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A study to assess the effectiveness of cough trick method in reducing pain among (6-12yrs) old children undergoing intravenous cannulation

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Abstract
Aim: To assess the effectiveness of cough trick method in reducing pain among children (6-12yrs) undergoing intravenous cannulation admitted in Pediatric ward of G.G.S. Medical Hospital, Faridkot
Material and methods: Study design used is Quasi-experimental post test control design. Study setting includes pediatric ward of G.G.S. Medical Hospital, Faridkot. Study population is 60 children from the age group of 6-12years. BAKER FACES pain scale was used to assess level of pain and Socio demographic data sheet to collect baseline information.
Results: Majority 26.7% of the children in the experimental group perceived moderate pain, 18.3% perceived mild pain and only 5.0% had severe pain during intravenous cannulation using cough trick method. 28.3% of the children in the Conventional care group had moderate pain, 11.7% perceived severe pain and only 10.0% had mild pain during intravenous cannulation using Conventional care or routine technique. There is significant decrease in pain score in cough trick method group as compared to Conventional care group with $p<0.05$.
Conclusions: There is significant difference in the severity of pain during intravenous cannulation using cough trick method**.** This reduction in the pain results in judicious application of this intervention as it is one of easiest non-pharamacological method in managing pain due to intravenous cannulation.

Keywords: pain, cough trick method, intravenous cannulation, Children

1. Introduction

Pediatric pain was been recently recognized as a main unresolved problem. Medical knowledge provides enough data to treat most of pediatric pain. Good practices for pain control are not easily to apply because of reluctance form caregivers sick children are subjected to many painful experiences.

In hospital settings, children experience pain because of different causes. Medical procedures, particularly needle insertions, are among the most feared experiences reported by children. These medical procedures also induce anxiety, fear, and behavioral distress in children and their families, further intensifying their pain and interfering with the procedure [1].

Intravenous cannulation is one of the most common invasive procedures carried out in hospital settings. Intravenous cannulation is mandatory for children requiring intravenous drugs /fluids to be administered or for emergency venous access. As, it is painful and stressful procedure, children anxiety and fear concerning needles may even prevent them for seeking health care. Insertion of cannula is often complicated in children who are afraid of needles or have bad experience; fear activates sympathetic nervous system thereby provoking peripheral vasoconstriction [2].

Besides, the repeated Intravenous cannulation attempts are painful as well as expensive for patient. Intravenous cannulation is a minor invasive procedure for pediatric practioners, however for children it is often accompanied by pain, fear and anxiety. Thus the reduction of such pain, fear and anxiety becomes the responsibility of health care professionals to an extent as possible while maintaining patient safety by using various pharmacological and non pharmacological interventions. Health care professionals in this setting have a responsibility to reduce pain and anxiety as much as possible while maintaining patient safety [3].

As pain can be managed by using both pharmacological and non-pharmacological method so cough trick method is one of the non-pharmacological methods that can be used to reduce pain intensity. The evidence for non-pharmacologic pain relief during intravenous cannulation has been varied. Evaluating alternative methods of non-pharmacologic children pain control supports the identification of practical and accessible techniques that doctors and nurses can incorporate into their practice [4].

Averages of 3-5 children each day are admitted for intravenous cannulation in pediatric ward of G.G.S Medical hospital which requires some pain relieving strategy to reduce pain. Although a number of studies have described promising non-pharmacologic acute pain control in children, we do not know whether the present technique works for every child and there is paucity of data in the literature for such a pain relieving technique which we have used in the study. Considering these aspects, we felt the need to conduct this study.

Materials and Methods

For the present study a quasi experimental post test control design considered to be appropriate for the present study to answer the research question of pain management in children i.e. to assess the effectiveness of cough trick method in reducing pain among children (6-12yrs) undergoing intravenous cannulation admitted in pediatric ward of G.G.S. Medical Hospital, Faridkot. A total sample of 60 children aged from 6-12 years undergoing intravenous cannulation were selected conveniently and randomly allocated using chit method into two groups – Group 1: Conventional care group (n=30) and Group 2: cough trick method group (n=30)

Inclusion criteria

1. Children undergoing intravenous cannulation admitted in pediatric ward of G.G.S. Medical Hospital, Faridkot.
2. Children in the age group of 6-12 years.
3. Children available at the time of sampling
4. Children who will cough moderately
5. Children whose parents are willing to participate and given written informed consent for the same.

Exclusion criteria

1. Children below the 6 year of age and above 12year.
2. Children who will not cough moderately and are critically ill.
3. Children with skin infections, scars, psoriasis, eczema at the site of intravenous cannulation.
4. Failed cannulation with first attempt.
5. Non-co-operative children.

Criterion measured

The criterion measures used in the study was level of pain measured by WONG BAKER FACE Pain Scale Score. Regarding pain measured by WONG BAKER FACES PAIN RATING SCALE, the procedure was seen by researcher and then the interpretation of the pain was done The pain response of the children (6-12yrs) undergoing intravenous cannulation was measured by rating scale 6 cartoon faces showing increasing degrees of distress (figure 1). Face 0 signifies "no hurt" and face 5 the "worst hurt you can imagine." The child chooses the face that best describes pain at the time of assessment [5].

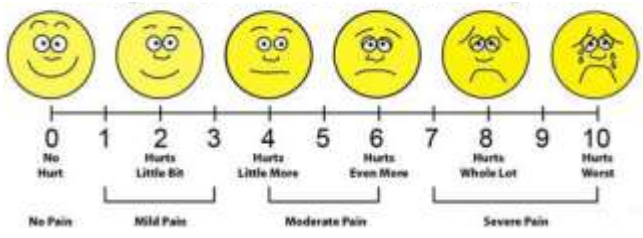

Fig 1

Interpretation of scores of Wong baker faces pain scale

Score 0 = no pain
Score 1 - 3= mild pain
Score 4-6 = moderate pain
Score 7-10 = severe pain

Description about intervention

As the study participants were children up to the age group of 6-12yrs who are sensitive to get the painful sensations as compared to adults. Cough trick method is used during intravenous cannulation in order to divert the painful stimuli so as to minimize the painful sensations due to intravenous cannulation by blocking out the nerve fibers. So, in cough trick method, the subjects were placed in supine position and the tourniquet on the non dominant arm was fastened. After the vein to be punctured was clearly visualized, the subject was asked to turn his head in the direction opposite the side of the intravenous cannulation, and then they were asked to perform a single cough of moderate intensity without moving their arms. Immediately after the subjects were asked to cough again, intravenous cannulation using 24gauze cannula was performed simultaneously with the second cough. It takes almost 2-3 minutes to be done with this technique from the initiation of intravenous cannulation till the procedure ends up.

Statistical Analysis

Analysis of data was done in accordance with the objectives. Statistical analysis was performed using SPSS version 20.0 software. Descriptive statistics was performed for sample characteristics calculating (percentage, mean and standard deviation). The inferential statistics calculating (independent t test, chi-square) was performed. *P* value at 0.05 was considered statistically significant.

Results

Table 1: The study subjects are distributed 15(50.0%) in the age group between 6-8 years, 8(26.7%) in the age group between 9-10 years and 7(23.3) in the age group between 11-12years respectively in Group I (cough trick method) and in Group II (Conventional care) 16(53.3%) in the age group 6-8 years,8(26.7%) in age group of 9-10 years and 6(20.0%) in age group of 11-12years. More than half 16(53.3) of study subjects in Group I (cough trick method) were male followed by female 14(46.7%). However in Group II (Conventional Care) 14(46.7%) were female and 16(53.3%) were male. Nearby half 13(43.3%) of study subjects were for medication, 9(30.0%) for blood transfusion and 8(26.7%) for blood sampling respectively in Group I (cough trick method) and half of 15(50.0%) of study subjects were for medication,8(26.7%) for blood transfusion and 7 (23.3%) for blood sampling were in Group II (Conventional Care).

Table 2: During intravenous cannulation along with conventional care, majority 17 (28.3%) of the study subjects perceive moderate level of pain, followed by 7 (11.7%) who have severe pain. Whereas only 6 (10.0%)) subjects were in the mild pain. With cough trick method, majority 16 (26.7%) of the study subjects perceived moderate pain, followed by 11(18.3%) who had mild pain and 3 (5.0%) subjects were in severe pain.

Table 3: reveals the mean of cough trick method group (cough trick method done during intravenous cannulation) measured by WONG BAKER Pain scale to be 4.23 with standard deviation 1.960 as compared to mean between level of pain measured by WONG BAKER Pain scale score of post-intervention assessment of Conventional Care group (routine procedure done during intravenous cannulation) of 5.50 with standard deviation 2.330 and it was found to be statistically significant at <0.05 level.

Discussion

The findings of present study revealed that the intravenous

cannulation along with cough trick method group and Conventional care leads to moderate level of pain expressed by WONG BAKER FACES pain scale scores among children. There was significant difference in the pain level of cough trick method group as compared to Conventional care group. Thus, cough trick method was found to be effective as compared to the Conventional care in relation to reduction of pain during intravenous cannulation.

The present study depicts that there is less perception of pain during intravenous cannulation among children who were using cough trick method as compared to who were receiving Conventional or routine care. This finding is supported by a study conducted Mutlu B (2000) [6] conducted an interventional study, a prospective randomized controlled study on, 9- to 12-year-old children in the intervention groups were asked to cough or inflate balloons during the venipuncture procedure. The Faces Pain Scale-Revised was used to assess pain intensity, Pain intensity significantly differed between the control (n = 44) and intervention groups (balloon inflation [n = 44] and cough trick [n = 44], $p < .001$).practice implications of this study was that Coughing and inflating balloons during venipuncture do not require preparation and are time saving, easy, accessible, and effective in reducing pain.

The comparison of level of pain in cough trick method group and conventional care group, shows that level of pain is less in cough trick method group as compared to conventional care group, as mean score of pain in cough trick group is 4.23 and 5.50 in conventional care group which was found significant. As supported by study of Usichenkoo T, I (2004) [7] conducted a randomized cross - over volunteer study in Germany to assess the effectiveness of cough trick in reducing pain during venipuncture. Twenty health volunteers were punctured twice in the same hand vein within an interval of 3 weeks, once with CT (cough trick) procedure and once without it .The intensity of pain on VP (vein puncture) was less than without it in 19 subjects. Pain intensity in group I, which received the VP without CT first,was less than at VT with CT (median VAS,44 versus 24 p=0.008).Pain intensity in group II, which received the VP with CT (median VAS,34 versus p=0.0014) .The intensity of both groups taken together at VP with CT was less than without CT procedure. Only one person reported pain intensity with CT procedure.

Findings of present study revealed that cough trick method is more effective in reducing pain during intravenous cannulation. These findings were supported by Wallace DP(2005) [8] did an interventional study, a randomized, controlled, study of 68 children receiving prekindergarten (ages 4-5) or pre-junior high school (ages 11-13) immunizations was performed. The strategy required a single "warm-up" cough of moderate force, followed by a second cough that coincided with needle puncture. The results of this study suggest that the cough trick can be an effective strategy for the reduction of pain for some children undergoing routine immunizations.

Conclusion

On the basis of the findings of the study, it is concluded that majority of the children perceived moderate level of pain and only few of the study subjects had severe pain during intravenous cannulation in cough trick method group. However, in Conventional care group, majority of the children perceived moderate pain and only 7 of the study subjects had severe pain during intravenous cannulation. There is significant reduction in the level of pain when children used cough trick method as compared to Conventional care or routine procedure. Cough trick method was effective as a non pharmacological method of reduction/management of pain during intravenous cannulation. Hence, strategies should be planned so as to implement it in the clinical setting which leads to painless intravenous cannulation. So there should be some more specific pain management strategies which effectively reduce intravenous cannulation pain in children.

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