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# Effectivness of a Leg Crossing and Muscle Tensing Technique on Decreasing Vasovagal Symptoms among Adolescents (10-19 Years of Age) Undergoing Venipuncture at Selected Hospital Belagavi

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## Abstract

Intravenous cannulation is a common procedure that can cause vasovagal symptoms among adolescents (10-19 yrs of age). Thus a study was conducted on 76 adolescents those who were admitted in pediatric wards of KLE's Dr. Prabhakar Kore charitable hospital, Belagavi. To evaluate the effectiveness of a leg crossing and muscle tensing technique on decreasing vasovagal symptoms among adolescents during venipuncture. The subjects were selected by using non probability convenient sampling technique. Data collection was done through observational check list, with an evaluative approach. The study revealed that, subjects in the experimental group accomplished decreased vasovagal symptoms as compared to control group it is statistically significant at P <0.05 level.

**Keywords:** Leg crossing (LC) • Muscle tensing technique (MTT) • Vasovagal symptoms (VS) • Venipuncture

## Introduction

Adolescence is said to be a most progressive stage of development [1]. It starts from puberty and terminates with change to adulthood (10-19 yrs) [2]. Venipuncture is a procedure used since decades from neonates to adolescents [3]. Intravenous cannulation and blood withdrawal are the common procedures performed in hospitals for diagnostic and therapeutic purposes and necessary for blood sampling and to deliver medicines, nutrition. It's a vital element in the care of pediatric patients [4]. An experimental study carried on 28 patients during cannula insertion, concluded that subjects those who underwent (LC and MTT) experienced a fewer amount of (VS) than the control group. In pediatric patients venipuncture and blood withdrawal is a unique challenge. Often poor visualization and small veins make venipuncture difficult [5,6]. Venipuncture when performed without sedation and in good light. It minimizes the risk of complications. If the adequate care is provided, it lessens the chance of infection and thrombotic complications [3]. Thus IV cannula insertion may lead to some of the vasovagal symptoms such as dizziness, pallor, bradycardia, hypotension, nausea, abdominal discomfort, sweating, seeing black dots, and blurred vision [5]. Thus few symptoms such as bradycardia and excessive sweating may be life threatening among adolescents; therefore it has been found that the leg crossing and muscle tensing technique are helpful in decreasing vasovagal symptoms [7]. The care giver can reduce the vasovagal symptoms of adolescents by implementation of leg crossing and muscle tensing technique by making hospital environment suitable for them during venipuncture and blood withdrawal. In this study leg crossing means here the child is in a supine position head end is propped up throughout the venipuncture procedure asks the child to cross his/her legs at the ankles. Muscle tensing refers to ask the child to tense the muscles in his/her arms and torso for about 10-15 seconds and then relax the body for 20-30 seconds. This study aims to reduce the vasovagal symptoms. Hence this study is taken up by me to assess the effectiveness of a leg crossing and muscle tensing to decrease vasovagal symptoms in adolescents those who are undergoing venipuncture.

## Material and methods

The study involves evaluative approach and the design was post-test only non-equivalent group design. The subjects of this study were adolescents (10-19 years of age) admitted in paediatric wards of KLE's Dr, Prabhakar Kore charitable hospital, Belagavi, during the period of August 2019 – April 2020.76 samples were selected for the study by using non-probability convenient sampling technique, by using the formula

$$N = \frac{2Pq\,(z\alpha+z\beta)2}{d2}$$

Where,

$P = \frac{P1+P2}{2}$, q=100-P

P1 = 72%, P2=32%

d = P1-P2=40%

$z\alpha$ =1.96 at 5% $\alpha$ error

$z\beta$ = 1.642 at 5% $\beta$ error

Then divided into 2 groups 38 in each. Study group consisting of 38 subjects were instructed to perform the leg crossing and muscle tensing technique during venipuncture. The control group consisting of 38 subjects, no intervention was given during the procedure data collection was done by using observational checklist. It consist 10 responses of vasovagal symptoms

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during venipuncture and blood withdrawal among adolescents in study and control group.

## Results

Describes that Majority 16 (41.1%) were in the age group of 10-12years in study group, while majority 13 (34.2%) were there in 13-15 years in control group. Majority 20 (52.6%) of the subjects were female and 18 (47.4%) were male in the study group; whereas, majority 26 (68.4%) of subjects were female and 12 (31.6%) were male in control group. Majority 15 (39.5%) subjects were of primary educational status and illiterate were 12 (31.6%) in study group, whereas majority 18 (47.4%) were illiterate and 7 (18.4%) possess primary educational status in control group. Majority respondents by fore arm site of veinpuncture were 22 (57.9%) in study group. Whereas, 21 (55.3%) were respondents of hand veins in control group. Majority 18 (47.4%) type of vein access among subjects was for blood withdrawal in study group, whereas in control group majority 20 (52.6%) type of vein access within subjects was

**Table 1.** Socio demographic variables, Where, N=Number of samples in each group, %=Percentage of samples in each group N=76.

| Socio Demographic Variables | Respondents | | | |
|---|---|---|---|---|
| | Control | | Experimental | |
| | N | % | N | % |
| **Age Group (years)** | | | | |
| 10-Dec | 13 | 34.2 | 16 | 41.1 |
| 13-15 | 13 | 34.2 | 6 | 15.8 |
| 16-17 | 10 | 26.3 | 8 | 21.1 |
| 18-19 | 2 | 5.3 | 8 | 21.1 |
| **Gender** | | | | |
| Male | 12 | 31.6 | 18 | 47.4 |
| Female | 26 | 68.4 | 20 | 52.6 |
| **Educational status** | | | | |
| Primary | 7 | 18.4 | 15 | 39.5 |
| Secondary | 13 | 34.2 | 11 | 28.9 |
| Illiterate | 18 | 47.4 | 12 | 31.6 |
| **Site of vein puncture** | | | | |
| Hand veins | 21 | 55.3 | 16 | 42.1 |
| Fore arms | 17 | 44.7 | 22 | 57.9 |
| **Type of vein access** | | | | |
| Intravenous cannulation | 20 | 52.6 | 20 | 52.6 |
| Blood withdrawal | 18 | 47.4 | 18 | 47.4 |
| **Previous exposure to vein puncture** | | | | |
| Yes | 11 | 28.9 | 9 | 23.7 |
| No | 27 | 71.1 | 29 | 76.3 |

**Table 2.** Aspect wise response on vasovagal symptoms among study groups, *Significant at 5% level, $\chi^2$ (0.05,1df)=3.841.

| S. No. | Vasovagal symptoms | Response | Check list scores (%) | | | | 'χ2' Test |
|---|---|---|---|---|---|---|---|
| | | | Control (n=38) | | Experimental (n=38) | | |
| | | | N | % | n | % | |
| 1 | Dizziness | Present | 17 | 44.7 | 8 | 21.1 | 4.83* |
| | | Absent | 21 | 55.3 | 30 | 78.9 | |
| 2 | Pallor | Present | 28 | 73.7 | 15 | 39.5 | 3.97* |
| | | Absent | 10 | 26.3 | 23 | 60.5 | |
| 3 | Bradycardia | Present | 22 | 57.9 | 13 | 34.2 | 4.29* |
| | | Absent | 16 | 42.1 | 25 | 65.8 | |
| 4 | Hypotension | Present | 23 | 60.5 | 14 | 36.8 | 4.27* |
| | | Absent | 15 | 39.5 | 24 | 63.2 | |
| 5 | Nausea | Present | 26 | 68.4 | 15 | 39.5 | 6.41* |
| | | Absent | 12 | 31.6 | 23 | 60.5 | |
| 6 | Abdominal discomforts | Present | 28 | 73.7 | 14 | 36.8 | 10.43* |
| | | Absent | 10 | 26.3 | 24 | 63.2 | |
| 7 | Sweating | Present | 30 | 78.9 | 20 | 52.6 | 5.85* |
| | | Absent | 8 | 21.1 | 18 | 47.4 | |
| 8 | Sighing | Present | 23 | 60.5 | 14 | 36.8 | 4.27* |
| | | Absent | 15 | 39.5 | 24 | 63.2 | |
| 9 | Seeing back dots | Present | 18 | 47.4 | 9 | 23.7 | 4.65* |
| | | Absent | 20 | 52.6 | 29 | 76.3 | |
| 10 | Blurred vision | Present | 29 | 76.3 | 20 | 52.6 | 4.65* |
| | | Absent | 9 | 23.7 | 18 | 47.4 | |

**Table 3.** Association of vasovagal symptoms among study groups, *Significant at 5% level, N=74.

| Group | Sample (n) | Aspects | Max. Score | Check List Scores | | | | 't' value |
|---|---|---|---|---|---|---|---|---|
| | | | | Mean | SD | Mean (%) | SD (%) | |
| Control | 38 | 10 | 10 | 6.42 | 0.68 | 64.2 | 6.8 | 18.81** |
| Experimental | 38 | 10 | 10 | 3.74 | 0.55 | 37.4 | 5.5 | |

intravenous cannulation. Majority 29 (76.3%) subjects had no any previous exposure to vein puncture and 9 (23.7%) subjects had previous exposure to vein puncture in study group, whereas in control group majority 27 (71.1%) subjects had no previous exposure to vein puncture and 11 (28.9%)subjects had exposure to vein puncture (Table 1).

Illustrates comparison of vasovagal symptoms response among control and experimental group. It was obvious that adolescents in experimental group exhibited less frequent vasovagal symptoms during vein puncture than control group. The response of experimental group was significant at 5% level (dizziness=21.1%, pallor=39.5%, bradycardia=34.2%, hypotension=36.8%, nausea=39.55%, abdominal discomfort=36.8%, sighing=14%, seeing black dots=23.7%). Whereas, the response was high (sweating and blurred vision=52.6%). Meanwhile in control group response for the presence of vasovagal symptoms was high (Table 2).

States that there is statistically difference found in the study group the mean response on vasovagal symptoms is at 3.74% and the SD is 0.55%. Whereas in control group the mean response on vasovagal symptoms is 6.42% and SD was 0.68%. So the score reveals that the research is significant with study group at (P< 0.05) than compared to control group (Table 3).

# Discussion

## Description of socio demographic data and results

In the present study it was found that out of 76 adolescents Majority 16 (41.1%) were in the age group of 10-12 years. whereas, majority 26 (68.4%) subjects were female and majority 18 (47.4%) of subjects were illiterate. Majority respondents by fore arm site of veinpuncture were 22 (57.9%). majority 20 (52.6%) type of vein access within subjects was by intravenous cannulation. Majority 29 (76.3%) subjects had no any previous exposure to vein puncture. Present study results were, in the experimental group the mean response on vasovagal symptoms is at 3.74% and the SD is 0.55%. Whereas in control group the mean response on vasovagal symptoms is 6.42% and SD was 0.68%. So the score reveals that the study is significant with (LC and MTT) at (P< 0.05) than compared to control group.

A study conducted on Leg crossing and hand gripping interventions to reduce vasovagal symptoms during venipuncture in pediatric patients by Dr. AmalAbdelrazikFathalla, and Dr. Azza A. Ghoneim, showed that. Majority 53 (28%) of the subjects were in the age group of 12-16years. Majority 59 (20%) of the subjects were female in study group. Most of the 50 (36%) respondents in experimental group responded to hand veins and fore-arm. In case of type of vein access for blood withdrawal and peripheral intravenous cannulation majority 50 (76%) were from experimental group. The results were in the experimental group the mean response on occurrence of vasovagal symptoms was 1.56%. Whereas in control group mean response seen was 6.21%, therefore there were statistical differences seen in both the groups at (P=0.001).

# Conclusion

After analysis the following conclusion were drawn. There was a significant reduction in the vasovagal symptoms among adolescents undergoing venipuncture after the implementation of leg crossing and muscle tensing technique. This study proved that the technique is effective in decreasing vasovagal symptoms in adolescents. Therefore this technique should be considered as an institutional routine procedure for adolescents undergoing venipuncture to decrease vasovagal symptoms.

# References


1. World Health Organization. "Programme reporting standards for sexual, reproductive, maternal, newborn, child and adolescent health." No. WHO/MCA/17.11. World Health Organization (2017).
2. Travers, J.F. and Dacey J.S. "Human development: Across the lifespan." McGraw-Hill (2006).
3. Paul, Krediet C.T., Ivar G.J.M. De Bruin, Karin S. Ganzeboom and Mark Linzer, et al. "Leg crossing, muscle tensing, squatting, and the crash position are effective against vasovagal reactions solely through increases in cardiac output." *J Appl Physiol* 99 (2005):1697-1703.
4. Humphrey, G. Bennett, Chris M.J Boon, Chiquit Van Linden Van Den Heuvell G.F.E. and Harry B.M. Van De Wiel. "The occurrence of high levels of acute behavioral distress in children and adolescents undergoing routine venipunctures." *Pediatrics* 90 (1992): 87-91.
5. McIntyre-Patton, Laura, Shannon Wanderski, Deb Graef and Laura Woessner, et al. "Randomized trial evaluating the effectiveness of a leg crossing and muscle tensing technique on decreasing vasovagal symptoms among pediatric and young adult patients undergoing peripheral IV catheter insertion." *J Pediatr Nurs* 38 (2018): 53-56.
6. Brignole, Michele, Francesco Croci, Carlo Menozzi and Alberto Solano. "Isometric arm counter-pressure maneuvers to abort impending vasovagal syncope." *J Am Coll Cardiol* 40 (2002): 2053-2059.
7. Mokhtar Abdallah, Haitham, Nermine M. Elcokany, Hany Eid and Nadia Taha Mohamed. "Responses of unconscious patients to painful procedures in intensive care units." *J Nurs Health Sci* 7 (2018): 43-54.


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