Pain during intravenous Cannulation among Adult Patients admitted at tertiary care hospital.

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Abstract-

Introduction: It has been reported around 1.2 billion peripheral intravenous catheters are inserted in hospitalized patients across the world annually and nearly four out of five patients admitted to the hospital receive a peripheral intravenous catheters, which makes peripheral intravenous catheters insertion one of the most regularly practiced invasive procedures by both medical and nursing staff.

Objective: study investigates thatPain during intravenous Cannulation among Adult Patients admitted at tertiary care hospital.

Method: Pretest only design was used to conduct the study among adult patients and totally 20 patients were allotted by Purposive Sampling technique. Ethical permission was obtained before the data collection. After obtaining permission from the setting, the patients were asked their willingness to participate in the study and informed consent was obtained. The pain level was assessed by using numerical pain scale. The collected data were studied and analyzed in terms of objectives of the study using descriptive and inferential statistics.

Results: The result shows the mean (SD) pain score was 7.15 (1.461). Maximum sample i.e.13(65%) sample were having severe pain and 7(35%) sample were having moderate pain. No demographic variable is significantly associated with pain score.

Conclusions: Maximum patients were suffering with pain during intravenous cannulation procedure. So they require noninvasive pain management method to reduce pain.

Key words: Pain, Intravenous Cannulation,

Introduction -

A cold spray applied directly to the puncture site causes momentary anaesthesia. The primary compounds employed in this environment are mixtures of short-chain alkanes; other chlorofluorocarbons have also been used in the past. Numerous research[1, 8–13] have used such vapocoolant sprays prior to venipuncture, but the outcomes have been uneven. Methodological considerations can not account for this lack of homogeneity [4].

In contrast, multiple studies have consistently discovered that a local anaesthetic, such as lidocaine solution 1-2%, can be used intradermally or subcutaneously to alleviate puncture-related discomfort [1, 8– 10, 14, 15]. In a recent network meta-analysis, 2% lidocaine was revealed to be the most effective analgesic when compared directly or indirectly to 16 additional analgesic therapies before peripheral venipuncture [5]. However, this process takes a while [7] and could have a larger cost.It can increase the likelihood of puncture failures [15, 16], and it hurts by itself [8– 10, 16].

This is the main reason why the current comparison of various techniques aimed at reducing discomfort during venous cannulation considers the entire procedure from the time the tourniquet is applied until the first cannulation attempt rather than just the insertion of the venous cannula in isolation. In order to find the best pre-treatment for the puncture site, we will examine two alternative cannula sizes because prior studies rarely took the significance of the cannula size into account. This research question was linked with the percentage of unsuccessful venipuncture attempts.

Methods:

Pretests only research design was used to conduct the study among adult patients and totally 20 patients were allotted by Purposive Sampling technique. The samples included in this study were who fulfilled the inclusion criteria with who were willing to participate in the study. The patient with extremities that have massive edema, burns or injury, patient with phlebitis and previous intravenous infiltration were excluded from the study. Ethical permission was obtained before the data collection. After obtaining permission from the

setting, the patients were asked their willingness to participate in the study and informed consent was obtained.pain was assessed by using numerical pain scale.

Results:

Table no .1 Frequency and Percentage distributions of Samples according to demographic variables:

Sr.No.	Demographic Variables		Frequency	Percentage
1.	Age	21- 30 yrs	8	40
		31-40yrs	7	35
		41-50yrs	3	15
		50-above	2	10
2.	Gender	Male	14	70
		Female	6	30
3.	Educational status	No formal Education	3	15
		Primary school	3	15
		Secondary school	3	15
		Higher secondary school	7	35
		Graduate	4	20
4.	Employment status	Employed	14	70
		Unemployed	6	30
5.	Marital status	Married	17	85
		Unmarried	3	15
6.	Residence	Urban	12	60
		Rural	8	40

Description of sample characteristics

The data presented in Table 1 reveals the distribution of samples according to demographic variables. Majority of samples i.e.8 (40%) between the age group 21-30 years, 7(35%)sample

belongs to age group of 31–40 years ,3(15%) belongs to 41 -50years and 2(10%) belongs to age group 50 years & above. As regards to gender most of the samples 14(70%) were Male and female were 6(30%)

In relation to Educational Status most of the samples 6(30%) were having Higher secondary school educational status,3(15%) sample were No formal Education, secondary education and primary education accordingly.

As regards to Employment status Majority of samples 14(70%) were Employed 6(30%) were unemployed.

In samples 17(85%) were Married and 3(15%) were unmarried

From Urban area 12(60%) and from Rural area 8 (40 %) sample were present in the study.

Table no .2 Pain Scores during intravenous procedures according to frequency &percentage

Pain Score	F	%
Mild (1-3)	0	0
Moderate (4-6)	7	35
Severe (7-10)	13	65

Table no 2 reveals that maximum sample i.e. 13 (65%) were having severe pain and 7 (35%) sample were having moderate pain while intravenous cannulation.

Table no .3 Pain Scores during intravenous procedures according to means & SD

Pain Score	**Mean**	**SD**
Mild (1-3)	7.15	1.461
Moderate (4-6)		
Severe (7-10)		

Table no 3 present that mean score was 7.15 (1.461) That indicate maximum sample of study is having severe pain while performing intravenous cannulation

Table no. 4 Association between pain scores with demographic variables of control group

Sr.No.	Demographic Variables		Pain Level			Chi square valve	P value	Result
			Mild	Moderate	Severe			
1.	Age	21- 30 yrs	0	2	6	0.7431	0.8630	Not Significant
		31-40yrs	0	3	4			
		41-50yrs	0	1	2			
		50-above	0	1	1			
2.	Gender	Male	0	10	4	0.8477	0.3572	Not Significant
		Female	0	3	3			
3.	Educational status	No formal Education	0	3	0	7.075	0.1320	Not Significant
		Primary school	0	1	2			
		Secondary school	0	1	2			
		Higher secondary school	0	1	6			
		Graduate	0	1	3			
4.	Employment status	Employed	0	4	10	0.8477	0.3272	Not Significant
		Unemployed	0	3	3			
5.	arital status	Married	0	7	10	1.900	0.1680	Not Significant
		Unmarried	0	0	3			
6.	Residence	Urban	0	3	9	1.319	0.2508	Not Significant
		Rural	0	4	4			

Table 4 Reveals association between pain score and demographic variables in control group. There was no significant association between pain score and demographic variables in control group at the level of $p<0.05$.

Discussion:

Present study reviles that the data presented in Table 1 reveals the distribution of samples according to demographic variables. Majority of samples i.e.8 (40%) between the

age group 21-30 years, 7(35%)sample belongs to age group of 31–40 years ,3(15%) belongs to 41 -50years and 2(10%) belongs to age group 50 years & above. As regards to gender most of the samples 14(70%) were Male and female were 6(30%). In relation to Educational Status most of the samples 6(30%) were having Higher secondary school educational status, 3(15%) sample were No formal Education, secondary education and primary education accordingly. As regards to Employment status Majority of samples 14(70%) were Employed 6(30%) Were unemployed. In samples 17(85%) were Married and 3(15%) were unmarried From Urban area 12(60%) and from Rural area 8 (40 %) sample were present in the study.

According to level of pain maximum sample i.e. 13 (65%) were having severe pain and 7 (35%) sample were having moderate pain while intravenous cannulation.

According to level of pain present study state that mean score was 7.15 (1.461) that indicate maximum sample of study is having severe pain while performing intravenous cannulation

According to association between pain score and demographic variables in control group, There was no significant association between pain score and demographic variables in control group at the level of $p<0.05$.

Rüsch, D., Koch, T., Spies, M., &HjEberhart, L. (2017) conducted study on Pain During Venous Cannulation which reveals that their is confirm a suspicion that has frequently been expressed but never consistently supported in studies up to this point thanks to this unambiguous result about the importance of the size of the venous cannula that was employed. When utilizing venous cannulas starting at size 18G, it is recommended to pre-treat the venipuncture site on the dorsum of the hand with local anesthesia[(6).] Without such preparation, 50% of our patients reported experiencing 5 NRS points or more of subjective stress or discomfort as a result of a 17G venous cannula, and 10% reported experiencing 7 points or more. Langham et al. revealed even greater results: 5.7 NRS points for 18G cannulas positioned on the hand's dorsum [(21).] Additional research revealed lesser results (NRS 2.8-4.5),but either the puncture site [(1, 11, 22)] or the findings were not categorized according to cannula size [(9, 22).]

Given the high degrees of pain and impairment/discomfort, intradermal lidocaine injection or vapocoolant spray can statistically significantly and clinically relevantly improve

patients' scores. Furthermore, it is evident that using cannula sizes greater than 17G will enhance patients' stress and, hence, the intervention's likely benefit.

Smaller cannulas (20G and smaller) face a very different set of challenges: Since the statistically significant effect of cryoanesthesia is only 0.75 points on the NRS and so just misses the measurement's ability to discriminate, it appears clinically irrelevant [17-19]. This outcome is in line with a meta-analysis of studies on the advantages of using cryoanesthesia before venipuncture [3]In all investigations, children's pain was decreased during venipuncture when using smaller cannula diameters (22G and smaller) (10/100 points), however this effect did not achieve statistical significance. Adults were also treated entirely with 20G venous cannulas, with the exception of one trial [9]. The meta-analysis discovered a pooled reduction in pain at the 10/100 level when compared to one venipuncture without pre-treatment; due to a higher total number of cases than in the previous comparison, this attained statistical significance [3]The pain decrease of 12/100 points was no longer significant when compared to actual placebo treatment. The pooling of studies in which various sized venous cannulae were used for venipuncture in various body regions is a drawback of this meta-analysis. Additionally, a variety of vapocoolant sprays were employed. On the surface, it could appear unimportant what materials were utilised to create the evaporation cool. The venipuncture site must be accurately struck by utilising a quick puff of the spray, though. As they were primarily designed for use on bigger parts of the body, including joints, different preparations vary greatly in this regard**.**

Prior to inserting a 17G (or larger) venous cannula, it is not possible to determine which procedure produces superior outcomes just on the basis of patient reviews. Vapocoolant outperforms lidocaine injection in the direct comparison (P=0.0047), but the difference of 0.9 NRS points barely meets the standard for clinical relevance. As a result, the outcomes are comparable to those of a subsequent investigation into radial artery cannulation [20] The rate of unsuccessful venipuncture attempts considerably and more than doubled after intradermal or subcutaneous injection of lidocaine, most likely as a result of the worse vein differential. Overall, the results are in favour of cryoanesthesia, particularly given that it is simple to use and, when used properly, has not been shown to have any long-term negative consequences.

Conclusions:

Present study concludes thatmaximum patients were suffering with pain during intravenous cannulation procedure. So they require noninvasive pain management method to reduce pain.

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