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Effect of Honey or Lavender Use on Post-Tonsillectomy Pain Relieve Among Preschool Children

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Abstract: *Recently application of Complementary and Alternative Medicine (CAM) is increasing in children populations global over the past 15 years especially for pain and acute conditions. Tonsillectomy is one of the most common surgical procedures performed worldwide in childhood; one of its main complications is pain. The main reason for seeking lavender or honey is to avoiding chronic use of drugs with their related side effects. So the aim of the study was to determine the effect of using honey or lavender essential oil to reduce pain after tonsillectomy among preschool children. Quasi experimental research design was carried out. The research hypothesis was children who received honey or lavender essential oil use will have decreasing mean score of pain than the control group. The sample was contain of the convenient mothers (150) were divided into three groups equally, and referred to pediatric clinic in ENT department at Benha University Hospital. The following tools were used to collect the required data, tool I; structured interviewing questionnaire, which included mothers and their children's socio-demographic data, past history of children, and mothers' knowledge related to CAM, tool II; Visual Analog Scale for pain assessment in the three groups were evaluated through 3 days after surgery. The findings of the study demonstrated that there was a significant different between using honey or lavender essential oil use than control group to reduce post-tonsillectomy pain, with more improvement in Visual Analog Scale for pain assessment in honey group than lavender and control group. In relation to mothers' knowledge about CAM, there was a significant and direct correlation between using CAM for children with increased maternal age. The study concluded that honey or lavender essential oil use is more effective than control group to reduce pain after tonsillectomy among preschool children, and above partial of the mothers of those children have poor knowledge about CAM. The study recommended that further researches regarding honey or lavender essential oil use to reduce pain after tonsillectomy, it is also highly recommended to apply educational program for enhancing mothers' knowledge about the proper use of different kinds of CAM.*

Keywords: *Tonsillectomy, honey, lavender essential oil, pain, preschool children.*

I. Introduction

Tonsillectomy is the most common childhood surgeries. One of its main complications is pain, which can cause poor oral intake and dehydration post-surgery, leading to morbidity and delayed recovery. Because children may also experience postoperative nausea and vomiting, pain relievers delivered through non-oral routes are needed [1]. Generally the indications for tonsillectomy could be primarily related to chronic upper airway obstruction. As a result, post-tonsillectomy pain relief is expected to facilitate many children's beginning of oral feeding and reduce dehydration, bleeding as well as infection [2].

For the many children who undergo tonsillectomies each year, management of post-operative pain remains a challenge. Among the obstacles is finding the best post-operative medical strategy to control pain with minimal side effects, as well as working with parents and other caregivers to ensure that children receive adequate pain medications. Adequate pain control is critical to ensure that children remain hydrated and resume regular eating as soon as possible after surgery. Most of the studies regarding post tonsillectomy pain control are pharmacological studies [3].

Pain is a subjective experience that its presence or absence can't be proved [4]. According to pain international association, pain is defined as unpleasant sensory and emotionally experience that is due to actual or probable tissue damage [5]. Although, no pain can be actually monitored, nowadays they are considered as the fifth vital signs in clinical cares. Children cannot express pain verbally until achieving speaking ability completely and it is necessary to use concrete tools for measuring their pain [6]. Pain can be somatic or sensory and it is counted as the care principles in nursing [7].

Non-pharmacological strategies are also known as psychological interventions, non-drug approaches non-invasive pain relief measures, alternative methods, mind body therapies, or complementary and alternative medical therapies. These simple methods are often used in conjunction with analgesic administration to relieve the pain [8]. Relieving pain prevents adverse consequences and serious complications and it promises normal growth and development of the next generation [9].

The use of Complementary Alternative Medicine (CAM) in pediatric populations is considerably increased, especially for pain and acute conditions. The main reasons for seeking CAM were: the wish of avoiding chronic use of drugs with their related side effects, the desire of an integrated approach, the reported inefficacy of conventional medicine, and a more suitable children disposition to CAM than to pharmacological compound [10].

Types of CAM reported are varied by cultural and geographical groups [11, 12& 13]. Examples of dietary based CAM therapies used by Saudi patients are Zamzam water, honey, different types of herbal, black seed, water with the Quran recited over it. Dietary supplements come in many forms, including extracts, concentrates, tablets, capsules, gel caps, liquids, and powders. Acupuncture, Aromatherapy, Chiropractic, electromagnetic fields, homeopathic, massage, osteopathic, therapeutic touch and mind body interventions are examples of non-dietary CAM therapies [14].

In CAM; honey use is frequently recommended to relieve pain and heal wounds. Honey has been used since ancient times for the treatment of some respiratory diseases and for healing of skin wounds. Many studies have been done to explain the various properties found in honey that contribute to their antioxidant, anti-inflammatory, antibacterial, antiviral, antiulcerogenic, antihepatotoxic, antiallergic, and hypolipidemic properties [15]. Previous study for [16] has shown that honey healed chronic wounds and ulcers that had failed to heal under conventional treatment.

"Honey is the healing of all diseases and there is no disease in it. It reduces phlegm and refreshes the heart" regarding that honey is widely welcome with no conventional limitations concerned with drug acceptance in clinical trials, and finding no study of honey's effects on pain relief after tonsillectomy[16], the researchers compare the effect of honey and lavender essential oil on pain relief after tonsillectomy in the study.

(يَخْرُجُ مِن بُطُونِهَا شَرَابٌ مُّخْتَلِفٌ أَلْوَانُهُ فِيهِ شِفَاءٌ لِلنَّاسِ [69]) سورة النحل

(There comes forth from their bellies, a drink of varying colors, wherein is healing for men).

Since healing effects of honey have been mentioned in Quran and traditional medicine, it is used as a curative agent for many diseases. This natural food substance was used as a treatment of infectious injuries even 2000 years before the discovery of bacteria [17]. The recent studies have shown the restrictive effect of honey on 60 types of bacteria. Honey could decrease prostaglandin ADI3 E2, prostaglandin alpha 2, and thromboxane B2 in blood and hence contributes to pain relief. High concentration of glucose and hydrogen peroxide in honey have an important role in fighting microbes in an infectious wound [18].

Today, lavender is the most used essential oil in the world. Ancient texts tell us that lavender essential oil has been used for medicinal and religious purposes for over 2,500 years. Lavender essential oil exhibits bactericidal, analgesic, and antispasmodic properties. The main components of lavender oil are linalyl acetate and linalool [19]. Furthermore, by inhibiting chemical pathways, linalool is used as an antispasmodic [19, 20].

Lavender is used in traditional medicine for its analgesic and anti-inflammatory activities. These authors, from Iran, explain that in Iranian folk and traditional medicine, lavender is used as a carminative, diuretic, antiepileptic, antirheumatic, and pain reliever. They conducted a randomized, controlled, prospective research study to evaluate the effectiveness of aromatherapy with lavender essential oil on post-tonsillectomy pain in children [20].

Nurses play an important role in postoperative pain management for children, as they spend most of their time with the patient and are accountable for the administration of analgesics, assessment, monitoring and reporting the outcomes of the given treatments [21]. Nurses are among the important people who have the highest relationship with the children suffering from pain and they can prevent future problems through assessing and treating children's pain [22].

Even if nurses assess pain according to the children's verbal reports, they do not use this information to guide their administration of pain medication. Some nurses need explicit proof of pain, such as crying and grimacing, before they consider children to be in severe enough pain to warrant morphine [23]. Nurses' assessment and management practices of children's pain are influenced by their own personal schema of pain, which includes attitudes, beliefs, pre-conceived ideas, knowledge and past experiences. For instance, some nurses believe that pain is an expected outcome of surgery, hence, there is no need to alleviate the postoperative pain completely [24].

II. Significance Of The Study

Pain is the most significant obstacle to the rehabilitation of a child following tonsillectomy. Inadequate analgesia causes poor oral intake, which leads to lethargy, delayed recovery of strength and wellbeing. In the light of the problems associated with post-operative pain, most of the studies regarding post tonsillectomy pain control are pharmacological studies [3]. Although, no pain can be actually monitored, nowadays they are considered as the fifth vital signs in clinical cares. Children cannot express pain verbally until achieving

speaking ability completely. A challenging area of research involved understanding the effect of honey or lavender use and how it relates to pain. There were a little researches were performed in the last several decades have outlined various honey or lavender use on post tonsillectomy pain relive. Therefore the aim of the study was to determine effect of honey or lavender use on post tonsillectomy pain relive among preschool children.

Aim of Study

The aim of the study was to determine the effect of honey or lavender essential oil use on post tonsillectomy pain relive among preschool children.

Research Hypothesis

The study results were testing the following hypothesis:

Children who received honey or lavender essential oil use will have decreasing mean score of post tonsillectomy pain score than the control group.

III. Subjects And Methods

Research design:

Quasi experimental research design was carried out to conduct the study.

Sample

The study sample contain of the convenient mothers (150) and their preschool children with range of age (3-6) years having tonsillectomy.

Setting

The study was conducted in the Ear, Nose, and Throat department (ENT) at Benha University Hospital, Egypt.

Tools of Data Collection

The following tools were used to collect the required data:

1- Structured interviewing questionnaire sheet; were developed by the researchers after extensive review of related literature, which included 21 questions categorized under three main parts:

Part I: mothers and their children's socio-demographic data, involved 6 questions such as, age, sex, level of education and occupation.

Part II: past history of children, it composed of 9 questions concerned with data about the child such as previous immunization, previous admission to the hospital, previous surgical intervention, ect.

Part III: mothers' knowledge related to CAM, included 6 questions to assess mothers' knowledge about CAM such as definition, types, uses, side effect, ect.

2- Visual Analog Scale (VAS); to assess post tonsillectomy pain in three groups of preschool children through 3 days immediately after surgery.

Scoring System:

For pain score, score the chosen face 0, 2, 4, 6, 8, or 10, counting left to right, so "0" equals "No pain" and "10" equals "Very much pain.

For mothers' knowledge, each correct response took two scores, the unknown one took one score and the correct response took 2score with a total score of 12 represent 100%. Total knowledge score above (≥ 75%) considered good, score between (50% – less than 75%) considered average, meanwhile mothers' total score(less than 50%.) was considered poor.

Description of Intervention:

The main intervention in this study was honey and lavender essential oil use to manage post tonsillectomy pain. The children and their mothers were randomly assigned to three groups. Group (A) used honey alone and acetaminophen. They used 5cc honey (small spoon) every 1 hour from beginning of drinking liquids after surgery until midnight (12 pm) for 3 days. Group (B) children received lavender essential oil as topical application and acetaminophen, lavender oil was applied every 6 hours as necessary to relieve pain for 3 days. The children in the control group (C) received only acetaminophen (10–15 mg/kg/dose, PO) every 6 hours to relieve pain. The frequencies of daily use of acetaminophen and nocturnal awakening due to pain, and pain intensity (evaluated using Visual Analog Scale [VAS]) were recorded for each child for 3 days after surgery. Measure every 3 hours at first 24 hours, then taught the mothers how to measure VAS for children in the second & third days. After the first day the researchers contact with the mothers through the phone to determine the degree of pain for their children and they documented the measurements. Also documented VAS pain score in different time, with follow up form to educate mother how to apply this steps.

Data Collection Procedure:

An official permission was obtained from the director of the pediatric unit to conduct the study. After the mothers accepted to participate in the study, the researchers filled the structured interviewing questionnaire sheet from the mothers who have post tonsillectomy children, who fulfilling the study criteria. The time was spent to fill the sheet ranged between 30 to 45 minutes for each mother. During each session the children were assessed by the researchers in relation to tonsillectomy pain by using VAS every 3 hours at first day. And complete second & third days from mothers by contact them through phone. The data collection procedures were gathered through 3 days weekly for 4 months started from September to December 2015.

A pilot Study:

A pilot study was conducted on (10%) mothers and their children post tonsillectomy, who were satisfying the prescribed criteria to test the clarity and applicability of the tools.

Validity and Reliability:

Data collection tools were submitted to two experts to test the content validity. Modifications for the tools were done according to the experts' judgment on clarity of sentences, appropriateness of content and sequence of items. The experts were agreed on the intervention, but recommended minor language skills changes that would make the information clearer and more precise.

Ethical Consideration:

All children and their mothers were informed about the aim of the study, its benefits, in order to obtain their acceptance to participate. The researchers informed them that the participation in the study is voluntary; they have the right to withdraw from the study at any time, without giving any reason and their responses would be held confidentially. Privacy and confidentiality of all the data will be assured. Informed consent (written or verbal) will be obtained from those who welcome to participate in the study.

Statistical Analysis of Data

The collected data were categorized, tabulated, and analyzed using the SPSS computer program Version 21. Numerical data were expressed as mean and standard deviation. Qualitative data were expressed as frequency and percentage. Level of significance at F test and $p<0.05$, 0.01, 0.001 were used as the cut of value for statistical significance.

IV. Results

The results of the study were divided into two parts: the first part was referred to the results pertinent to the mothers of children sociodemographic characteristics. The second part was related to VAS score to post tonsillectomy pain relive among preschool children.

Table (1): showed that the age of children was ranged between (3 -5 years). Also it was revealed that more than half (52%, 54%) of mothers' age more than 30 years in honey and lavender groups respectively, while in the control group more than half (56%) of mothers' age less than 30 years. Regarding mothers' occupation the table demonstrated that more nearly two third of those mothers (70%, 60%, 66%) were worked respectively.

Table (1) Comparisons between children and their mothers' socio demographic characteristics in the honey, lavender and control groups.

Items	Honey		Lavender		Control		P value
	N	%	N	%	N	%	
Child Age :Mean ± SD	**0.447**		**4.72±1.32**		**5.12±1.11**		**4.93±0.98**
Arrange of child:							
First	12	24	8	16	11	22	
Second	8	18	13	26	8	16	0.206
Third	12	24	15	30	13	26	
Fourth	17	34	14	28	18	36	
Residence:							
Rural	16	32	14	28	16	32	
Urban	34	68	36	72	34	68	0.339
Mother's age:							
<30yrs.	24	48	23	46	28	56	
>30yrs.	26	52	27	54	22	44	0.483
Mean ± SD	**29.98±0.96**		**30.21±1.65**		**27.33±1.11**		0.76
Mother's Job:							
Work	35	70	30	60	33	66	0.554
Not work	15	30	20	40	26	34	

Figure (1): illustrated that the percentage between gender of the children were approximately equivalent in male: female in honey, lavender, and control groups.

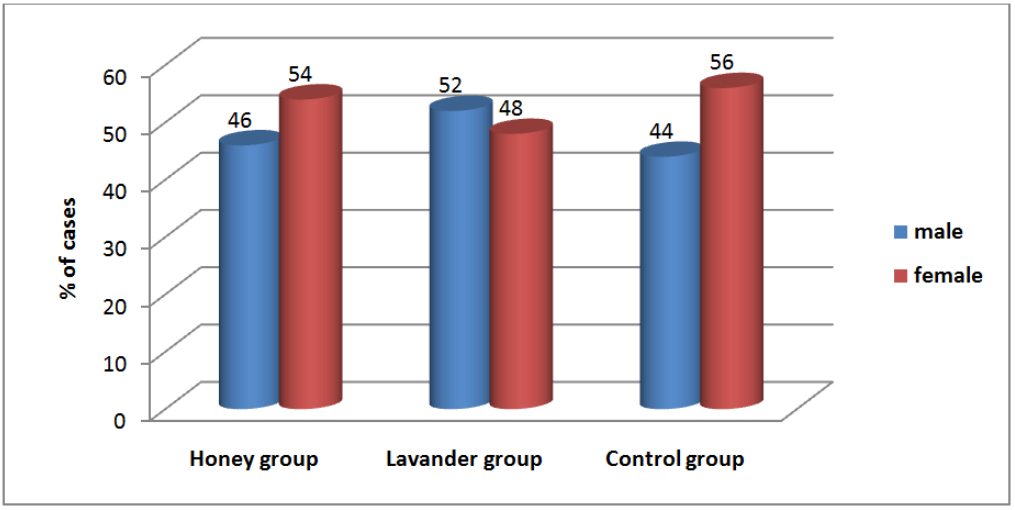

Fig (1): Frequency distribution of child' gender in honey, lavender and control groups.

Figure (2): Showed that educational level of the mothers about 32% of honey group were illiterate, and 16% of them were primary education, while 18% of lavender group were university education, with non-significance difference (P>0.05) between three groups.

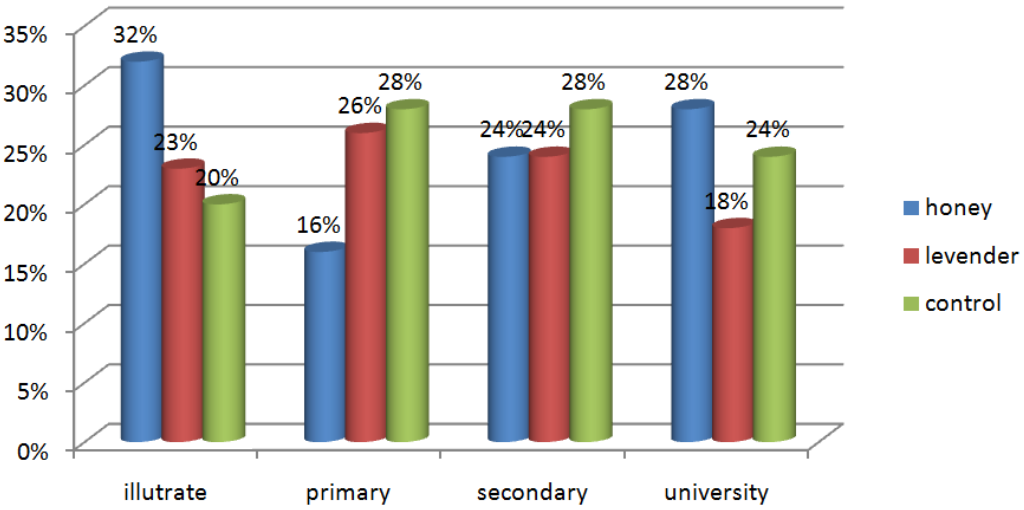

Fig (2): Frequency distribution of mothers according to their educational level in honey, lavender and control groups.

Table (2): demonstrated that all of the children (100%) administer regular immunization in honey, lavender and control groups. And most of them (92%, 90%, 94%) didn't admitted to the hospital before respectively, with non-significance difference (P>0.05) in the three groups. As regards to herbal uses; the table revealed that vast majority of children didn't use any herbal before. (62 %, 58 %, 66 %) respectively from the family members didn't administer any herbal previously.

Table (2): Frequency distribution of children according to their past history in honey, lavender and Control groups.

Item	Honey group "n=50"		Lavender group "n=50"		Control group "n=50"		p-value
	No.	%	No.	%	No.	%	
Regular vaccine							
Yes	50	100.0	50	100.0	50	100.0	--
No	--	--	--	--	--	--	
Previous admission hospital							
Yes	4	8.0	5	10.0	3	6.0	0.482
No	42	92.0	45	90.0	47	94.0	
Child had previous surgery							
Yes	2	4.0	--	--	3	6.0	
No	48	96.0	50	100.0	47	94.0	0.247
Child have previous injury							
Yes	3	6.0	2	4.0	1	2.0	
No	47	94.0	48	96.0	49	98.0	0.649
Child take regular medicine							
Yes	--	--	--	--	--	--	--
No	50	100.0	50	100.0	50	100	
Child has allergy							
Yes	--	--	--	--	--	--	--
No	50	100.0	50	100.0	50	100.0	
Child administer any herbal							
Yes	6	12.0	4	8.0	5	10.0	0.618
No	44	88.0	46	92.0	45	90.0	
Any one of family administer herbal							
Yes	19	38.0	21	42.0	17	34.0	0.553
No	31	62.0	29	58.0	33	66.0	

Table (3): showed that the majority (82%, 78%, 86%) & (74%, 80%, 76%) respectively of the mothers have knowledge of about definition and types of CAM. As regards mothers' uses of honey or lavender before; the table proved that approximately three quarters (76%, 70%, and 74%) respectively of the mothers didn't use honey or lavender previously. With non-significance difference (P>0.05) in the three groups. More than half of the mothers have average total level of knowledge.

Table (3): Comparison between mothers' knowledge about complementary and alternative medicine in honey, lavender and control groups.

Items	Honey group		Lavender group		Control group		F test	P value
	N	%	N	%	N	%		
Definition of CAM								
Yes	41	82.0	39	78.0	43	86.0	0.593	0.274
No	9	18.0	11	22.0	7	14.0		
Uses of CAM								
Yes	23	46.0	26	52.0	24	48.0	0.338	0.218
No	27	54.0	24	48.0	26	52.0		
Types of CAM								
Yes	37	74.0	40	80.0	38	76.0	0.662	0.217
No	13	26.0	10	20.0	12	24.0		
Side effects of CAM								
Yes	18	36.0	17	34.0	20	40.0	0.487	0.375
No	32	64.0	33	66.0	30	60.0		
Uses of honey or lavender before								
Yes	12	24.0	15	30.0	13	26.0	0.584	0.638
No	38	76.0	35	70.0	37	74.0		
Role of traditional medicine beside medical medicine								
- Basic role	12	24.0	10	20.0	13	26.0	0.437	0.594
- Assistant role	29	58.0	28	56.0	27	54.0		
- No role	9	18.0	12	24.0	10	20.0		
Total knowledge level								
• Good "≥75%"	12 (24.0%)		10 (20.0%)		13(26.0%)			
• Average "50-75"	27(54.0%)		25 (50.0%)		26(52.0%)			
• Poor "≤50"	11(22.0%)		15(30.0%)		11(22.0%)			
Mean +SD	**8.23 ± 2.15**		**6.89 ± 1.89**		**7.86 ± 2.01**		**0.336**	**0.427**

It was clear from table (4) that non-significant correlation in the three group between total knowledge and socio demographics characteristics of the mothers (P>0.05). While there is correlation between age and educational level in each group. Also there was positive correlation between mothers' age and educational level with total mother's knowledge.

Table (4): Correlation between total mothers' knowledge and mothers' socio demographic characteristics in honey, lavender and control groups.

Items	Total Knowledge			F-test	P
	Honey group	Lavender group	Control group		
Mother's age:					
<30 yrs.	5.34 ± 1.21	6.48. ± 0.98	6.27 ± 1.06	0.683	0.382
>30yrs.	9.34 ± 2.76	8.96 ± 1.93	8.66 ± 2.03		
p- value	P<0.02*	P<0.03*	P<0.02*		
Educational Levels:					
Low education	8.94 ± 2.65	9.03 ± 1.78	8.45 ± 2.01	0.529	0.527
High education	5.38 ± 1.76	6.42 ± 2.32	6.02 ± 1.89		
p- value	P<0.04*	P<0.01*	P<0.03*		

Table (5): Showed visual pain score in honey, lavender and control groups. Mean score of pain in honey or lavender in the first, second and third days less than control group and highly significance difference. P = < 0.001.

Table (5): Correlation between the total mean score of post tonsillectomy pain among children in honey, lavender and control groups.

Item	Honey group "n=50"	Lavender group "n=50"	Control group "n=50"	p-value
***First day:**				
Immediately after surgery	2.60±1.82	2.71±1.72	2.61±1.71	P=0.497
3hrs. after surgery	2.42±1.41	2.52±1.50	2.11±1.53	P=0.753
6hrs. after surgery	1.70±0.70##	2.01±1.5#	2.81±1.93	P<0.04*
12hrs. after surgery	1.43±0.32##	1.72±0.82#	2.11±1.41	P<0.001**
***Second day**	1.11±0.41##	1.40±0.52##	1.91±0.93	P<0.02*
***Third day**	0.98±0.46#	1.08±0.46#	1.48±0.46	P<0.04*
	0.42±0.03##	0.74±0.12	0.78±0.23	P<0.03*

*: significance between three groups
#: significance between each group & control.

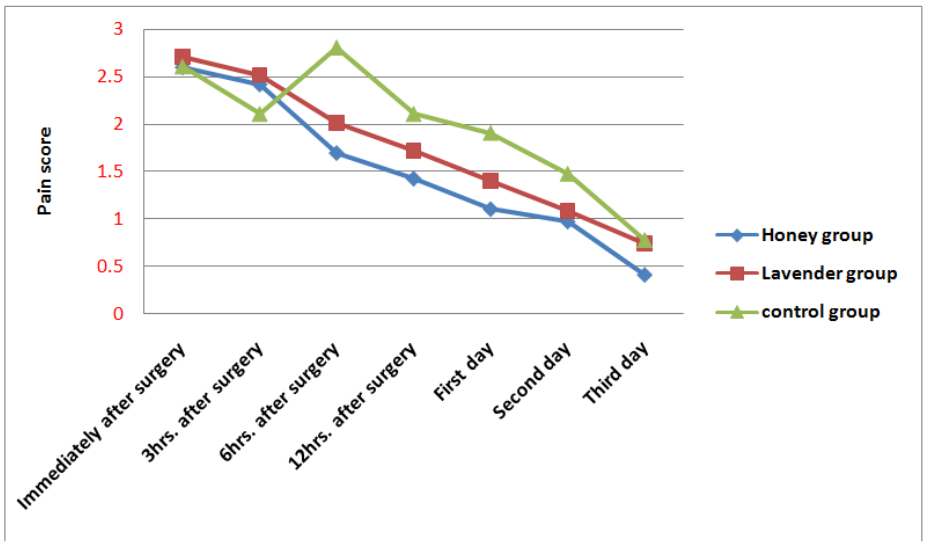

Fig (3): Pain score of children in honey, lavender and control groups.

V. Discussion

Due to increasing rate of CAM and traditional medicine "TM" application in children worldwide, determination of the rate of "TM" application and the factors influencing the usage of it is very important. In the present study, about one-third of mothers have used CAM for their children. This rate was 58.6% and 57% . in Turkey; 33% at St. Louis; 31% in Nigeria and 12% in Pittsburgh [25]. Also dissimilar other studies that higher maternal education levels were usually associated with more CAM application, in the present study lower level of maternal education was correlated with higher CAM usage for their children. This could be due to the fact that educated mothers in Birjand have opposite views about using this type of medicine [26].

In this study, there was a significant increase in the use of CAM in children with mother being as housewife, while in [27] study being employed or working as a housewife had no significant influence on the usage of CAM. Significant correlation with mothers being a house wife may be related to this fact that these mothers have low education levels.The most common morbidities after tonsillectomy are bleeding, edema, nausea, vomiting, poor oral intake, and pain . Despite advances in anesthetic and surgical techniques, post tonsillectomy morbidity remains a major clinical problem. On the other hand, many studies are being performed to find treatment with fewer side effects as honey or lavender essential oil use, especially for pediatric patients who are more sensitive. Many researches have been performed to investigate different analgesics' effects on post tonsillectomy pain, especially together with acetaminophen. In many studies, relief of early postoperative pain, in first hours of operation, was investigated [28].

On the other hand, many studies look into postoperative pain after recovery room. Although the intensity of pain in all groups decreased after surgery, honey alone and Lavender groups experienced more pain relief compared to the other control group. However, there was no statistically significant difference between honey, lavender, and control groups immediately and after 3hrs. After surgery, while there is no similar study, to the best of our knowledge, examining the effect of honey alone on post-tonsillectomy pain, some researches indicated its relative efficacy in some conditions. [29] for example, showed that honey could be more effective compared to habitual dressing in superficial mild to moderate burns [29]. Also in [18] study on 60 post-tonsillectomy child, divided into two groups, the first group was administered antibiotic, acetaminophen, and placebo, and the second group was administered antibiotic, acetaminophen, and honey. In addition to a study from [18], the post tonsillectomy effect of honey in pain killing was surveyed for 14 days, and it was reported that pain scores in first two days after the operation were significantly less in honey group, compared to our study which shows this difference from the first to the third day after tonsillectomy.

Oral administration of honey after wake up, following tonsillectomy can reduce postoperative pain in pediatric patients, and may substantially decrease the need for analgesics during taking honey in this challenging group. More studies are necessary to be performed to investigate mechanisms of honey pain relieving effects. There were some limitations in this study such as: disagreement of mothers in continuing their cooperation, the child's dislike for eating the lavender or honey the difference regarding the VAS score was not significant ($p > 0.05$). In agreement with this study who showed that oral honey administration after tonsillectomy in pediatric cases may reduce the need for analgesics for relieving postoperative pain [18].

Pain following tonsillectomy is caused by postoperative inflammation, nerve irritation, and pharyngeal spasm .It is considered that the tonsillary fossa is healed in the form of an open wound after tonsillectomy; therefore, it could be expected that honey accelerates the recovery of wounds and decreases postoperative pain. However, it is not possible to keep honey in continuous contact with the tonsillary fossa as it is a wound dressing. As a result, honey application intervals were kept frequent. Some studies proposed that oral administration of honey in wound healing is much more effective than topical application . In addition, 10 mg/kg acetaminophen was given to all three groups for ethical reasons [29].

Honey followed by herbal tea in Karachi , biological products in Nigeria [30]. Herbal remedies (41%) and prayer therapy (37%) in Michigan and herbal medicine in Turky (were the most used "TM". In the present study, the most common treatment was herbal medicine. It is due to its special place among the people of this region which is a rich region in terms of herbal medicine [31].The use of lavender essential oil caused statistically significant reduction in daily use of acetaminophen in all three post-operative days but had not significant effects on pain intensity and frequency of nocturnal awakening. Aromatherapy with lavender essential oil decreases the number of required analgesics following tonsillectomy in pediatric patients [20, 26].

VI. Conclusion

The study concluded that honey or lavender essential oil use is more effective than control group to reduce pain after tonsillectomy among preschool children, and above partial of the mothers of those children have poor knowledge about CAM. A lot of studies have been conducted on anti-inflammatory and anti-bacterial effect of honey, but there are not so many about the effect of honey and lavender on pain. However, more decrease in pain was observed in honey and lavender groups, but the difference was not statistically significant. Honey with anti-inflammatory effect can decrease the pain. Considering the fact that about one third of the

mothers used Complementary and Alternative Medicine modalities, the mothers were the least source of CAM information, nearly all mothers were unaware of the side effects of CAM.

VII. Recommendations

The study recommended that further researches supported for confirmation of honey or lavender essential oil use to reduce pain after tonsillectomy, it is also highly recommended to apply educational program for enhancing mothers' knowledge about the proper use of different kinds, benefits and disadvantages of CAM.

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