EFFECTIVENESS OF VIRTUAL PRESENTATION OF VENEPUNCTURE UPON THE COPING LEVEL OF PAIN AMONG CHILDREN UNDERGOING VENEPUNCTURE

BY

MEERA JOSE

A DISSERTATION SUBMITTED TO THE TAMILNADU DR.M.G.R.MEDICAL UNIVERSITY, CHENNAI, IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OFMASTER OF SCIENCE IN NURSING

APRIL 2014

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DECLARATION

I hereby declare that the present dissertation entitled **"Effectiveness of Virtual Presentation of Venepuncture Upon Coping Level of Pain among Children Undergoing Venepuncture"** is the outcome of the original research work undertaken and carried out by me under the guidance of **Dr. Latha Venkatesan,** M.Sc (N)., M.Phil (N)., Ph.D (N)., Principal, Apollo College of Nursing, **Prof.Nesa Sathya Satchi,** M.Sc (N)., Ph.D (N)., HOD, Department of Child Health Nursing, Apollo College of Nursing, Chennai. I also declare that the material of this has not found in any way, the basis for the award of any degree or diploma in this university or any other universities.

M.Sc Nursing II Year

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SYNOPSIS

An Experimental Study to Assess the Effectiveness of Virtual Presentation of Venepuncture upon the Coping Level of Pain among Children Undergoing Venepuncture in Selected Hospitals, Chennai.

The Objectives of the Study were,

1. To determine the coping level of pain by control and experimental group of children undergoing venepuncture.
2. To determine the effectiveness of virtual presentation of venepuncture by comparing the coping level of pain in control and experimental group of children undergoing venepuncture.
3. To determine the association between selected demographic variables and the coping level of pain in experimental and control group of children undergoing venepuncture.
4. To determine the association between selected clinical variables and the coping level of pain in experimental and control group of children undergoing venepuncture.
5. To determine the level of satisfaction among the experimental group of children undergoing venepuncture.

The conceptual framework for the study was developed on the basis of Roy's adaptation model, which was modified for the present study. A Post test only design was used in this study. The present study was conducted in Apollo Children's Hospital, Chennai. A sample size of 60 children who met the inclusion criteria were chosen for this study of which 30 were taken for the control group

and 30 for the experimental group through systematic random sampling. The study variables were the coping level of pain among children undergoing venepuncture and virtual presentation of venepuncture.

An extensive review of literature and guidance by experts laid the foundation to the development of the tools for the study. The investigator used Demographic variables proforma, Clinical variables proforma, Wong Baker FACES Pain Rating Scale and Rating Scale on the level of satisfaction about virtual presentation of venepuncture to assess the outcome during venepuncture.

The data collection tools were validated and the reliability was established. After the pilot study, the data for the main study was collected using interview method. The children in the control group were assessed for coping level of pain using Wong Baker FACES Pain Rating Scale without any intervention. In experimental group, virtual presentation of venepuncture, it includes procedure room set up as well as the health personnel and each steps of venepuncture that a child should undergo was shown to each child for a period of 5 minutes before the procedure. Adequate explanations were provided and doubts of children and their parents were clarified. At the end of this period, venepuncture was performed and assessment of coping level of pain was done during and immediately for 1 minute by Wong-Baker FACES Pain Rating Scale. The level of satisfaction of experimental group of children regarding virtual presentation of venepuncture was assessed using satisfaction rating scale.

Major Findings of the Study were

- Majority of the children in the control and experimental group were from nuclear family (90%, 86.7%), living in urban area (66.7%, 50%) belonging to Hindu religion (60%, 50%) with a family income of 10,001-15,000 (50%, 50%). Fifty seven percent of children in control group were males. Significant percentages of children in the control group (33.3%) were 14.1-16yrs old and sixty percentages were undergoing secondary education. In experimental group (40%) were 8-10yrs old undergoing primary education (56.7%).
- Significant percentage of children in control and experimental group had previous history of hospitalization (60%, 50%), most of them had not received details of venepuncture (60%, 66.7%). Majority of the children had not undergone venepuncture previously (90%, 76.7%) and none of them had previous experience of watching videos of venepuncture (100%, 100%) in control and experimental group respectively.
- Most of the children in control and experimental group used to express their fear with parents (73.3%, 83.3%) and part of them in control group (50%) ventilated their fears to mother, where as in the experimental group (50%) of the children ventilated to their father.
- Majority of children in the control group (63.3%) had severe pain during venepuncture; where as in experimental group (40%) had mild pain.
- The mean and standard deviation of the coping level of pain in control group was Mean=7.4, SD=1.78 and in experimental group Mean=2.3, SD=1.86 respectively. The ‘t’ value of 10.66 is highly significant at

P< 0.001 level of significance. Hence, the null hypothesis H_{01} was rejected.

- Majority of the children were highly satisfied (90%) with virtual presentation of venepuncture. This showed that virtual presentation of venepuncture is highly effective and it enables children to cope with pain during venepuncture.
- There was a significant association between the selected demographic variable of age of the children ($p< 0.05$) and coping level of pain in control group, but there was no significant association between other demographic variable and the coping level of pain in control and experimental group. Hence the null hypothesis H_{02} was partially rejected with regard to age of the children and coping level of pain in control group.
- It was inferred that there was no significant association between any clinical variables and the coping level of pain in both control and experimental group of children undergoing venepuncture. So null hypothesis H_{03} was retained.

Recommendations

- The study can be conducted on larger sample to generalize the results.
- The study can be conducted in different settings.
- The study can be conducted to assess the coping level of pain during other invasive procedures.
- A comparative study can be conducted to evaluate the effectiveness of various other interventions to reduce pain.

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CHAPTER I

INTRODUCTION

Background of the Study

"The pain of the mind is worse than the pain of the body"

~ Pubililius Syrus

The word child comes from the Germanic word cild –'child'. Children are amazingly efficient and very enthusiastic towards the environment. Children are the future of every nation across the world. Every child, on provision of a conducive and an enabling environment, may blossom into an ever fragrant flower, to shine in all spheres of life. India's total children population between the age group of 0-14 years is 32.3%. The pediatric population in hospitals changed dramatically over the last two decades. Although there is a growing trend towards shortened hospital stays, greater percentage of the children hospitalized today have more serious and complex problems than those in the past.

In the American Heritage Dictionary, pain is referred to "an unpleasant sensation occurring in varying degrees of severity as a consequence of injury, disease, or emotional disorder." Today pain has become the universal disorder, a serious and costly public health issue, and a challenge of family, friends, and health care providers who must give support to the individual suffering from physical as well as emotional consequence of pain. The Greek and Romans were the first to advance a theory of sensation, the idea that brain and nerve system has a role in producing pain perception. Children understand basic concept of pain at a very young age and can describe both its emotional and physical aspects. The

sensation of pain is the most complex yet elusive of all the stimuli to which human beings are sensitive. Pain is subjective experience and for children, it's possibly the most bewildering and frightening occurrence of their young lives. It is impossible for them to understand why pain occurs or that relief is just around the corner. They know only that something hurts right now. Children respond to pain with behavioural relations that depend up on their age cognitive process. In 1931, the French medical missionary Dr Albert Schweitzer wrote, "Pain is a more terrible lord of mankind than even death itself".

Pain in children, and children feel pain, has been the subject of debate within medical profession for centuries. Prior to the late 19th century it was generally considered that children get hurt more easily than adult. Children are becoming increasingly subjected to a larger battery of invasive procedure which is painful (Abu-saad, 1994). The assessment of pain is difficult task for the health professionals and becomes especially challenging when attempting to objectively assess the quality or magnitude of pain and pain experiences in children (Hester, 1993).

Venepuncture is one of the most painful medical procedures for a child, and it is one of the most frequently performed and it is carried out for, to obtain blood for diagnostic purposes; to monitor levels of blood components (Lavery & Ingram, 2005); to administer therapeutic treatments including medications, nutrition, or chemotherapy; to remove blood due to excess levels of iron or erythrocytes.

Most children are frightened and anxious before procedure, and during venepuncture they cry, suffer pain and refuse to cooperate, whereas parents are often worried and do not know how to help. Not only do they express high levels of distress during venepuncture but also in anticipation of the procedure. Therefore, prevention or reduction of distress should focus on both phases of the procedure.

Various pharmacological and non pharmacological methods of managing pain during venepuncture are existing, topical application of local anaesthetics, non invasive dermal anaesthesia. Several papers report that distraction can reduce fear, anxiety and pain connected to painful medical procedures. These tools can include movies, interactive robot toys, virtual reality goggles, music, soap bubbles and short stories.

Strategies to manage pain coping from medical illness, surgery and major procedure exist. Means to pain coping for investigational procedures including heel lance and venepuncture are lacking (Fernandes, (1994) & Johnston, (1997). The challenge of providing simple, safe and effective pain coping intervention for these children is an ongoing dilemma. The American academy of pediatrics and American pain society addressed the need for appropriate pain management in children in their joint statement presented 2001. They noted that despite comprehensive research, anecdotal experienced and ample knowledge from 10-15 year, the assessment and treatment of pain in children frequently remain inadequate.

Virtual presentation of venepuncture is a simple and easily applicable technique to cope with pain during venepuncture procedure in children. As an adult, psychological factors such as stress, anxiety has an impact on the medical procedures may influence the experience of procedure pain in children. This technique is cost-effective, so it can be widely used for pain management and to promote cooperation with the child.

The importance of pain assessment and pain management is widely acknowledged (Ali, 2011). Pain management has favoured children's cooperation during venepuncture is essential for a successful procedure and in building a relationship of trustworthiness. A negative experience may mean that the child will always be afraid of medical personnel.

Need for the Study

Current population of India is 1,21,01,93,422 of which paediatric population comprises 31.4% that is; it comprises major part of the population. Pain is an uncomfortable phenomenon. It is one of the factors which interfere with the quality of life of the people. Even if pain is the same, the experience of it varies with individuals. The factors that contribute to the individual pain perception are age, sex, ethnicity, genetic, psycho-social variables.

Venepuncture is commonly seen as one of the most painful and frequently performed invasive procedure by nurses. Children with chronic illness are more likely to identify intrusive procedures as stressful, where as children who are acutely ill are more likely to indicate physical symptoms. Fears of bodily pain are

prevalent among children. Adult reassurance during children's painful medical procedures (eg venepuncture, immunizations) is consistently linked with increased child pain and distress (McMurtry, 2006)

Children frequently undergo venepuncture in the emergency department. This painful procedure causes considerable pain and anxiety for children and their parents. Failure to alleviate pain results in an uncooperative child, unsuccessful procedures (increased reattempts), prolonged procedure time and dissatisfaction with care for all involve. On interviewing different patients on pain following venepuncture, it was revealed that 70% of them complained moderate pain and remaining 30% complained of severe pain. Children and adolescents often describe invasive procedures and their associated anticipatory anxiety as the most distressing aspect of illness or hospitalization (Von Baeyer, 2013).

Effective pain management requires that the health professionals be willing to try a number of interventions to achieve optimum pain results. Pain reducing methods can be grouped into two categories non-pharmacologic and pharmacologic methods. A combination of pharmacological and non-pharmacological interventions can ensure the highest standard of care in the management of pain in children. There is no systemic pharmacological treatment are appropriate to provide pain relief during minor procedures, such as venepuncture, immunization, injections. Alleviation of pain caused by minor invasive procedures in children is an important issue for humane reasons and in terms of their reactions to future painful events and acceptance of subsequent health care interventions; (Von Baeyer, 2004) moreover, unrecognized pain can become severe and difficult to control and lead to fear and stress (Roggen, 2009).

Non pharmacological strategies such as physical and psychological comfort measures are useful in conjunction with pharmacological options to help lower levels of anxiety, distress and pain. Some physical comfort measures include the use of massage, heat or cold compresses, applying pressure or vibration and repositioning. Psychological comfort measures include use of imagery, distraction and relaxation techniques

An intervention that is cost effective and has no ill effect would be ideal for use in primary care setting for child receiving venepuncture. Research has shown that virtual presentation of venepuncture is effective in pain coping of children underwent venepuncture. In many cases children that are anxious and frightened about venepuncture. Some of the cases are such that they need an immediate management through venepuncture, with no other alternatives. In such a condition, the client refused treatment and went away, taking their own life at risk. So researcher felt a strong need for a pain coping intervention prior to venepuncture.

In a study conducted by Dennis (2004) to reduce the anxiety and fear thus increasing pain coping among adolescent children who undergone IV cannulation by using video associated teaching. He stated that it had a significant effect in pain coping among adolescent children. Virtual presentation is a being shown to be a powerful technology in the treatment of acute pain. It is envisioned that could be used with much greater efficacy in the treatment of pain. The rationale for preparing the children for venepuncture is based on the principle that fears of unknown exceeds fears of known. Therefore decreasing elements of unknown result and pain coping.

Lindsey (2006) conducted study on visual nurse coaching and cartoon diversion to reduce distress and pain during venepuncture. This study revealed that children under went visual nurse coaching and cartoon diversion coped more and less had less distress compare to control group. As advocates of children, pediatric nurse is obligated to minimize the emotional and physical effects to painful procedure. Finally, a less painful venepuncture may lead to less difficulty and higher success rates and therefore may spare blood vessel damage, which leaves more sites for later use (Squire, 2000).

If pain is not treated quickly and effectively in children, it can cause long-term physical and psychological sequelae. Therefore, it is important for all health care providers to understand the importance of effective pain control in children. The idea that pain related fear would direct attention towards the pain stimulus and therefore increase subjective pain. Virtual presentation of venepuncture do not only reduce pain but also effective in reducing anxiety.

Assessing and managing a child with pain is a daily problem for nurses. The main difficulty in assessing pain in children is the potential discrepancy between the perception and experience of pain and its expression. Nurses implement the orders and work closely with patients to facilitate the healing process. The investigator with her personal experience among children had practically witnessed the reaction of children to painful procedures. This motivated the investigator to conduct an experimental study about virtual presentation of venepuncture upon pain coping among children undergoing venepuncture.

Statement of the Problem

“An experimental study to assess the effectiveness of virtual presentation of venepuncture upon the coping level of pain among children undergoing venepuncture in selected hospitals, Chennai.”

Objectives of the Study

1. To determine the coping level of pain by the control and experimental group of children undergoing venepuncture.
2. To determine the effectiveness of virtual presentation of venepuncture by comparing the coping level of pain in control and experimental group of children undergoing venepuncture.
3. To determine the association between selected demographic variables and the coping level of pain in experimental and control group of children undergoing venepuncture.
4. To determine the association between selected clinical variables and the coping level of pain in experimental and control group of children undergoing venepuncture.
5. To determine the level of satisfaction among the experimental group of children undergoing venepuncture.

Operational Definitions

Effectiveness

In this study, it refers to the extent to which the virtual presentation of venepuncture increases the coping level of pain in children which is measured by

Wong Baker FACES Pain Rating Scale. In which the researcher has to choose the face that describes their pain intensity.

Virtual presentation of venepuncture

In this study, it refers to a visual stimulating programme using videotape of venepuncture; it includes procedure room set up as well as the health personnel and each steps of venepuncture that a child should undergo. This video show is for 5 minutes. It will be shown to each child before the procedure.

Coping level of pain

In this study, it refers to the pain expressed by children during venepuncture as measured by Wong Baker FACES Pain Rating Scale. In which the researcher has to choose the faces that describes their pain intensity and interpret as mild, moderate, severe.

Venepuncture

In this study, it refers to the puncture of a vein with a cannula or a needle for the purpose of blood collection, administration of intravenous fluid or medications for children. This invasive procedure is a common source of pain in children.

Children

In this study, it refers to the children ages from 8-16 yrs undergoing venepuncture in Apollo Children's Hospital, Chennai.

Assumptions

The study assumes that

- Invasive procedures evoke pain response in children.
- Venepuncture is a painful procedure.
- Painful procedures cause physical stress and discomfort.
- Distractions can modify children's response to pain.
- Virtual presentation of venepuncture can increase the coping level of pain by reducing fear of unknown.

Null hypothesis

H01 There will be no significant difference in the coping level of pain in control and experimental group of children undergoing venepuncture.

H02 There will be no significant association between selected demographic variables and the coping level of pain in control and experimental group of children undergoing venepuncture.

H03 There will be no significant association between the selected clinical variables and the coping level of pain by the control and experimental group of children during venepuncture.

Delimitations

The study is delimited to children who are

- Aged 8 - 16 yrs
- Admitted in selected hospitals Chennai

Conceptual Framework

The conceptual framework deals with the interrelated concepts that are assembled together in some rational schemes by virtue of their relevance to a common theme (Polit & Beck, 2008).

Conceptual framework of the present study is based on modified Callista Roy's adaptation Model (1970). According to Callista Roy, a person in an adaptive system and the need for adaptation is triggered by various stimuli. The human beings are biopsychological being in the adaptive system, who copes within the environmental change through the process of adaptation. Within the human system there are four subsystem, response modes such as physiological needs, self concept, role function and independence. These sub systems constitute an adaptive mode that provides a mechanism for coping with environmental stimuli and change. The goal of nursing according to this model is to promote adaption of the individual for various stimuli from the environment during health and illness.

The main concept of this model is input, throughput, output and feedback.

Input

In this study input refers to the demographic variable such as age, sex, religion, place, educational status.

Throughput

In this study throughput refers to providing nursing intervention that is virtual presentation of venepuncture prior to venepuncture. The person uses it as adaptive system. Experimental group is exposed to the intervention before

venepuncture to assess the coping level of pain by Wong Baker FACES Pain Rating Scale. Control group is allowed hospital routine and assess the coping level of pain is assessed by using Wong Baker FACES Pain Rating Scale.

Out put

It refers to the child's patterns behaviour. These patterns may be observed by Wong Baker FACES Pain Rating Scale responses provide feedback for the system. Roy's state that output of the system is either adaptive or non adaptive responses.

Feedback

For adaptive response enhancement will be given and the non adaptive response area reinforces will be given.

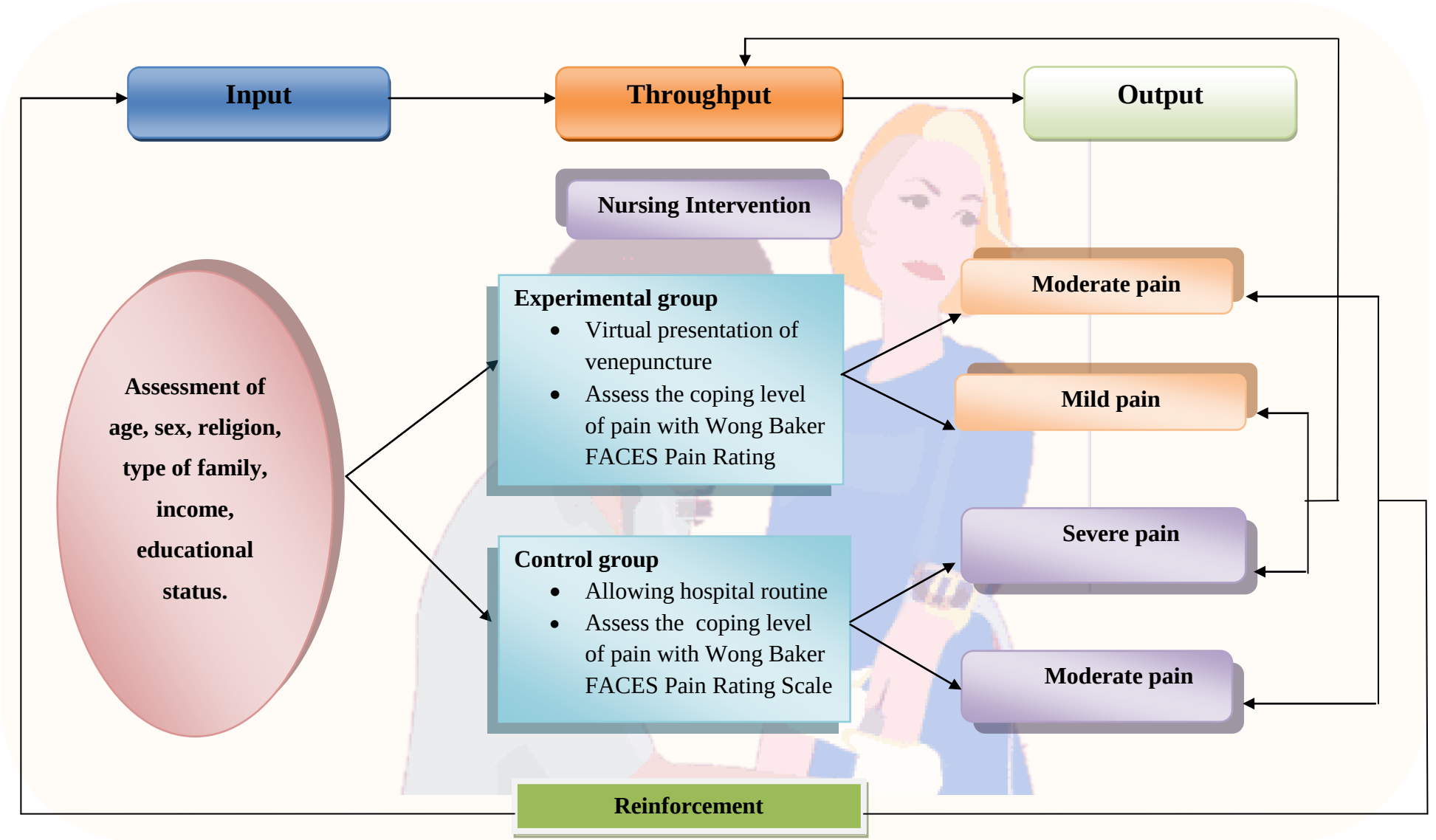

Fig:1 Conceptual Frame Work Based On Modified Roy's Adaption Model (1970)

Projected Outcome

This study will be useful to increase the coping level of pain among children undergoing venepuncture. In turn it will help to achieve more cooperation from children during venepuncture.

Summary

This chapter has dealt with the background, need for the study, and statement of the problem, objectives, operational definitions, assumptions, null hypothesis, delimitations and conceptual framework.

Organization of the Report

Further aspects of the study are presented in the following five chapters.

In chapter II : Review of literature

In chapter III : Research Methodology which includes research approach, design, Setting, population, sample and sampling techniques, tool description, content validity and reliability of the tool, pilot study, data collection procedure and plan for data analysis.

In chapter IV : Analysis and interpretation of data.

In chapter V : Discussion

In chapter VI : Summary conclusion, implication and recommendation.

The report ends with selected references and annexure.

CHAPTER II

REVIEW OF LITERATURE

Review of literature helps the research to build on existing work he or she should understand what is already known as topic (Polit & Beck, 2008).

Review of literature is an early step for conducting research. It enables to avoid the duplication of research work and broadens the understanding of the research problem. This chapter deals with a review of published and unpublished research studies and from related material for the present study. The review helped the researcher to develop an insight into the problem area. This helped the researcher in building the foundation of her study.

The review of related literature for the current study is categorized under the following headings

- **Literature related to the coping level of pain in children.**
- **Literature related to the coping level of pain in children undergoing venepuncture.**
- **Literature related to virtual presentation of venepuncture up on the coping level of pain among children undergoing venepuncture**.

Literature related to the Coping Level of Pain in Children

A descriptive study was conducted by Tricia (2011) among 130 children with chronic pain to examine the relation of children's pain severity, perceived pain threat, and passive coping to maternal worry and family activities. Controlling for pain severity, higher pain threat was associated with maternal

reports of greater worry and limitations in family activities due to the child's health. Children's use of passive-coping strategies was not related to maternal worry or family activity limitations. And here by concluded that health care providers should assess patients' pain beliefs, correct misperceptions about pain seriousness, and help increase patients' perceived efficacy in coping with pain.

Parkinson (2009) conducted a study to determine the prevalence and associations of self-reported and parent-reported pain in children with cerebral palsy (CP) of all severities. Cross-sectional design using a questionnaire; analysis using ordinal regression. Children aged 8–12 years were randomly selected from population-based registers of children with CP in eight data on pain were available from 490 children who could self-report and parents of 806 children (those who could and could not self-report). The estimated population prevalence of self-reported pain in the previous week was 60% (95% CI: 54–65%) and that of parent-reported pain in the previous 4 weeks was 73% (95% CI: 69–76%). In self-reporting children, older children reported more pain but pain was not significantly associated with severity of impairment. In parent reports, severity of child impairment, seizures and parental unemployment were associated with more frequent and severe pain.

Taylor (2008) conducted a study to benchmark pain prevalence, pain intensity, pain assessment documentation and pharmacological treatment of pain. A structured, verbally administered questionnaire was used to obtain information on patient demographics, pain before admission, pain intensity during admission and pain treatment. Charts were reviewed to establish frequency of documented pain assessment, the pain assessment tool used and analgesics given. Two hundred

forty-one (83%) of the 290 inpatients or their care givers were interviewed. It was found that 27% of patients usually had pain before admission, and 77% experienced pain during admission. Of these, 23% had moderate or severe pain at interview and 64% had moderate or severe pain sometime in the previous 24 hours. Analgesics were largely intermittent and single-agent, although 90% of patients found these helpful. Fifty-eight per cent of those with pain received analgesics in the preceding 24 hours but only 25% received regular analgesia. Only 27% of children had any pain score documented in the preceding 24 hours. It was concluded that pain was infrequently assessed, yet occurred commonly across all age groups and services and was often moderate or severe.

A descriptive study was conducted by Vak (2007) on children to view the sources of pain and explore the views on pain relief strategies. An exploratory cross sectional descriptive design and writes technique was used to investigate on what aids the children to think at the time of experiencing pain. The sample was composed of 33% boys and 64% girls of 4 – 16 years. The result has shown that mean ± S.D: 9.25, ± 3.04 and few were different from the mean presented in the children texts and drawing based on developmental stage and on difference based on gender.

Literature related to the Coping Level of Pain in Children undergoing Venepuncture

Francesco (2012) conducted a study to evaluate the efficacy of the subjective Wong Baker FACES pain rating scale (WBFS) and of the objective skin conductance fluctuation (SCF) test in assessing pain in children undergoing venepuncture. One-hundred and fifty children (aged 5–16 years) entered the study.

All underwent venepuncture at the antecubital fossa to collect blood specimens for routine testing in the same environmental conditions. After venepuncture, the children indicated their pain intensity using the WBFS, whereas the number of SCFs was recorded before, during and after venepuncture. So, pain level was measured in each child with WBFS and SCF. We found that the level of WBFS-assessed pain was lower in all children, particularly those above 8 years of age, than SCF-assessed pain ($p < 0.0001$). Moreover, the number of SCFs was significantly higher during venepuncture than before or after venepuncture ($p < 0.0001$). At multivariate regression analysis, age and previous experience of venepuncture influenced the WBFS ($\beta = -1.81$, $p < 0.001$, and $\beta = -0.86$, $p < 0.001$, respectively) but not SCFs. In conclusion, although both procedures can be useful for research and clinical practice, findings show that WBFS was affected by age and previous venepuncture, whereas SCF produced uniform data.

In 2008, an experimental study to identify that a multidisciplinary approach is necessary to reduce the pain level in children, by using randomized trial on 90 children undergoing painful procedures was conducted by Chung. The study results recommended that medical and paramedical professionals can use pain management techniques like deep breathing imagery, acupressure and distraction tools. These methods are effective with no side effects.

Tufekci (2006) was conducted a study to assess the effect of distraction (looking through kaleidoscopes) to reduce perceived pain, during venepuncture in healthy school-age children. The data were obtained by a form determining introductory features of the children and Wong-Baker FACES Pain Rating Scale and Visual Analogue Scale evaluating the pain. Descriptive statistics was used in

the assessment of the data and t-test was used in comparisons of dependent-independent groups. Pain levels of the children according to both scales in intervention group were lower than those of control group. But, it was detected that the distinction between score averages of intervention and control group of Wong Baker FACES Pain Rating Scale, not Visual Analogue Scale, was statistically significant ($p < 0.001$). It was detected that the distraction made with kaleidoscope effectively reduced the pain related to venepuncture in healthy school children and that some features of the children influenced the perception of pain.

A descriptive study was conducted by Uman in 2006 to assess the efficiency of cognitive behavioural, psychological interventions for needle related procedural pain. And realised that this method is effective in both children and adolescence to reduce pain and also stress which is associated with painful procedures.

In 2005 Kim did a study to determine the effectiveness of parental positioning and distraction on the pain, fear, and distress of pediatric patients undergoing venepuncture. An experimental-comparison group design was used to evaluate 43 patients (20 experimental and 23 comparisons) who were 4 to 11 years old. Experimental participants used parental positioning and distraction. All participants rated their pain and fear; parents and child life specialists (CLS) rated the child's fear, and CLS rated the child's distress. Self-reported pain and fear were highly correlated ($p < .001$) but not significantly different between the two groups. Fear rated by CLS ($p < .001$) and parents ($p = .003$) was significantly lower in experimental participants. Although no difference was found in distress

between the two groups, a significant time trend was discovered ($p < .001$). The parental positioning-distraction intervention has the potential to enhance positive clinical outcomes with a primary benefit of decreased fear.

An article on alternative therapies for pain by Zonna in 2003 written and shared that non pharmacological therapies are very effective to reduce procedural illness or injury related pain. It includes application of heat or cold or massage to the affected body areas, distraction techniques like toys, games, use of deep breathing and relaxation technique. McGhee (2002) mentioned in an article that Children are fearful of medical procedures report higher pain intensity to venepuncture and display more behavioural responses. Nevertheless, investigators have not examined the contextual stimulus of children's medical fears in relation to a multidimensional view of the pain experience or accounted for another contextual stimulus, children's general fears. While fear is an immediate response to a threatening situation, general fears may serve as a context for the development of medical fears.

Marion (2000) conducted a study on children’s medical fear coping behaviour pattern and pain coping during painful procedure. This study explored the relationship among medical fear, coping behaviour pattern and acute pain perception in 17 children who were encountering a painful medical procedure. A majority of the children present a great deal of pain during the painful procedure. No significant difference was found between the exhibited active or passive coping behaviour and reported medical fear levels. Implication for practice relate to the need for continual preparation and support of children during a painful procedure.

Literature related to Virtual Presentation of Venepuncture up on the Coping Level of Pain among Children undergoing Venepuncture.

Kleiber (2009) conducted a Meta analysis study to determine the usefulness of virtual presentation of venepuncture to decrease children's distress behavior and pain during medical procedures because many studies use very small samples and report inconsistent findings. For distress behavior, the mean effect size was 0.33 (±0.17), with 74% of the variance accounted for by sampling and measurement error. For pain, the mean effect size was 0.62 (±0.42) with 35% of the variance accounted for. Analysis of studies on pain that limited the sample to children 7 years of age or younger (total $n =$ 286) increased the amount of explained variance to 60%. The study concluded that virtual presentation of venepuncture had a positive effect on children's distress behavior and pain across the populations represented in this study.

In 2008 a study conducted by Bagnasco in chronically-ill patients, is one of the invasive procedures most frequently repeated during the day. Most children are frightened and anxious before this procedure, and during venepuncture they cry, suffer pain and refuse to cooperate, whereas parents are often worried and do not know how to help. Sample included 203 patients aged between 8 and 15 years. Before venepuncture a video of venepuncture was shown to the patient. Pain and parent collaboration were measured using validated scales. Significant differences were observed between the mean score of pain in patients undergoing venepuncture with intervention technique (2.53 ± 1.76) and the mean score obtained in those undergoing venepuncture without this technique (5.22 ± 2.53). In the group intervention, the mean level of cooperation was 0.38 (SD = 0.63)

compared to 0.20 (SD = 0.54) in the control group. In relation to the presence of parents, no significant differences were found in the mean pain scores (P = 0,5 >).

In 2007 Jeffrery did a study to assess the effectiveness of virtual reality for pediatric pain distraction during I.V. placement. Twenty children (12 boys, 8 girls) requiring I.V. placement for a magnetic resonance imaging /computed tomography (MRI/CT) scan were randomly assigned to two conditions: (1) virtual reality (VR) distraction using street luge (5DT), presented via a head- mounted display, or (2) Standard of care (topical anaesthetic) with no distraction. Responses from the Faces Pain Scale Revised indicated a fourfold increase in affective pain within the control condition; no significant differences were defected within the VR condition. There was a sufficient amount of evidence supporting the efficacy of street luge as a pediatric pain distraction tool during I.V. placement: an adequate level of presence, no simulator sickness, and significantly more child, parent, and nurse – reported satisfaction with pain management.

Bellieni in 2007 conducted a study to assess the analgesic effect of passive or active distraction during venepuncture in children. 69 children aged 7–12 years undergoing venepuncture. The children were randomly divided into three groups: a control group (C) without any distraction procedure, a group (M) in which mothers performed active distraction, and a TV group (TV) in which passive distraction (TV cartoon) was used. Both mothers and children scored pain after the procedure. Main pain levels rated by the children were 23.04 (standard deviation (SD) 24.57), 17.39 (SD 21.36), and 8.91 (SD 8.65) for the C, M, and TV groups, respectively. Main pain levels rated by mothers were 21.30 (SD 19.9),

23.04 (SD 18.39), and 12.17 (SD 12.14) for the C, M, and TV groups, respectively. Scores assigned by mothers and children indicated that procedures performed during TV watching were less painful ($p<0.05$) than control or procedures performed during active distraction.

An unblended experimental study was conducted by Cassidy in 2005 to investigate the effectiveness of the cartoon movies for preschooler children during venepuncture and had found that there is relationship between the attention to the distraction and decrease distress among the children undergoing venepuncture validated by observational checklist.

Karen (2000) conducted a study to determine the use of video tape in preparation of children for venepuncture, to help the children to cope with the stress and pain of venepuncture.53 samples were selected with 6-12 years of age were randomly assigned to experimental (N=31) control (N=22) groups. Each viewed the videotape of venepuncture, the child's anxiety, adjustment and pain coping during and after hospitalization was evaluated. The experimental group displayed significantly greater adjustments during procedure than control.

An article by Jeffrey Gold discussed research related to painful and stressful medical procedures in children. During IV placement, virtual presentation was found to help in pain coping among children, as indicated by both the child's and the parent's report of the child's pain. Anxiety of the children was also substantially reduced. Further, he found that the caregiver were much more satisfied. Ploghaus (2001) reported that accurate preparatory information during medical and dental procedures alleviates pain.

Von Baeyer (1997) reported that anxiety about pain increases the pain sensation and explained the importance of preparation of children for brief procedural pain. 1n 1999 Leventhal reported that for those persons who provided with preparatory information experience less pain and distress.

Summary

This chapter has dealt with review of literature related to the problem stated. The literatures presented here were extracted from Medscape, Journal of Indian Pediatrics and Journal of complementary and alternative medicine; it includes 30 primary and 6 secondary sources. It helped the researcher to understand the impact of the problem under study. It has also enabled the investigator to design the study, develop the tool and plan the data collection procedure and to analyze the data.

CHAPTER III

RESEARCH METHODOLOGY

The methodology of the research study is defined as the way, the data is gathered and analysed in order to answer the research questions or analyse the research problem. The research methodology involves a systematic procedure by which the researcher starts from an initial identification of the problem to find its conclusion (Polit & Beck, 2008).

This chapter deals with a brief discussion of different steps undertaken by the researcher for the study. It involves research approach, research design, setting, population, sample and sampling technique, selection of tool, content validity, reliability, pilot study, data collection procedure and plan for data analysis.

Research Approach

Research approach is the most significant part of any research. The appropriate choice of the researcher approach depends on the purpose of researcher study which is undertaken. Experimental research is an extremely applied from of research and involves finding out how well a program, practice or policy are working (Polit & Beck, 2008).

In this study researcher wanted to assess the effectiveness of virtual presentation of venepuncture up on coping level of pain among children undergoing venepuncture by using experimental research approach.

Research Design

The overall plan for addressing a research question including specifications for enhancing the study's integrity is called a research design.

A research design incorporates the most important methodological design that a researcher works on conducting a research study (Polit & Beck 2008).

A true experimental research design was used for this study. True experimental research is a powerful method available for testing the hypothesis of cause and effect relationship between variables. It has the characteristic feature such as manipulation, control and randomization. Randomization was carried out to select 60 samples and to assign them in the control and experimental group. Virtual presentation of venepuncture is given as intervention in experimental group.

In this study, post test only design was adopted. The researcher manipulated the independent variable i.e., virtual presentation of venepuncture to the experimental group of children. The effectiveness of virtual presentation of venepuncture upon the independent variable i.e., the coping level of pain in children was computed. The research design is represented diagrammatically as follows:

Post test only design

R - 0

R X 0

R - Randomization

X - Intervention

O - Post test in control and experimental group

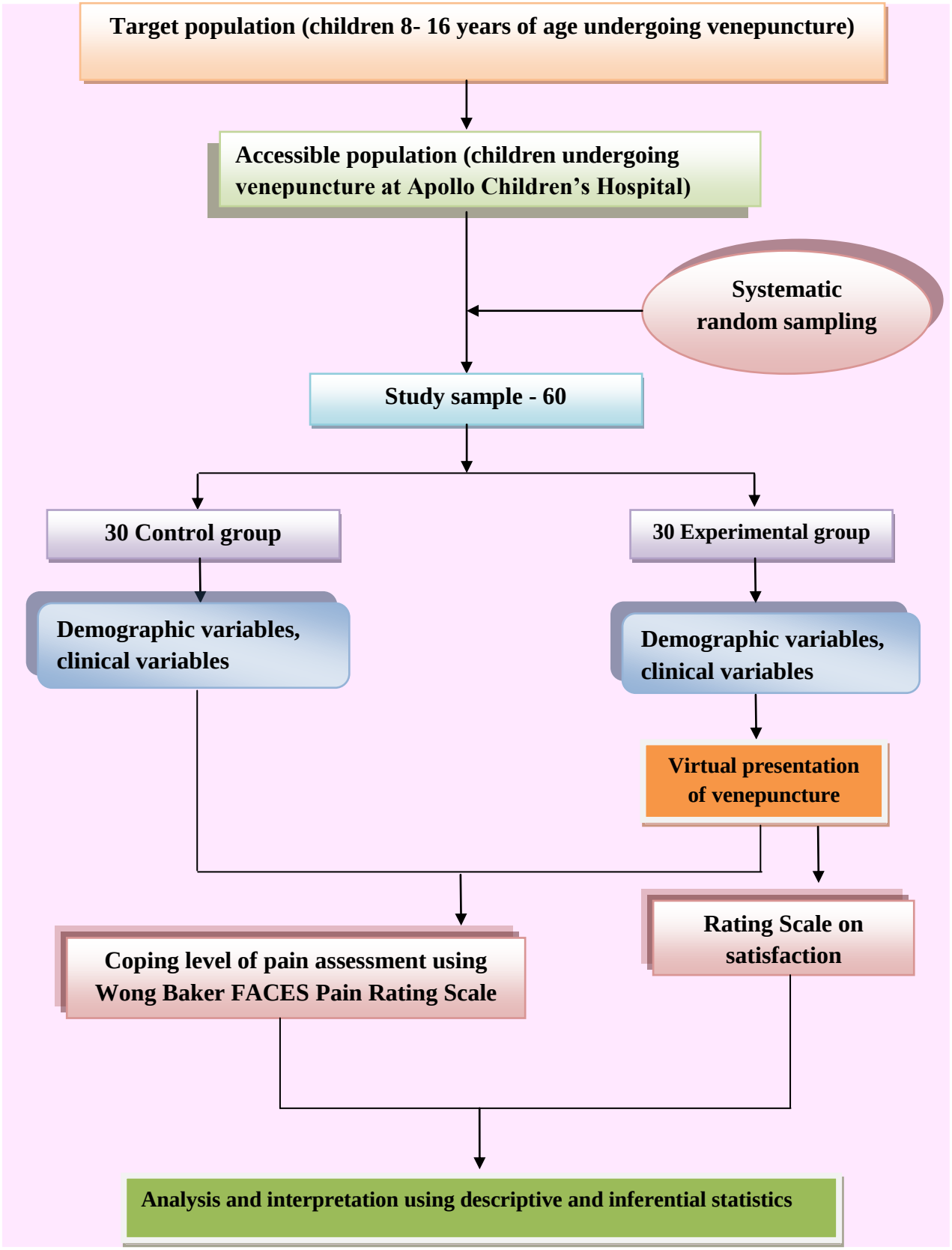

Fig. 2. Schematic Representation of the Research Design

Variables

Independent variable

The variable that is believed to cause or influence the dependent variable is the independent variable (Polit & Beck, 2008). In this study independent variable is virtual presentation of venepuncture.

Dependent variable

The variable hypothesized to depend on or be caused by another variable is the dependent variable (Polit & Beck, 2008). In this study dependent variable is the coping level of pain in children during venepuncture.

Attribute variable

Variable that describes the study sample characteristics are termed as attribute variables (Polit & Beck, 2008). In this study, the attribute variables are the demographic variable proforma of the children and the clinical variable proforma of the children.

Research Setting

Research setting is the physical location and conditions in which data collection will occur in study (Polit & Beck, 2008). The present study was conducted at Apollo Children's Hospital, Chennai. It is a 100 bedded hospital under the administration of Apollo Main Hospital situated in Chennai. It is a multispecialty tertiary centre for paediatrics with facilities like Neonatal Intensive Care Unit, Paediatric Intensive Care Unit(PICU), Cardio-Thoracic Intensive Care Unit (CTICU), Paediatric Emergency Services and subspecialties. In this hospital has both outpatient and inpatient facilities are available all days. Everyday more

than 200 children will come to hospital with various problems like respiratory, gastric, neuro, cardiac. Venepuncture is a common medical procedure among children, the researcher collected data from wards and the outpatient blood collection area.

Population

Population is the entire set of individual or object having some common characteristics (Polit & Beck, 2008).

Target population is the entire population in which a researcher is interested and would like to generalize the study result (Polit & Beck, 2008). In this study target population comprises of all children undergoing venepuncture.

Accessible population is the aggregate of cases that conforms to designated criteria and that are accessible as subject for a study (Polit & Beck, 2008). The accessible population in this study are children with in the age of 8 -16 yrs, undergoing venepuncture in Apollo Children Hospitals, Chennai who met the inclusion criteria during the data collection period

Sample

According to Polit & Beck (2008), the sample is a subset of the population selected to participate in a study. Sample consists of children undergoing venepuncture in Apollo Children Hospitals, Chennai who satisfy the inclusion criteria. Sample size of the study is 60 children undergoing venepuncture, in that 30 were in control group and 30 in experimental group.

Sampling Technique

Sampling is the process of selecting a portion of the population to represent the entire population (Polit & Beck 2008). The participants for the present study were selected by systematic random sampling, 60 children undergoing venepuncture were selected, in that 30 were assigned to control group and 30 in experimental group.

Sampling Criteria

Inclusion criteria

- Both male and female children between 8 – 16 yrs of age
- Children who are undergoing venepuncture in Apollo Children Hospital, Chennai.
- Children who are willing to participate in this study
- Care givers and children who know English or Tamil

Exclusion criteria

- Children who are seriously ill
- Parents who are not willing to participate in the study
- Immunocompromised children
- Children with developmental delay

Selection and Development of Study Instruments

The study aimed at evaluating the effectiveness of virtual presentation of venepuncture upon coping level pain among children under going venepuncture. Data collection instruments were developed through an extensive review of literature and consultation with experts.

The instruments used in this study were, Demographic variable Proforma, Clinical variable proforma, Wong Baker FACES Pain Rating Scale for pain assessment, rating scale to assess the level of satisfaction of children in the experimental group.

Demographic variable proforma of children

Demographic variable proforma of children undergoing surgery consisted of information regarding age, gender, religion, type of family, area of residence, monthly income and educational status of parents.

Clinical variable proforma of children

Clinical variable proforma for children includes previous hospitalization of the child, duration of the illness, diagnosis, previous venepuncture, previous exposure of any videos of venepuncture, and mode of ventilation of fear and anxiety.

Wong Baker FACES Pain Rating Scale to assess the coping level of pain

Wong Baker FACES Pain Rating Scale is a subjective pain rating scale developed by Wong and Baker (1988). It consists of six cartoon faces ranging from smiling face for “no pain” to tearful face for “worst pain”. It can be used for children as young as 3 years. The FACES provide three scales in one: facial expression, numbers, and words. The score ranging from 0–no hurt , 2 - hurts little bit, 4 - hurts little more 6-hurts even more, 8 - hurts whole lot, 10- hurts worst. The score interpretation is mentioned below,

Score	Level
0	No pain
2	Mild pain
4-6	Moderate pain
8-10	Severe pain

Rating scale to assess the level of satisfaction of children in experimental group

This was developed by the investigator to assess the satisfaction regarding virtual presentation of venepuncture among the experimental group of children. This was a 4 point scale ranging from 1 – 4 (highly satisfied, satisfied, dissatisfied, highly dissatisfied).Thus the total obtainable score is 60.

Score Interpretation

Score	Percentage	Interpretation
>40	> 81.3%	High satisfaction
28 - 39	56.3 – 81.2 %	Moderate satisfaction
< 27	< 56.2%	Low satisfaction

Psychometric Properties

Validity of study instruments

Content validity is the degree to which an item in an instrument adequately represents the universe of the content (Polit & Beck, 2008).The tools were given for validation to 6 experts in the field of research and nursing. The valuators had suggested some modification in the demographic variable proforma

and clinical variable proforma. The modifications and suggestions of experts were incorporated in the final preparation of the tool.

Reliability of the instruments

The reliability is the degree of consistency with which an instrument measures the attribute which is designed to measure (Polit & Beck, 2008). The reliability of the tool was elicited by using test and re-test method, and was found to be 0.7 which indicated that the tool is highly reliable.

Pilot Study

Pilot study is a miniature version of actual study, in which the instrument is administered to the subject drawn from the sample population. It is a small scale version or trial run done in preparation for major study (Polit & Beck, 2008).

The purpose is to find out the feasibility and practicability of the study design. The pilot study was conducted among 12 children undergoing venepuncture in Apollo Children's Hospital, Chennai. The pilot study revealed that the present study was feasible.

Intervention Protocol

In the experimental group, the child was taken to the room, seated comfortably in a chair and virtual presentation of venepuncture was given for a period of 5 min before venepuncture. At the end of this period, venepuncture was performed and post assessment of coping level of pain was done immediately for 1 minute by using Wong Baker FACES Pain Rating Scale. The level of

satisfaction of experimental group of children was assessed using satisfaction rating scale.

Protection of Human Rights

The study was conducted after the approval of the ethical committee, Apollo Hospitals, Chennai and got permission from Principal, Apollo College of Nursing, HOD of Child Health Nursing Department and Nursing Superintendent of Apollo Children's Hospital where the study was conducted. The participants were explained about the study and verbal consent was obtained after providing assurance and developing confidence. Confidentiality of the data was maintained throughout the study.

Data Collection Procedure

Data collection is the gathering of information needed to address a research problem (Polit & Beck, 2008).The data was collected from 15-5-2013 to 15-6-2013 at Apollo Children's Hospital, Chennai. After obtaining permission to conduct study from administrator and concerned authorities. Children who satisfied the inclusion criteria were selected randomly, and numbered as one and two. The children who were numbered as one were assigned to control group and two numbers to experimental group. The researcher introduced herself to the parents of the children and obtained verbal consent for the study.

The researcher collected the demographic variables and the clinical variables by interviewing the children. The children in the control group were assessed for the coping level of pain by Wong Baker FACES Pain Rating Scale

during and after venepuncture without any intervention. In the experimental group, virtual presentation of venepuncture was given for a period of 4 min before venepuncture. At the end of this period, venepuncture was performed and assessment of coping level of pain was done during and immediately after the procedure for 1 minute by using Wong Baker FACES Pain Rating Scale. The level of satisfaction of experimental group of children was assessed using satisfaction rating scale.

Problem Faced During Data Collection

The problem faced by the researcher during this study was that certain parents were not interested to participate in the study.

Plan for Data Analysis

Data analysis is a systematic organization and synthesis of research data and testing of research data and testing of research hypothesis by using the obtained data (Polit & Beck, 2008). The data analysis was carried out by descriptive statistics like frequency distribution, percentage, mean, standard deviation and inferential statistics like‘t’ test and chi-square.

Summary

This chapter dealt with the research methodology. It includes selection of research approach, research design, setting, population, and sample, sampling technique, sampling criteria, selection and development of study instruments, validity and reliability of study instrument, pilot study, data collection procedure and plan for data analysis. In the following chapter, analysis is interpreted using descriptive and inferential statistics.

CHAPTER – IV

ANALYSIS AND INTERPRETATION

This chapter deals with analysis and interpretation of data collected on a number of issues from various sources. Statistics is a field of study concerned with techniques or methods of data collection, classification, summarizing, interpretation, drawing inferences, testing of hypothesis and making recommendations (Mahajan, 2004).

Data was collected from 60 children undergoing venepuncture in Apollo Children's Hospital of which 30 were in control group and 30 were in experimental group to determine the effectiveness of virtual presentation of venepuncture upon the coping level of pain among children undergoing venepuncture. The data were analyzed according to the objectives and hypothesis of the study. The data were analyzed, tabulated and interpreted using descriptive and inferential statistics.

Organisation of the Findings

The findings of the study were organized and presented under the following headings:

- Frequency and percentage distribution of demographic variables in control and experimental group of children.
- Frequency and percentage distribution of clinical variables in control and experimental group of children.

- Frequency and percentage distribution of coping level of pain among children during venepuncture measured by Wong Baker FACES Pain Rating Scale in experimental and control group of children.
- Comparison of mean and standard deviation of coping level of pain among control and experimental group of children undergoing venepuncture measured by using Wong Baker FACES Pain Rating Scale.
- Frequency and percentage distribution of level of satisfaction on virtual presentation of venepuncture in experimental group of children.
- Association between selected demographic variables and coping level of pain among children in experimental and control group using Wong Baker FACES Pain Rating Scale.
- Association between selected clinical variables and coping level of pain among children in experimental and control group using Wong Baker FACES Pain Rating scale.

Table. 1

Frequency and Percentage Distribution of Demographic Variables in Control and Experimental Group of Children.

Demographic variables	Control group (n=30)		Experimental group (n=30)	
	N	**P**	**N**	**P**
Age of the child				
8- 10 years	5	16.7%	12	40%
10.1-12 years	6	20%	6	20%
12.1-14 years	9	30%	6	20%
14.1-16 years	10	33.3%	6	20%
Type of family				
Nuclear	27	90%	26	86.7%
Joint	3	10%	4	13.3%
Extended	-	-	-	-
Area of residence				
Urban	20	66.7%	15	50%
Sub urban	7	23.3%	13	43.3%
Rural	3	10%	2	6.7%
Educational level of the child				
Not started formal education	-	-	-	-
Primary	12	40%	17	56.7%
Secondary	18	60%	13	43.3%
Educational status of the father				
Not literate	-	-	-	-
Primary	-	-	-	-
Secondary	1	33.3%	-	-
Higher secondary	8	26.7%	9	30%
Diploma	13	43.3%	16	53.3%
Graduation and above	8	26.7%	5	16.7%
Educational status of the mother				
Not literate	-	-	-	-
Primary	-	-	2	6.7%
Secondary	4	13.3%	7	23.3%
Higher secondary	15	50%	13	43.3%
Diploma	9	30%	6	20%
Graduation and above	2	6.7%	2	6.7%

The above data reveals that majority of the children in control and Experimental group were from nuclear family (90%, 86.7%), living in urban area (66.7%, 50%). Significant percentages of children in the control group (33.3%) were 14.1-16yrs old and (60%) were undergoing secondary education. In experimental group (40%) were 8-10yrs old undergoing primary education (56.7%). In control and experimental group most of the fathers had diploma (43.3%, 53.3%). Whereas mothers had undergone higher secondary education (50%, 43.3%) in both experimental and control group.

Fig.3 depicts that significant percentage of children in control group (56.7%) were males and in experimental group male and female were equal in number.

Fig.4 reveals that majority of the children in control and experimental group belonged to Hindu religion (60%, 50%).

Fig.5 shows that most of the children in the control and experimental group (50%, 50%) had family income of 10,001-15,000.

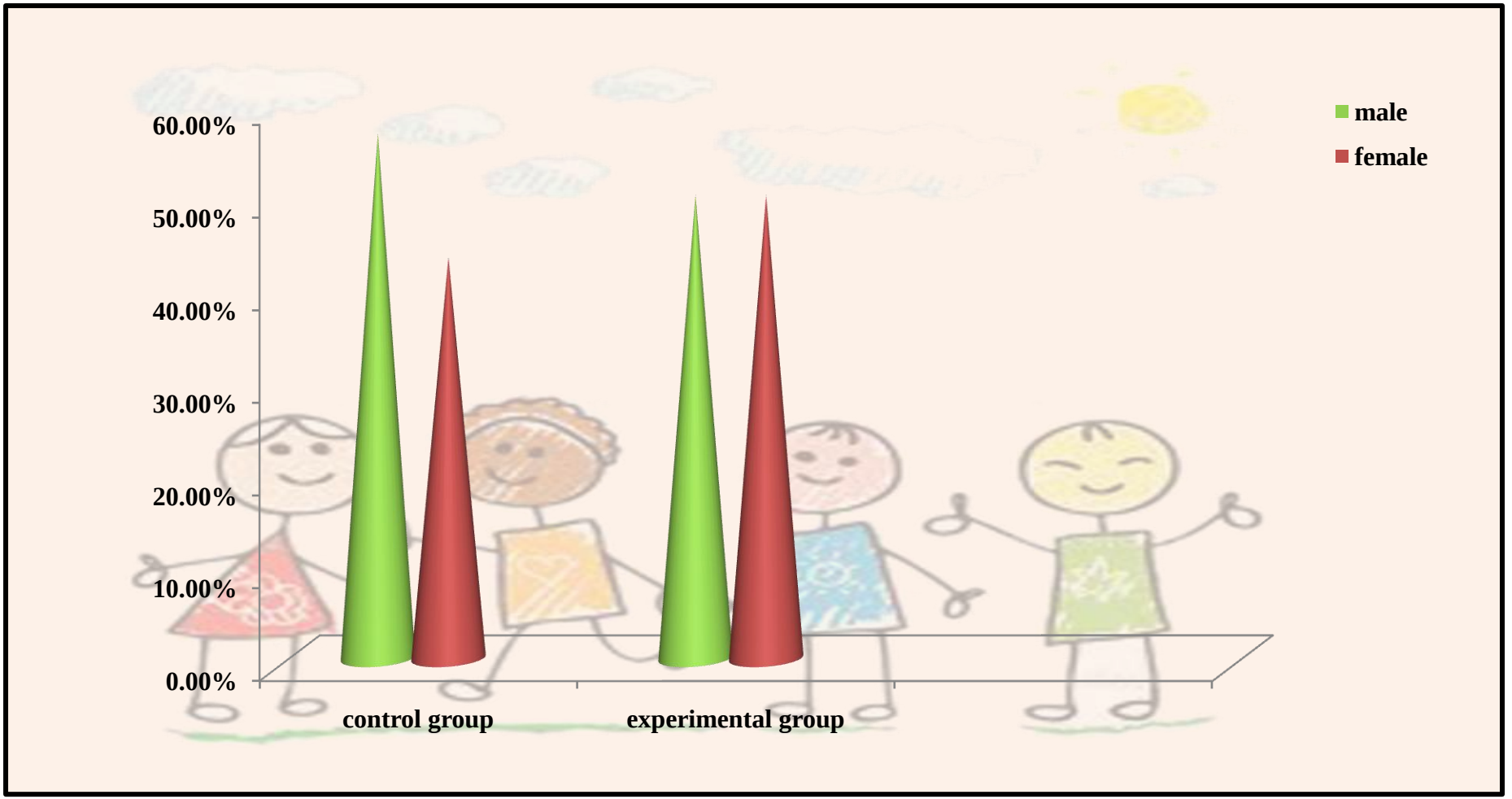

Fig 3 Depicts the Percentage Distribution of Gender of Children Undergoing Venepuncture

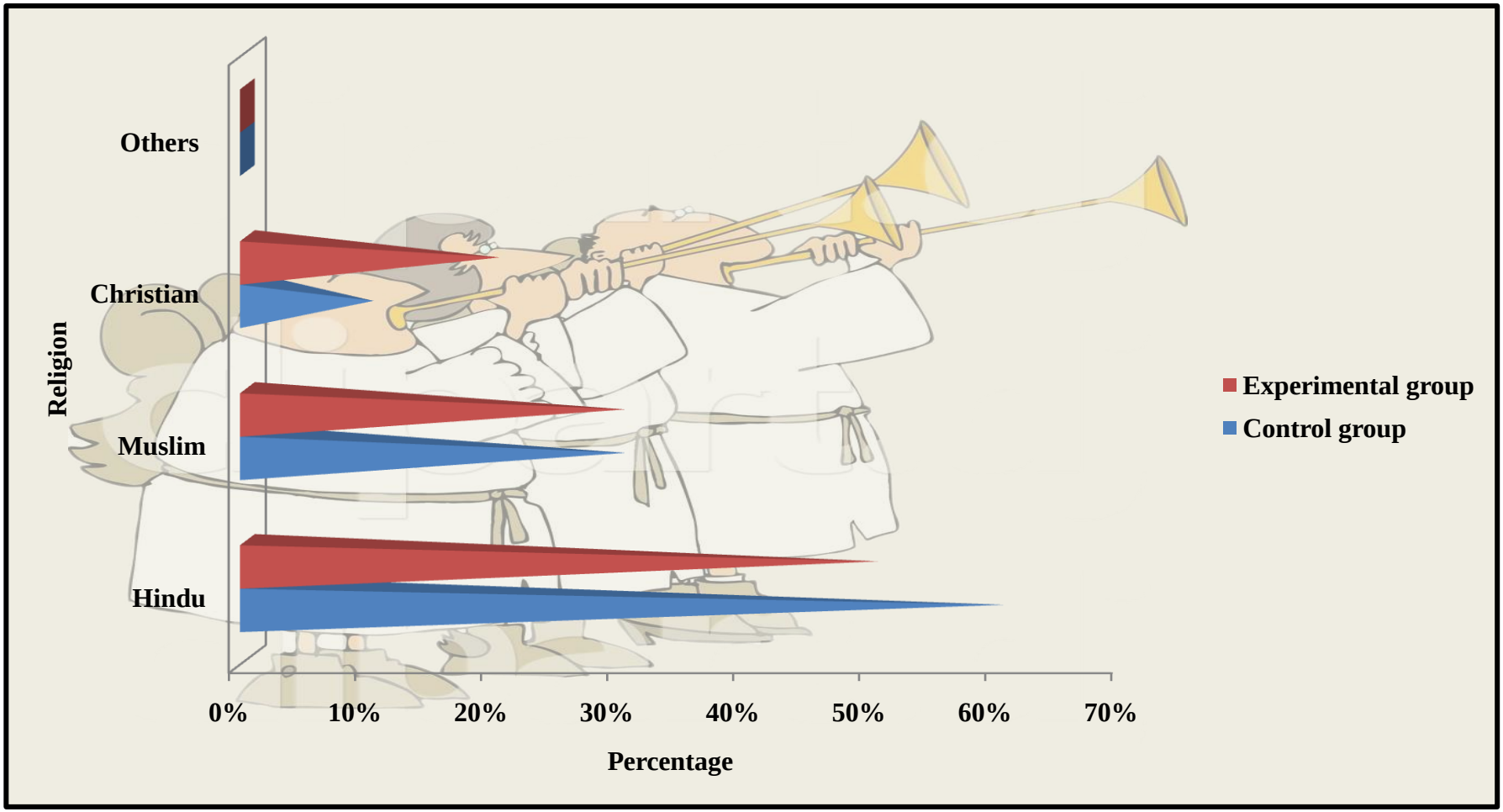

Fig.4: Percentage Distribution of Religion of Children undergoing Venepuncture

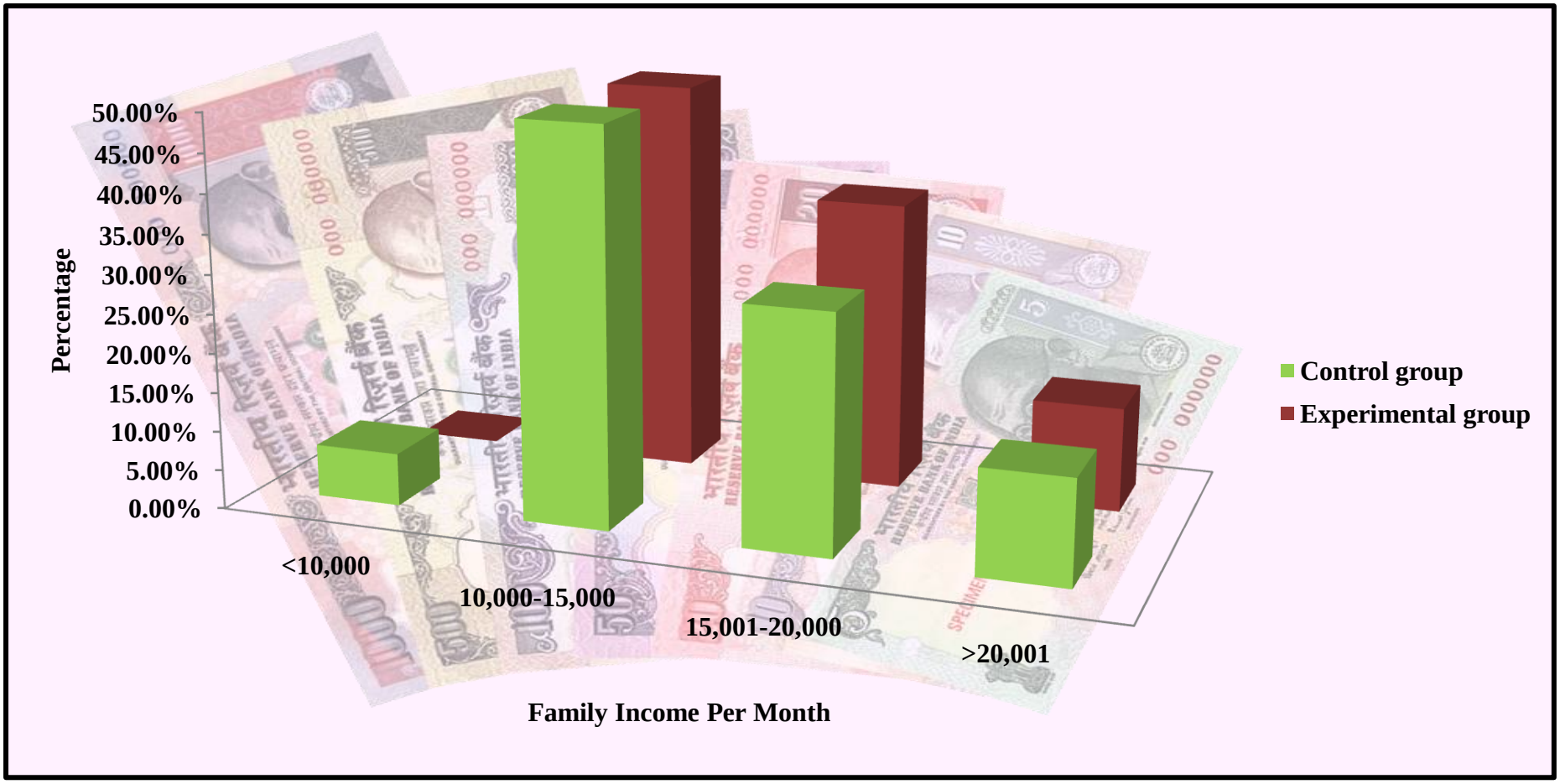

Fig.5: Percentage Distribution of Family Income Per Month of Children undergoing Venepuncture

Table. 2

Frequency and Percentage Distribution of Clinical Variables in Control and Experimental Group of Children

Clinical Variables	Control Group (n=30)		Experimental Group(n=30)	
	N	P	N	P
Previous hospitalization				
Yes	18	60%	15	50%
No	12	40%	15	50%
Have you seen anyone undergone venepuncture				
Yes	3	10%	7	23.3%
No	27	90%	23	76.7%
How do you usually express your fear?				
Share with parents	22	73.3%	25	83.3%
Share with friends	6	20%	2	6.7%
Cry alone	2	6.7%	3	10%
Engage in diversional activities	-	-	-	-
Whom do you ventilate your fear				
Mother	15	50%	12	40%
Father	6	20%	15	50%
Sibling	2	6.7	-	-
Friend	7	23.3%	3	6.7%
Any other, specify?	-	-	-	-
Have you ever watched any video of venepuncture before?				
Yes	-	-	-	-
No	30	100%	30	100%
Has anyone informed you the details of venepuncture priorly?				
Yes	12	40%	10	33.3%
No	18	60%	20	66.7%

The data presented in table 2 shows that significant percentage of children in control and experimental group had previous history of hospitalization (60%, 50%), most of them had not received details of venepuncture (60%, 66.7%). None of them had previous experience of watching videos of venepuncture (100%, 100%) in control and experimental group respectively. Most of the children in control and experimental group used to express their fear with parents (73.3%, 83.3%) and part of them in control group (50%) ventilated their fears to mother, where as in the experimental group (50%) of the children ventilated to their father.

Fig: 6 depicts that significant percentage of children in both control and experimental group the duration of illness was up to one week (33.3%, 36.7%) respectively.

Fig: 7 shows that significant percentage of children in control group had respiratory problem (30%), where as in experimental group had neurological problem (23.3%).

Fig: 8 reveal that most of the children did not undergo any venepuncture previously (50%, 70%) in control and experimental group respectively.

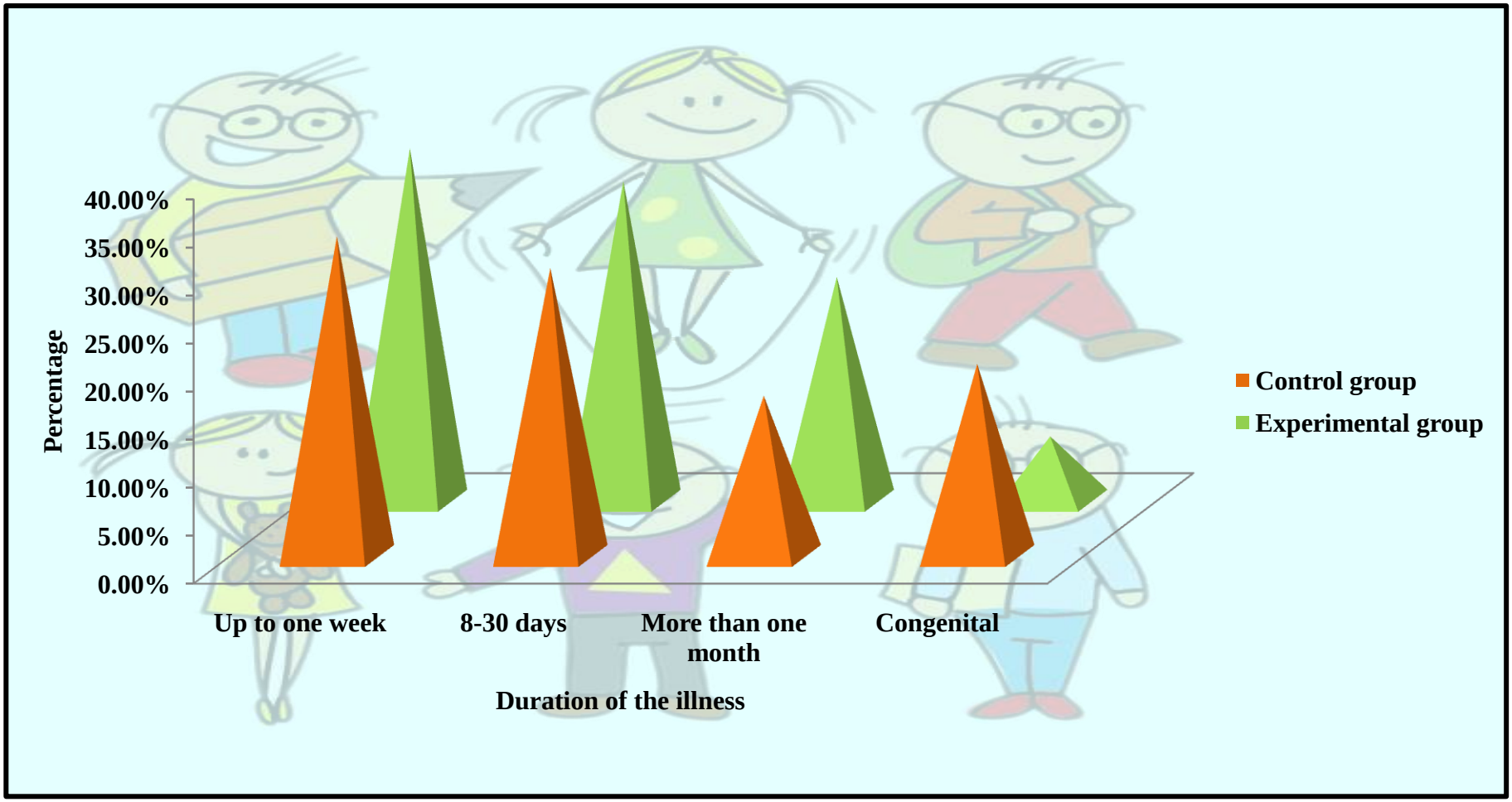

Fig 6: Percentage Distribution of duration of the illness in children undergoing venepuncture.

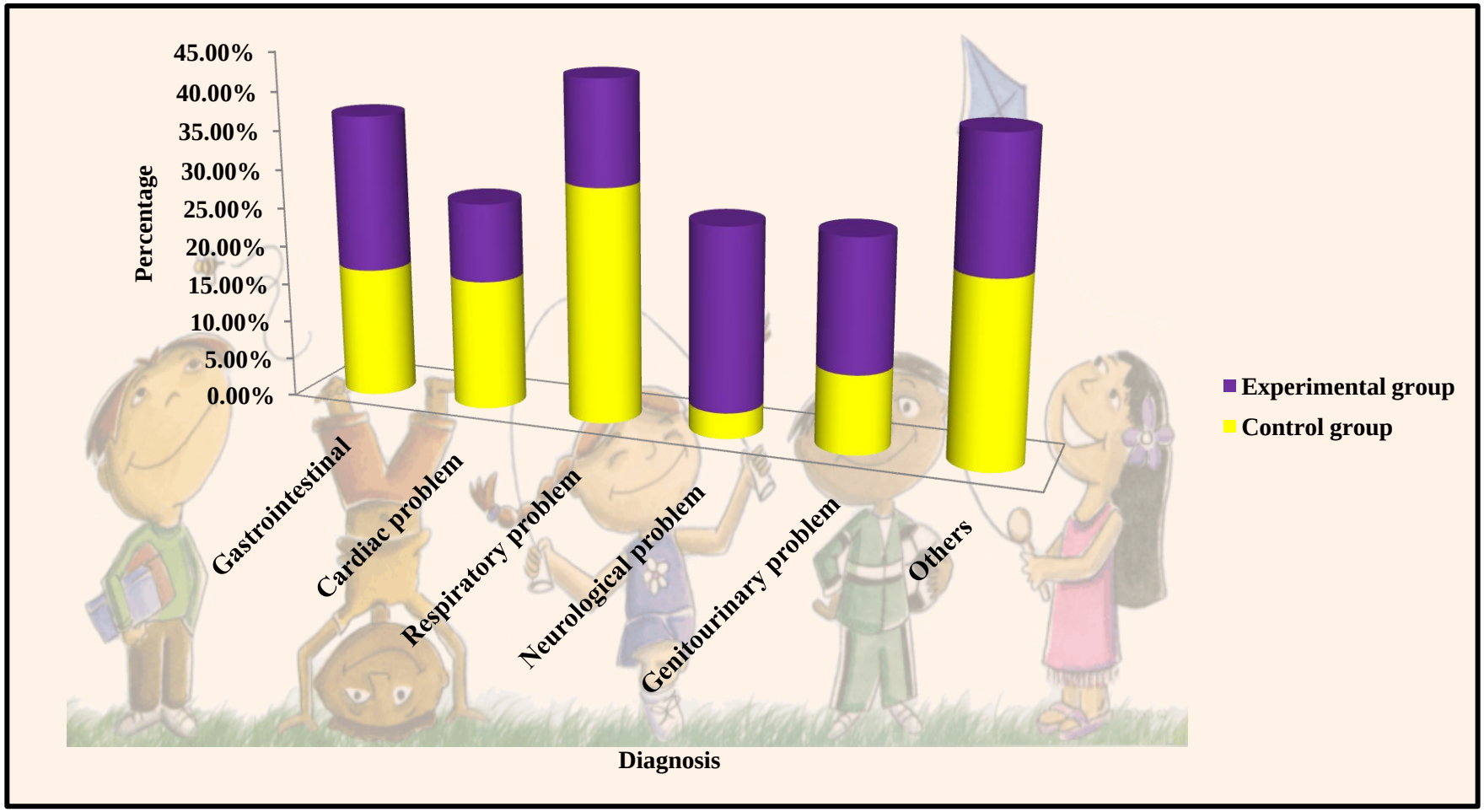

Fig7. Percentage Distribution of Diagnosis of Children undergoing Venepuncture.

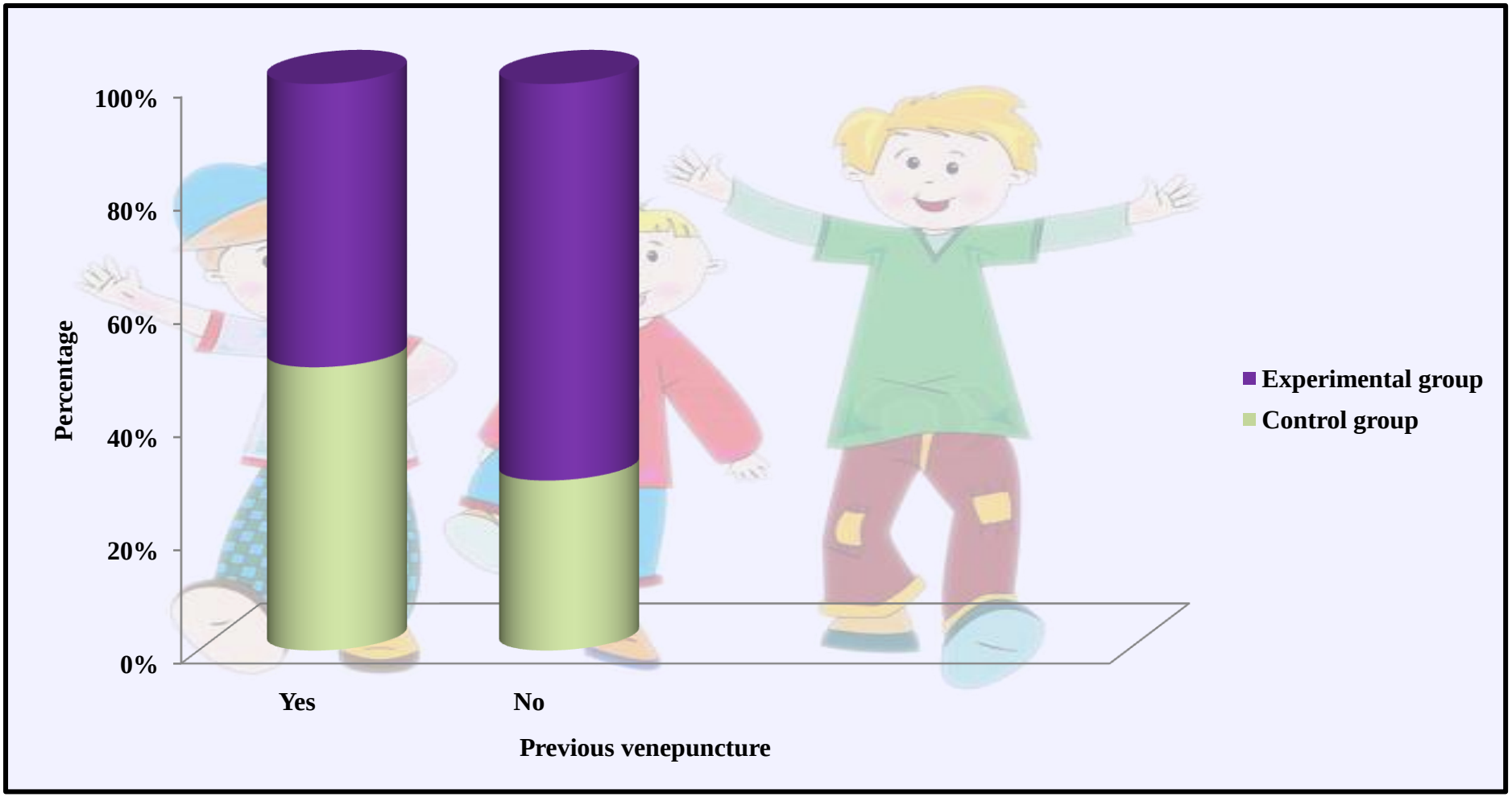

Fig.8: Percentage Distribution of Previous Venepuncture of children Undergoing Venepuncture.

Table. 3

Frequency and Percentage Distribution of Coping Level of Pain among Children during Venepuncture by Wong Bakers FACES Pain Rating Scale.

Coping level of pain	Control group (n=30)		Experimental group (n=30)	
	N	P	N	P
No pain	-	-	8	26.7%
Mild pain	-	-	12	40%
Moderate pain	11	36.7%	10	33.3%
Severe pain	19	63.3%	-	-

The data presented in the table 3 reveals that majority of children in the control group had severe pain (63.3%) during venepuncture, where as in experimental group had mild pain (40%).

Table. 4

Comparison of Mean and Standard Deviation of Coping Level of Pain among Control and Experimental Group of Children Undergoing Venepuncture

Group	N	M	SD	t value
Control group	**30**	**7.4**	**1.78**	**10.66*** **
Experimental group	**30**	**2.3**	**1.86**	

***P<0.001

The data in table 4 depicts that the mean and standard deviation of the control and experimental group of children is 7.4, 1.78.; 2.3, 1.86 respectively. The‘t’ value of 10.66 is highly significant at P< 0.001 level of significance.

Fig .9 Depicts that majorities of the children were highly satisfied (90%) with virtual presentation of venepuncture.

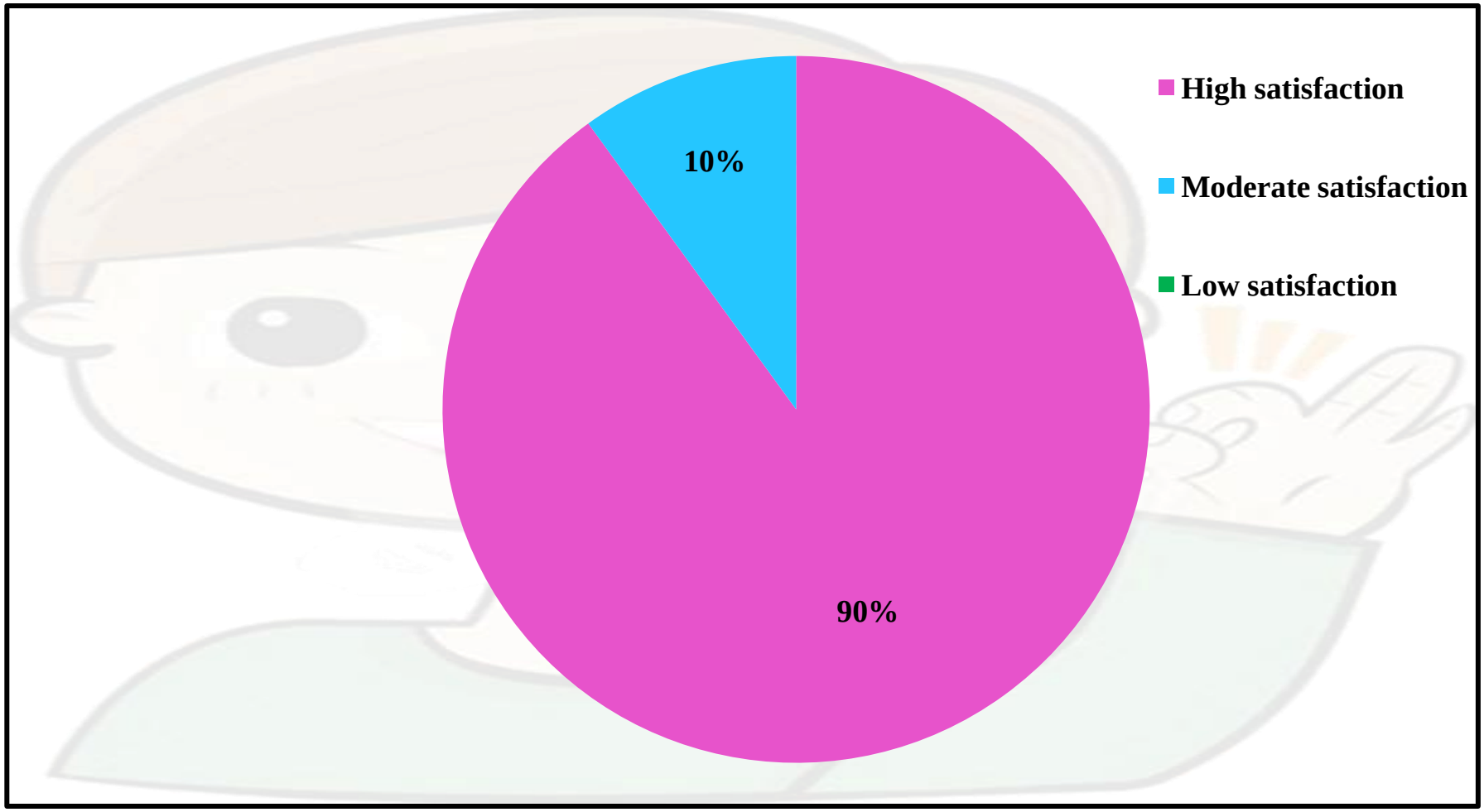

Fig. 9 Percentage Distribution of Level of Satisfaction of Children in Experimental Group on Virtual Presentation of Venepuncture.

Table .5

Association between the Selected Demographic Variable and Coping Level of Pain among Children in Control Group and Experimental Group Using Wong Bakers FACES Pain Rating Scale

Demographic variables	Control group Coping level of pain		χ^2	Experimental group Coping level of pain		χ^2
	Up to mean	Above mean		Up to mean	Above mean	
	N	N		N	N	
Age(in years**)**						
Up to 12yrs	1	10	5.53*	10	8	2.32
Above 12yrs	10	9	(df=1)	10	2	(df=1)
Gender						
Male	5	12	0.21	12	3	2.24
Female	5	7	(df=1)	8	7	(df=1)
Family						
Nuclear	10	17	0.43	16	10	1.95
Joint	1	2	(df=1)	4	0	(df=1)
Religion						
Hindu	7	11	0.41	11	9	0.45
Others	4	8	(df=1)	9	6	(df=1)
Educational level of the child						
Primary	5	7	0.22	9	8	3.17
Secondary	6	12	(df=1)	11	2	(df=1)

*p<0.05

From Table 5, we can infer that there is a significant association between the selected demographic variable of age (p< 0.05) of the child and the coping level of pain in control group, but there was no significant association between other demographic variables and the coping level of pain in control and experimental group.

Table .6

Association between the Selected Clinical Variable and Coping Level of Pain among Children in Control Group and Experimental Group Using Wong Bakers FACES Pain Rating Scale

Clinical variables	Control group Pain coping score		χ^2	Experimental group Pain coping score		χ^2
	Up to mean	Above mean		Up to mean	Above mean	
	N	N		N	N	
Previous hospitalization						
Yes	7.4	13	0.56	11	4	0.54
No	5	6	(df=1)	9	6	(df=1)
Previous venepuncture						
Yes	5	9	0.003	9	2	1.62
No	6	10	(df=1)	11	8	(df=1)
Have you seen anyone had undergone venepuncture						
Yes	2	1	0.88	4	3	0.14
No	9	18	(df=1)	16	7	(df=1)
Has anyone informed you the details of venepuncture						
Yes	6	6	1.65	5	5	1.20
No	5	13	(df=1)	14	6	(df=1)

From Table 6, it could be inferred that there was no significant association between any clinical variables and coping level of pain in both control and experimental group.

Summary

This chapter dealt with the analysis and interpretation of the data obtained by researcher. The analysis of the data using descriptive and inferential statistics clearly revealed the effectiveness of virtual presentation of venepuncture among children undergone venepuncture and satisfaction of children regarding the intervention. In the following chapter interpretation of the study findings are discussed in detail.

CHAPTER V

DISCUSSION

Statement of the Problem

An Experimental Study to Assess the Effectiveness of Virtual Presentation of Venepuncture upon the Coping Level of Pain among Children Undergoing Venepuncture in Selected Hospitals, Chennai.

Objectives of the Study

1. To determine the coping level of pain by control and experimental group of children undergoing venepuncture.
2. To determine the effectiveness of virtual presentation of venepuncture by comparing the coping level of pain in control and experimental group of children undergoing venepuncture.
3. To determine the association between the selected demographic variables and the coping level of pain in experimental and control group of children undergoing venepuncture.
4. To determine the association between selected clinical variables and the coping level of pain in experimental and control group of children undergoing venepuncture.
5. To determine the level of satisfaction among the experimental group of children undergoing venepuncture.

The present study was conducted in Apollo Children's Hospital, Chennai. A sample size of 60 children who met the inclusion criteria were chosen for this study of which 30 were taken for the control group and 30 for the experimental

group through systematic random sampling. The researcher collected the demographic variables and the clinical variables by interviewing the children and their parents. . The children in the control group were assessed for the coping level of pain by Wong Baker FACES Pain Rating Scale during and after venepuncture without any intervention. In the experimental group, virtual presentation of venepuncture was given for a period of 4 min before venepuncture. At the end of this period, venepuncture was performed and assessment of coping level of pain was done during and immediately after procedure for 1 minute by using Wong Baker FACES Pain Rating Scale. The level of satisfaction of experimental group of children was assessed using satisfaction rating scale.

Demographic variables distribution

Significant percentage of children in both control and experimental group belonged to nuclear family (90%, 86.7%). The findings of the study is consistent with the findings of Lipani (2006) says that child's pain severity, perceived pain threat, and passive coping to pain was related to family and its activities.

India being a Hindu dominant country, the present study also reveals that most of them belonged to Hindu religion (60%, 50%) with a family income of 10,001-15,000 (50%, 50%). Emilia Hermann (2014) says that lower household income is associated with higher pediatric inpatient costs. Among adults, lower socioeconomic status has been associated with a higher risk of hospitalization and longer lengths of hospitalization, a relationship thought to be due to interplay between social, environmental, and biomedical factors. Variation in cost was attributed to increased length of stay for patients with lower household income admitted with a diagnosis of asthma, diabetes, and bronchiolitis. Aggregated

differences in cost burden were greatest in the treatment of chronic illnesses, such as diabetes and asthma.

Urbanization, the demographic transition from rural to urban, is associated with shifts from an agriculture-based economy to mass industry, technology, and service. For the first time ever, the majority of the world's population lives in a city, and this proportion continues to grow. One hundred years ago, 2 out of every 10 people lived in an urban area. By 1990, less than 40% of the global population lived in a city, but as of 2010, more than half of all people live in an urban area. Significant percentages of children in the control group (33.3%) were 14.1-16yrs old and (60%) were undergoing secondary education. In experimental group (40%) were 8-10yrs old undergoing primary education (56.7%). Majority of the children in control and experimental group were from urban area (66.7%, 50%).

Majority of the children were males in both control and experimental group (56.7%, 50%). Findings confirms that sex ratio over the decades in India has been deteriorating. The 2011 census report shows the sex ratio in India is 940 females /1000 males which are inconsistent with the obtained date.

Clinical variables of children

Most of the children in control and experimental group had previous history of hospitalization (60%, 50%). Most of the children did not undergo any venepuncture previously (90%, 36.7%). Salmela (2010) states that previous hospitalization increases coping ability in children. Children with no previous hospital experience were more anxious than those who had been hospitalised

before, which suggest the potential benefits of being familiar with the hospital setting.

Majority of children used to express their fear with parents (73.3%, 83.3%) this is supported by Giselle, she says that parents play a major role in helping children to cope with their fears. Fifty percent of children ventilate their fear to mother. Rangel (2012) in her study, says that the mother was the family member who most often accompanied the pediatric patients. Thus the researcher felt the importance of preparing parents, especially mothers for venepuncture.

None of the children had seen a video of venepuncture before (100%, 100%) which shows that children are not made to familiarize with various medical procedures which could reduce anxiety and increase coping level of pain. It is the duty of the pediatric nurse to explain and prepare the child and family for venepuncture.

The first objective of the study was to assess the coping level of pain in control and experimental group of children undergoing venepuncture.

The coping level of pain among children in both control and experimental group was measured by Wong Bakers Pain Rating Scale. Majority of the children in the control group had severe pain (63.3%), where as in experimental group (40%) had mild pain. This could be attributed to the effectiveness of virtual presentation of venepuncture. The above finding of the study is supported by Karen (1998), she concluded that video tape in preparation of children for venepuncture helps to reduce the stress of children and enhances procedural coping.

Pain is something that will be experienced by every person in his or her lifetime. Some pain will be severe, and some will be minor. Some will have a long duration, and some will have a relatively short duration. Dealing with pain is not a skill that children are born with. Nurses must help children to develop effective skills for coping with the pain that is inevitable in every person's life. Hence all the nurses must be trained regarding child preparation and behaviour modification modalities so that they can implement them while caring for children.

The second objective of the study was to determine the effectiveness of virtual presentation of venepuncture upon the coping level of pain among experimental group of children undergoing venepuncture.

The effectiveness of virtual presentation of venepuncture upon coping level of pain among the experimental group of children undergoing venepuncture was assessed statistically using the independent 't'test. The mean and standard deviation of the coping level of pain in control group was Mean=7.4, SD=1.78 and in experimental group Mean=2.3, SD=1.86 respectively. The 't' value of 10.66 is highly significant at $P< 0.001$ level of significance. The result could be attributed to the effectiveness of virtual presentation of venepuncture upon coping level of pain among children undergoing venepuncture. Hence null hypothesis H01 was rejected.

Preparing children for painful medical interventions will help to increase their coping level of pain. Nurses should take steps to prepare the children for the event before it occurs. Nurse should describe the medical procedure, the reason for the procedure, where it will take place, the equipment that will be used, and

the medical personnel who will be there. This was dealt with the virtual presentation of venepuncture. Thus it is the responsibility of every pediatric nurse to understand the importance of virtual presentation of venepuncture, which helps in increasing the coping level of pain. The researcher concludes that the findings must be disseminated so that evidence based knowledge can be utilized in the clinical setting to improve the pain coping of children during venepuncture.

The third objective of the study was to determine the association between the selected demographic variables and the coping level of pain in experimental and control group of children undergoing venepuncture

Chi-square test was used to find out the association between selected demographic variable and the coping level of pain in children. It is inferred that there were no significant association between demographic variables like gender, type of family, religion, educational level of the child and coping level of pain among children. There was a significant association between age of the children in control group and pain coping at $p<0.05$. Hence the null hypothesis H02 was partially rejected. The above finding of the study is supported by McGrath, (1990) children's age and developmental level influence their perception of pain and understanding of pain, pain coping strategies. Susan and Janice (1991) determined that male and female were alike regarding age, state anxiety, expected pain, perceived sensory and affective venepuncture pain. Robieux (1992) states that age was a major determinant of coping level of pain and younger children recalled more severe pain than older children.

The fourth objective of the study was to determine the association between selected clinical variables and the coping level of pain in experimental and control group of children undergoing venepuncture.

There was no significant association was found between selected clinical variables and coping level of pain in both control and experimental group of children undergoing venepuncture which emphasizes that clinical variables have no influence over the pain coping of children undergoing venepuncture and necessitates provision of external agent in improving the coping level of pain among children undergoing venepuncture. Hence the null hypothesis Ho3 was retained.

In children, many of the pain they experience, concern the so-called 'everyday pains'. These are the pain associated with playing, learning how to stand and walk, and teething, for instance. Almost all children in the Western world also have immunization pain on a regular basis. Fewer children experience acute pain in medical settings, for example during blood sampling or other medical procedures. And many children have chronic pain, defined as continuous or recurrent pain that persists past the normal time of healing – most commonly 3 months duration in the pediatric setting. Merske (1994). Damage to the tissue will definitely cause painful stimuli. Previous history of hospitalization does not influence the coping level of pain. Thus irrespective of the clinical variable all the children had pain. Hence it is necessary to provide intervention for improving the coping level of pain to all the children receiving venepuncture.

The fifth objective of the study was to determine the level of satisfaction among the experimental group of children undergoing venepuncture.

Majority of the children were highly satisfied (90%) with the virtual presentation of venepuncture and none of them felt dissatisfied with the intervention. This interprets that virtual presentation of venepuncture is cost effective and simple method to reduce anxiety and to improve the coping level of pain among children undergoing venepuncture, being familiar with the unknown through prior exposure has better effects. Even children are more interested to watch video it makes them familiar with the procedure thus the fear of unknown can be reduced. Hence the pediatric nurses should be made to understand the importance and encouraged in practicing such methods.

Summary

This chapter has dealt with the discussion of various aspects of the study findings, emphasized the objectives of the study, major findings of the demographic and clinical variables, mean and standard deviation of the coping level of pain in control and experimental group of children, association between selected demographic variables and clinical variables with the coping level of pain in both the groups and the level of satisfaction regarding virtual presentation of venepuncture in the experimental group of children underwent venepuncture.

CHAPTER VI

SUMMARY, CONCLUSION, IMPLICATION AND RECOMMENDATION

The heart of the research project lies in reporting the findings. This is the most creative and demanding part of the study. This chapter gives a brief account of present study including the conclusion drawn from the findings, nursing implication of the study and recommendations. The present study was intended to analyze the effectiveness of virtual presentation of venepuncture upon pain coping of children undergoing venepuncture.

Summary

"An Experimental study to assess the effectiveness of virtual presentation of venepuncture up on the coping level of pain among children undergoing venepuncture in selected hospitals, Chennai."

Objectives of the study

1. To determine the coping level of pain by control and experimental group of children undergoing venepuncture.
2. To determine the effectiveness of virtual presentation of venepuncture by comparing the coping level of pain in control and experimental group of children undergoing venepuncture.
3. To determine the association between the selected demographic variables and the coping level of pain in experimental and control group of children undergoing venepuncture.

4. To determine the association between selected clinical variables and the coping level of pain in experimental and control group of children undergoing venepuncture.
5. To determine the level of satisfaction among the experimental group of children undergoing venepuncture.

Null Hypothesis

H01 There will be no significant difference in the coping level of pain in control and experimental group of children undergoing venepuncture.

H02 There will be no significant association between selected demographic variables and the coping level of pain in control and experimental group of children undergoing venepuncture.

H03 There will be no significant association between the selected clinical variables and the coping level of pain by the control and experimental group of children during venepuncture.

The conceptual frame work for the study was developed on the basis of Roy's adaptation model, which was modified for the present study. A post test only design was used in this study. The present study was conducted in Apollo Children's Hospital, Chennai. A sample size of 60 children who met the inclusion criteria were chosen for this study of which 30 were taken for the control group and 30 for the experimental group through systematic random sampling. The study variables were the coping level of pain among children undergoing venepuncture and virtual presentation of venepuncture.

An extensive review of literature and guidance by experts laid the foundation to the development of the tools for the study. The investigator used Demographic variables proforma, Clinical variables proforma, Wong Baker FACES Rating Scale and Rating Scale on the level of satisfaction about virtual presentation of venepuncture to assess the outcome during venepuncture. The data collection tools were validated and the reliability was established. After the pilot study, the data for the main study was collected using interview method.

The Major Findings of the Study

Demographic variables of children

Majority of the children in the control and experimental group were from nuclear family (90%, 86.7%), living in urban area (66.7%, 50%) belonging to Hindu religion (60%, 50%) with a family income of 10,001-15,000 (50%, 50%). Fifty seven percentage of children in control group were males. Significant percentages of children in the control group (33.3%) were 14.1-16yrs old and (60%) were undergoing secondary education. In experimental group (40%) were 8-10yrs old undergoing primary education (56.7%).

Clinical variables of children

Most of the children in control and experimental group used to express their fear with parents (73.3%, 83.3%) and part of them in control group(50%) ventilated their fears to mother, where as in the experimental group (50%) of the children ventilated to their father . Significant percentage of children in control group had respiratory problem (30%), where as in experimental group (23.3%) had neurological problem.

Comparing of mean and standard deviation of the coping level of pain in both control and experimental group of children

The mean and standard deviation of the coping level of pain in control group was Mean=7.4, SD=1.78 and in experimental group Mean=2.3, SD=1.86 respectively. The't' value of 10.66 is highly significant at P< 0.001 level of significance. Hence, the null hypothesis H_{01} was rejected.

Association between the selected demographic variable and coping level of pain in both control group and experimental group of children using Wong Bakers FACES Pain Rating Scale

There was a significant association between the selected demographic variable of age (p< 0.05) of the children and the coping level of pain in control group, but there was no significant association between other demographic variable and the coping level of pain in control and experimental group. Hence the null hypothesis H_{02} was partially rejected with regard to age of the children and coping level of pain in control group.

Association between the selected clinical variable and the coping level of pain in both control group and experimental group of children using Wong Bakers FACES Pain Rating Scale.

There was no significant association between any clinical variables and coping level of pain in both control and experimental group of children. So null hypothesis "There will be no significant association between the selected clinical variables and the coping level of pain in both the control and experimental group of children during venepuncture". Emphasizes that clinical variables have no

influence over coping level of pain undergoing venepuncture and necessitates the provision of an external agent in the coping level of pain in children undergoing venepuncture.

Level of satisfaction among the experimental group of children underwent venepuncture.

Majority of the children were highly satisfied (90%) with virtual presentation of venepuncture and none of them were dissatisfied with the intervention. This shows virtual presentation of venepuncture was highly effective in the coping level of pain in children undergoing venepuncture.

Conclusion

The venepuncture is a stressful event for children, it is necessary to provide pharmacological or non pharmacological intervention to reduce the pain and discomfort in children. This study shows that virtual presentation of venepuncture is simple, safe and esy to administer. The experimental group of children who had undergone virtual presentation of venepuncture were highly satisfied. Proper preparation of the child has good impact on pain coping and has procedural coping. Hence paediatric nurses could be encouraged to use this method to increase the coping level of pain in children undergoing venepuncture.

Implications

The researcher has derived from the study the following implications which are of vital concern in the field of nursing practice, nursing education, nursing administration and nursing research. By assessing the effectiveness of

virtual presentation of venepuncture among children undergoing venepuncture, we get a clear picture regarding different steps to be taken in all fields, to improve the standards of nursing profession.

Nursing practice

Each child is unique and the pain coping varies with underlying illness and developmental level. Previous exposure and knowledge about what is going to happen can reduce anxiety to an extent and increase pain coping. Familiarizing the situation tends to decrease the fear. Hence it is necessary for the paediatric nurses to have adequate knowledge and skill about the various techniques, to promote the coping level of pain among children undergoing venepuncture. Though there are various ways to promote the coping level of pain in children undergoing venepuncture virtual presentation of venepuncture is safe and effective. Thus nurses should use virtual presentation of venepuncture as a safe and effective method to reduce anxiety and promote pain coping among children undergoing venepuncture.

Nursing education

Integration of theory and practice is a vital need and it is important in nursing education. Care of children has been included since the beginning years of nursing education.

The focus on measures nursing education must focus on innovation to enhance nursing care. Some research suggests that virtual presentation of venepuncture is a non pharmacological measure to promote the coping level of

pain. The research findings suggest that the virtual presentation of venepuncture is simple, safe, cost effective and easy to administer than any other pharmacological pain intervention. So it must be incorporated in clinical setting as a pain coping measures. Nursing education curriculum should be incorporated with emphasis on non pharmacological measures to promote the pain coping of children during venepuncture. The nursing students should be taught about the importance of various pain coping measures that could implement in the care of children.

Nursing administration

In today's technological advances and the ever growing challenges in field of health care, the administrator has the highest responsibility to provide the nurses with substantive continuing education opportunities on the coping level pain among children undergoing venepuncture and nursing interventions for promoting it. This will enable the nurses to update their knowledge, acquire special skills in managing the children undergoing venepuncture and demonstrate high quality care.

Nurse administrators should take the initiative and periodically organize activities in their administration to reduce the anxiety of parents and children undergoing venepuncture. The nurse leader must be a liaison with the child and his/her parents. The nurse administrator should accept the responsibility to supervise the staff nurses so as to ensure good quality of care.

The nurse administrator should also take adequate steps with the growing bodies in formulating policies and protocols in providing patient education and

plans for man power, money, material, methods and time to conduct successful and useful Patient education programmes.

Nursing research

In India, evidence based clinical strategies are not sufficient. As there are fewer studies related to the coping level of pain during venepuncture there is a need for extensive and intensive studies in this area. Nurse researcher should challenge to perform scientific work and take part in assessment, applications, evaluation of a child during venepuncture. Researchers must focus on various aspects and develop appropriate tools for the coping level of pain assessments in children during venepuncture. It opens the large avenue for research. Since virtual presentation of venepuncture can be implemented to children who undergoing venepuncture and its effectiveness can be tested through research. Dissemination of the findings of evidence based practice through conferences, seminars, publications in national and international nursing journals and World Wide Web will benefit a wider community.

Recommendations

- The study can be conducted on larger sample to generalize the results.
- The study can be conducted in different settings
- The study can be conducted for the coping level of pain during other invasive procedures.
- A comparative study can be conducted to evaluate the effectiveness of various other interventions to reduce pain.

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APPENDIX I

LETTER SEEKING PERMISSION TO CONDUCT THE STUDY

Apollo College of Nursing
(A unit of Apollo Hospitals Educational Trust)
(Recognised by the Indian Nursing Council and Affiliated to the Tamil Nadu Dr. M.G.R. Medical University, Chennai)

CO/0222/13 ***02.05.2013***

To

The Director
Apollo Childrens Hospital
No.15, Shafi Mohamed Road
Greams Road
Chennai – 600 006.

Respected Sir / Madam,

Sub: To request permission for research study- Reg.

Greetings! As a part of the curriculum requirement our 2nd year M. Sc. (N) student Ms. Meera Jose has selected the following title for her research study.

"An Experimental study to assess the effectiveness of virtual presentation of venipuncture upon pain coping among children undergoing venipuncture in selected hospitals, Chennai."

So I kindly request your good selves to permit her to conduct study in your esteemed institution

Thanking You,

Dr.LATHA VENKATESAN
PRINCIPAL

Regd. Office : 21, Greams Lane Off, Greams Road, Chennai - 600 006. Ph. : +91-44-2829 3333, 2829 0200 Website : www.apollohospitalseducation.com
Unit Office : Vanagaram to Ambattur Main Road, Ayanambakkam, Chennai - 600 095. Phone : 044 - 2653 4387 Fax : 044 - 2653 4923 / 2653 4386

APPENDIX II

LETTER PERMITTING TO CONDUCT STUDY

Apollo College of Nursing
(A unit of Apollo Hospitals Educational Trust)
(Recognised by the Indian Nursing Council and Affiliated to the Tamil Nadu Dr. M.G.R. Medical University, Chennai)

CO/0222/13 ***02.05.2013***

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Respected Sir / Madam,

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So I kindly request your good selves to permit her to conduct study in your esteemed institution

Thanking You,

Dr.LATHA VENKATESAN
PRINCIPAL

Regd. Office : 21, Greams Lane Off, Greams Road, Chennai - 600 006. Ph. : +91-44-2829 3333, 2829 0200 Website : www.apollohospitalseducation.com
Unit Office : Vanagaram to Ambattur Main Road, Ayanambakkam, Chennai - 600 095. Phone : 044 - 2653 4387 Fax : 044 - 2653 4923 / 2653 4386

APPENDIX III

ETHICAL COMMITTEE CLEARANCE LETTER

Ethics Committee

Apollo HOSPITALS
TOUCHING LIVES

15 May 2013

To,
Ms. Meera Jose
2nd Year M.SC (Nursing),
Department of Pediatric Nursing,
Apollo College of Nursing, Chennai.

Ref: A study to assess the effectiveness of virtual presentation of venepuncture up on the coping level of pain among children undergoing venepuncture at selected hospitals, Chennai.

Sub: Approval of the above referenced project and its related documents.

Dear Ms. Meera Jose,

Ethics Committee-Apollo Hospitals has received the following document submitted by you related to the conduct of the above-referenced study.

- Project proposal.
- Informed consent form.

The Ethics Committee-Apollo Hospitals reviewed and discussed the Project proposal documents submitted by you related to the conduct of the above referenced Project at its meeting held on 14 May 2013.
The following Ethics Committee Members were present at the meeting held on 14 May 2013:

Name	Profession	Position in the committee
Dr. Rema Menon	Clinician	Member Secretary
Dr. P. Nalini Rao	Social Worker	Chairperson
Dr. Renuka Singh	Consultant Clinical Pharmacologist	Basic Medical Scientist
Dr. Krishna Kumar	Clinician-Medical Superintendent	EC -Member
Miss. N. Suseela	Retired English Teacher	Layperson
Ms. Maimoona Badsha	Lawyer	Lawyer
Dr. Vijayakumar	Clinician	EC-Member

Apollo Hospitals Enterprise Limited
21, Greams Lane, Off Greams Road, Chennai - 600 006
Tel : 91 - 44 - 2829 1618, 2829 3333, 91 - 44 - 2829 5465 Extn : 5045 / 6641
Fax : 91 - 44 - 2829 1618 / 4449 E - Mail : ecapollochennai@gmail.com

Ethics Committee

Apollo HOSPITALS
TOUCHING LIVES

After due ethical and scientific consideration, the Ethics Committee has approved the above presentation submitted by you.

The EC review and approval of the report is only to meet the academic requirement and will not amount to any approval of the conclusions / recommendations as conclusive, deserving adoption and implementation, in any form, in any healthcare institution.

The Ethics Committee is constituted and works as per ICH-GCP, ICMR and revised Schedule Y guidelines.

With Regards,

Date:
13/5/13

Dr. Rema Menon,
Ethics Committee-Member Secretary,
Apollo Hospitals, Chennai,
Tamil Nadu, India.

Dr. REMA MENON
MEMBER SECRETARY
ETHICS COMMITTEE, APOLLO HOSPITALS
APOLLO HOSPITALS ENTERPRISE LIMITED
CHENNAI-600 006, TAMILNA

Apollo Hospitals Enterprise Limited
21, Greams Lane, Off Greams Road, Chennai - 600 006
Tel : 91 - 44 - 2829 1618, 2829 3333, 91 - 44 - 2829 5465 Extn : 5045 / 6641
Fax : 91 - 44 - 2829 1618 / 4449 E - Mail : ecapollochennai@gmail.com

APPENDIX IV

REQUEST FOR CONTENT VALIDITY LETTER REQUESTING OPINIONS AND SUGGESTIONS OF EXPERTS FOR ESTABLISHING CONTENT VALIDITY OF RESEARCH

From

Ms. Meera Jose

M.Sc., (Nursing) II Year,

Apollo College of Nursing,

Chennai-95

To

Through Proper channel

Dr. Latha Venkatesan

Principal,

Apollo College of Nursing

Sub: Request for opinions and suggestions of experts for content validity of Research tool.

Respected Sir/ Madam

Greetings! As a part of the Curriculum Requirement the following research title is selected for the study.

"An Experimental study to assess the effectiveness of virtual presentation of venepuncture upon the coping level of pain among children undergoing venepuncture in selected hospitals, Chennai."

I will be highly privileged to have your valuable suggestions with regard to the establishment of Content Validity of Research tool. So, I request you to validate my Research tool and give suggestions about the tool.

Thanking You,

Yours Sincerely,

(Ms.Meera Jose)

APPENDIX V

LIST OF EXPERTS

1. **Dr. Latha Venkatesan, M.Sc(N), M.Phil (N)., Ph.D (N)**

   Principal and Professor,

   Apollo College of Nursing,

   Chennai- 600 095

2. **Dr. Deepa Elizabeth Mathew, MBBS.,DCH.,MRCPCH**

   Pediatric consultant,

   Apollo Speciality Hospitals, Vanagaram

   Chennai-600 095

3. **Prof. Lizy Sonia. A, M.Sc (N)., Ph.D (N)**

   Vice Principal and Professor,

   Apollo College of Nursing,

   Chennai-600 095

4. **Prof. K. Vijayalakshmi, M.Sc (N)., Ph.D (N)**

   HOD, Department of Mental Health Nursing,

   Apollo College of Nursing,

   Chennai- 600 095

5. **Mrs. Nesa Sathya Satchi, M.Sc(N)., Ph.D (N)**

   HOD, Department of Child Health Nursing,

   Apollo College of Nursing,

   Chennai- 600 095

6. Mrs. Cecilia Mary, M.Sc(N)

Lecturer in Child Health Nursing,

Apollo College of Nursing,

Chennai-600 095

7. Mrs. Jennifer.G, M.Sc (N),

Lecturer in Child Health Nursing,

Apollo College of Nursing,

Chennai- 600 095

APPENDIX VI

CONTENT VALIDITY CERTIFICATE

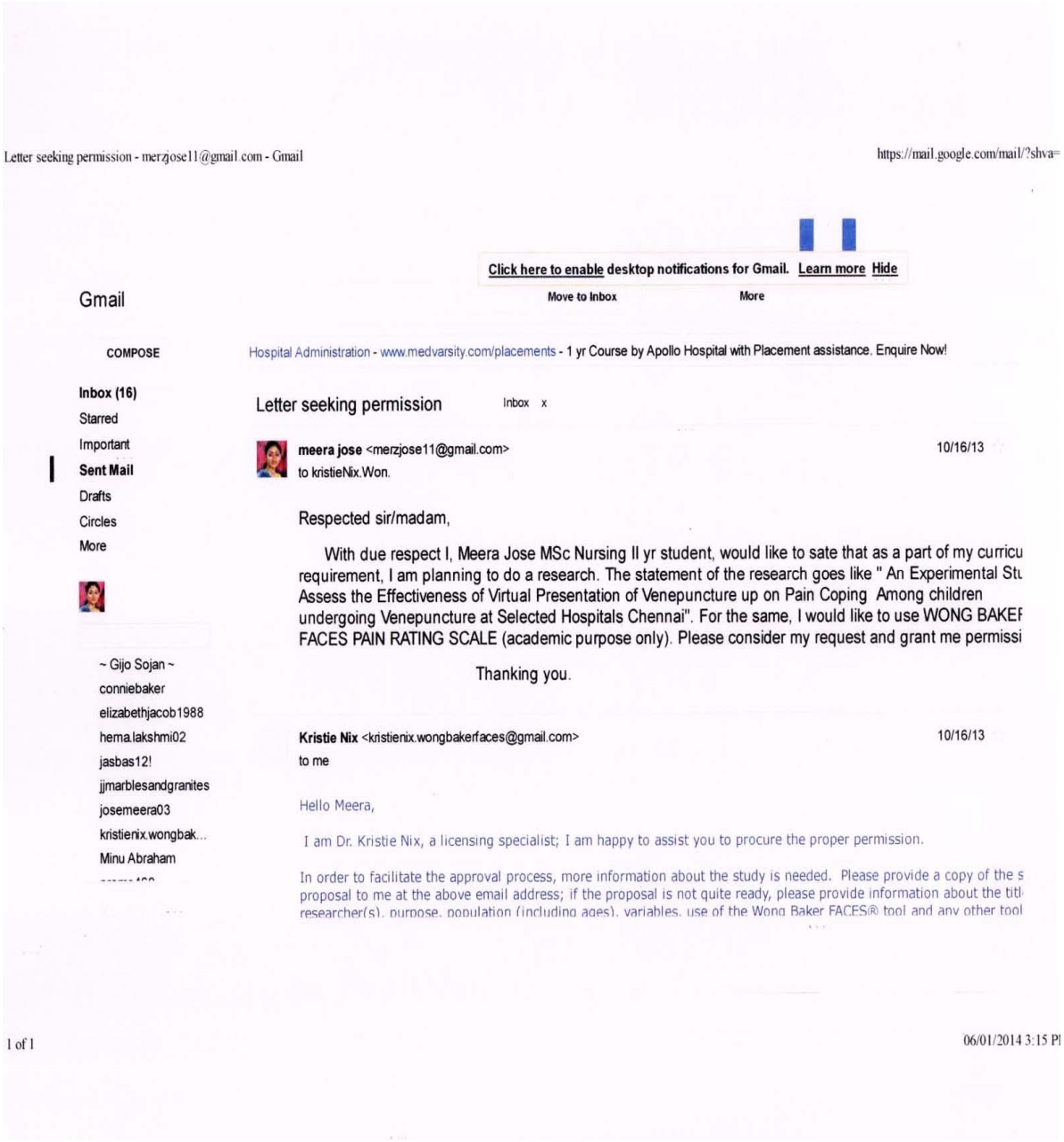
I hereby certify that I have validated the research tool and interventional programme of Ms.Meera Jose, M.Sc (Nursing) II year student who is undertaking research study on **"An Experimental study to assess the effectiveness of virtual presentation of venepuncture upon the coping level of pain among children undergoing venepuncture in selected hospitals, Chennai."**

Signature of Expert

Name and designation

APPENDIX – VII

LETTER SEEKING PERMISSION TO USE THE TOOL



Letter seeking permission - merzjose11@gmail.com - Gmail https://mail.google.com/mail/?shva=

Click here to enable desktop notifications for Gmail. Learn more Hide

Gmail

Move to Inbox More

COMPOSE

Inbox (16)
Starred
Important
Sent Mail
Drafts
Circles
More

~ Gijo Sojan ~
conniebaker
elizabethjacob1988
hema.lakshmi02
jasbas12!
jjmarblesandgranites
josemeera03
kristienix.wongbak...
Minu Abraham

Hospital Administration - www.medvarsity.com/placements - 1 yr Course by Apollo Hospital with Placement assistance. Enquire Now!

Letter seeking permission Inbox x

meera jose <merzjose11@gmail.com> 10/16/13
to kristieNix.Won.

Respected sir/madam,

With due respect I, Meera Jose MSc Nursing II yr student, would like to sate that as a part of my curricu requirement, I am planning to do a research. The statement of the research goes like " An Experimental Stu Assess the Effectiveness of Virtual Presentation of Venepuncture up on Pain Coping Among children undergoing Venepuncture at Selected Hospitals Chennai". For the same, I would like to use WONG BAKEF FACES PAIN RATING SCALE (academic purpose only). Please consider my request and grant me permissi

Thanking you.

Kristie Nix <kristienix.wongbakerfaces@gmail.com> 10/16/13
to me

Hello Meera,

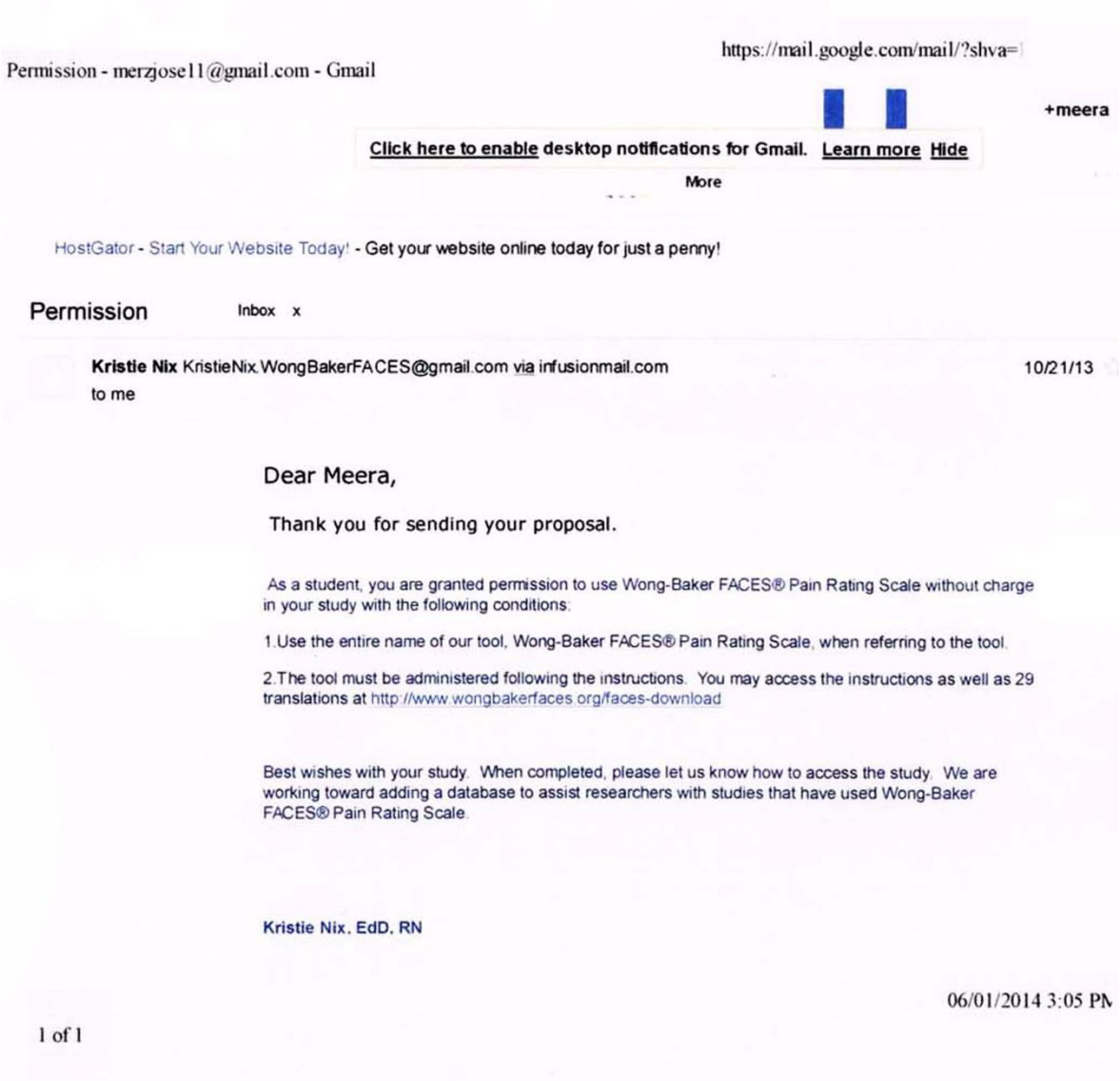
I am Dr. Kristie Nix, a licensing specialist; I am happy to assist you to procure the proper permission.

In order to facilitate the approval process, more information about the study is needed. Please provide a copy of the s proposal to me at the above email address; if the proposal is not quite ready, please provide information about the titl researcher(s), purpose, population (including ages), variables, use of the Wong Baker FACES® tool and any other tool

1 of 1 06/01/2014 3:15 PI

APPENDIX – VIII

LETTER PERMITTING TO USE THE TOOL



Permission - merzjose11@gmail.com - Gmail https://mail.google.com/mail/?shva=

+meera

Click here to enable desktop notifications for Gmail. Learn more Hide

More

HostGator - Start Your Website Today! - Get your website online today for just a penny!

Permission Inbox x

Kristie Nix KristieNix.WongBakerFACES@gmail.com via infusionmail.com 10/21/13

to me

Dear Meera,

Thank you for sending your proposal.

As a student, you are granted permission to use Wong-Baker FACES® Pain Rating Scale without charge in your study with the following conditions:

1.Use the entire name of our tool, Wong-Baker FACES® Pain Rating Scale, when referring to the tool.

2.The tool must be administered following the instructions. You may access the instructions as well as 29 translations at http://www.wongbakerfaces.org/faces-download

Best wishes with your study. When completed, please let us know how to access the study. We are working toward adding a database to assist researchers with studies that have used Wong-Baker FACES® Pain Rating Scale.

Kristie Nix, EdD, RN

06/01/2014 3:05 PM

1 of 1

APPENDIX IX

RESEARCH PARTICIPANT CONSENT FORM

Dear participant,

I am a M.Sc., Nursing student of Apollo College of Nursing, Chennai. As part of my study, a research on, **"**An Experimental study to assess the effectiveness of virtual presentation of venepuncture upon the coping level of pain among children undergoing venepuncture in selected hospitals, Chennai" is selected to be conducted. The findings of the study will be helpful in coping with the pain in children.

I hereby seek your consent and co-operation to participate in the study. Please be frank and honest in your responses. The information collected will be kept confidential and anonymity will be maintained.

Signature of the researcher

I ……. Hereby consent to participate and undergo the study

Place:

Date:

Signature of the participant

APPENDIX X

CERTIFICATE FOR ENGLISH EDITING

TO WHOM SO EVER IT MAY CONCERN

This is to certify that the dissertation **"An experimental study to assess the effectiveness of virtual presentation of venepuncture upon the coping level of pain among children undergoing venepuncture at a selected hospital, Chennai"** by Ms Meera Jose, M.Sc(N) II year student, Apollo College of Nursing was edited for English language appropriateness by Prof. Jose Augustine
Dept. of English

NIRMALA COLLEGE
686 661
MUVATTUPUZHA

Signature 31.12.2013

APPENDIX – XI

PLAGIARISM ORIGINALITY REPORT

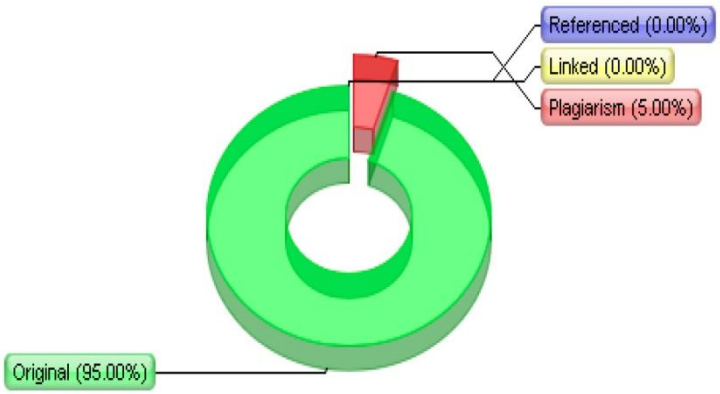
	Plagiarism Detector - Originality Report
	Plagiarism Detector Project: [http://plagiarism-detector.com] Application core verrsion: 557

Originality report details:

	Generation Time and Date:	1/10/2013 08:11:30 PM
	Document Name:	MEERA THESIS.doc
	Document Location:	C:\Documents and Settings\Administrator\Desktop\ MEERA THESIS.doc
	Document Words Count:	153100

Important Hint: to understand what exactly is meant by any report value - you can click "Help Image" . It will navigate you to the most detailed explanation at our web site.

Plagiarism Detection Chart:



Referenced 0% / Linked 0%

Original - 95% / 5% - Plagiarism

APPENDIX XII

DEMOGRAPHIC VARIABLE PROFORMA

Purposes

This proforma is used by the researcher to measure the demographic variables of children.

Instructions

The researcher will collect the information by interviewing the participants and by reviewing hospital records. The response will be kept confidential and used for research purpose only.

Sample Number: - ☐ **Hospital Number:-** ☐

1. **Age of the child**
   - 1.1 8-10 years ☐
   - 1.2 10.1-12 years ☐
   - 1.3 12.1-14 years ☐
   - 1.4 14.1-16years ☐
2. **Gender of the child**
   - 2.1 Male ☐
   - 2.2 Female ☐
3. **Type of family**
   - 3.1 Nuclear ☐
   - 3.2 Joint ☐
   - 3.3 Extended ☐

4. Religion

4.1 Hindu ☐

4.2 Muslim ☐

4.3 Christian ☐

4.4 Others specify …….? ☐

5. Area of residence

5.1 Urban ☐

5.2 Sub urban ☐

5.3 Rural ☐

6. Educational level of the child

6.1 Not started formal education ☐

6.2 Primary ☐

6.3 Secondary ☐

7. Educational status of the father

7.1 Non literate ☐

7.2 Primary ☐

7.3 Secondary ☐

7.4 Higher Secondary ☐

7.5 Diploma ☐

7.6 Graduation and above

8. **Educational status of the mother**

8.1 Non literate ☐

8.2 Primary ☐

8.3 Secondary ☐

8.4 Higher Secondary ☐

8.5 Diploma ☐

8. Graduation and above ☐

9. Family income per month in rupees

9.1 <10,000 ☐

9.2 10,001-15,000 ☐

9.3 15,001-20,000 ☐

9.4 >20,001 ☐

APPENDIX XIII

CLINICAL VARIABLE PROFORMA

Purpose

This proforma used by the researcher to measure the clinical variables of children.

Instructions

The investigator will collect the data by interviewing the participants and by reviewing the hospital records. The responses will be kept confidential and used for research purpose only.

Sample number: ☐

1. Have you ever been admitted in the hospital before?

   1.1 Yes ☐

   1.2 No ☐

2. What is the duration of your present illness?

   2.1 Few days ☐

   2.2 Few weeks ☐

   2.3 Few months ☐

   2.4 Congenital ☐

3. Diagnosis

   3.1 Gastrointestinal ☐

   3.2 Cardiac problem ☐

   3.3 Respiratory problems ☐

   3.4 Neurological problems ☐

   3.5 Genitourinary problems ☐

   3.6 Others specify.....? ☐

4. Any history of previous venepuncture?

4.1 Yes ☐

4.2 No ☐

5. Have you seen anyone (siblings, parents, relatives, friends, others) who had undergone venepuncture in the hospital?

5.1 Yes ☐

5.2 No ☐

6. How do you usually express your fear?

6.1 Share with parents ☐

6.2 Share with friends ☐

6.3 Cry alone ☐

6.4 Engage in diversional activities ☐

7. To whom do you usually ventilate your fear?

7.1 Mothers ☐

7.2 Father ☐

7.3 Sibling ☐

7.4 Friend ☐

7.5 Any others..... specify? ☐

8. Have you ever watched any video of venepuncture before?

8.1 Yes ☐

8.2 No ☐

9. Has anyone informed you the details of venepuncture priorly?

9.1 Yes ☐

9.2 No ☐

If yes specify.....?

APPENDIX XIV

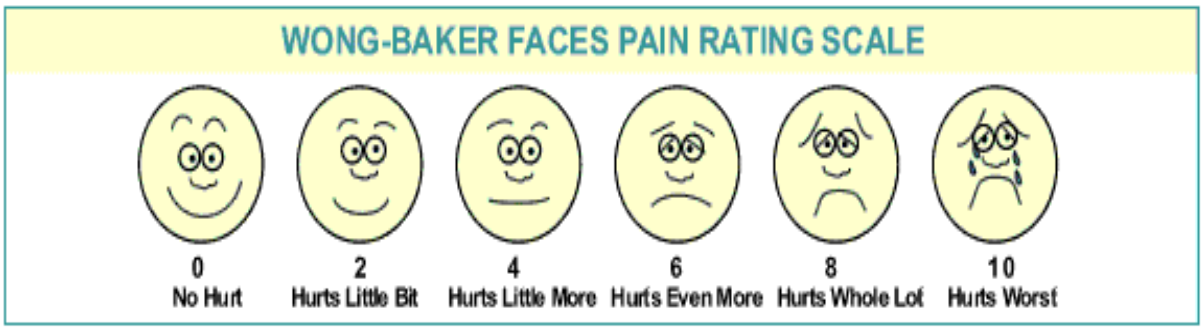
THE COPING LEVEL OF PAIN ASSESSMENT SCALE

Purpose

This is a standardized scale used to measure the coping level of pain among children during venepuncture as scored by researcher.

Instructions

The researcher observes and documents the coping level of pain among children undergoing venepuncture. By comparing with the faces and interpreting as words.



Score Interpretation

0	**No hurts**
2	**Hurts little bit**
4	**Hurts little more**
6	**Hurts even more**
8	**Hurts whole lot**
10	**Hurts worst**

Score Interpretation

0	**-**	**No pain**
2	**-**	**Mild pain**
4-6	**-**	**Moderate pain**
8-10	**-**	**Severe pain**

BLUE PRINT FOR RATING SCALE TO ASSESS THE LEVEL OF SATISFACTION OF CHILDREN IN EXPERIMENTAL GROUP

S. No	Content	Item no	Total items	Percentage
1.	Characteristics of the researcher	1,2,3,4	4	25%
2.	Nature of virtual presentation of venepuncture	5,6,7,8	4	25%
3.	Effectiveness of virtual presentation of venepuncture	9,10,11,12	4	25%
TOTAL			**12**	**100%**

APPENDIX XV

RATING SCALE ON LEVEL OF SATISFACTION OF CHILDREN UNDERGOING VENEPUNCTURE IN EXPERIMENTAL GROUP

Purpose

The rating scale is designed by the researcher to assess the level of satisfaction of children undergoing virtual presentation of venepuncture

Instructions

The rating scale consists of 12 items. The researcher collects the response from the children through interview and responses will be confidential. The responses range from highly satisfied to highly dissatisfied with scores 4, 3, 2, 1, respectively.

S.No.	Questions	Highly satisfied	Satisfied	Dissatisfied	Highly dissatisfied
1.	The information about the virtual presentation of venepuncture given by the researcher				
2.	The approach of the researcher				
3.	The presence of researcher during and after the procedure				
4.	The language / communication skill of the researcher				

5.	Clarity of the video				
6.	The duration of the virtual presentation of venepuncture				
7.	The continuity of scene				
8.	The content of the video				
9.	The coping abilities of the child acquired for venepuncture after the virtual presentation				
10	The relief of anxiety expressed by the child after the virtual presentation of venepuncture				
11	The co-operation of the child with health personnel for venepuncture after virtual presentation				
12	The child appears relaxed during and after the therapy				

Scoring Key

Highly satisfied - 4

Satisfied - 3

Dissatisfied - 2

Highly dissatisfied - 1

Score Interpretation

Score	Percentage	Interpretation
>40	> 81.3%	High satisfaction
28 - 39	56.3 – 81.2 %	Moderate satisfaction
< 27	< 56.2%	Low satisfaction

APPENDIX XVI

ITEM WISE FREQUENCY AND PERCENTAGE DISTRIBUTION OF LEVEL OF SATISFACTION REGARDING VIRTUAL PRESENTATION OF VENEPUNCTURE IN EXPERIMENTAL GROUP OF CHILDREN UNDERGOING VENEPUNCTURE.

Items	Highly satisfied		Satisfied		Dissatisfied		Highly dissatisfied	
	n	P	n	p	n	p	N	P
1. The information about the virtual presentation of venepuncture given by the researcher	24	80%	6	20%	-	-	-	-
2. The approach of the researcher	21	70%	9	30%	-	-	-	-
3.The presence of the researcher during and after the procedure	23	77%	7	23%	-	-	-	-
4. The language /communication skill of the researcher	18	60%	12	40%	-	-	-	-
5. Clarity of the video	21	70%	9	30%	-	-	-	-
6. The duration of the virtual presentation of venepuncture	22	73%	8	27%	-	-	-	-
7. The continuity of scene	20	67%	10	33%	-	-	-	-
8. The content of the video	23	77%	7	23%	-	-	-	-
9. The coping abilities of the child acquired for venepuncture after the virtual presentation of venepuncture	22	73%	8	27%	-	-	-	-
10. The relief of anxiety expressed by the child after the virtual presentation of venepuncture	25	83%	5	17%	-	-	-	-
11. The cooperation of the child with health personnel for venepuncture after virtual presentation.	26	87%	4	13%	-	-	-	-
12. The child appears relaxed during and after the therapy	24	80%	6	20%	-	-	-	-

APPENDIX - XVII
DATA CODE SHEET
DEMOGRAPHIC VARIABLES PROFORMA

1. AGE: Age of the child
- 1.1 8 – 10
- 1.2 10.1 – 12
- 1.3 12.1 – 14
- 1.4 14.1 – 16

2. GEN: Gender of the child
- 2.1 Male
- 2.2 Female

3. FAM: Type of family
- 3.1 Nuclear
- 3.2 Joint
- 3.3 Extended

4. REL: Religion
- 4.1 Hindu
- 4.2 Muslim
- 4.3 Christian
- 4.4 Others specify.....?

5. RES: Area of residence
- 5.1 Urban
- 5.2 Sub urban
- 5.3 Rural

6. EDU: Education level of the child
- 6.1 Not started formal education
- 6.2 Primary
- 6.3 Secondary

7. EDF: Educational status of the father
- 7.1 Non literate
- 7.2 Primary
- 7.3 Secondary
- 7.4 Higher Secondary
- 7.5 Diploma
- 7.6 Graduation and above

8. EDM: Educational status of the mother
- 8.1 Non literate
- 8.2 Primary
- 8.3 Secondary
- 8.4 Higher Secondary
- 8.5 Diploma
- 8.6 Graduation and above

9. INC: Family income per month in rupees
- 9.1 <10,000
- 9.2 10,001-15,000
- 9.3 15,001-20,000
- 9.4 >20,001

DATA CODE SHEET

CLINICAL VARIABLES PROFORMA

1. PRH: Have you ever been admitted in hospital before?
1.1 Yes
1.2 No
2. DUR: What is the duration of your present illness?
2.1 Few days
2.2 Few weeks
2.3 Few months
2.4 Congenital
3. DIA: Diagnosis:
3.1 Gastrointestinal
3.2 Cardiac problems
3.3Respiratory problems
3.4 Neurological problems
3.5 Genitourinary problems
3.6 Others specify.....?
4. PRS: Any history of previous venepuncture?
4.1 Yes
4.2 No
5. EXP: Have you seen anyone (siblings, parents, relatives, friends, others) who had undergone venepuncture in the hospital?
5.1 Yes
5.2 No
6. VEN: How do you usually express your fear?
6.1 Share with parents
6.2 Share with friends
6. 3 Cry alone
6.4 Engage in diversional activities
7. WHV: To whom do you usually ventilate your fear?
7.1 Mother
7.2 Father
7.3 Sibling
7.4 Friend
7.5 Any other..... specify?
8. PRV: Have you ever watched any video of venepuncture before?
8.1 Yes
8.2 No
9. INF: Has anyone informed you the details of venepuncture priorly?
9.1 Yes
9.2 No
If yes specify.....?

APPENDIX XVIII
MASTER CODE SHEET

MASTER CODE SHEET										
CONTROL GROUP										
DEMOGRAPHIC VARABLES										COPING LEVEL OF PAIN
SL.NO	AGE	GEN	FAM	REL	RES	EDU	EDF	EDM	INC	
1	1.4	2.1	3.2	4.1	5.2	6.3	7.6	8.5	9.2	4
2	1.4	2.2	3.1	4.3	5.1	6.3	7.6	8.5	9.3	6
3	1.4	2.1	3.1	4.1	5.1	6.3	7.4	8.4	9.2	6
4	1.4	2.2	3.1	4.3	5.2	6.3	7.6	8.5	9.3	8
5	1.1	2.1	3.1	4.2	5.1	6.2	7.5	8.4	9.3	10
6	1.2	2.2	3.1	4.1	5.1	6.2	7.5	8.4	9.3	8
7	1.3	2.1	3.1	4.2	5.1	6.3	7.6	8.5	9.3	10
8	1.3	2.2	3.1	4.1	5.2	6.3	7.5	8.4	9.2	8
9	1.2	2.2	3.1	4.2	5.3	6.2	7.5	8.4	9.3	6
10	1.3	2.1	3.1	4.3	5.1	6.3	7.6	8.5	9.3	6
11	1.1	2.1	3.1	4.2	5.1	6.2	7.5	8.4	9.2	8
12	1.2	2.1	3.1	4.1	5.1	6.2	7.4	8.3	9.2	10
13	1.1	2.1	3.1	4.1	5.1	6.2	7.4	8.4	9.2	8
14	1.4	2.2	3.1	4.1	5.1	6.3	7.5	8.4	9.2	8
15	1.4	2.1	3.1	4.2	5.1	6.3	7.5	8.4	9.3	8
16	1.3	2.2	3.1	4.2	5.1	6.3	7.5	8.4	9.1	8
17	1.4	2.2	3.1	4.1	5.2	6.3	7.4	8.3	9.2	10
18	1.1	2.1	3.2	4.1	5.3	6.2	7.3	8.3	9.1	8
19	1.2	2.2	3.1	4.1	5.2	6.2	7.4	8.3	9.1	4
20	1.4	2.2	3.1	4.1	5.1	6.3	7.6	8.6	9.4	6
21	1.4	2.1	3.1	4.2	5.2	6.3	7.5	8.5	9.4	8
22	1.3	2.2	3.2	4.1	5.3	6.3	7.4	8.4	9.2	8
23	1.2	2.1	3.1	4.1	5.1	6.2	7.5	8.5	9.2	6
24	1.3	2.1	3.1	4.1	5.1	6.2	7.4	8.4	9.2	10
25	1.2	2.1	3.1	4.1	5.1	6.2	7.5	8.4	9.2	4
26	1.4	2.2	3.1	4.2	5.1	6.3	7.6	8.6	9.4	6
27	1.3	2.2	3.1	4.1	5.2	6.3	7.6	8.5	9.4	8
28	1.3	2.1	3.1	4.2	5.1	6.3	7.5	8.4	9.3	10
29	1.1	2.1	3.1	4.1	5.1	6.2	7.5	8.5	9.2	6
30	1.3	2.1	3.1	4.1	5.1	6.3	7.4	8.4	9.2	8

MASTER CODE SHEET											
EXPERIMENTAL GROUP											
Demographic variables										Coping level of pain	Satis-faction
SL.NO	AGE	GEN	FAM	REL	RES	EDU	EDF	EDM	INC		
1	1.3	2.2	3.1	4.1	5.2	6.3	7.4	8.3	9.2	4	48
2	1.4	2.1	3.1	4.1	5.1	6.3	7.5	8.5	9.2	0	48
3	1.4	2.1	3.1	4.1	5.1	6.3	7.5	8.4	9.3	2	43
4	1.4	2.1	3.1	4.3	5.2	6.3	7.4	8.3	9.3	8	48
5	1.1	2.1	3.1	4.2	5.1	6.2	7.5	8.3	9.2	6	36
6	1.3	2.2	3.1	4.3	5.2	6.3	7.6	8.2	9.2	4	48
7	1.1	2.1	3.1	4.1	5.2	6.2	7.5	8.4	9.2	4	36
8	1.1	2.2	3.1	4.1	5.2	6.2	7.4	8.4	9.2	4	44
9	1.2	2.1	3.1	4.1	5.2	6.2	7.4	8.3	9.2	2	44
10	1.3	2.2	3.1	4.1	5.1	6.3	7.4	8.4	9.3	2	45
11	1.2	2.1	3.1	4.2	5.2	6.2	7.5	8.4	9.3	4	48
12	1.4	2.2	3.1	4.2	5.1	6.3	7.5	8.4	9.3	0	36
13	1.2	2.2	3.2	4.1	5.2	6.3	7.6	8.5	9.3	2	44
14	1.1	2.2	3.1	4.1	5.1	6.2	7.5	8.4	9.2	6	44
15	1.2	2.1	3.1	4.1	5.1	6.2	7.4	8.3	9.3	2	46
16	1.1	2.2	3.1	4.2	5.2	6.2	7.4	8.3	9.2	4	48
17	1.1	2.1	3.1	4.2	5.1	6.2	7.6	8.6	9.4	0	42
18	1.1	2.2	3.2	4.3	5.1	6.2	7.5	8.4	9.2	2	45
19	1.1	2.1	3.1	4.3	5.2	6.2	7.5	8.4	9.3	2	47
20	1.2	2.1	3.1	4.2	5.2	6.2	7.4	8.4	9.2	2	46
21	1.2	2.1	3.1	4.1	5.1	6.2	7.5	8.5	9.2	0	48
22	1.1	2.2	3.1	4.1	5.1	6.2	7.5	8.5	9.2	2	46
23	1.4	2.1	3.1	4.2	5.2	6.3	7.5	8.5	9.3	0	44
24	1.1	2.2	3.1	4.3	5.1	6.2	7.5	8.4	9.2	4	48
25	1.3	2.2	3.1	4.1	5.1	6.3	7.6	8.6	9.4	0	46
26	1.1	2.1	3.2	4.3	5.2	6.2	7.5	8.5	9.4	2	47
27	1.1	2.2	3.1	4.2	5.1	6.2	7.5	8.4	9.3	6	43
28	1.3	2.1	3.1	4.1	5.1	6.3	7.5	8.5	9.2	2	44
29	1.3	2.1	3.1	4.1	5.3	6.3	7.4	8.2	9.3	2	48
30	1.4	2.2	3.2	4.2	5.3	6.3	7.6	8.3	9.4	0	48

CLINICAL VARIABLES									
CONTROL GROUP									
SLNO	PRH	DUR	DIA	PRS	EXP	VEN	WHV	PRV	INF
1	1.1	2.3	3.5	4.2	5.2	6.1	7.1	8.2	9.2
2	1.2	2.4	3.2	4.2	5.2	6.1	7.1	8.2	9.2
3	1.1	2.4	3.2	4.1	5.2	6.1	7.2	8.2	9.1
4	1.2	2.2	3.1	4.2	5.2	6.1	7.1	8.2	9.2
5	1.2	2.1	3.3	4.2	5.2	6.1	7.2	8.2	9.2
6	1.1	2.3	3.1	4.1	5.2	6.1	7.1	8.2	9.1
7	1.1	2.4	3.2	4.1	5.2	6.2	7.4	8.2	9.1
8	1.2	2.2	3.1	4.2	5.2	6.3	7.3	8.2	9.2
9	1.1	2.1	3.3	4.1	5.2	6.1	7.4	8.2	9.2
10	1.2	2.1	3.6	4.2	5.2	6.2	7.4	8.2	9.1
11	1.1	2.1	3.3	4.1	5.2	6.1	7.1	8.2	9.1
12	1.2	2.4	3.6	4.2	5.2	6.1	7.3	8.2	9.2
13	1.2	2.1	3.3	4.2	5.2	6.1	7.1	8.2	9.2
14	1.1	2.1	3.6	4.1	5.2	6.2	7.4	8.2	9.2
15	1.2	2.2	3.3	4.2	5.2	6.1	7.2	8.2	9.2
16	1.1	2.2	3.6	4.2	5.2	6.1	7.1	8.2	9.2
17	1.1	2.2	3.5	4.2	5.2	6.1	7.1	8.2	9.1
18	1.1	2.3	3.6	4.2	5.2	6.1	7.1	8.2	9.2
19	1.2	2.4	3.2	4.1	5.1	6.3	7.4	8.2	9.2
20	1.1	2.2	3.5	4.2	5.2	6.1	7.1	8.2	9.1
21	1.1	2.3	3.6	4.2	5.2	6.1	7.1	8.2	9.2
22	1.2	2.4	3.2	4.1	5.1	6.3	7.4	8.2	9.2
23	1.1	2.2	3.3	4.1	5.1	6.1	7.1	8.2	9.2
24	1.2	2.1	3.3	4.2	5.2	6.1	7.2	8.2	9.1
25	1.1	2.2	3.6	4.1	5.1	6.1	7.2	8.2	9.1
26	1.2	2.1	3.3	4.1	5.1	6.1	7.2	8.2	9.1
27	1.1	2.2	3.4	4.2	5.2	6.1	7.1	8.2	9.2
28	1.2	2.2	3.5	4.2	5.2	6.1	7.1	8.2	9.2
29	1.1	2.1	3.3	4.1	5.2	6.1	7.1	8.2	9.1
30	1.1	2.4	3.1	4.1	5.2	6.1	7.2	8.2	9.1

CLINICAL VARIABLES									
EXPERIMENTAL GROUP									
SLNO	PRH	DUR	DIA	PRS	EXP	VEN	WHV	PRV	INF
1	1.1	2.3	3.1	4.1	5.1	6.1	7.2	8.2	9.1
2	1.2	2.2	3.1	4.2	5.2	6.2	7.1	8.2	9.2
3	1.2	2.1	3.3	4.2	5.2	6.2	7.1	8.2	9.1
4	1.1	2.1	3.4	4.2	5.2	6.3	7.2	8.2	9.2
5	1.2	2.1	3.3	4.2	5.2	6.1	7.1	8.2	9.2
6	1.1	2.2	3.5	4.2	5.2	6.1	7.2	8.2	9.2
7	1.2	2.1	3.1	4.2	5.2	6.1	7.1	8.2	9.1
8	1.1	2.1	3.6	4.2	5.2	6.1	7.2	8.2	9.1
9	1.2	2.1	3.1	4.1	5.2	6.1	7.2	8.2	9.1
10	1.1	2.2	3.3	4.2	5.2	6.3	7.4	8.2	9.2
11	1.2	2.2	3.6	4.2	5.2	6.3	7.4	8.2	9.2
12	1.1	2.3	3.4	4.2	5.2	6.1	7.1	8.2	9.2
13	1.2	2.3	3.6	4.1	5.2	6.1	7.2	8.2	9.2
14	1.2	2.3	3.2	4.1	5.2	6.1	7.2	8.2	9.1
15	1.1	2.2	3.3	4.2	5.1	6.1	7.2	8.2	9.1
16	1.2	2.2	3.4	4.2	5.1	6.1	7.2	8.2	9.2
17	1.1	2.1	3.5	4.2	5.1	6.1	7.1	8.2	9.2
18	1.2	2.2	3.4	4.2	5.2	6.1	7.2	8.2	9.1
19	1.2	2.3	3.4	4.2	5.2	6.3	7.4	8.2	9.2
20	1.1	2.3	3.4	4.1	5.2	6.1	7.2	8.2	9.2
21	1.1	2.2	3.5	4.1	5.2	6.1	7.2	8.2	9.2
22	1.1	2.1	3.1	4.1	5.2	6.1	7.1	8.2	9.2
23	1.2	2.4	3.6	4.2	5.2	6.1	7.1	8.2	9.2
24	1.1	2.1	3.4	4.2	5.2	6.1	7.1	8.2	9.1
25	1.1	2.2	3.5	4.1	5.2	6.1	7.1	8.2	9.2
26	1.2	2.3	3.2	4.2	5.2	6.1	7.2	8.2	9.1
27	1.2	2.1	3.5	4.2	5.2	6.1	7.2	8.2	9.2
28	1.1	2.2	3.6	4.2	5.2	6.1	7.1	8.2	9.2
29	1.1	2.1	3.1	4.2	5.1	6.1	7.2	8.2	9.2
30	1.2	2.4	3.2	4.2	5.2	6.1	7.2	8.2	9.2

APPENDIX – XIX

PHOTOGRAPHS DURING THE STUDY