operating room. The aim is to facilitate the transfer of important information to the team responsible for the care of the patient after surgery". - The "sign out" can be initiated by the circulating nurse, surgeon or anesthesia professional and should be accomplished before the surgeon has left the room. It can coincide, for example, with wound closure. Again, each box should be checked only after the coordinator has confirmed that each item has been addressed by the team. ***1. Nurse verbally confirms with the team:*** • ***The name of the procedure recorded*** ***2. Instrument, sponge and needle counts are correct (orNot applicable)*** ***3. How the specimen is labelled (including patient***	Researcher explain the **SIGN OUT** Phase and learner listens	PowerPoint presentation	

Time	Contributory objectives	Contents	Investigator and learner activity	AV AIDS	Evaluation
		name) ***4. Are there any equipment problems to be addressed?*** ***5.surgeon,anaesthesia professional and nurse review the key concerns for recovery and management of the patient. With the final step, the safety checklist is completed. If desired, the checklist can be placed in the patient record*** ***Or retained for quality assurance review.***			
12.	enlist the advantages of doing a Timeout Procedure	***advantages of doing a Timeout Procedure:-*** - Prevents harm as a result of operating on the wrong patient or the wrong site or performing the wrong procedure. - Improves quality patient care - Enhanced performance of the surgical team. - Improves communication between the team members. - All aspects of the operation can be monitored in a standardized way.	Researcher enlist the advantages of doing a Timeout Procedure and learner listens	PowerPoint presentation	

Time	Contributory objectives	Contents	Investigator and learner activity	AV AIDS	Evaluation
		✚ An opportunity for other members of the team to share their thoughts ✚ Ultimately adheres to the code of ethics- ***"Do no harm".*** ✚ Patient-centered safety culture ✚ Environment of trust in staff who were empowered to report patient safety events without fear of reprisal. ✚ During the time-out, the team comes together and develops a shared mental model of what the procedure will be like, increasing the chances that all members will have the situational awareness needed to prevent harm ✚ Establishes the leadership of the team and empowers all members to work on behalf of the patient. ✚ Empowers the Nurses to act as a *"Nurse Advocate"* Role.			

Time	Contributory objectives	Contents	Investigator and learner activity	AV AIDS	Evaluation
	Conclusion	Patient safety is a discipline that emphasize safety culture in health care through the prevention, reduction, reporting, and analysing of medical and surgical error that often leads to adverse effects. Patient safety is a fundamental principle of health care delivery system. Every point in the process of care-giving contains certain degree of inherent unsafety. Organization should bring up a patient safety environment with clear policies, leadership training, safety improvements through quality markers, skilled health care professionals and their effective involvement of patients in their care, all these ingredients are needed to ensure sustainable and significant improvements in patient safety of health care. Patient safety helps doctors, nurses and all other health care professionals practice safe and better health care.			

Time	Contributory objectives	Contents	Investigator and learner activity	AV AIDS	Evaluation
		Therefore, it is good not only for patients but for everyone in healthcare team. This intervention aimed in upgrading the knowledge and skill of operating room nurses. So let us all, **Raise Awareness, Increase Engagement: Be a Time Out Super Hero** Speak up; let your VOICE lead the surgery.			

Love to Serve
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TIME OUT PROCEDURE PROTOCOL

Prepared by

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October – 2018

1. DEFINITION:

The Joint Commission defines as "***An immediate pause by the entire surgical team to confirm the correct patient, procedure, and site***" – Joint Commission (2009)

2. PURPOSE:

- A last chance to ask questions or clear up any inconsistencies that may appear

Addressing the missing information or discrepancies before starting the procedure.

- Last chance to verify correct procedure, for the correct patient, at the correct site.

- Identify items that must be available for the procedure.

- Checking pre requisites for the procedure

3. **Time out team:**

- Surgeons
- Anesthesia professional
- Nurses
- OR technicians

4. **Performing a time out:**

- The procedure is not started until all questions or concerns are resolved.
- Conduct a time out immediately before starting the invasive procedure or making the incision.
- A designated member of the team (circulatory nurse) starts the time out.
- The time out should be a standardized tool.
- The timeout involves the immediate members of the procedure team
- All relevant members of the procedure team actively communicate during the timeout
- During the timeout, the team members agree, at a minimum, on the following
    - Correct patient
    - Correct site

- Correct procedure

When the same patient has two or more procedures, or if the person performing the procedure changes, another timeout need to be performed before starting each procedure.

- Document the completion of Timeout

5. BE A TIME OUT SUPER HERO

- **S**upport a safety culture
- **U**se the Joint Commission's Universal Protocol and AORN's Surgical Checklist
- **P**roactively reduce risk in the OR
- **E**ffect changes in your organization
- **R**educe harm to patients

- **H**ave frank discussions about hazardous situations
- **E**mpower others to speak up when a patient is at risk
- **R**espect others on the surgical team
- **O**penly seek opportunities for improving patient safety

6. ERRORS RELATED TO MISUSE OF TIME-OUTS AS DETERMINED BY THE JOINT COMMISSION

- Time-outs occurring before all staff members are ready or before preparation and draping occurs
- Performing time-outs without full participation of the staff
- Lack of senior leadership engagement in the time-out
- Staff feeling passive or unable to speak up
- Inconsistent organizational focus on patient safety
- Policy changes made with inadequate or inconsistent staff education
- Distractions or rushed time-outs

7. SURGICAL SAFETY CHECKLIST (WORLD HEALTH ORGANIZATION)

The Safe Surgery Saves Lives initiation was established by the World Alliance for Patient Safety as part of the World Health Organization's efforts to reduce the number of surgical deaths across the world.

8. COMPONENTS OF SURGICAL SAFETY CHECKLIST – WHO

- Each corresponding to a specific time period in the normal flow of a procedure—the period before induction of anesthesia (**Sign In**), the period after induction and before surgical incision (**Time Out**), and the period during or immediately after wound closure but before removing the patient from the operating room (**Sign Out**).

9. TIME OUT PROCEDURE PROTOCOL:

- "The Time Out is a momentary pause taken by the team just before skin incision in order to confirm that several essential safety checks are undertaken and involves everyone on the team".

Before skin incision

(with nurse, anaesthetist and surgeon)

- ☐ **Confirm all team members have introduced themselves by name and role.**
- ☐ **Confirm the patient's name, procedure, and where the incision will be made.**

Has antibiotic prophylaxis been given within the last 60 minutes?

- ☐ Yes
- ☐ Not applicable

Anticipated Critical Events

To Surgeon:

- ☐ What are the critical or non-routine steps?
- ☐ How long will the case take?
- ☐ What is the anticipated blood loss?

To Anaesthetist:

- ☐ Are there any patient-specific concerns?

To Nursing Team:

- ☐ Has sterility (including indicator results) been confirmed?
- ☐ Are there equipment issues or any concerns?

Is essential imaging displayed?

- ☐ Yes
- ☐ Not applicable

10. ADVANTAGES OF DOING A TIMEOUT PROCEDURE

- Prevents harm as a result of operating on the wrong patient or the wrong site or performing the wrong procedure.
- Improves quality patient care
- Enhanced performance of the surgical team.
- Improves communication between the team members.
- All aspects of the operation can be monitored in a standardized way.
- An opportunity for other members of the team to share their thoughts
- Ultimately adheres to the code of ethics- ***"Do no harm".***
- Patient-centered safety culture
- Environment of trust in staff who were empowered to report patient safety events without fear of reprisal.
- During the time-out, the team comes together and develops a shared mental model of what the procedure will be like, increasing the chances that all members will have the situational awareness needed to prevent harm

- Establishes the leadership of the team and empowers all members to work on behalf of the patient.
- Empowers the Nurses to act as a *"Nurse Advocate"* Role

11. Conclusion

- **Raise Awareness, Increase Engagement: Be a Time Out Super Hero**

  Speak up; let your VOICE lead the surgery.

TIMEOUT PROCEDURE PROTOCOL

Love to Serve
அறஞ்செய விரும்பு

World Health Organization

DEFINITION

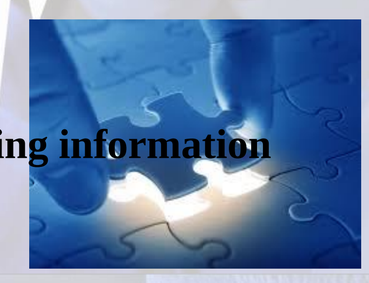
"*An immediate pause by the entire surgical team to confirm the correct patient, procedure, and site*"
– Joint Commission (2009)

TAKE TIME OUT FOR EVERY PATIENT, EVERY TIME

BE A TIME OUT SUPER HERO

PURPOSE

A last chance to ask questions or clear up any inconsistencies



Addressing the missing information

Last chance to verify correct procedure, for the correct patient, at the correct site.

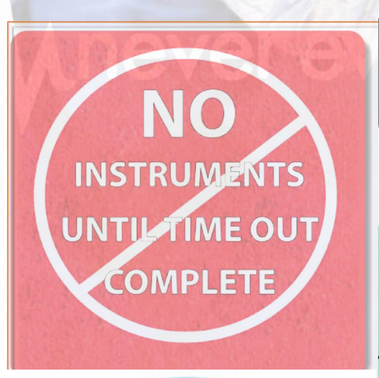
Identify items that must be available for the procedure.

Checking pre requisites for the procedure

- *Support a safety culture*
- *Use the Joint Commission's Universal Protocol and Surgical Safety Checklist*
- *Proactively reduce risk in the Operating room.*
- *Effect changes in your organization*
- *Reduce harm to patients*
- *Have frank discussions about hazardous situations*
- *Empower others to speak up when a patient is at risk*
- *Respect others on the surgical team*
- *Openly seek opportunities for improving patient safety*

TIME OUT TEAM

- *Surgeons*
- *Anaesthesiologist*
- *Nurses*
- *OR Technicians*



TIME OUT PROCEDURE PROTOCOL

Before skin incision

(with nurse, anaesthetist and surgeon)

- ☐ **Confirm all team members have introduced themselves by name and role.**
- ☐ **Confirm the patient's name, procedure, and where the incision will be made.**

Has antibiotic prophylaxis been given within the last 60 minutes?

- ☐ Yes
- ☐ Not applicable

Anticipated Critical Events

To Surgeon:

- ☐ What are the critical or non-routine steps?
- ☐ How long will the case take?
- ☐ What is the anticipated blood loss?

To Anaesthetist:

- ☐ Are there any patient-specific concerns?

To Nursing Team:

- ☐ Has sterility (including indicator results) been confirmed?
- ☐ Are there equipment issues or any concerns?

Is essential imaging displayed?

- ☐ Yes
- ☐ Not applicable

HAVE YOU DONE TIMEOUT TODAY?

Conduct a Timeout immediately before starting The invasive procedure or before making an incision

Perform Timeout for each patient and become A TIMEOUT SUPERHERO!

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