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RESEARCH ARTICLE

AWARENESS OF MOTHER WITH BABY PACIFIER

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Abstract

Introduction: Pacifiers consist of a latex or silicone nipple with a firm plastic shield and handle and are available in different forms and sizes. This is used in infant for colling and calming effect on infant however, it is related to many disadvantage and side effect on teeth of the infants. In this study we aimed to a Assess the interrelation between different on-nutritive sucking habits, pacifier use and thumb/digit sucking. Besides, Investigate the relationships between various non-nutritive sucking habits and occlusion in the primary dentition.

Methodology: Following a comprehensive literature review, the questionnaire was designed and used for data collection. Then, a cross- sectional survey was distributed throughout the internet for two months (October - November 2019) to 200 mothers in Riyadh, Saudi Arabia. The mothers answered 16 questions, where 5 of them were self-administered, while the others followed the pacifier and their effect on Breastfeeding and teeth. Initially, the participants have answered inquiries about the demographic information.

Results: The results of our study include 202 mothers in which 55.9 % were between 18 -30 years old while 88.6 % of married while 6.4 % were widowed and the rest were divorced. Moreover, 67.3 % of mothers in this study started breast feeding but stopped it, while 15.3 % still breast feeding partially, 12.9 % still breasting feeding exclusively and 4.5 % never breast fed during the process of the survey. 58.9 % of mothers agree about the use of pacifier with their infants where younger mothers were more intended to agree about using of pacifier. Considering the reason behind using of pacifier, mothers reported that 74.3 % of mothers using pacifier because of its comfort or soothing effect. Moreover, 47.1 % of the sample thought that best time to start using pacifiers is from first week of birth and 49 % of mothers in this study thought that pacifier should be used for 4 hours per day. Finally, most of mother thought that the ideal time of pacifier cessation before the first year (45%).

Conclusion: As with all infant care practices, there may be multiple factors influencing the parental decision to use or not use a pacifier for the infant. Some of these factors (e.g., concerns about nipple confusion, dental concerns) may be the result of misinformation. As pacifier use has been associated with a reduced risk for SIDS, it is important for health care providers to understand and be able to address the concerns that parents may have about pacifier use. In the hospital setting,

providers should be aware that parents may have strong preferences about getting educated regarding pacifier use and its consequences.

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..... **Introduction:-**

Primary dentition is the basis of the development of permanent teeth in infants which in terms of determining space and occlusion for future developing teeth [1]. Sucking habits in infants are an environmental factor therefore, knowledge about how such behavior can prevent some dental problems as malocclusion is important to determine better options for children's health care. Oral sucking habits in infants is divided into breastfeeding or bottle sucking which can be categorized as nutritive habits and non – nutritive. Nutritive habits including feeding children and non-nutritive habits include thumb sucking, finger sucking or pacifier use which often used to calm and comfort infants [2]. The calming effects have also been used to provide pain relief during minor procedures such as immunization [3]. Apart from the calming effects and providing a sense of security, pacifier use has been found to be associated with protection of sudden infant death syndrome [3,4,5].

Infants have a strong sucking reflex that helps with breastfeeding. The process of sucking was also found to be helpful in calming and soothing babies. In one Canadian study, more than 80% of parents used pacifiers for their babies.³ However, in recent years a potential “nipple confusion” between breast, bottle, and pacifier was suspected [6]. Breastfeeding is a nutritive sucking habit that has been found to have general, immunological, nutritional and oral benefits for the child [7]. The World Health Organization (WHO) recommends exclusive breastfeeding for the first 6 months of life, with some breastfeeding up to 2 years of age [1, 8]. Moreover, in another study, the authors showed that pure breastfeeding is related with reduced chances of developing abnormal primary dentition, for example lower chances of having a Class II incisal relationship and increased overjet. We also found that children with pure breastfeeding for more than 6 months have wider interchained and intermolar widths [9].

Pacifiers consist of a latex or silicone nipple with a firm plastic shield and handle and are available in different forms and sizes. There are many types of pacifiers such as the conventional pacifier NUK, the functional pacifier Dentistar, and the orthodontic pacifier Curaprox Baby. However, a proper definition for a functional or orthodontic pacifier is missing [10]. Several studies also show that non-nutritive sucking habits are associated with the development of malocclusion in the primary dentition [1, 11, 12]. It is important for dentists and parents to know the frequency and duration of the force required to affect occlusion. The ideal time for cessation of non-nutritive sucking is during the second or third year of life; after this time, non-nutritive sucking is considered to be a prolonged sucking habit.[13] Pressure against the teeth must exist for at least six hours a day to cause tooth movement. Variations in terms of the amount of the time spent with a pacifier in the mouth (and the intensity of the child's sucking) may explain why some children do not develop a posterior crossbite.

The effects of a sustained pacifier habit beyond 24–47 months of age may extend into the mixed dentition, contributing to a Class II molar relationship and an anterior open bite [14]. All issues considered, the time for intervention may be at approximately two years of age to minimize occlusal disharmonies [15]. The crossbite usually will self-correct within six months after cessation of the habit. In one study, the prevalence of malocclusion was roughly 71 percent in children who used a pacifier or sucked a digit for more than 48 months, compared with 32 percent in those who ceased sucking between 36 and 48 months, and 14 percent in those who ceased sucking before 24 months while fifty percent of all children with a non-nutritive sucking habit will cease the habit without parental intervention by 24–28 months of age [15]. Digit habits may persist longer than pacifier sucking and may require appliance therapy for cessation. [16] Cessation of the habit usually is more of a challenge for the parents than for the child.

Aims of study :

- (1) Assess the interrelation between different on-nutritive sucking habits, pacifier use and thumb/digit sucking.
 - (2) Investigate the relationships between various non-nutritive sucking habits and occlusion in the primary dentition.
- To be representative of having a habit, the frequency and duration of the non-nutritive sucking habits.

Materials & Methods:-

Following a comprehensive literature review, the questionnaire was designed and used for data collection. Then, a cross-sectional survey was distributed throughout the internet for two months (October - November 2019) to 200 mothers in Riyadh, Saudi Arabia. The major focus of the questionnaire was to compare of the mothers' awareness about use a child's pacifier and influence on his teeth. The mothers answered 16 questions, where 5 of them were self-administered, while the others followed the pacifier and their effect on Breastfeeding and teeth. Initially, the participants have answered inquiries about the demographic information (age, Maternal marital status, educational level, job and Infant gender). Following this, an information about the followed the pacifier and their effect on Breastfeeding and teeth. Then, they provided a feedback about Their personal experiences based on Their culture while dealing with babies. Participation was voluntary; all information remained confidential. The study design was reviewed and approved by the institutional ethics committee of all schools. institutional review board; IRB approval (RC/IRB/2019/285) was obtained at Riyadh Elm University, while the registration number was FUGRP/2019/98. The data were analyzed by using IBM SPSS software version 25 (IBM , Armonk,NY).

Statistical Analysis

A descriptive statistics of frequency distribution and percentages were calculated for the sociodemographic variables and questionnaire items. A chi-square test was applied to the categorical variables to assess the relationship between questionnaire items and sociodemographic variables. A p value of less than 0.05 was considered significant for all statistical tests. All the analysis was performed by using SPSS version 25 (IBM, Armonk, NY).

Results:-

The results of our study include 202 mothers in which 55.9 % were between 18 -30 years old while 24.3 % were between 31-40 years old while 88.6 % of married while 6.4 % were widowed and the rest were divorced. Moreover, most of mothers in our study had bachelor's degree (57.9 %) while 27.2 % had high school education while 53 % were not employee and 61.4 % had female infants (Table 1).

Table 1:- Socio-demographic variables.

Variables		n	%
Age	18-30	113	55.9%
	31-40	49	24.3%
	41-50	29	14.4%
	>50	11	5.4%
Maternal Marital status	Married	179	88.6%
	Widowed	13	6.4%
	Divorced	10	5.0%
Educational Level	Lower than High school	15	7.4%
	High school	55	27.2%
	Bachelor's degree	117	57.9%
	Master's degree	15	7.4%
Employment	Yes	95	47.0%
	No	107	53.0%
Infant Gender	Female	124	61.4%
	Male	78	38.6%

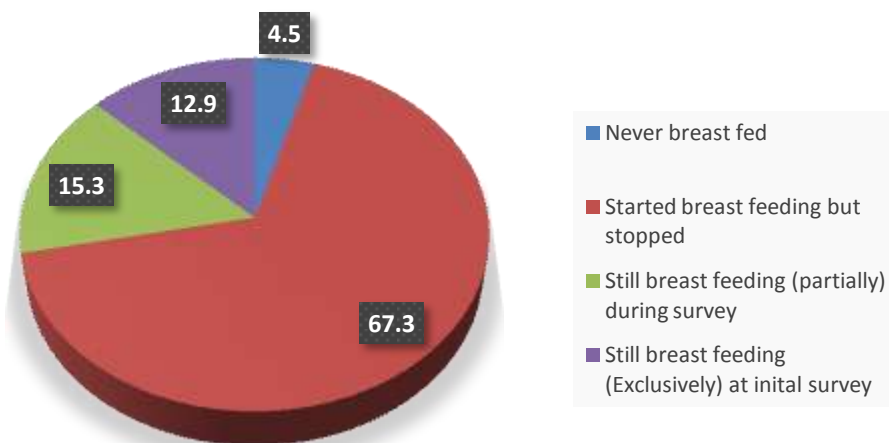
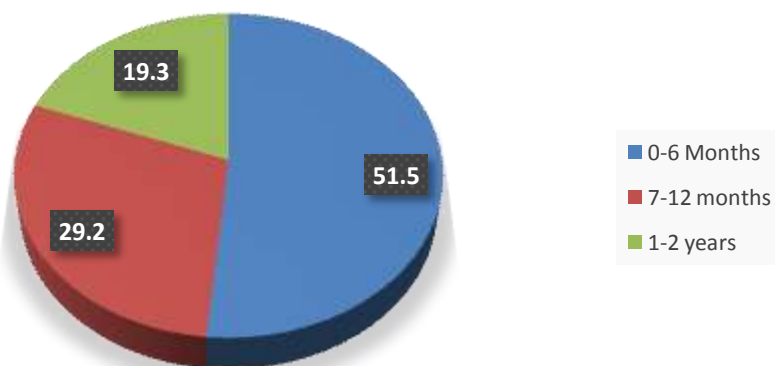
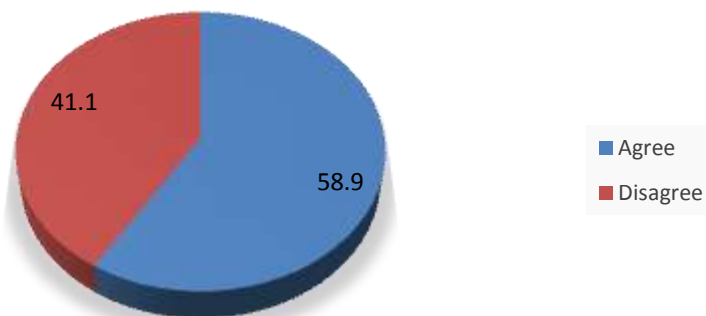
Figure1: state of breastfeeding**Figure 2: infant age****Figure 3: Mother's feeling about the use of pacifiers (%)**

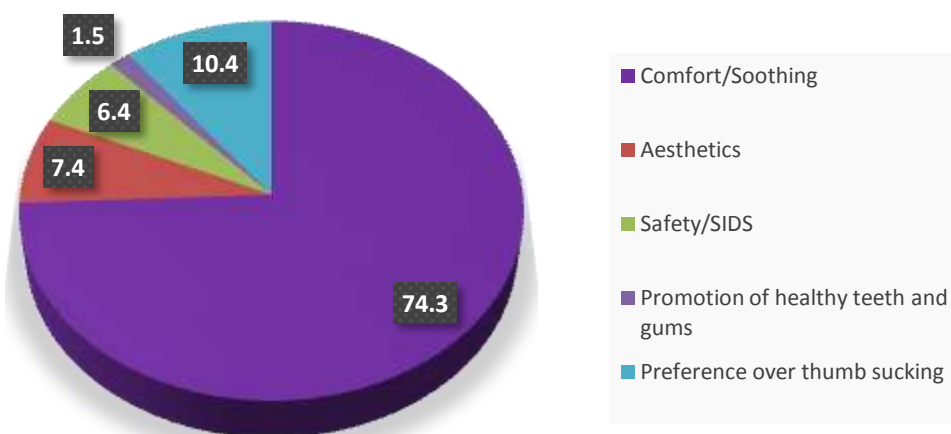
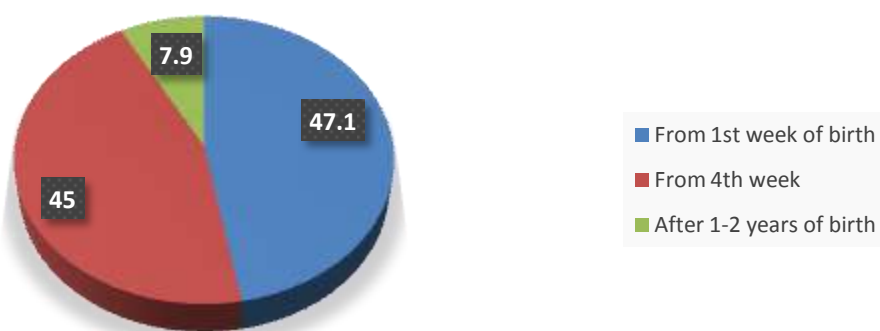
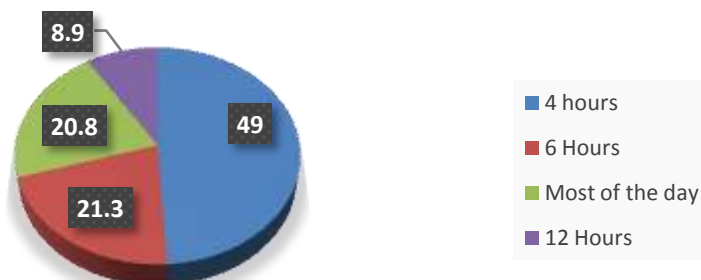
Figure 4: Reasons for use of pacifiers (%)**Figure 5: Best time to start using pacifiers (%)****Figure 6: Hours of use of pacifier every day (%)**

Figure 7: Yes responses to the questionnaire items 8, 13, 14 and 15

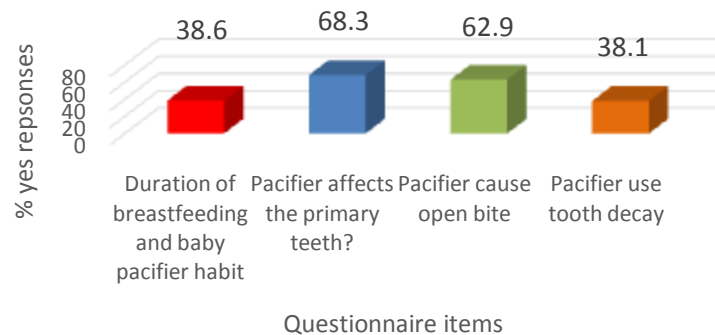
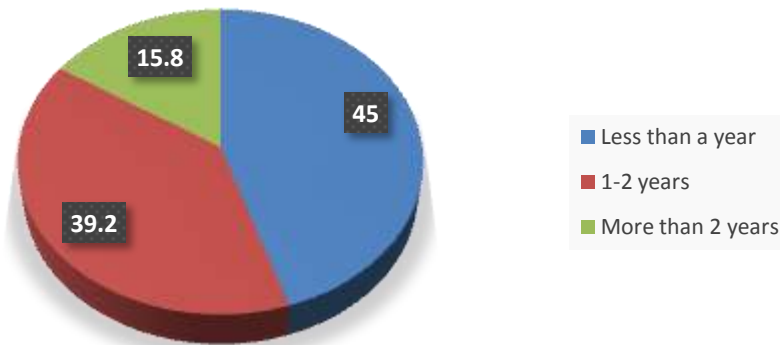


Figure 8: Ideal time of pacifier cessation



Moreover, 67.3 % of mothers in this study started breast feeding but stopped it, while 15.3 % still breast feeding partially, 12.9 % still breastfeeding exclusively and 4.5 % never breast fed during the process of the survey (figure 1).

Considering the infants in this study, figure2 show that 51.5 % of infants was between 0 -6 months of their age while 29.2 % were between 7-12 months and 19.3 % were between 1-2 years. While, 58.9 % of mothers agree about the use of pacifier with their infants (Figure 2). However, age seems to have a significant effect on the perception where younger mothers were more intended to agree about using of pacifier (P-value =0.005). Moreover, it seems that married women were more agreed about use of pacifier than widow and divorced women which may related to age (P-value =0.019). on the other hand, either education level, employment state or infant gender had an effect on this perception (Table 2).

Table 2:- Mother's feeling about pacifiers and sociodemographic variables.

Variables		Agree		Disagree		p
		n	%	N	%	
Age	18-30	78	65.5%	35	42.2%	0.005*
	31-40	25	21.0%	24	28.9%	

	41-50	13	10.9%	16	19.3%	
	>50	3	2.5%	8	9.6%	
Maternal Marital Status	Married	111	93.3%	68	81.9%	0.019*
	Widowed	3	2.5%	10	12.0%	
	Divorced	5	4.2%	5	6.0%	
Educational Level	<High school	10	8.4%	5	6.0%	0.297
	High school	36	30.3%	19	22.9%	
	Bachelors	67	56.3%	50	60.2%	
	Master's	6	5.0%	9	10.8%	
Employment	Yes	55	46.2%	40	48.2%	0.782
	No	64	53.8%	43	51.8%	
Infant Gender	Female	77	64.7%	47	56.6%	0.246
	Male	42	35.3%	36	43.4%	

Considering the reason behind using of pacifier, mothers reported that 74.3 % of mothers using pacifier because of its comfort or soothing effect while 7.4 % used it as anesthetics, 10.4 % as preferred over thumb sucking and 6.4 % because of its safety/SIDS (Figure 4).

Moreover, 47.1 % of the sample thought that best time to start using pacifiers is from first week of birth, while 45 % from fourth week and 7.9 % after 1-2 years of birth (Figure 5).

In figure 6, it was found that 49 % of mothers in this study thought that pacifier should be used for 4 hours per day. While 21.3 % thought used it for 6 hours per day, 20.8 % use pacifier most of the day and 8.9 % for 12 hour per day.

In table 3, it was found that older mothers tend to delay the use pacifier than younger one and for fewer hour every day. While the higher educated mothers mostly delayed the use of pacifier and for shorter duration. Moreover, employed mothers would use pacifier in younger age of their infant and for longer duration. Interestingly, it seems that mothers tend to use pacifier in younger age in female than male infant.

Table 3:- sociodemographic variables and best time and hours use of pacifier.

Variable		Best time use pacifier			Hours use of pacifier			
		From 1st week of birth	From 4th week	After 1-2 years of birth	4 hours	6 Hours	12 Hours	Most of the day
		%	%	%	%	%	%	%
Age (Years)	18-30	60.0%	51.6%	56.3%	59.6%	53.5%	33.3%	59.5%
	31-40	23.2%	28.6%	6.3%	25.3%	27.9%	33.3%	14.3%
	41-50	13.7%	14.3%	18.8%	11.1%	14.0%	27.8%	16.7%
	>50	3.2%	5.5%	18.8%	4.0%	4.7%	5.6%	9.5%
Maternal Marital status	Married	87.4%	92.3%	75.0%	92.9%	86.0%	72.2%	88.1%
	Widowed	8.4%	3.3%	12.5%	3.0%	11.6%	11.1%	7.1%
	Divorced	4.2%	4.4%	12.5%	4.0%	2.3%	16.7%	4.8%
Educational Level	<High school	6.3%	8.8%	6.3%	9.1%	7.0%	0.0%	7.1%
	High school	28.4%	26.4%	25.0%	24.2%	32.6%	55.6%	16.7%
	Bachelors	55.8%	58.2%	68.8%	60.6%	51.2%	38.9%	66.7%
	Master's	9.5%	6.6%	0.0%	6.1%	9.3%	5.6%	9.5%
Employment	Yes	55.8%	38.5%	43.8%	52.5%	44.2%	38.9%	40.5%
	No	44.2%	61.5%	56.3%	47.5%	55.8%	61.1%	59.5%
Infant Gender	Female	64.2%	61.5%	43.8%	62.6%	62.8%	61.1%	57.1%
	Male	35.8%	38.5%	56.3%	37.4%	37.2%	38.9%	42.9%

Moreover, 38.6 % of mothers thought that there is association between duration of breastfeeding and baby pacifier habit. Moreover, most of mothers thought that pacifier could affect the primary teeth (68.3 %) and 62.9 % agreed that pacifier can cause open bite and 38.1 % thought that pacifier use can cause tooth decay (Figure 7).

Furthermore, as found in table 4, age had no significant effect on all the previous variable while marital status had an effect on the perception that pacifier affect primary teeth (P-value =0.022).

Table 4:- Relationship between sociodemographic variables and questionnaire responses to items.

Variables		Duration of breastfeed Pacifier habit		Pacifier affects primary Teeth		Pacifier causes open bite		Use of tooth pacifier and Tooth decay	
		Yes (%)	No (%)	Yes (%)	No (%)	Yes (%)	No (%)	Yes (%)	No (%)
Age (Years)	18-30	47.4	61.3	52.2	64.1	55.1	57.3	57.1	55.2
	31-40	30.8	20.2	26.8	18.8	25.2	22.7	28.6	21.6
	41-50	12.8	15.3	16.7	9.4	12.6	17.3	10.4	16.8
	>50	9.0	3.2	4.3	7.8	7.1	2.7	3.9	6.4
	p	.073		.182		.459		.407	
Maternal Marital status	Married	85.9	90.3	88.4	89.1	85.8	93.3	87.0	89.6
	Widowed	6.4	6.5	4.3	10.9	7.9	4.0	6.5	6.4
	Divorced	7.7	3.2	7.2	0.0	6.3	2.7	6.5	4.0
	p	.361		.022*		.265		.728	
Educational Level	<High school	16.7	1.6	7.2	7.8	7.9	6.7	7.8	7.2
	High school	25.6	28.2	30.4	20.3	27.6	26.7	24.7	28.8
	Bachelors	52.6	61.3	55.1	64.1	57.5	58.7	61.0	56.0
	Master's	5.1	8.9	7.2	7.8	7.1	8.0	6.5	8.0
	p	.001*		.514		.982		.879	
Employment	Yes	52.6	43.5	45.7	50.0	50.4	41.3	68.8	33.6
	No	47.4	56.5	54.3	50.0	49.6	58.7	31.2	66.4
	p	.211		.565		.213		.000*	
Infant Gender	Female	61.5	61.3	63.8	56.3	62.2	60.0	63.6	60.0
	Male	38.5	38.7	36.2	43.8	37.8	40.0	36.4	40.0
	p	.972		.307		.756		.606	

Most of mother thought that the ideal time of pacifier cessation before the first year while 39.2 % thought that should be between 1-2 years and 15.8 % after than 2 years (Figure 8).

Discussion:-

This study was conducted to evaluate mothers' awareness of pacifier use and its effect on the development of dentition and malocclusions. Many published studies have shown a significant association between pacifier use and the development of malocclusion and their results confirm that children who were exclusively breastfed for 6 months and never used a pacifier had a lower frequency of moderate/severe malocclusion than other children. This is important, since the identification of factors that exacerbate the development of malocclusion in primary teeth can ultimately improve oral health and reduce the impact of these conditions on the quality of life.

Previous studies indicate that breastfeeding can prevent the occurrence of deleterious sucking habits, such as pacifier use, finger sucking, and bottle-feeding, and that there is evidence showing that pacifier use in infancy is associated with a shorter duration and non-exclusivity of breastfeeding.

In our study we have found that one of the commonly cited reasons for pacifier use was infant comfort, which referred to calming and soothing of the infant was picked by the majority of our sample (74.3%), in addition many mothers found that the pacifier helped their infant sleep, stopped the crying, and satisfied the need to suck [17]. Some mothers also believed that pacifier use would promote healthy teeth and gums, particularly if the pacifier was promoted as an "orthodontic pacifier".

Finally, several mothers thought that an infant using a pacifier was an appealing image [17]. A large proportion of mothers who chose to use pacifiers expressed preference of pacifier use over finger sucking. Some of these mothers preferred the pacifier because it was easier to clean than the fingers or because they were concerned about skin rashes from finger sucking. However, most of these mothers felt that it would be easier to stop pacifier use than finger sucking. One of the most commonly cited reasons for pacifier nonuse was infant refusal. These mothers wished that their infant would use a pacifier and had offered the pacifier to their infant's multiple times without success [18]. The American Academy of Pediatric Dentistry, in its policy statement about non-nutritive sucking, recognizes that this is common and developmentally normal behavior and states that there is little danger of permanent harm to the teeth if the pacifier is discontinued by 3 years of age [17]. Pacifiers may be used for several reasons by nursery staff, including calming after a painful procedure (such as blood drawing or circumcision) [18], calming of the infant, and SIDS risk reduction. Our breastfeeding rates were higher (66.3 % ever breastfed, 37.4 % still breastfeeding) than national breastfeeding rates for black infants (58.9 % ever breastfed and 30.1 % still breastfeeding at 6 months) [17].

There may be multiple factors influencing the parental decision to use or not use a pacifier for the infant. Some of these factors (e.g., concerns about nipple confusion, dental concerns) may be the result of misinformation. As pacifier use has been associated with a reduced risk for SIDS, it is important for health care providers to understand and be able to address the concerns that parents may have about pacifier use. The prevalence of AOB in children using pacifier varies between 8.5 [19] and 96.3% [20]. It is worth mentioning that not all studies analyzed the same age groups nor the same type of pacifiers. In a systematic review, fifteen out of the reviewed 17 articles showed a strong association between AOB and the use of a pacifier when compared with the children not using the pacifier [21]. Duration and frequency of pacifier sucking played an important role [21]. The use of pacifier for more than 36 months was associated with AOB [21]. Two studies showed that children who used a pacifier for more than 2 years were more likely to develop an AOB than children who used it for less than 2 years [21]. One study showed that discontinuing the use of pacifier at 1 year of age may still result in an anterior open bite; however, this study had a serious risk of bias [21].

Pacifiers have been used to stimulate sucking in children with neuropathies, to coordinate sucking-swallowing-breathing, anticipating oral feeding to preterm newborns, as well as to reduce the stress of painful procedures babies have to undergo. It is a partial way of fulfilling the emotional needs of a child who cannot be breastfed. Nevertheless, the literature presents more harmful effects than benefits of pacifier use [1]. The use of pacifiers prevents babies from achieving breast sucking and induces weaning when pacifiers are offered to children when they cry, since longer time intervals between the breastfeeding sessions reduce the stimulus to milk production. It is responsible for a shorter duration of breastfeeding. It may cause suffocation, poisoning or allergies and increases the risk of caries, infections, and parasitosis. It originates dental and speech problems, mainly if it lasts even after the child is 3 or 4 years old. If, on one hand, some authors have related the pacifier use to a lower incidence of SDS, on the other hand, studies have shown that breastfeeding reduces the risk of sudden death in 50% and, therefore, it is advisable to be cautious before suggesting that pacifiers are a protective factor against sudden death because they also reduce the duration of breastfeeding [22].

Reasons for pacifier use included comfort/soothing, safety/SIDS, and preference over digit-sucking. Reasons for pacifier non-use included infant refusal, fear of attachment, nipple confusion, and germs. Many parents were unaware that pacifier use reduces SIDS risk; however, most parents of non-users did not think that this knowledge would have changed their decision.

This study had some limitations including depending in this study on questionnaire tools in collecting the data and however, questionnaire is valuable tool in collecting data, it is associated with some individual bias where some mothers may answer questions of the questionnaire in a manner that make them more moral however, this may not represent the real practice.

Conclusion:-

As with all infant care practices, there may be multiple factors influencing the parental decision to use or not use a pacifier for the infant. Some of these factors (e.g., concerns about nipple confusion, dental concerns) may be the result of misinformation. As pacifier use has been associated with a reduced risk for SIDS, it is important for health care providers to understand and be able to address the concerns that parents may have about pacifier use. In the

hospital setting, providers should be aware that parents may have strong preferences about getting educated regarding pacifier use and its consequences.

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