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"An Experimental Study To Assess The Effectiveness Of Virtual Presentation On Venepuncture Upon The Coping Level Of Pain Among The Children (6-12 Years) Undergoing Venepuncture In Selected Hospitals."

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Abstract: 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 be wildering 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 upon their age cognitive process."Pain is a more terrible lord of mankind than even death itself. The aim of the study was to assess the effectiveness of virtual presentation on venepuncture upon the coping level of pain among children of 6-12 years of age undergoing venepuncture in selected hospitals.

Methods: The conceptual framework for the study was developed on the basis of Roys 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 municipal corporation hospital. A sample size of 70 children who met the inclusion criteria were chosen for this study of which 35 were taken for the control group and 35 for the experimental group through purposive sampling technique. The study variables were the coping level of pain among children under going venepuncture and virtual presentation of 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 FLACC 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 during the procedure. Adequate explanations were provided and doubts of children and their parents were clarified. While watching the video, venepuncture was performed and assessment of coping level of pain was done during immediately for 1 minute by using FLACC Pain Rating Scale. The data collection was carried out in three phases and the data was analyzed by using the descriptive and inferential statistics.

Result: The study result depicted that In control group majority 68.57% of samples had severe level of pain and 31.43% moderate level of pain. Mean score was 7.74 along with 1.75 SD. In Experimental group majority 80% of samples had moderate level of pain and 20% of samples had severe level of pain. Mean score was 2.26 along with1.46 SD. In control group mean score was 7.74 along with1.75 SD therefore in experimental group mean score is 2.26 and 1.46 SD. DF is 34, t value is 13.42 and p value is 0.00001 which shows virtual presentation on venepuncture is significantly effective

Conclusion: The present study concluded that. Pain is an unpleasant experience and the fifth vital sign which need to be assessed and managed appropriately. The perception of pain depends on anatomic, physiologic and cognitive behavioral factors. Most of the children express their pain by means of cry, restless, kicking or legs drawn up, rigid or jerking. So treating the pain is essential with the help of non-

pharmacological technique such as distraction which is has the property of analgesic effect for the toddlers who are receiving immunization injection or other invasive procedure. Number of studies proved that distraction is effective in pain reduction among young children. So as nurse's we have to reduce the pain by using different distraction techniques during painful procedure for children as a pre procedural interventions.

Keywords: Virtual presentation, Venepuncture, coping, level of pain and children.

INTRODUCTION

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.[2]

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 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.[3]

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 be wildering 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 behavioral relations that depend upon their age cognitive process. "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. 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.[3]

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, to administer therapeutic treatments including medications, nutrition, or chemotherapy; to remove blood due to excess levels of iron erethrocytes.

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.[4]

The importance of pain assessment and pain management is widely acknowledged. Pain management has favored children cooperation during venepuncture is essential for a successful procedure and in building a relationship of trust worthiness. A negative experience may mean that the child will always be afraid of medical personnel.[5]

Current population of India is 1,32,60,93,247 of which pediatric population comprises 32.4% that is; it comprises major part of the population.[1]Painisan 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.[2]

Venepuncture is commonly seen as one of the most painful and frequently performed invasive procedure by nurses.[6]

Children with chronic illness are more likely to identify intrusive procedures as stressful, whereas 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 (e.g. venepuncture, immunizations) is consistently linked with increased child pain and distress.[7]

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.[8]

If pain is not treated quickly and effectively in children, it can cause long- term physical and psychological problems. 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.[12]

PROBLEM STATEMENT

"An experimental study to assess the effectiveness of virtual presentation on venepuncture upon the coping level of pain among children of 6-12 years of age undergoing venepuncture in selected hospitals."

OBJECTIVES OF THE STUDY:

The objectives of the study were -

Primary objective

1. To assess effectiveness of virtual presentation on venepuncture upon the coping level of pain among children of 6-12 years of age undergoing venepuncture in selected hospitals.

Secondary objectives

1. To assess the coping level of pain in children during venepuncture in control group.
2. To assess the coping level of pain in children during venepuncture in experimental group while the virtual presentation is shown.
3. To assess the effectiveness of virtual presentation of venepuncture on the coping level of pain of children undergoing venepuncture.
4. To associate the selected demographic variables with the coping level of pain in experimental and control group of children undergoing venepuncture.
5. To associate the selected clinical variables with the coping level of pain in experimental and control group of children undergoing venepuncture.

MATERIALS & METHODS

Researcher methodology defines what the activity of research is, how to proceed, how to measure progress and what constitutes success.

Research Design: Experimental, Post-test only Research Design

Research Approach: Quantitative Research Approach

Sample: children undergoing venepuncture at selected tertiary care hospital.

Sample Size: Sample size of the study is 70 children undergoing venepuncture, in that 35 were in control group and 35 in experimental group. Who fulfil the required inclusion and exclusion criteria?

Sampling Technique: Non Probability Purposive sampling technique.

Data collection tool: FLACC rating scale a standardized tool was used for data collection.

Criteria for Sample selection:

a. Inclusion criteria:

1. Both male and female children between 6–12 years of age.
2. Children who are undergoing venepuncture for the first time.
3. Children who are willing to participate in this study.
4. Caregivers and children who knows Marathi or English.

b. Exclusion criteria:

1. Children who are chronically ill.
2. Children who need emergency treatments.
3. Dump and deaf children.
4. Children with developmental delay or who are having neurological defects.

Hypothesis

H1 : There is a significant change in the coping level of pain among experimental group with the intervention of virtual presentation of venepuncture.

H2 : There is a significant association between selected demographic variables and the coping level of pain in control and experimental group of children undergoing venepuncture.

H3 : There is a significant association between the selected clinical variables and the coping level of pain in the control and experimental group of children during venepuncture.

The researcher approached the subjects, informed regarding the objectives of the study and obtained informed consent after assuring the subjects about the confidentiality of the data. Purpose and important of research study explain before collection of data. The tool used for the study is FLACC rating scale to assess the coping level of children in the control and experimental group. Descriptive and inferential statistics was used for data analysis. The collected data was organized and tabulated by using descriptive statistics, i.e. frequency, percentage, mean and SD. The inferential statistics i.e., paired t test was used to assess the effectiveness of virtual presentation of venepuncture upon coping level pain among children under going venepuncture. The data was planned and presented in the form of tables and figures.

RESULT

The data collected is entered in the master sheet for tabulation and statistical processing. In order to find out relationship, the data was tabulated, analyzed and interpreted using descriptive and inferential statistics.

Table 1 : Distribution of subjects in relation to the socio- demographic data using frequency and percentage in Control Group and experiment group

n=35,35

Demographic Variables	Control Group		Experiment group	
Age of the child	**Frequency**	**%**	**Frequency**	**%**
a)6-8years	8	22.86	4	11.43
b)8.1-10 years	14	40	23	65.71
c)10.1-12 years	13	37.14	8	22.86
Gender of the child				
a)Male	16	45.71	16	45.71
b)Female	19	54.29	19	54.29
c)Transgender	0	0	0	0
Type of family				
a)Nuclear	25	71.43	22	62.86
b)Joint	8	22.86	10	28.57
c)Extended	2	5.71	3	8.57
Area of residence				
a) Urban Area	15	42.86	16	45.71
b) Sub Urban	20	57.14	19	54.29
c) Rural	0	0	0	0
Educational level of the child				
a)Not started formal education	0	0	0	0
b)Primary	35	100	35	100
c)Secondary	0	0	0	0

The above table 1 shows that, in Controlgroup-inthatmajority40%ofsubject belonging to 8.1 to 10 years, 37.14% were from 10.1 to 12 years and 22.86% belongs to 6 to 8years of age. Majority 54.29% of the subject were female whereas 45.71% of subject were male. Majority 71.43% of children had nuclear family, 22.86% had joint family and 5.71% had extended family. Majority 57.14% of children lives in suburban area and 42.86% of children lives in urban area. All 100% of children were studying in primary level of education. In experimental group**,** Majority 65.71% of subject belonging to 8.1 to 10 years, 22.86% were from 10.1 to 12 years and 11.43% belongs to 6 to 8 years of age. Majority 54.29% of the subject were

female whereas 45.71% of subject were male. Majority 62.86% of children had nuclear family, 28.57% belongs to joint family and 8.57% of children belongs to extended family. Majority 54.29% of children lives in suburban area and 45.71% of children lives in urban area. All 100% of children were studying in primary level of education

Table 2 : Distribution of subjects in relation to the Clinical variables using frequency and percentage in Control Group and experiment group

n=35,35

CLINICALVARIABLES	Control group		Experimental group	
	Frequency	Percentage	Frequency	Percentage
Have you ever been admitted in the hospital before?				
a)Yes	10	28.57%	8	22.86
b)No	25	71.43%	27	77.14
What is the duration of your present illness?				
a)7 days	35	100 %	35	100
b)2 week	0	0%	0	0
c)1months	0	0%	0	0
3.Diagnosis				
a)Abd Pain	1	2.86%	0	0.00
b)AGE	5	14.29%	9	25.71
c)Anaemia	2	5.71%	1	2.86
d)Asthma	3	8.57%	4	11.43
e)CKD	2	5.71%	5	14.29
f)Convulsions	7	20%	1	2.86
g)Fever	7	20%	4	11.43
h)Nephritis	1	2.86%	3	8.57
i)PLEffusion	2	5.71%	1	2.86
j)Pneumonia	5	14.29%	7	20
Any history of previous venepuncture?				
a)Yes	14	40%	14	40
b)No	21	60%	21	60
5. Have you seen anyone (siblings, parents, relatives, friends, others) who had undergone venepuncture in the hospital?				
a)Yes	0	0%	0	0
b)No	35	100%	35	100
How do you usually express your fear about hospitalization?				
a)Share with parents	25	71.43%	27	77.1
b)Share with friends	0	0%	0	0
c)Cry alone	6	17.14%	4	11.43
d)Engage in diversional activities	4	11.43%	4	11.43
To whom do you usually ventilate your fear?				
a)Mother	22	62.86%	26	74.29
b)Father	13	37.14%	9	25.71
c)Sibling	0	0%	0	0
d)Friend	0	0%	0	0
e)Any others	0	0%	0	0
8. Have you ever watched any video of venepuncture before?				
a) Yes	0	0%	0	0
b)No	35	100%	35	100
9.Has anyone informed you the details of venepuncture priory?				

a)Yes	0	0%	0	0
b)No	35	100 %	35	100
c)If yes specify	0	0%	0	0

The above table 2 depicts that in Control group majority 71.43% not having any history of hospitalization and 28.57% of children having history of hospitalization. All 100% participants were having duration of present <7 days. Majority 20% of samples diagnosed with convulsion, another 20% diagnosed with fever, 14.29% diagnosed with pneumonia, another 14.29% diagnosed with AGE, 8.57% of samples diagnosed with asthma, 5.71% of samples diagnosed with anaemia,5.71% of samples diagnosed with CKD, another 5.71 of samples diagnosed with pleural effusion, 2.86% diagnosed with abdominal pain and another 2.86% diagnosed with nephritis. Majority 60% of samples were not having history of venepuncture and 40% of samples were having history of venepuncture. All 100% of samples have not seen any relative of their undergoing venepuncture. Majority 77.14% express their fear of hospitalization by sharing with parents, 17.14% of samples express their fear of hospitalization by cry alone and 11.43% ofsamples express their fear of hospitalization by diversional therapy. Majority 63.86% ventilate their feeling ofbeing in fear with mother,37.14% ventilate their feeling of being in fear with father. All 100% of children did not watch any kind of video related to venepuncture. All 100% of children did not get any information about venepuncture details before procedure.

In Experimental group majority 77.14% not having any history of hospitalization and 23.86% of children having history of hospitalization. All 100% participants were having duration of present illness <7 days. Majority 25.71% of samples diagnosed with AGE, 20% diagnosed with pneumonia, 14.29% diagnosed with CKD, 11.43% diagnosed with fever, another 11.43% diagnosed with asthma, 8.57% of samples diagnosed with nephritis, 2.86% diagnosed with anaemia, another 2.86% diagnosed with convulsion and another 2.86% diagnosed with pleural effusion. Majority 60% of samples were not having history of venepuncture and 40% of samples were having history of venepuncture. All 100% of samples have not seen any relative of their undergoing venepuncture. Majority 71.43% express their fear of hospitalization by sharing with parents, 11.43% of samples express their fear of hospitalization by cry alone and another 11.43% of samples express their fear of hospitalization by diversion therapy. Majority 74.29% ventilate their feeling of being in fear with mother, 26.71% ventilate their feeling of being in fear with father. All 100% of children did not watch any kind of video related to venepuncture. All 100% of children did not get any information about venepuncture details before procedure.

Table 3 : Analysis of effectiveness of virtual presentation by comparing the coping level of pain among children undergoing venepuncture

n=35,35

Pain Coping Level	Mean	SD	DF	T test Value	P value	Remark
Control Group	7.74	1.75	68	13.42	0.00001	Significant
Experiment Group	2.26	1.46				

The above table 3 depicts that in control group mean score is 7.74 along with 1.75 SD therefore in experimental group mean score is 2.26 and 1.46 SD .DF is 34, t value is 13.42 and p value is 0.00001 which shows virtual presentation on venepuncture is significantly effective. Hence Alternative hypothesis (H_1) is accepted as p value is 0.00001 which is less than 0.05 level of significance

DISCUSSION

The aim of the study is to assess the effectiveness of virtual presentation on venepuncture upon the coping level ofpain among the children of6-12 years of age undergoing venepuncture in a selected hospital.

Findings related to coping level of pain in experimental and control group

In the present study, the control group majority68.57% of samples had severe level ofpainand31.43%moderatelevelofpain.Meanscorewas7.74alongwith1.75SD. In Experimental group majority 80% of samples had moderate level of pain and 20% of samples had severe level of pain. Mean score was 2.26 along with 1.46 SD.

Similarly, **Meera, Jose (2014)** conducted a study on the effectiveness of virtual presentation of venepuncture upon the coping level of pain among children undergoing venipuncture. The results revealed that majority of children in the control group (63.3%) had severe pain during venepuncture; whereas 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 H01 was rejected. Majority of the children were highly satisfied (90%) with virtual presentation of venepuncture. This showed thatvirtualpresentationofvenepunctureishighlyeffectiveanditenableschildrento cope with pain during venepuncture.7.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 demographicvariableandthecopinglevelofpainincontrolandexperimentalgroup.

Findings related to effectiveness of virtual presentation on venipuncture upon the coping level of pain among the children

In control group mean score is 7.74 along with 1.75 SD therefore in experimental group mean score is 2.26 and 1.46 SD. DF is 34, t value is 13.42 and p value is 0.00001 which shows virtual presentation on venepuncture is significantly effective.

Barbara Atzori,et.al (2022) conducted exploratory study on the Effectiveness of Virtual Reality Analgesia for Children and Adolescents with Kidney Diseases Undergoing Venipuncture. The study evaluated the effectiveness of Virtual Reality analgesia among pediatric and adolescent patients with kidney disease undergoing venipuncture. Patients at an Italian Children's hospital (N=82,agerange7–17years) undergoing venipuncture were randomly assigned to a No Virtual Reality group (non- medical conversation) vs. a Yes Virtual Reality (VR) group (VR analgesia).The results shows that patients distracted by Virtual Reality (VR) reported significantly lower scores for the sensory (worst pain) and emotional (pain unpleasantness) components of pain. "*Worst pain*": No VR group mean 2.74, SD = 2.76 vs. Yes VR groupmean1.56, SD, and"*Painunpleasantness*":NoVRgroupmean2.41, SD=2.9 vs. Yes VR group mean 1.17, SD = 1.80; *t* (80) = 2.31,*p*< 0.05. The predicted pattern of higher mean levels of the cognitive component of pain (Time spent thinking about pain") was reported by patients in the No VR group. Yes VR group. However, the difference was not significant for this variable.

Findings related to association between selected demographic variables and the coping level of pain in control group of children undergoing venipuncture

In the present study, there is no association between coping level of pain and demographic variables as p values are more than 0.05 level of significance.

Wong, et.al (2019) conducted a study on effects of immersive virtual reality intervention on pain and anxiety among pediatric patients undergoing venipuncture. A randomized controlled trial with repeated assessments will be conducted. A total of 200 pediatric patients aged 4–12 years will be recruited from a regional public hospital and randomly assigned to either the intervention or control group. The study will use two age-appropriate IVR modules that consist of procedural information. The intervention group will receive IVR intervention, whereas the control group will receive standard care only. Sensitivity analysis will be conducted to examine if the intervention effects on the anxiety level in the two age groups are consistent with the pooled age group. Cohen's values will also be calculated to estimate the effect sizes of the IVR intervention on the outcome variables. All statistical analyses are two-sided and level of significance will be set at 0.05.There was no association with the demographic variables.

Findings related to association between clinical variables and the coping level of pain in control group of children undergoing venepuncture

In the present study, there is no association between clinical variables and coping level of pain as p values are more than 0.05 level of significance.

Jeena, Joy (2013) conducted a study on effectiveness of pre-operative virtual OT tour upon anxiety of children undergoing surgery. 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.Thedatacollectiontoolswerevalidatedandthereliabilitywasestablished through test-retest and split half technique. The researcher used validated tool for collecting data. The results revealed significant percentage of children in the control and the experimental groups were between the age group of

11-12yrs (40%, 40%),were males(53%, 50%) and belonged to the Hindu religion (47%, 50%), had genitourinary problems (33%, 37%) with illness lasting few months (37%, 40%) respectively. Majority of children in experimental group experienced severe anxiety (90%) before pre-operative virtual OT tour whereas after the pre-operative virtual OT tour, severe anxiety was found to be reduced to mild anxiety (60%) and moderate anxiety. There was significant association between the selected demographic variable gender and anxiety level in the control group ($\chi 2=3.8, df=1$)at $p<0.05$, but there was no significant association between other demographic variables and anxiety levels in the control and experimental groups. Hence the null hypothesis Ho2 was rejected with regard to gender.

No significant association was found between the clinical variables and the level of anxiety in both the control and experimental group of children undergoing surgery. This study demonstrated that pre-operative virtual OT tour can help in reducing the anxiety of children undergoing surgery.

CONCLUSION

The findings of the present study indicate that the effectiveness of virtual presentation on venipuncture upon the coping level of pain among the children of 6-12 years of age undergoing venepuncture in a selected hospital was effective

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