Chapter III

RESEARCH METHODOLOGY

Introduction:

Research methodology is a way by which research problems are systematically solved. It may be understood as all those methods or techniques that are used for conducting research. "The research methodology refers to a set of orderly discipline procedures involved in the deliberate collection, analysis & interpretation of the data."90

A research design is the blueprint for conducting the study that maximizes control over the factors that could interfere with the validity of findings.91

According to Woods and Catanzaro (1998) a research design is analogous to a musical score of a symphony. Just as the score indicates to conductor & musicians what notes, various sections of the orchestra should be playing & the sequence & manner in which the music should be played, research design indicates, what activities the investigator should be performing & the order in which they should occur. Research design links an investigator’s abstract thinking about a topic to the realities of studying the topic.92

This chapter deals with the description of various steps taken by the investigator to conduct this study, which includes:-

- Research approach
- Research design
- Variables of the study
- Setting of the study
- Population
- Sample and sampling technique
- Sample size
- Inclusion and exclusion criteria
- Tool and techniques
- Content of validity
Reliability of the tool
Data collection process
Plan for data analysis

3.1 Research Approach: - research approaches are plans and the procedures for research that span the steps from broad assumptions to detailed methods of data collection, analysis, and interpretation.93

The research approach chosen for this study is Quantitative descriptive evaluative research approach; Quantitative research is an approach for testing theories by examining the relationship among variables. These variables, in turn, can be measured, typically on instruments, so that numbered data can be analyzed using statistical procedures.94

As this research problem is aimed at identifying the effect of Standard Operating Protocol on the knowledge & practices of the nurses working in Pediatric Intensive Care Unit.

3.2 Research Design: - research design is the binding force that holds all the elements in a research together. A research design incorporates the most important methodological decisions that a research makes in conducting a research design.95

The design used for this study is Quasi-Experimental non-randomized control group design. It is also known as the ‘nonequivalent control group design’. In this design, experimental & control groups are selected without randomization, and dependent variables are observed in experimental as well as control groups before the intervention. Later, the experimental group receives treatment & after that post-test observation of dependent variables is carried out for both the groups to assess the effect of treatment on experimental group.96
FIGURE –3.1
SCHEMATIC PRESENTATION OF RESEARCH DESIGN

IDENTIFICATION OF RESEARCH AREA: Nursing care of patient on ventilator, Procedures that should be focused in order to prevent complication & its effect on recovery

FORMULATION OF PROBLEM: Survey to observe the practices of nurses on care of children on ventilator and ROL

HYPOTHESIS FORMULATION: Based on objectives

SETTING OF THE STUDY: Paediatric Intensive Care Unit of selected hospitals of Pune city

SAMPLING: Purposive Sampling

DATA COLLECTION TOOL: Structured questionnaire, Observation checklist and inventory checklist,
Tool Part 1 - Demographic data, Tool Part 2 - structured knowledge questionnaire,
Tool Part 3 - Observation checklist, Tool Part 4 - Inventory checklist

Permission from ethical committee and authorities of all the hospital

Identified the nurses as per the criteria, obtained the consent, delivered test, observed practices before implementation

Day 1, 2 & 3 - Pre-test given to assess the knowledge and observation of skills followed by introduction of the Nursing Protocol,
Day 7, 8 & 9 - post test 1 to assess the knowledge and observation of the skill (observation checklist and Inventory checklist)

Day 14, 15, & 16 - Post test 2 for observation of the skills on observation checklist
Day 21, 22, & 23 - Post test 3 for observation of the skills on observation checklist

Analysis of the data, presentation in table testing of hypothesis

Conclusion & recommendation
Quasi-Experimental Design – Non-equivalent control group before-after design

3.3.1 Independent variables: - According to Burns & Grooves (2007)” An independent variables is a stimulus or activity that is manipulated or varied by researcher to create an effect on the dependent variable. It is also called an intervention or experimental variables.  

In the present study, the independent variable is Standard Operating Protocol on care of children on ventilator.

3.3.2 Dependent variables: - According to Burns & Grooves (2007) “it is the outcome or response that the researcher wants to predicts or explain.

In the present study, the dependent variable is the knowledge and practices of nurses. The dependent variable i.e. knowledge & practices may change with the educational status of the nurses, years of experience in the pediatric intensive care unit.

3.4 Setting of the study: - “According to Wood & Kerr (2006): setting refers to the area where the study is conducted.

The study was planned in all the private hospitals of Pune city which included the following Ruby Hall Clinic, Jahangir Hospital, Poona Hospital, Sayadri Hospital, Birla Hospital, Inamdar Multispecialty Hospital, Dr. D.Y Patil Hospital, K.E.M Hospital, Global Hospital, Bharati Hospital and Deenanath Mangeshkar Hospital. Due to administrative difficulties the permission was granted from only five hospitals that were Ruby Hall Clinic, Deenanath Mangeshkar hospital, K.E.M hospital, Dr. D.Y Patil hospital, and Inamdar hospital. All these hospitals have a well-equipped PICU. An interview was taken and it was identified that there was no Standard Operating Protocol in the Pediatric Intensive Care Unit, though some of the hospitals had a general protocol.
The first hospital group ‘A’ selected was at Tadiwala road, with the bed strength of 4 in the pediatric intensive care unit. With the total nurses 10 and the nurse patient ratio as 1:2. The monthly patients on ventilators are approximately 2 to 3.

The second hospital group ‘B’ selected was at Erandwane with the bed strength of 11 in pediatric intensive care unit. With the total nurses 20 and the nurse patient ratio 1:1 or 1:2 as per the availability of nurses for all three shift. The monthly patients on ventilators are approximately 10 to 14.

The third hospital selected group ‘C’ selected was at Rasta Peth with the bed strength of 10 in the pediatric intensive care unit. With the total nurses 20 and the nurse patient ratio 1:2 or 1:3 as per the availability of nurses at all three shift. The monthly patients on ventillator are approximately 10 to 15.

The fourth hospital selected group ‘D’ selected was at Pimpri with the bed strength of 8 in the pediatric intensive care unit. With the total nurses 16 and the nurse patient ratio 1:2 or 1:3 as per the availability of the nurses at all three shift. The monthly patients on ventilator are approximately 8 to 10.

The fifth hospital selected group ‘E’ selected was at Fatima Nagar with the bed strength of 5 in the pediatric intensive care unit. With the total nurses 14 and the nurse patient ratio 1:2 or 1:3 as per the availability of the nurse at all three shift. The monthly patients on ventilator are approximately 3 to 4.

3.5.1 The Sampling Technique:–

Population: - Population Refers to the aggregate or of all the objects, subjects or members that conform to a set of specification (Polit& Hungler, 1999)\(^9\)

In this study, the population consisted of all the staff nurses working in the PICU of the selected private hospitals during the time of the study.

3.5.2 Sampling Technique:–

According to Polit& Beck (2008), “sampling refers to the process of selecting a portion of population to represent the entire population.”
In the present study the investigator has used a non-probability purposive sampling technique.

According to Suresh K Sharma (2015) “Purposive sampling is more commonly known as ‘judgmental’ or ‘authoritative’ sampling. In this type of sampling, subjects are chosen to be part of the sample with a specific purpose in mind.

3.5.3 Sample

According to Suresh K Sharma (2015) “sample is a representative unit of a target population, which is to be worked upon by researcher during their study. In other word sample consist of a subset of units which comprise the population selected by investigator to participate in their research project. The sample selected for the present study comprises of staff nurses working in Pediatric Intensive Care Unit.

3.5.4 Sample size:-

Sample size refers to the number of sample elements from which data is collected in order to evaluate the statistical significance of findings. The size of the sample depends on a number of factors, including the previous study data.\(^{102}\)

The estimated sample size for the study is determined by:

1. The estimated percentage \((P)\) of the variable of interest – for this study percentage of knowledge of nurses on care of pediatric patients on ventilator in PICU was \((P) = 13.36\%\). (Rozina Roshan Essani and Tazeen Saeed Ali 2011)\(^{102}\)
2. The desired level of confidence = 95% so \(Z = 1.96\)
3. The power – 80%
4. Absolute precision \((E)\) – 11%

Sample size \(n = (Z\alpha + Z\beta)^2 pq/E^2\)

\[n = (1.96 + 0.84)^2 \times (13.36) \times (86.64) / (11)^2\]

\[= 74.999\]

\[n = 75\]
The maximum sample size works out to be 75. Therefore 80 nurses working in pediatric intensive care unit were selected for study anticipating an attrition of 5%.

3.6.1 Inclusion criteria:-

1. All nurses working in PICU in the selected hospitals.
2. Registered GNM/B.Sc nurses
3. Nurse with minimum experience of 1 month working in PICU.
4. Nurses with special training in PICU.
5. Children between the age group of 1 month to 12 years.

3.6.2 Exclusion criteria:-

1. Unit in-charge who do not participate in the care of children.

3.7 Tool & technique for Data Collection:

According to Polit and Beck (2011) “the Phenomenon in which a researcher is interested must ultimately be translated into data that can be analysed. The most important & crucial aspects of any research is data collection, which provides answer to the question under study. Data collection relies on instrument”. 103

The following tools will be developed & administered by the investigator for the collection of data:-

3.7.1 A structured questionnaire: -The structured knowledge questionnaire was to assess the existing knowledge of the nurses working in PICU regarding care of children on ventilator. The purpose of the questionnaire was to assess the knowledge in the various aspect of care of children on ventilator and equal weightage was given in all aspects like knowledge, comprehension, application, analysis, synthesis and evaluation. The correct answer in the questionnaire was scored as one and the inappropriate answer was scored zero. The objectives of the questionnaire was as follows:

i. To collect the personal & professional data of the nurses.

ii. To assess the knowledge on the following:-

- Assisting for endotracheal Intubation
- Monitoring of ventilator parameters
- Suctioning of Endotracheal tube
- Assisting for Arterial blood gas collection and its interpretation
Monitoring & care of invasive lines
Administration of intravenous injection
Administration of enteral feeding
Maintenances of oral hygiene
Assisting for weaning off from the ventilator.
Change of position & Back-care

3.7.2 An observation checklist: - the purpose of the observation checklist is to record the practices of the nurses regarding care of children on ventilator. All the aspects of skill were assessed on the observation checklist the tool consisted with yes / no questions.

Tool:-

To assess the practices on the following:-
- Suctioning of Endotracheal tube
- Monitoring & care of invasive lines
- Administration of intravenous injections
- Administration of enteral feeding
- Maintenances of oral hygiene
- Change of position & Back-care

3.7.3 An inventory checklist: - the purpose of the inventory checklist is to record the self-reporting practices of the nurses regarding care of children on ventilator. The inventory checklist consisted of questions with yes/no responses. The inventory checklist had to be filled by the nurses.

Tool:-

To assess the self-reported practices on the following:-
- Assisting during Endotracheal Intubation
- Monitoring of ventilator parameters
- Assisting for Arterial blood gas collection and its interpretation
- Assisting for weaning off from the ventilator.

3.7.4 An opinionarrie checklist: - the purpose of the semi structured opinionarrie is to assess the usefulness of standard operating protocol, in hospitals which follow the protocol on routine bases.

Technique: - the investigator will use the following technique in her study:
- The technique of pre-test & post-test design will be used to assess the knowledge of the nurses regarding care of paediatric patients on mechanical ventilator in the PICU. The
investigator selected this technique because this would show the changes in the dependent variable after the use of nursing protocol.

- A direct observation checklist will be used to assess the practice of nurses before & after use of standard operating protocol intervention. The investigator will opt for this technique as she felt that the nurses would be more at ease & perform naturally when the nurse were not aware that they will be observed, this would be unbiased & objective.

### 3.7.5 Development of Standard Operating Protocols:

The main aim of the Standard Operating Protocol was that the nurses will recognize the importance of Standard Operating Protocol on care of paediatric patients of ventilator and improve their knowledge and skill in this area.

The steps adopted in the development of Standard Operating Protocol on Care of Paediatric Patients on ventilator are as follows:

- Preparation of the first draft of standard operating protocol
- Content validation of nursing protocol
- Preparation of 2\textsuperscript{nd}, 3\textsuperscript{rd}, 4\textsuperscript{th}, 5\textsuperscript{th}, 6\textsuperscript{th}, 7\textsuperscript{th}, and 8\textsuperscript{th}, draft of the standard operating protocol.
- Editing of the content
- Finalization of the standard operating protocol.

The plan was developed in English and was given for validation. The initial standard operating protocol consisted, protocol for hand washing, monitoring vital signs, protocol for assisting in extubation, protocol for infection control and protocol for chest physiotherapy. The plan was then modified on the suggestion from the experts, and a final draft was prepared under the title Standard Operating Protocol on Care of Paediatric Patients on ventilator. The topic covered the following:

- Assisting for endotracheal intubation
- Monitoring patients on ventilator
- Suctioning of endotracheal tube
- Assisting for ABG collection and its interpretation
- Assisting for weaning off from the ventilator
The Standard Operating Protocol aimed at increasing the knowledge and skills of nurses working in Paediatric Intensive Care Unit.

3.8. **Validity of the tool:**

Validity of an instrument refers to the degree to which an instrument measures what it is supposed to measure. Validity of an instrument is a determination of the extent to which the instrument actually reflects the abstract construct. The validity of an instrument is assessed in terms of the face validity, content validity & construct validity.

3.8.1 **Face Validity:**

The face validity involves an overall of an instrument regarding its appropriateness to measure a particular attribute or phenomenon. It is the face value or overall of the instrument.

The face validity of the tool was established through consultation with nursing experts in various fields of nursing & nursing research & modifications were made as advised.

3.8.2 **Content validity:**

For the present the researcher had undertaken the thorough review of existing literature to establish the face & content validity of the tool. Copies of the tool along with the purpose & objectives of the study were submitted to 9 experts’ who include 3 paediatricians, 3 MSc Nurses and 3 PhD Nurses. Experts evaluated the tool.

The tool was modified as per the suggestions given by the experts and consensus was reached about the tool few questions were deleted from the questionnaire some questions were modified and a few new questions were added.

Questions that were deleted are:

1. Maintenances of Nutrition
   a. The purpose of parental nutrition
b. The total duration for lipid infusion
c. At the end of the parental nutrition flush the infusion catheter with?
d. The early indicator of sepsis
e. Importance of monitoring catheter insertion site daily

2. Monitoring vital signs
   a. Which water is taken for tepid sponge
   b. Which instrument is used to measure patients forehead temperature
   c. The common site for checking pulse in children
   d. Systolic blood pressure of infants
   e. Systolic blood pressure of toddlers
   f. Respiratory rate of children aged 1 to 5 years is

3. Chest physiotherapy
   a. Chest percussion is indicated in
   b. Deep breathing helps in
   c. How is cough simulation done
   d. Why breathing exercises are given importance in chest physiotherapy

4. Approach to sick children
   a. How to recognize a sick child “Early & Promptly”
   b. What is the basic principle to manage the emergency
   c. The first aid for foreign aspiration

5. Gastrostomy or jejunostomy tube feeding
   a. What is PEG (percutaneous endoscopic Gastrostomy)
   b. Skin protector barrier used around the stoma
   c. How to clean the skin surface around the stoma
   d. How to prevent transmission of microorganism around the stoma

6. Assisting for extubation of the patient
   a. When extubation must be performed

The questions that were modified are:

1. Indications for endotracheal intubation are
2. Name the pulmonary cause of respiratory failure which may require mechanical ventilation
3. What is C.M.V mode

The questions that were added are:

1. Medications that can cause dryness of the mouth includes the following
2. The normal inhabitant in the mouth cavity that acts on the carbohydrate material is
3. The most common complication of the neglected mouth in the patients on ventilator is?
4. What are the clinical parameters to assess the adequacy of ventilation therapy?
5. The humidifier located on the inspiratory side of the circuit is necessary to overcome following problems.

In the observation checklist the deleted checklists are:

1. Hand washing
2. Control of infection
3. Monitoring vital signs
4. Chest physiotherapy

In the inventory checklist the deleted checklists are:-

1. Assisting for extubation

Necessary modifications were made as per the suggestions of the experts. Letter seeking opinions for content validation, list of experts are enclosed in the annexure.

3.8.3 Construct Validity:-
Construct validity was established with the help of item analysis & difficulty index calculation. Blue print of the questionnaire was made & after administration of question to a trial group of respondents. Item difficulty, discrimination & distracters power statistics were calculated during quantitative item analysis. Questions with difficult index below 25 & above 75 were excluded (except few vital questions) item discrimination index was between 0.2 & 0.6 which denoted that the item were able to differentiate between high & low scores. On the whole suggestion & comments of experts included some addition & omission of some items & simplification of the
language used. Overall the tool was found to be relevant. The necessary modifications were done as per expert’s advice.

**Content Validity of the Standard Operating Protocol:**

To determine the content validity of the Nursing Protocol the draft along with the questionnaire and observation checklist was submitted to these 9 experts, suggestions for modification and improvement of Standard Operating Protocol were welcomed.

As per the suggestion of experts the areas identified for written and the standard operating protocol was finalized for the study.

**3.9 Reliability:**

According to Suresh K Sharma (2015) “Reliability is the degree of consistency & accuracy with which an instrument measures the attribute for which it is designed to measure”.96

The Reliability is defined as the ability of an instrument to create reproducible results. Therefore, reliability is concerned with consistency of the measurement tools. A tool only can be considered reliable if it measures an attribute with similar results on repeated use.

To measure a quantity this is a sum of K components (K – items)

\[ X = Y_1 + Y_2 + \ldots + Y_K \]

Cronbach \( \alpha \) is defined as

\[ \alpha = \frac{K}{K-1} \left(1 - \sum_{i=1}^{K} \frac{\sigma^2_{Y_i}}{\sigma^2_x} \right) \]

Where,

\( \sigma^2_x \) = variance of the observed total test scores

\( \sigma^2_{Y_i} \) = variance of component i for the current sample of persons

A total of 10 subjects were administered the tool for knowledge questions and 10 subjects were observed on the practices with the observation checklist, inventory checklist were administered to 10 subjects observation & self-reported practices were scored. Cronbach’s alpha was calculated for the same using SPSS (Statistical Package for social science) software. Reliability
for the observation checklist was tested by ‘Inter Rater reliability test’ in one of the selected hospital. Two of her colleagues observed five nurses, using the observation checklist.

The reliability of observation checklist & inventory checklist was established by using Scott formula.

\[
\text{Scott } \parallel = 100 - \frac{\sum D - \sum E^2}{100} \\
100 - \frac{\sum E^2}{100}
\]

The statistical analysis computed had relation of range from 0.80 to 0.92 in the entire 10 checklist using the above formula which indicates the high reliability of the tool.

**TABLE NO –3.I**

**PRESENTATION OF THE CALCULATED RELIABILITY FOR THE DIFFERENT AREAS OF THE TOOL**

<table>
<thead>
<tr>
<th>Sr.No</th>
<th>Content</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Knowledge questionnaire</td>
<td>0.8060</td>
</tr>
<tr>
<td>2</td>
<td>Observation checklist as follows: -</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1. Observation checklist for Endotracheal tube suctioning</td>
<td>0.8693</td>
</tr>
<tr>
<td>2</td>
<td>2. Observation checklist for Administration of intravenous injection</td>
<td>0.8434</td>
</tr>
<tr>
<td>2</td>
<td>3. Observation checklist for Care of invasive lines</td>
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</tr>
<tr>
<td>2</td>
<td>4. Observation checklist for Enteral feeding</td>
<td>0.8153</td>
</tr>
<tr>
<td>2</td>
<td>5. Observation checklist for Oral hygiene</td>
<td>0.8002</td>
</tr>
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<td>2</td>
<td>6. Observation checklist for Back massage</td>
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<td>3</td>
<td>Inventory checklist: -</td>
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<tr>
<td>3</td>
<td>1. Inventory checklist for Endotracheal intubation</td>
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</tr>
<tr>
<td>3</td>
<td>2. Inventory checklist for Monitoring patients on ventilator</td>
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<td>3. Inventory checklist for Assisting in ABG (Arterial Blood Gas) collection</td>
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<tr>
<td>3</td>
<td>4. Inventory checklist for Weaning</td>
<td>0.8247</td>
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</table>
3.10 Pilot Study:

According to Janet Houser (2008) “A pilot study is an intentionally smaller version of a study, with a limited sample size or group of measures to test the methods & procedures of a study prior to full implementation”.

Administrative permission has been procured formally from the hospital authorities and the sister in charge. Pilot study was conducted from 1st October 2014 to 28th October 2014. It was performed on 10 nurses from the PICU. The investigator approached the samples, explained to them about the study and obtained their consent.

The observation was carried out on the first day to study their practices. Then the pre-test was given to assess their knowledge regarding care of children on ventilator. After completing all the nurses pre-test the standard operating protocol was administered to all the nurses. After teaching sessions, observation was carried out to check the practices after 7, 14 and 21 days. After 7th day post test was administered to assess their knowledge. After the post-test data was analysed and the findings indicated that standard operating protocol is effective.

3.11 Data Gathering Process:

The data gathering process commenced on 8th December 2014 and ended on 30th December 2015 the investigator visited the Paediatric Intensive Care Unit of various private hospitals in Pune city prior to data gathering process & obtained permission from the concerned administrative authorities and the sister in-charge of each PICU, to conduct the study. They responded in positive and encouraging manner.

The study was explained in detail to the sample in each PICU and the investigator obtained their consent for participating in the study. The data collection was done from 9am to 9pm, so that all three shift morning, evening and night shift nurses could be observed. For certain observation of the skill the investigator had to visit early morning to the respective PICU. After completing the initial pre-test questionnaire and pre observation of all the staff nurses then the standard operating protocol were administered to the staff nurses.

Day 1 – questionnaire to assess the knowledge of nurses regarding care of paediatric patients on ventilator was administered to the nurses after 30-45 minute duration the questionnaire was
collected back from the staff. And there after the staff nurses were observed for their practices & scored on the observation checklist. Once completing with all the nurses of the concern hospital then the standard operating protocol was distributed to the nurses, & explained about the procedures given in the protocol, the quires was handled there & then. 30-45 minute duration for the same was given for them to ask any quires. After day 7 (7, 8, 9) – post-test was collected and the 2nd observation of the nurses was recorded on the checklist after the administration of the nursing protocol. After day 14 (14, 15, 16) – 3rd observation of the nurses was recorded on the checklist. After day 21 (21, 22, 23) – 4th observation of the nurses was recorded on the observation checklist. There were inventory checklists where the observations are taken pre-test and post-test. In the control group there will be 4 observations taken. A total number of 4 observations will be required to assess the effectiveness of the standard operating protocol. This pattern of data gathering process was continued till desired sample size was achieved.
<table>
<thead>
<tr>
<th>Sr.No</th>
<th>Hospitals</th>
<th>Date of permission</th>
<th>Date of starting the study</th>
<th>Date of completing the study</th>
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<tr>
<td>1</td>
<td>Group – A Poona Medical Research</td>
<td>18&lt;sup&gt;th&lt;/sup&gt; November 2014 Ethical approval 14&lt;sup&gt;th&lt;/sup&gt; November 2014</td>
<td>8&lt;sup&gt;th&lt;/sup&gt; December 2014</td>
<td>28&lt;sup&gt;th&lt;/sup&gt; February 2015</td>
</tr>
<tr>
<td>2</td>
<td>Group – B Deenanath Mangeshkar Hospital</td>
<td>7&lt;sup&gt;th&lt;/sup&gt; April 2015</td>
<td>15&lt;sup&gt;th&lt;/sup&gt; April 2015</td>
<td>23&lt;sup&gt;rd&lt;/sup&gt; July 2015</td>
</tr>
<tr>
<td>3</td>
<td>Group – C KEM Hospital</td>
<td>12&lt;sup&gt;th&lt;/sup&gt; February 2015 KEM Hospital Ethical Approval</td>
<td>1&lt;sup&gt;st&lt;/sup&gt; March 2015</td>
<td>25&lt;sup&gt;th&lt;/sup&gt; May 2015</td>
</tr>
<tr>
<td>4</td>
<td>Group – D Dr. D Y Patil Hospital</td>
<td>27&lt;sup&gt;th&lt;/sup&gt; May 2015</td>
<td>29&lt;sup&gt;th&lt;/sup&gt; August 2015</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt; October 2015</td>
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<tr>
<td>5</td>
<td>Group – E Inamdar Multispecialty Hospital</td>
<td>18&lt;sup&gt;th&lt;/sup&gt; June 2015</td>
<td>5&lt;sup&gt;th&lt;/sup&gt; October 2015</td>
<td>24&lt;sup&gt;th&lt;/sup&gt; December 2015</td>
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</table>
### TABLE – 3.III

#### PROCESS OF DATA COLLECTION

<table>
<thead>
<tr>
<th>Sr. N</th>
<th>Content</th>
<th>Activities</th>
<th>Day 1, 2, &amp; 3 Pre-test</th>
<th>Day 7, 8 &amp; 9 Observation post-test I</th>
<th>Day 14, 15 &amp; 16 Observation Post-test II</th>
<th>Day 21, 22 &amp; 23 Observation Post-test III</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Knowledge Questionnaire</td>
<td>Knowledge questionnaire on care of children on ventilator</td>
<td>Pre-test 80 min</td>
<td>Post-test I 60 min</td>
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</tr>
<tr>
<td>2</td>
<td>Observations of Practices</td>
<td>Endotracheal Tube suctioning</td>
<td>15 min</td>
<td>10 min</td>
<td>10 min</td>
<td>10 min</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Administration of intravenous injections</td>
<td>15 min</td>
<td>10 min</td>
<td>10 min</td>
<td>10 min</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Care of invasive lines</td>
<td>15 min</td>
<td>10 min</td>
<td>10 min</td>
<td>10 min</td>
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<tr>
<td></td>
<td></td>
<td>Enteral feeding</td>
<td>15 min</td>
<td>10 min</td>
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<tr>
<td></td>
<td></td>
<td>Oral hygiene</td>
<td>15 min</td>
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<tr>
<td></td>
<td></td>
<td>Back care</td>
<td>15 min</td>
<td>10 min</td>
<td>10 min</td>
<td>10 min</td>
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<td>3</td>
<td>Inventory Checklist</td>
<td>Assisting for Endotracheal intubation</td>
<td>15 min</td>
<td>10 min</td>
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<td>--</td>
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<td>Monitoring patients on the ventilator</td>
<td>10 min</td>
<td>5 min</td>
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<tr>
<td></td>
<td></td>
<td>Assisting for ABG collection &amp; its interpretation</td>
<td>10 min</td>
<td>5 min</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Assisting for weaning</td>
<td>10 min</td>
<td>5 min</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total Time</td>
<td>215 min</td>
<td>145 min (2 hours 40 min)</td>
<td>60 min (1 hour)</td>
<td>60 min (1 hour)</td>
</tr>
</tbody>
</table>

|                |                  |                  | 3 hours 58 min (4 hours) |                  | 60 min (1 hour) | 60 min (1 hour) |

Note: -- indicates no activity.
Plan for Data Analysis:-
Analysis will be done based on the objectives & hypothesis to be tested. The investigator planned to analyse the data in the following manner.

Demographic variables would be analysed in terms of frequency and percentage in the form of tables and graphs. The data will be processed by using Wilcoxon test, Mann Whitney test & ANOVA (analysis of Variance) to compare between the pre-test and post-test knowledge score and the mean post-test knowledge scores & determine the relationship between knowledge & selected demographic variables.

Summary:-
This chapter has explicitly described the sequence in which the investigator had carried out the research. It describes the research approach, research design, setting of the study, sample, sampling method, development of research tool, final research tool, & their validity & reliability, pilot study, method of data collection & plan for data analysis adopted for the present study. The findings of the pilot study guided the investigator to avoid intervention contamination. Overall the pilot study carried out indicted that the data collection method was feasible.