



EFFECTIVENESS OF ICE COLLAR APPLICATION ON LEVEL OF PAIN AFTER RECOVERY FROM GENERAL ANAESTHESIA AMONG CHILDREN UNDERGONE TONSILLECTOMY

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ABSTRACT

Tonsillitis is one of the most common ENT problem among children, and it is more prevalence in under 12 years of children and it causes pain, discomfort and it interrupt the normal daily activity of living. Tonsillectomy is the most common surgery in the field of ENT for who suffer recurrent and frequent infections of tonsillitis or tonsil stones and when the condition does not respond to any form of tonsillitis treatment. Pain is the most common post tonsillectomy complaint. Considering the importance of nursing cares is relieving post- surgery pain in general and post- tonsillectomy pain in particular. The level of pain after recovery from general anaesthesia among children, the effectiveness of ice collar application on level of pain after recovery from general anaesthesia, the level of pain after recovery from general anaesthesia among children undergone tonsillectomy with their selected socio demographic variables and clinical variables were studied and found that there was a significant reduction on level of pain confirmed by student independent ‘t’ test ($t=5.81$ at $p=0.001$).

Key words: Level of pain, Ice collar application, Tonsillectomy.

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INTRODUCTION

Children are vital part to the nation’s present and its future. In recent years, an increased focus towards issues that affect children and on improving their health. Ear, Nose, Throat problems are more common in children than in adults, especially diseases such as acute suppurative otitis media, acute tonsillitis, acute epiglottitis, laryngotracheobronchitis and rhinitis etc. About 10-30% of people were treated with sore throat each year. A sore throat is when the child complains their throat hurts. The child’s throat may feel dry, itchy, scratchy or painful. Pharyngitis and tonsillitis are infections in the throat that cause it to be sore. If the tonsils are primarily involved, it is called tonsillitis and it is more common in childhood.[1]

Tonsillitis is defined as the inflammation of the tonsils, typically of rapid onset. Tonsillitis is most commonly caused by viral infections, with 5%-40% of cases caused by a bacterial infection. Tonsillitis is characterized by swelling within the tonsils, which

become red and inflamed and may even show a surface coating white spots.

The tonsils are lymphoid mass tissues located in the pharyngeal cavity. There are two pairs of tonsils namely pharyngeal tonsil (adenoids), tubal tonsil, palatine tonsil, lingual tonsil. The important function is to filter the micro organisms and protect the respiratory and alimentary tracts from invasion by pathogenic organism. They also have a role in antibody formation. Although the size of tonsils varies children generally have large tonsils than adolescents or adults. These differences thought to be productive mechanism at a time of upper respiratory tract infection. Some children seem to be more prone to developing tonsillitis as often as five or six times a year. In addition to antibiotic therapy home care management can help the child in relieving the discomfort due to symptoms. [2,3]

Tonsillectomy is the most common surgery in the field of ENT for who suffer recurrent and frequent



infections of tonsillitis or tonsil stones and when the condition does not respond to any form of tonsillitis treatment or if there is any kind of serious risk of complications developing. Pain is the most common post tonsillectomy complaint. Considering the importance of nursing cares is relieving post- surgery pain in general and post- tonsillectomy pain in particular.

Pain is an unpleasant experience of sensory and emotional associated with actual or potential tissue, or described in terms of such damage. The international association states that, “pain is subjective. Each individual learns the application of the word through experiences related to it in early life”. This definition explained that the individuality of each person’s pain response and the importance of pain experiences, especially those in early life, in shaping that response is differ. Thus, a child’s experience during painful medical and surgical procedures play a significant role in shaping that individuals pain response to future events [4].

The use of ice or cryotherapy in the management of pain is widely accepted in clinical practice. There are more physiologic function of ice have been proposed including peripheral cooling of superficial tissues, reduction of pain, reduction of the inflammatory response, reduction of edema formation, and decrease in secondary hypoxic cell death.

The present study is aimed to assess the level of pain after recovery from general anaesthesia among children undergone tonsillectomy, evaluate the effectiveness of ice collar application on level of pain after recovery from general anaesthesia among children undergone tonsillectomy and also associate the level of pain after recovery from general anaesthesia among children undergone tonsillectomy with their selected socio demographic variables and clinical variables.

METHODOLOGY

This study was conducted after the approval from the ethical committee, Madurai Medical College, Madurai – 20. The study was conducted among children undergone tonsillectomy in ENT ward at Government Rajaji Hospital, Madurai.

Sample Size

In this study the sample size consists of 60 tonsillectomy children (30- Intervention group and 30- control group)

Sampling Technique

In this study Probability sampling (simple random – lottery method) technique was used

Criteria for sample selection

Inclusion criteria

- Children with in the age group between 6-12 years

- Children who were undergone tonsillectomy and adenoidectomy
- Children who were taking oral analgesics for pain.
- Parents who were willing to participate in this study by their children.
- Children and their parents understands Tamil or English

Exclusion criteria

- Children who were poor tolerance to cold
- Children with mentally challenged.
- Children with sensory impairments

Description of Research Tool and Technique

Data Collection tools are the procedures or instruments used by the researcher to observe or measure key variables in the research problem. It consists of two sections.

Section – A : Socio demographic variables and clinical variables

Socio demographic variables consisted of Age, gender, Place of residence, Type of family, Monthly income of the family, Educational status of the mother, Educational status of the father, Occupation of the father, Occupation of the mother .

Clinical Variables consisted of Nutritional Status, Type of Tonsillitis, Classification of Tonsillitis, Duration of Illness, Occurrence of Tonsillitis.[5,6]

Section –B : Wong – Baker FACES pain rating scale

Wong – Baker FACES pain rating scale is a standardized scale developed by Wong DL (1999) . This FACES pain rating scale consists of six cartoon faces ranging from smiling face for ‘no pain ‘ to tearful face for ‘ worst pain’ .



Score Interpretation

Score	Interpretation
0	No pain
2	mild pain
4	moderate pain
6	severe pain
8	very severe pain
10	worst pain possible

Then investigator administered the Ice collar application to children undergone tonsillectomy four



times per day (7am,11am,3pm,7pm) for 3consecutive days to the intervention group along with hospital routine care and the hospital routine care only provided to the control group. On the fourth day,posttest level of pain was assessed by using Wong Baker FACES Pain rating scale.

The analysis and interpretation of the data was organized under the following sections

Section 1: Distribution of children undergone tonsillectomy according to their selected socio demographic variables and clinical variables

Section II: Distribution of pre test level of pain after recovery from general anesthesia among children undergone tonsillectomy in intervention group and control group

Section III: Description of effectiveness of ice collar application on level of pain after recovery from general anesthesia among children undergone tonsillectomy in intervention group.

Section IV: Association between the post test level of pain after recovery from general anesthesia among children undergone tonsillectomy in intervention group and control group with their selected socio demographic variables and clinical variables [7,8& 9].

RESULTS AND DISCUSSION

The table 1 depicts the frequency and percentage distribution of children undergone tonsillectomy with their selected socio demographic variables and clinical variables in intervention group and control group.

Table 1. Frequency and percentage distribution of children undergone tonsillectomy according to their selected socio demographic variables and clinical variables in intervention group and control group n=60

Demographic variables	Intervention Group (n = 30)		Control Group (n = 30)		χ^2
	f	%	f	%	
Age of the child					$\chi^2 = 1.78$ p = 0.41 (NS)
6-8 years	10	33.33%	8	26.67%	
8-10 years	9	30.00%	14	46.66%	
10-12 years	11	36.67%	8	26.67%	
Sex of the child					$\chi^2 = 2.44$ p = 0.11 (NS)
Male child	16	53.33%	10	33.33%	
Female child	14	46.67%	20	66.67%	
Residential area					$\chi^2 = 0.79$ p = 0.67 (NS)
Rural	17	56.67%	15	50.00%	
Urban	11	36.66%	11	36.67%	
Suburban	2	6.67%	4	13.33%	
Type of family					$\chi^2 = 0.74$ p = 0.68 (NS)
Nuclear family	18	60.00%	17	16.67%	
Joint family	10	33.33%	9	60.00%	
Extended family	2	6.67%	4	23.33%	
Monthly Income					$\chi^2 = 1.01$ p = 0.60 (NS)
<Rs 5000	6	20.00%	5	16.67%	
Rs 5001 to Rs 10,000	20	66.67%	18	60.00%	
Rs 10001 to Rs 15000	4	13.33%	7	23.33%	
>Rs 15000	0	0.00%	0	0.00%	
Educational status of the father					$\chi^2 = 1.84$ p = 0.76 (NS)
Non formal education	3	10.00%	2	6.67%	
Primary education	14	46.67%	10	33.33%	
High school education	8	26.66%	11	36.67%	
Higher secondary education	3	10.00%	5	16.66%	
Graduation	2	6.67%	2	6.67%	
Educational status of the mother					$\chi^2 = 72$ p = 0.56 (NS)
Non formal education	2	6.67 %	3	10.00%	
Primary education	10	33.33 %	11	36.67%	
High school education	15	50.00 %	12	40.00%	
Higher secondary education	3	10.00 %	4	13.33%	
graduation	0	0.00 %	0	0.00%	
Occupation of the father					$\chi^2 = 2.15$ p = 0.34 (NS)
Un employee	0	0.00%	0	0.00%	
Daily wages	19	63.33%	14	46.66%	



Business	4	26.67%	8	26.67%	
Private employee	7	26.67%	8	26.67%	
Government employee	0	0.00%	0	0.00%	
Occupation of the mother					
Home maker	15	50.00%	15	50.00%	$\chi^2=0.47$ $p=0.92$ (NS)
Dailywages	10	33.34%	10	33.33%	
Business	1	3.33%	2	6.67%	
Private employee	4	13.33%	3	10.00%	
Government employee	0	0.00%	0	0.00%	

Clinical variables	Intervention Group (n = 30)		Control Group (n = 30)		χ^2
	f	%	f	%	
Nutritional Status of the Child					
Normal nutrition	8	26.67%	8	2.067%	$\chi^2=0.61$ $p=0.73$ (NS)
I ⁰ Malnutrition	19	63.33%	17	56.67%	
II ⁰ Malnutrition	3	10.00%	5	16.67%	
III ⁰ Malnutrition	0	0.00%	0	0.00%	
Type of Tonsillitis					
Acute Tonsillitis	0	0.00%	0	0.00%	$\chi^2=0.08$ $p=0.95$ (NS)
Chronic Tonsillitis	30	100.00%	30	100.00%	
Classification of Tonsillitis					
Grade I (25% obstruction in airway)	0	0.00%	0	0.00%	$\chi^2=0.28$ $p=0.59$ (NS)
Grade II (25-50% obstruction in airway)	9	30.00%	8	26.67%	
Grade III (50-75% obstruction in airway)	20	66.67%	21	3.33%	
Grade IV (> 75% obstruction in airway)	1	3.33%	1	3.33%	
Duration of Illness					
Less than 1 year	20	66.67%	18	60.00%	$\chi^2=0.47$ $p=0.92$ (NS)
1 to 2 years	10	33.33%	12	40.00%	
2 to 3 years	0	0.00%	0	0.00%	
More than 3 year	0	0.00%	0	0.00%	
Occurrence of tonsillitis					
First episode	9	30.00%	6	20.00%	$\chi^2=1.77$ $p=0.44$ (NS)
Second episode with treated	16	53.33%	15	50.00%	
More than two episode with treated	5	16.67%	9	30.00%	
Occurred but untreated	0	0.00%	0	0.00%	

Table 2. Frequency and percentage distribution of pre test level of pain after recovery from general anaesthesia among children undergone tonsillectomy in intervention group and control group n = 60

Level of pain	Intervention Group		Control Group		χ^2
	f	%	f	%	
No pain (0)	0	0	0	0	$\chi^2=0.45$ $p=0.80$ (NS)
Mild Pain (2)	0	0	0	0	
Moderate pain (4)	0	0	0	0	
Severe pain (6)	4	13.33%	3	10.00%	
Very severe pain (8)	20	66.67%	19	63.33%	
Worst pain (10)	6	20.00%	8	26.67%	
Total	30	100.00%	30	100.00%	

Table 3. Comparison of pre test mean, standard deviation and mean score difference on level of pain of after recovery from general anaesthesia among children undergone tonsillectomy in intervention group and control group n = 60

Pain score	Intervention		Control		Mean difference	Student independent 't' test
	Mean score	SD	Mean score	SD		
Pretest	8.13	1.17	8.33	1.18	0.20	$t=0.65$ $P=0.61$ (NS)



Table 4. Frequency and percentage distribution of pretest and post test level of pain after recovery from general anaesthesia among children undergone tonsillectomy in intervention group n = 30

Level of pain	Intervention Group				Extended McNemar's test
	Pre Test		Post Test		
	f	%	f	%	
No pain (0)	0	0	11	36.67%	$\chi^2=32.14$ P=0.001 ***significant
Mild Pain (2)	0	0	16	53.33%	
Moderate pain (4)	0	0	3	10.00%	
Severe pain (6)	4	13.33%	0	0.00%	
Very severe pain (8)	20	66.67%	0	0.00%	
Worst pain (10)	6	20.00%	0	0.00%	
Total	30	100.00%	30	100.00%	

Table 5. Frequency and percentage distribution of pretest and post test level of pain after recovery from general anaesthesia among children undergone tonsillectomy in control group n = 30

Level of pain	Control Group				Extended McNemar's test
	Pre Test		Post Test		
	f	%	f	%	
No pain (0)	0	0	2	6.67%	$\chi^2=13.16$ P=0.01 **significant
Mild Pain (2)	0	0	10	33.33%	
Moderate pain (4)	0	0	18	60.00%	
Severe pain (6)	3	10.00%	0	0.00%	
Very severe pain (8)	19	63.33%	0	0.00%	
Worst pain (10)	8	26.67%	0	0.00%	
Total	30	100.00%	30	100.00%	

Table 6. Effectiveness of ice collar application on level of pain after recovery from general anaesthesia among children undergone tonsillectomy in intervention group and control group n = 60

Group		Max score	Mean score	% of pain score	Mean Difference of Pain reduction score with 95% Confidence interval	Percentage of Pain reduction score with 95% Confidence interval
Intervention	Pretest	10	8.13	81.3%	6.03 (5.41 – 6.64)	60.3% (54.1%–66.4%)
	Posttest	10	2.10	21.0%		
Control	Pretest	10	8.33	83.3%	3.93 (3.30 – 4.56)	39.30% (33.0% –45.60%)
	Posttest	10	4.40	44.0%		

Table 7. Comparison of pretest and post test mean, standard deviation and mean score difference on level of pain of after recovery from general anaesthesia among children undergone tonsillectomy in intervention group and control group n=60

Pain score	Pretest		Posttest		Mean difference	Student paired 't' test
	Mean score	SD	Mean score	SD		
Intervention Group	8.13	1.17	2.10	1.72	6.03	t=20.02 P=0.001***(S)
Control Group	8.33	1.18	4.40	1.30	3.93	t=11.81 P=0.001***(S)

Table 8. Frequency and Percentage distribution of post test level of pain after recovery from general anaesthesia among children undergone tonsillectomy in intervention group and control group n=60

Level of pain	Intervention Group		Control Group		χ^2
	Post Test		Post Test		
	f	%	f	%	
No pain (0)	11	36.67%	2	6.67%	$\chi^2=18.33$ P=0.001 ***(S)
Mild Pain (2)	16	53.33%	10	33.33%	
Moderate pain (4)	3	10.00%	18	60.00%	



Severe pain (6)	0	0.00%	0	0.00%
Very severe pain (8)	0	0.00%	0	0.00%
Worst pain (10)	0	0.00%	0	0.00%
Total	30	100.00%	30	100.00%

Table 9. Comparison of post test mean, standard deviation and mean score difference on level of pain after recovery from general anaesthesia among children undergone tonsillectomy in intervention group and control group n=60

Pain score	Intervention		Control		Mean difference	Student independent 't' test
	Mean score	SD	Mean score	SD		
Posttest	2.10	1.73	4.40	1.30	2.30	t=5.81 P=0.001*** (S)

Table 10. Association between the post test level of pain after recovery from anaesthesia among children undergone tonsillectomy with their selected socio demographic variables and clinical variables in intervention group n=30

Demographic variables	Posttest level of pain score						N	χ^2
	No pain		Mild		Moderate			
	n	%	n	%	n	%		
Age of the child								$\chi^2=11.78$ p=0.02 *(S)
6 to 7 years	7	70.00%	3	30.00%	0	10.00%	10	
8 to 10 years	2	22.22%	7	77.78%	0	0.00%	9	
11 to 12 years	2	18.18%	6	54.45%	3	27.27%	11	
Sex of the child								$\chi^2=0.54$ p=0.76 (NS)
Male child	6	37.50%	9	56.25%	1	6.25%	16	
Female child	5	35.71%	7	50.00%	2	14.29%	14	
Residential area								$\chi^2=2.18$ p=0.70 (NS)
Rural	6	35.29%	9	52.94%	2	11.76%	17	
Urban	5	45.45%	5	45.45%	1	9.09%	11	
Semi urban	0	0.00%	2	100.00%	0	0.00%	2	
Type of family								$\chi^2=3.03$ p=0.18 (NS)
Nuclear family	7	38.89%	8	44.44%	3	16.67%	18	
Joint family	3	30.00%	7	70.00%	0	0.00%	10	
Extended family	1	50.00%	1	50.00%	0	0.00%	2	
Monthly Income								$\chi^2=1.98$ p=0.73 (NS)
<Rs 5000	3	50.00%	3	50.00%	0	0.00%	6	
Rs 5001 to Rs 10000	7	35.00%	11	55.00%	2	10.00%	20	
Rs 10001 to Rs 15000	1	25.00%	2	50.00%	1	25.00%	4	
>Rs 15000	0	0.00%	0	0.00%	0	0.00%	0	
Educational status of the father								$\chi^2=4.78$ p=0.78 (NS)
Non - Formal education	1	33.33%	2	66.67%	0	0.00%	3	
Primary education	4	28.57%	8	57.14%	2	14.29%	14	
High school education	4	50.00%	3	37.50%	1	12.50%	8	
Higher secondary education	2	66.67%	1	33.33%	0	0.00%	3	
Graduate	0	0.00%	2	100.00%	0	0.00%	2	
Educational status of the mother								$\chi^2=2.06$ p=0.91 (NS)
Non - Formal education	1	50.00%	1	50.00%	0	0.00%	2	
Primary education	3	30.00%	5	50.00%	2	20.00%	10	
High school education	6	40.00%	8	53.33%	1	6.67%	15	
Higher secondary education	1	33.33%	2	66.67%	0	0.00%	3	
Graduate	0	0.00%	0	0.00%	0	0.00%	0	
Occupation of the father								$\chi^2=2.45$ p=0.65 (NS)
Un employee	0	0.00%	0	0.00%	0	0.00%	0	
Daily wages	7	36.84%	9	47.37%	3	15.79%	19	
Business	1	25.00%	3	75.00%	0	0.00%	4	
Private employee	3	42.86%	4	57.14%	0	0.00%	7	
Government Employee	0	0.00%	0	0.00%	0	0.00%	0	



Occupation of the mother								
Un employee	5	33.33%	9	60.00%	1	6.67%	15	$\chi^2=3.17$ p=0.78 (NS)
Daily wages	4	40.00%	4	40.00%	2	20.00%	10	
Business	0	0.00%	1	100.00%	0	0.00%	1	
Private employee	2	50.00%	2	50.00%	0	0.00%	4	
Government Employee	0	0.00%	0	0.00%	0	0.00%	0	

Clinical variables	Posttest level of pain score						N	χ^2
	No pain		Mild		Moderate			
	n	%	n	%	n	%		
Nutritional Status of the child								$\chi^2=14.49$ p=0.01 ** (S)
Normal nutrition	5	62.50%	3	37.50%	0	0.00%	8	
I ^o malnutrition	6	31.58%	12	63.16%	1	5.26%	19	
II ^o malnutrition	0	0.00%	1	33.33%	2	66.67%	3	
III ^o malnutrition	0	0.00%	0	0.00%	0	0.00%	0	
Types of tonsillitis								$\chi^2=0.00$ p=1.00 (NS)
Acute tonsillitis	0	0.00%	0	0.00%	0	0.00%	0	
Chronic tonsillitis	11	36.67%	16	53.33%	3	10.00%	30	
Classification of tonsillitis								$\chi^2=2.92$ p=0.57 (NS)
Grade I	0	0.00%	0	0.00%	0	0.00%	0	
Grade II	3	33.33%	6	66.67%	0	0.00%	9	
Grade III	8	40.00%	9	45.00%	3	15.00%	20	
Grade IV	0	0.00%	1	100.0%	0	0.00%	1	
Duration of illness								$\chi^2=0.08$ p=0.93 (NS)
Less than 1 year	7	35.00%	11	55.00%	2	10.00%	20	
1 to 2 years	4	40.00%	5	50.00%	1	10.00%	10	
2 to 3 years	0	0.00%	0	0.00%	0	0.00%	0	
More than 3 years	0	0.00%	0	0.00%	0	0.00%	0	
Occurrence of tonsillitis								$\chi^2=11.27$ P=0.02*(S)
First episode	5	55.56%	4	44.44%	0	0.00%	9	
Second episode with treated	6	37.50%	9	56.25%	1	6.25%	16	
More than two episode with treated	0	20.00%	3	60.00%	2	40.00%	5	
Occurred but untreated	0	0.00%	0	0.00%	0	0.00%	0	

*Significant at $P < 0.05$, **Highly Significant at $P < 0.01$, *** Very Highly Significant at $P < 0.001$, NS= Not Significant

With respect to age, in intervention group, majority of the subjects, 11 (36.67%) were in the age group between 11-12 years, 10 (33.33%) were in the age group between 6-7 years and 9 (30.00%) were in the age group between 8-10 years, whereas in control group, majority of the subjects, 14 (46.66%) were in the age group between 8-10 years, 8 (26.67%) were in the age group between 6-7 years and 8 (26.67%) were in the age group between 10-12 years [10,11].

When dealing with sex of the child, in intervention group, majority of the subjects, 16 (53.33%) were male children and 14 (46.67%) were female children, whereas in control group, majority of the subjects, 20 (66.67%) were female children and 10 (33.33%) were male children.

With regards of residential area, in intervention group, majority of the subjects, 17 (56.67%) were hailed from rural area, 11 (36.66%) were hailed from urban area and 2 (6.67%) were hailed from Suburban area, whereas in control group, majority of the subjects, 15 (50%) were hailed from rural area, 11 (36.67%) were hailed from

urban area and 4 (13.33%) were hailed from Suburban area.

While discussing the type of family, in intervention group, majority of the subjects, 18 (60%) were from nuclear family, 10 (33.33%) were from joint family and 2 (6.67%) were from extended family, whereas in control group, majority of the subjects, 17 (56.67%) were from nuclear family, 9 (30%) were from joint family and 4 (13.33%) were from extended family.

With regards to monthly income, in intervention group, majority of the subjects, 20 (66.67%) were earned between Rs 5000 - Rs 10,000, 6 (20%) were earned less than Rs 5000, 4 (13.33%) were earned between Rs 10,001 - Rs 15,000 and none of them earned more than Rs 15,000, whereas in control group majority of subjects, 18 (60%) were earned between Rs 5000 - Rs 10,000, 7 (23.33%) were earned between Rs 10,001 - Rs 15,000, 5 (16.67%) were earned less than Rs 5000 and none of them earned more than Rs 15,000.

While considering the educational status of the father, in intervention group, majority of the fathers, 14



(46.67%) were studied up to primary level of education, 8 (26.66%) were studied up to high school education, 3 (10%) were studied up to higher secondary education, 3 (10%) were non formal education and 2 (6.67%) were studied up to graduation, whereas in control group, majority of the fathers, 11 (36.67%) were studied up to high school education, 10 (33.33%) were studied up to primary level of education, 5 (16.66%) were studied up to higher secondary education, 2 (6.67%) were studied up to graduation and 2 (6.67%) were non formal education.

While considering the educational status of the mother, in intervention group, majority of the mothers, 15 (50%) were studied up to high school education, 10 (33.33%) were studied up to primary education, 3 (10%) were studied up to higher secondary education, 2 (6.67%) were non formal education and none of them studied up to graduation, whereas in control group, majority of the mothers, 12 (40%) were studied up to high school education, 11 (36.67%) were studied up primary level of education, 4 (13.33%) were studied up to higher secondary education, 3 (10%) were non formal education and none of them studied up to graduation.

While mentioning the occupation of the father, in intervention group, majority of the fathers, 19 (63.33%) were daily wages, 7 (23.34%) were private employee, 4 (13.33%) were business and none of them unemployed or Government employee, whereas in control group, majority of fathers, 14 (46.66%) were daily wages, 8 (26.67%) were business, 8 (26.67%) were private employee and none of them unemployed or Government employee.

While mentioning the occupation of the mother, in intervention group, majority of the mothers, 15 (50%) were home maker, 10 (33.34%) were daily wages, 4 (13.33%) were private employee, 1 (3.33%) was in Business and none of them Government employee, whereas in control group, majority of mothers, 15 (50%) were home maker, 10 (33.33%) were daily wages, 3 (10%) were private employee, 2 (6.67%) were business and none of them Government employee.

While considering the Nutritional status of the child, in intervention group, majority of the subjects, 19 (63.33%) were had I⁰ malnutrition, 8 (26.67%) were had normal nutrition, 3 (10%) were had II⁰ mal nutrition and none of them had III⁰ malnutrition, whereas in control group, majority of the subjects, 17 (56.67%) were had I⁰ malnutrition, 8 (26.67%) were had normal nutrition, 5 (16.67%) were had II⁰ mal nutrition and none of them had III⁰ malnutrition.

When discussing the type of tonsillitis, in intervention group, majority of the subjects, 30 (100%) were had chronic tonsillitis and none of them acute tonsillitis, whereas in control group, majority of the subjects, 30 (100%) were had chronic tonsillitis and none of them acute tonsillitis.

While stating classification of tonsillitis, in intervention group, majority of the subjects, 20 (66.67%) were had Grade III tonsillitis, 9 (30%) were had Grade II

tonsillitis, 1 (3.33%) was had Grade IV tonsillitis and none of them had Grade I tonsillitis, whereas in control group, majority of the subjects, 21 (70%) were had Grade III tonsillitis, 8 (26.67%) were had Grade II tonsillitis, 1 (20%) was had Grade IV tonsillitis and none of them had Grade I tonsillitis.

With respect of duration of illness, in intervention group, majority of the subjects, 20 (66.67%) were had less than 1 year, 10 (33.33%) were had 1 to 2 years, and none of them 2 to 3 years or more than 3 years, whereas in control group, majority of the subjects, 18 (60%) were had less than 1 year, 12 (40%) were had 1 to 2 years and none of them 2 to 3 years or more than 3 years.

When discussing the occurrence of tonsillitis, in intervention group, majority of the subjects, 16 (53.33%) were had second episode with treated, 9 (30%) were had first episode, 5 (16.67%) were had more than two episode with treated and none of them occurred but untreated, whereas in control group, majority of the subjects, 15 (50%) were had second episode with treated, 9 (30%) were had more than two episode with treated, 6 (20%) were had first episode and none of them occurred but untreated. [12].

The table 2 states the frequency and percentage distribution of pretest level of pain after recovery from anaesthesia among children undergone tonsillectomy in intervention group and control group.

In intervention group, majority of the subjects, 20 (66.67%) were had very severe pain, 6 (20%) were had worst pain, 4 (13.33%) were had severe pain and none of them had no pain or mild pain or moderate pain.

In control group, majority of the subjects, 19 (63.33%) were had very severe pain, 8 (26.67%) were had worst pain, 3 (10%) were had severe pain and none of them had no pain or mild pain or moderate pain. Chi square test revealed that ($\chi^2=0.45$), ($p=0.80$). There was no significant difference between pretest test level of pain in intervention group and control group. The table no 3 depicts the comparison of mean, standard deviation and mean score difference on pretest level of pain of after recovery from general anaesthesia among children undergone tonsillectomy in intervention group and control group.

In intervention group mean score was 8.13 with standard deviation 1.17, whereas in the control group mean score was 8.33 with standard deviation 1.18, mean difference was 0.20 and the calculated 't' value was 0.65 at 0.05 level. The student independent 't' test revealed that there was no significant difference between pretest test level of pain in intervention group and control group.

The table 4 states the frequency and percentage distribution of pretest and post test level of pain after recovery from anaesthesia among children undergone tonsillectomy in intervention group.

In intervention group, the pre test level of pain, majority of the subjects, 20 (66.67%) were had very severe pain, 6 (20%) were had worst pain, 4 (13.33%) were had severe pain, and none of them had no pain or



mild pain or moderate pain. In post test level of pain, majority of the subjects, 16 (53.33%) were had mild pain, 11 (36.67%) were had no pain, 3 (10%) were had moderate pain and none of them had severe pain or very severe pain or worst pain.

The Extended McNemar's test revealed that ($\chi^2=32.14$), ($p = 0.001$). There was a significant difference between pretest and post test level of pain in intervention group.

The table 5 states the frequency and percentage distribution of pretest and post test level of pain after recovery from anaesthesia among children undergone tonsillectomy in control group.

In control group, the pre test level of pain, majority of the subjects, 19 (63.33%) were had very severe pain, 8 (26.67%) were had worst pain, 3 (10.00%) were had severe pain, and none of them had no pain or mild pain or moderate pain.

In post test level of pain, majority of the subjects, 18 (60%) were had moderate pain, 10 (33.33%) were had mild pain, 2 (6.67%) were had no pain and none of them had severe pain or very severe pain or worst pain. The Extended McNemar's test revealed that ($\chi^2=13.16$), ($p = 0.01$). There was a significant difference between pretest and post test level of pain in control group.

The table 6 portrays the effectiveness of ice collar application on level of pain after recovery from general anaesthesia among children undergone tonsillectomy in intervention group and control group.

On an average pain after recovery from general anaesthesia among children in the intervention group was reduced by 60.3% than the control group children. On the other hand on an average, in control group was reduced by 39.3%

Difference between the intervention group and control group post test score was analyzed using proportion with 95% confidence interval and mean difference with 95% confidence interval. This difference showed that the effect of ice collar application on level of pain after recovery from general anaesthesia among children undergone tonsillectomy.[13].

The table 7 depicts the comparison of pretest and post test mean, standard deviation and mean score difference on level of pain of after recovery from general anaesthesia among children undergone tonsillectomy in control group.

In intervention group, the pretest mean score was 8.13 with standard deviation 1.17, whereas in the post test mean score was 2.10 with standard deviation 1.72, mean difference was 6.03, the student paired 't' test revealed that the calculated 't' value was 9.38 at $p = 0.001$ level

In control group, the pretest mean score was 8.33 with standard deviation 1.18, whereas in the post test mean score was 4.40 with standard deviation 1.30, mean difference was 3.93, the student paired 't' test revealed that the calculated 't' value was 11.81 at $p = 0.001$ level.

The table 8 states the frequency and percentage distribution of post test level of pain after recovery from anaesthesia among children undergone tonsillectomy in intervention group and control group.

In intervention group, the post test level of pain, majority 16 (53.33%) were had mild pain, 11 (36.67%) were had no pain, 3 (10%) were had moderate pain and none of them had severe pain or very severe pain or worst pain.

In control group, the post test level of pain, majority of the subjects, 18 (60%) were had moderate pain, 10 (33.33%) were had mild pain, 2 (6.67%) were had no pain and none of them had severe pain or very severe pain or worst pain.

Chi square test revealed that ($\chi^2=18.33$), ($p = 0.001$). There was a significant difference between post test level of pain in intervention group and control group.

The table 9 depicts the comparison of mean level of pain between post test among children undergone tonsillectomy in intervention group and control group.

In intervention group, post test mean score was 2.10 with standard deviation 1.73 and in control group, post test mean score was 4.40 with standard deviation 1.30 and the mean difference was 2.30, the student independent 't' test revealed that the calculated 't' value was 5.81 at $p = 0.001$ level. The student independent 't' test revealed that there is a statistically significant difference between the post test level of pain after recovery from general anaesthesia among children.

The table 10 depicts the association between post test level of pain after recovery from general anaesthesia in intervention group with their selected socio demographic variables and clinical variables.

In order to find out the association between the post test level of pain after recovery from general anaesthesia in intervention group with their selected socio demographic variables and clinical variables, Chi square analysis revealed that there was statistically significant association between the level of pain and the age group between 6-7 years ($\chi^2=11.78$), ($p=0.02$), normal nutrition status of the child ($\chi^2=14.49$), ($p=0.01$) and first episode of tonsillitis ($\chi^2=11.27$), ($p=0.02$).

CONCLUSION

The following conclusions were drawn from the study: Findings of this study revealed that ice collar application was to reduce the level of pain among children undergone tonsillectomy. So the ice collar application can be used for tonsillectomy children in order to alleviate the pain level and also promote the comfort of the children. There was an association between the level of pain after recovery from general anaesthesia among children undergone tonsillectomy with their selected socio demographic variables and clinical variables.[14,15].



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