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A Study to Assess the Effectiveness of 25% Sucrose Orally on Painful Procedure among Neonates in NICU at Mehta Children's Hospital, Chennai, India

V. Hemavathy

Principal, Sree Balaji College of Nursing, Bharath University, Chennai, India

V. J. Bini Paul

Associate Professor, Sree Balaji College of Nursing, Bharath University, Chennai, India

Brindha P.

2nd Year M. Sc. Nursing, Sree Balaji College of Nursing, Bharath University, Chennai, India

Abstract:

Many neonates admitted to hospital undergo repeated invasive procedures. Oral sucrose is frequently given to relieve procedural pain in neonates on the basis of its effect on behavioural and physiological pain scores. The purpose of the study is to assess the level of pain among neonates before and after administration of 25% sucrose, to assess the effectiveness of 25% sucrose orally among neonates in NICU and to assess the association between the level of pain among neonates and selected demographic variable such as age, sex, weight, gestation, ordinal position of the neonates and type of invasive procedure. The study method was Evaluate research approach and a pre experimental (one group pre-test post-test design) was used. Non randomized purposive sampling technique was used to select the sample for the study. The total sample consists of 60 neonates admitted in NICU. Pain was assessed during invasive procedure before administration of 25% sucrose and 0.02- 2ml sucrose was given 2mins prior to next painful procedure. The pain was assessed during procedure at 30second and at 1minute by neonatal infant pain scale (NIPS) for neonates. The result of the study concluded that mean and standard deviation score for pain during procedure, 30 seconds and 1 minute in the pre-test was 6.5, 4.7, 2.5 and in the post test were 4.2, 1.9, 0.5. The calculated 't' value was 9.4***, 10.6***, 7.4*** is significant p value (<0.001). It reveals that there was significant difference existing between pre-test and post-test pain score. It is evident that the 25% sucrose is significantly effective in reducing of pain among neonates undergoing painful procedure.

1. Introduction

The newborn period is a time of critical events for both infants and parents. The physiologic transition to life outside the uterus subjects new babies to a risk of mortality greater than and they will encounter until they reach middle age (Waechter, 2003). Pain in neonates is defined as an "unpleasant sensory and emotional experience associated with actual or potential tissue damage" (WHO). The pain in neonatal life can be acute procedural pain or chronic persistent pain as in postoperative neonates. Identification and adequate intervention to minimize pain is legal right to human neonates therefore preventing or minimizing pain associated with NICU experience and its immediate and long-term consequences is of paramount importance to the development and quality of life in these vulnerable neonates.

2. Objectives

To assess the level of pain among neonates before administration of 25% sucrose. To assess the level of pain among neonates after administration of 25% sucrose. To assess the effectiveness of 25% sucrose orally among neonates in NICU. To assess the association between the level of pain among neonates and selected demographic variables.

3. Methodology

Evaluate research approach and a pre experimental (one group pre test post test design) was used. Non randomized purposive sampling technique was used to select the sample for the study. The total sample consists of 60 neonates admitted in NICU.

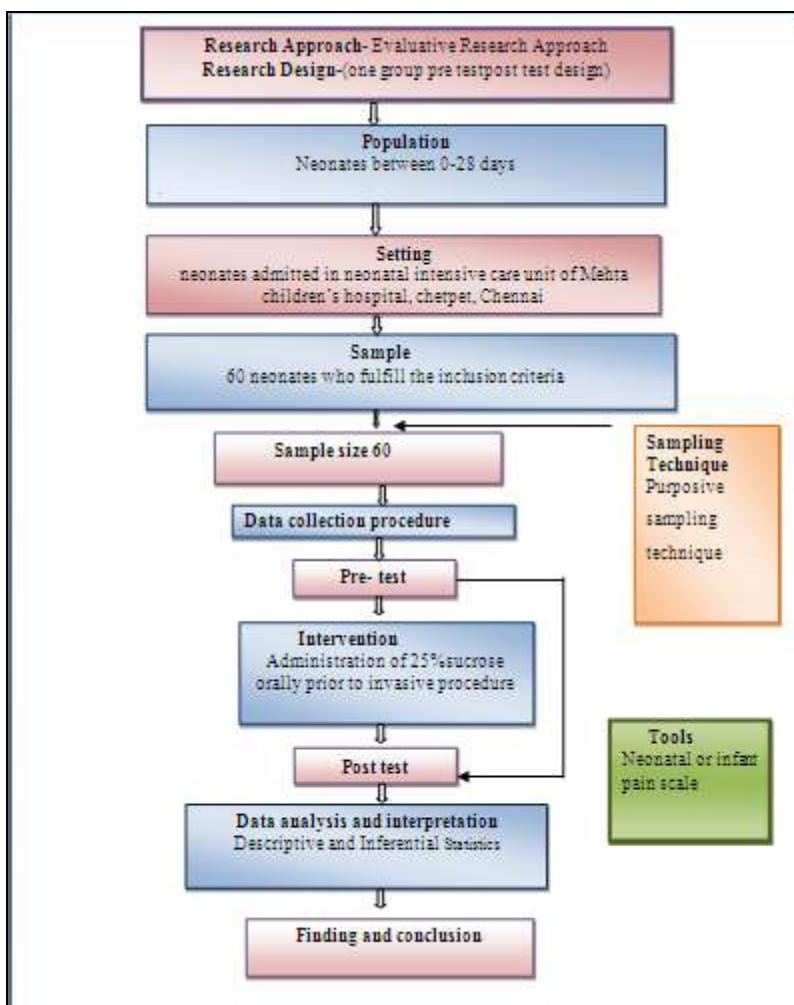


Figure 1

4. Result

The comparison of mean standard deviation of pre-test and post-test level of pain and paired ‘t’ value regarding the level of pain during invasive procedure the mean score for pain during procedure, 30 seconds and 1 minute in the pre-test was 6.5, 4.7, 2.5 and in the post test were 4.2,1.9, 0.5. the calculated ‘t’ value was 9.4***, 10.6***, 7.4*** is significant p(<0.001).

Pre Test Level of Pain						
Pain level	During procedure	%	30 seconds	%	1 minute	%
No pain (0)	0	-	1	2%	11	18%
Mild discomfort (<2)	0	-	2	3%	17	29%
Mild to moderate (2-4)	3	5%	24	40%	23	38%
Moderate to sever (4-7)	57	95%	33	55%	9	15%

Table 1

The pre-test during procedure majority of the s neonate 57 out of 60 experienced moderate to severe pain and 3 out of 60 experienced mild to moderate pain

At 30 seconds majority of the neonate 33 out of 60 experienced moderate to severe pain and 24 out of 60 experienced mild to moderate pain and 2 out of 60 experienced mild discomforts and 1 out of 60 experienced no pain.

At 1 minute majority of the neonate 23 out 60 experienced mild to moderate (2-4) and 17 out of 60 experienced mild discomfort (<2) and 11 out of 60 experienced no pain and 9 out of 60 experienced moderate to severe(4-7).

Post Test Level of Pain						
Pain level	During procedure	%	30 seconds	%	1 minute	%
No pain (0)	0	-	13	22%	45	75%
Mild discomfort (<2)	8	13%	23	38%	11	18%
Mild to moderate (2-4)	27	45%	21	35%	4	7%
Moderate to sever (4-7)	25	42%	3	5%	0	-

Table 2

The post-test during procedure majority of the sample 27 out of 60 experienced mild to moderate and 25 out of 60 experienced moderate to severe and 8 out of 60 experienced mild discomforts

At 30 seconds majority of the sample 23 out of 60 experienced mild discomfort and 21 out of 60 experienced mild to moderate pain and 13 out of 60 experienced no pain and 3 out of 60 experienced moderate to severe pain

At 1 minute majority of the neonate 45 out of 60 experienced no pain(0) and 11 out of 60 experienced mild discomfort (<2) and 4 out of 60 experienced mild to moderate pain (2-4) and no one experienced moderate to severe pain (4-7)

S.NO	Duration	Effectiveness of sucrose	Mean	S.D	't' value
1.	During Procedure	Pre test	6.5	1.1	9.4***
		Post test	4.2	1.6	
2.	30 seconds	Pre test	4.7	1.7	10.5***
		Post test	1.9	1.7	
3.	1 minute	Pre test	2.5	1.6	7.4***
		Post test	0.5	1.0	

Table 4: The mean and SD of pre-test and post level of pain among neonates by neonatal or infant pain sample

The mean score for pain during procedure, 30 seconds and 1 minute in the pre-test was 6.5, 4.7, 2.5 and in the post test were 4.2, 1.9, 0.5. The calculated 't' value was 9.4***, 10.6***, 7.4*** is significant p (<0.001). It reveals that there was significant difference existing between pre-test and post-test pain score. It is evident that the 25% sucrose is significantly effective in reducing of pain among neonates undergoing painful procedure.

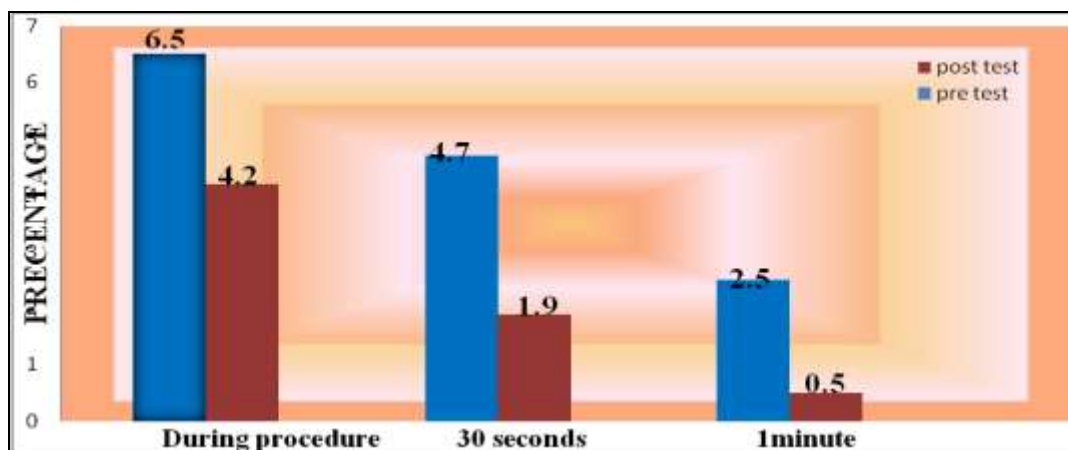


Figure 2: the mean pre-test and post-test level of pain among neonates

5. Conclusion

Based on the finding the study concluded that there is a significant reduction in pain among neonates who received 25% sucrose two minute prior to painful procedure. The post test score for pain was less after administration of 25% sucrose. Hence 25% sucrose was effective in reducing pain during painful procedures

6. Recommendations

The study recommends the following for further research.

- A similar study can be conducted by using large sample to generalize the findings.
- A comparative study can be performed to evaluate the effectiveness of sucrose among neonates and other age group children.
- A comparative study can be performed to evaluate the effectiveness of different strengths of sucrose.
- A similar study can be done with experimental and control group
- A comparative study can be conducted in NICU and in wards.
- A similar study can be conducted to evaluate the effectiveness of sucrose in term and preterm neonates.

7. References

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