Original Article

EVALUATION OF KNOWLEDGE, ATTITUDE AND AWARENESS IN THE PREVENTION OF DENTAL CARIES AMONGST PAEDIATRIC RESIDENTS IN EDO STATE, NIGERIA.

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ABSTRACT

Aim*:* To evaluate awareness, knowledge and attitude towards dental caries prevention amongst pediatrics residents in Edo state.

Methods*:* This study was a cross sectional study carried out among paediatrician trainees in the University of Benin Teaching Hospital and Irrua Specialist Teaching Hospital, Edo State. A pre-tested, self-administered questionnaire which elicited demographic characteristics, awareness, knowledge and attitude toward dental caries prevention, was the data collection tool. This study was carried out between February and May, 2019.

Results: A total of 42 pediatrics residents participated in this study. The majority (85.7%) of participants identified carbohydrate diets as one of the main aetiological factors in dental caries development. About one-third of the participant, 35.7% reported seeing at least one case of childhood caries a week in the clinic while One-third (33.3%) of the participants examined their patients' teeth. About three-quarters (76.5%) of the participants reported that they refer children with dental caries to the pediatric dentist. Routine dental visit was seen by majority (90.5%) of the participants as important in preventing childhood dental caries while less than half (42.8%) of the participants reported that dental caries is transmissible.

Conclusion: This study indicates that the paediatric residents have proper attitude, satisfactory knowledge and sufficient awareness about the prevention of dental caries in children.

Keywords: dental caries, paediatric residents, knowledge, prevention.

Introduction

The disease burden of dental caries,[1] especially considering the health impact of its sequelae, has become an ever-present reminder of the dire need for dentists and allied professionals to increase the level of vigilance and increased capacity for prevention, early detection and intervention.[1,2]

This stance is especially critical amongst the children population not just because of their marked anatomic and psychological vulnerability[2] but also due to the seemingly rapid progression of the lesion along the spectrum of its aftermath when left

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unchecked.[3] Dental caries can result in progressive episodes of both oral and systemic morbidity which elicit high levels of anxiety amongst patients, guardians and caregivers.[3]

While dentists continue to ruminate on the possible ways to attenuate the predisposing factors for childhood caries, factors like the mode and timing of feeding, socio-economic status, neonatal circumstances and infection from mothers have remained key points of interest.[4,5]

Among health professionals, pediatricians and pediatrician trainees have the earliest and most profound contact with not only the child patient but also the parents and caregivers as they play the unique role of shaping the health outlook of the care unit of the child.[6,7,8] This role is therefore pivotal in not just setting the general health agenda for the child but also pertinent as it concerns the oral health status and the adoption of adequate preventive measures in establishing a conducive environment for oral health;[9] the dental home.

The current global focus on disease prevention aims at raising the level of vigilance and ensuring adequate exposure of all healthcare providers to the early signs and symptoms of diseases while also equipping them with the skill sets and information to ensure apt advisory, early detection as well as proper referrals to the relevant specialists. It is therefore in keeping with this stratagem that pediatricians have to be co-opted into the frontline of dental caries prevention and early intervention by identifying incipient lesions and ensuring prompt referrals.[7,8]

There is currently little data on the level of information at the disposal of pediatricians and pediatrician trainees as it pertains to dental caries prevention neither are there reliable statistics on the effect if any of previous collaborations between the pediatric inpatient / outpatient clinic protocols and the pediatric dental facilities available in the various federal tertiary health institutions in Nigeria.

There is need to ascertain the current level of knowledge regarding dental caries prevention amongst pediatricians as they are indispensable collaborators given their role in the evolving health of the child patient. This study will delineate their knowledge base and identify areas in need of strengthening as it concerns dental caries preventive measures while highlighting the efficacy of current regimes aimed at same.

This study also hopes to engender positive constructs towards the formal etching of a policy statement on the role of pediatricians in oral health in Nigeria, while hopefully, taking a cue from the American Academy of Pediatricians who underlined the role of pediatricians in oral health with official releases in 2003 and 2008.[8]

This study aimed to evaluate the level of knowledge, attitude and awareness in prevention of dental caries amongst pediatrician trainees in Edo State using the Federal Tertiary Health Institutions where the training of residents in pediatrics takes place namely; the University of Benin Teaching Hospital (UBTH), Benin City and the Irrua Specialist Teaching Hospital (ISTH) Irrua.

The aim of this study was to evaluate knowledge, attitude and awareness of prevention of dental caries amongst pediatrician trainees in Edo state. The objectives include determining the level of awareness of signs of dental caries, assessing the knowledge of the aetiological factors of dental caries, determining the level of awareness of dental caries preventive measures and to determine the knowledge of referral protocol for dental caries amongst paediatric residents in Edo State.

Materials and Methods

This study was a cross sectional descriptive study carried out in the Department of Paediatrics of the University of Benin Teaching Hospital, Benin City, Edo state as well as the Department of Paediatrics of the Irrua Specialist Teaching Hospital. A total of 42 pediatrician trainees from both institutions were recruited into the study. Data collection was carried out using a Closed- ended, pre-tested, self-administered questionnaire. The duration of this study was three (3) months.

All paediatric residents in the University of Benin Teaching Hospital and the Irrua Specialist Teaching Hospital in Edo State who were willing to participate in the study were included in the study while those who were unwilling to participate in the study were excluded. Ethical clearance was obtained from the Ethics Committee of the University of Benin Teaching Hospital, Benin City and the Ethics Committee of the Irrua Specialist Teaching Hospital while informed consent was obtained from all participants. Data analysis was done using Statistical Package for Social Sciences (SPSS) version 21.

Results

A total of forty-two (42) respondents who were paediatrician trainees working in the University of Benin Teaching Hospital and Irrua Specialist Teaching Hospital both in Edo State, formed the population of this study. Majority of the respondents were females and they made up 28 (66.7%) of the respondents while the males were 14 (33.3%). Half of the respondents have spent less than 10 years in medical practice with only a few, 8 (19.0%) having spent more than 20 years in practice. Most of the respondents 25 (59.5%) reported seeing between 11 – 15 patients per day. About one-third of the participant, 15 (35.7%) reported seeing at least one case of childhood caries a week in clinic (Table 1 and Figure 1).

Concerning the factors involved in the formation of dental caries, most of the respondents 36 (85.7%) selected bacteria followed by carbohydrates 31 (73.8%), tooth 14 (33.3%), fluoride 11 (26.2%) with the least being saliva 2 (4.8%). The frequency of sugar intake was reported as the most important factor causing caries accounting for 15 (35.7%) followed by amount of sugar intake 11 (26.2%) (Figure 2 and Table 2).

Majority of the respondents 32 (76.2%) reported night feeding as a cause of dental caries while others 29 (24.8%) thought otherwise. Bottle feeding was reported by majority 26 (61.9%) as cause of dental caries. Transmission of bacteria causing dental caries from mother to child was reported to be true as one of the causes of childhood dental caries among majority constituting 18 (42.9%) of the respondents. Inadequate tooth brushing was reported by most of the respondents 38 (90.5%) as cause of dental caries. Family tendency as cause of caries was reported by 28 (66.7%) of respondents. Overcrowding and malpositioned teeth was reported by 33 (78.6%) of the respondents as a cause of dental caries in children (Table 2).

Concerning when a child is to pay the first visit to the dental clinic, only about one third of the respondents (31.0%) reported 6 months with majority (57.1%) reporting I year after birth. The remaining respondents 5 (11.9%) reported when dental caries or pain is present. Frequency of dental visit was 6 months and 1 year for 21 (50.0%) and 20 (47.6%) respectively. About one-third of the participants 14 (33.3%) responded that they examined their child- patients' teeth as part of their routine general examination. The other participants making up about28 (66.7%) of the respondents didn't examine nor felt it was necessary. Counseling of children and

parents on the importance of good oral hygiene by regular toothbrushing was reported to be done by 27 (64.3%) of the respondents while the others 15 (35.7%) didn't counsel or felt it was necessary. Concerning when is proper to commence toothbrushing, only 17 (40.5%) of the respondents felt that it should be done immediately after eruption of milk teeth. Commencement of toothbrushing after eruption of some milk teeth or all milk teeth was reported by 20 (47.6%) and 5 (11.9%) of the respondents respectively (Table 3).

The use of fluoride dentifrices and fissure sealants and brushing twice daily under supervision by the parents or guardian was reported to be effective in preventing dental caries among children by majority as they constituted 26 (61.9%) and 38 (90.5%) of the respondents. Concerning referral of children with caries to the paedodontist (paediatric dentist), majority of the respondents 32 (76.5%) reported that they do refer. Only 7 (11.9%) didn't or felt it was necessary while a few 3 (7.1%) of the respondents reported that there is no established protocol for referral of such patients. Routine dental visit was seen by a majority 38 (90.5%) of the respondents as important in preventing childhood dental caries. The use of pacifiers was not recommended as a means of preventing dental caries by 37 (88.1%) of the respondents.

TABLE 1 - CHARACTERISTICS OF RESPONDENTS

Variable	n (%)
Gender	
Male	14 (33.3)
Female	28 (66.7)
Number of years in practice	
≤ 10 years	21 (50.0)
11 – 15 years	11 (26.2)
16 – 20 years	2 (4.8)
> 20 years	8 (19.0)
Number of patients seen daily	
≤ 10 patients	7 (16.7)
11 – 15 patients	25 (59.5)
16 – 20 patients	6 (14.3)
21 - 25 patients	1 (2.4)
26 – 30 patients	1 (2.4)
> 30 patients	2 (4.8)
Frequency of childhood caries seen	
Less than once a week	5 (11.9)
At least once a week	15 (35.7)
Never in a week	22 (52.7)
Total	**42(100.0)**

Discussion

The global burden of dental caries in children has been highlighted in several studies.[1,2,4,5,8] The various factors, demographic, social and the concept of the dental home all play roles which intersect to result in the prevention or formation of caries. The need for adequate preventive measures has been generally adopted as one of the most pragmatic and effective stratagems in the bid to reduce the burden of this condition. The key role played by Pediatricians and their trainees in the possible early screening and diagnosis of dental caries further underlines the import of the preventive mechanisms for dental caries.

This study set out to assess the knowledge, attitude and awareness of dental caries prevention amongst resident doctors training to become specialist paediatricians in the two Federal Teaching Hospitals in Edo state, Nigeria (not necessary as your audience is global and may fail to understand "South-south"); the University of Benin Teaching

Figure 1 – Frequency of childhood caries cases seen by the pediatric residents

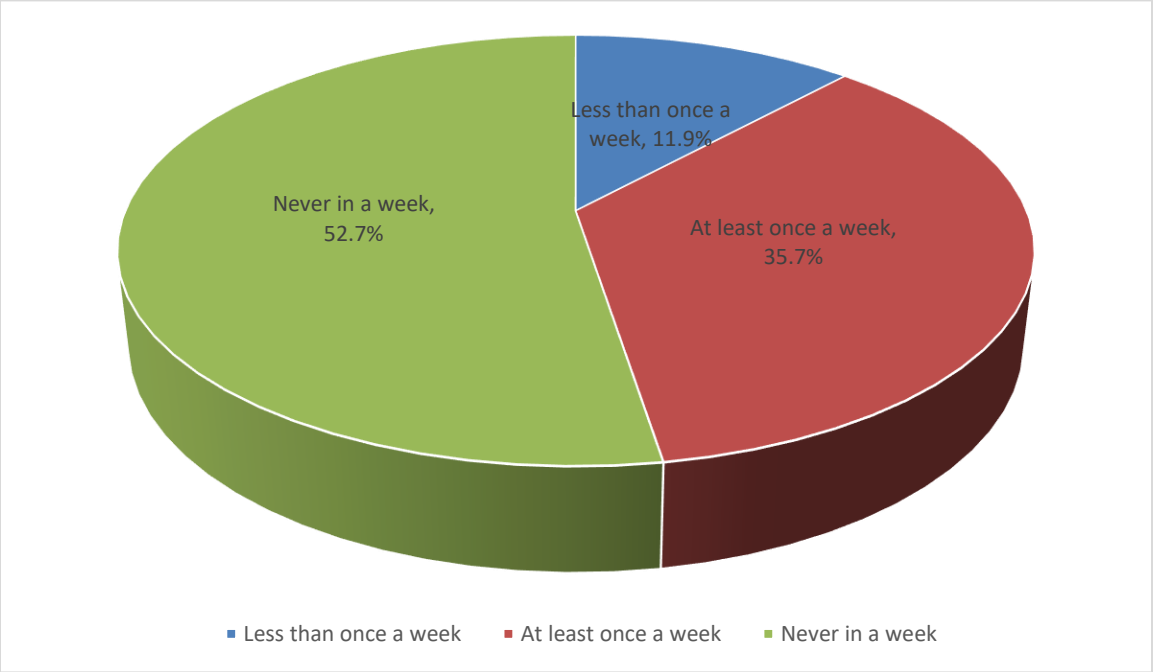

Figure 2 – Pediatric residents' knowledge of the factors involved in the formation of dental caries

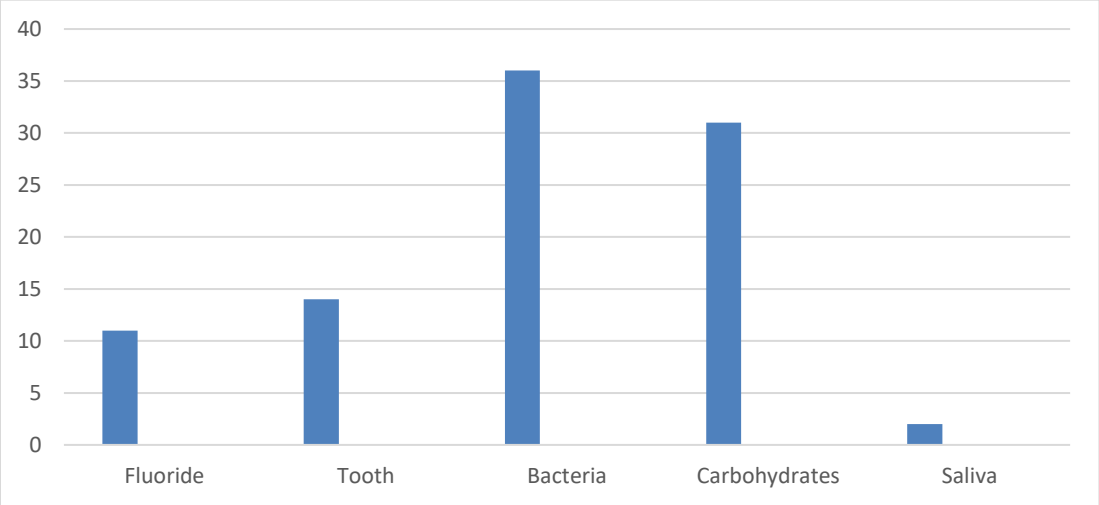

TABLE 2–PAEDIATRIC RESIDENTS' KNOWLEDGE ABOUT CARIES

Variable	Frequency (n = 42)	Percentage
Factors involved in formation of caries ***respondents were allowed to tick more than one option****		
Fluoride	11	26.2
Tooth	14	33.3
Bacteria	36	85.7
Carbohydrates	31	73.8
Saliva	2	4.8
Most important factor causing caries		
Amount of sugar	11	26.2
Frequency of sugar	25	59.5
intake	6	14.3
I don't know	42	100
Total		
Night feeding as cause of dental caries		
Yes	32	76.2
No	6	14.3
I don't know	4	9.5
Total	42	100.0
Bottle feeding as cause of dental caries		
Yes	26	61.9
No	7	16.7
I don't know	9	21.4
Total	42	100.0
Dental caries causing bacteria can be transmitted from mother to child		
Yes	18	42.8
No	17	40.5
I don't know	7	16.7
Total	42	100.0
Inadequate toothbrushing as cause of dental caries		
Yes	38	90.5
No	3	7.1
I don't know	1	2.4
Total	42	100.0
Family tendency as cause of dental caries		
Yes	28	66.7
No	5	11.9
I don't know	9	21.4
Total	42	100.0
Overcrowding and malpositioned teeth as cause of childhood dental caries	33	78.6
Yes	2	4.7
No	7	16.7
I don't know	42	100.0
Total		

Hospital (UBTH) Benin City and the Irrua Specialist Teaching Hospital (ISTH) Irrua. The increasing collaboration between the dental community and other specialties especially concerning child health is underlined by the growing interest of paediatricians in the oral health of their patients. This stance has been seen to impart on the training of paediatric residents as it has seemingly increased the knowledge base of pediatrician trainees as it concerns oral health including dental caries and its risk factors with majority of the respondents acknowledging that carbohydrates (73.8%) and bacteria (85.7%) were the major factors implicated in the formation of dental caries. This is similar to the results of a study amongst registered pediatricians in India.[10] The findings by the researchers that majority of the respondents

TABLE 3– PAEDIATRIC RESIDENTS' ATTITUDE TOWARDS PREVENTION OF DENTAL CARIES

Variable	Frequency (n = 42)	Percentage
When should be the first dental visit?		
6 months	13	31.0
1 year	24	57.1
When dental caries is present	3	7.1
When pain is present	2	4.8
Total	42	100.0
What should be the frequency of dental visit?		
6 months	21	50.0
1 year	20	47.6
When dental caries is present	0	0.0
When pain is present	1	2.4
Total	42	100.0
Do you examine teeth for caries?		
Yes	14	33.3
No	21	50.0
I have never felt it necessary	7	16.7
Total	42	100.0
Do you counsel children and their parents on the importance of toothbrushing?		
Yes	27	64.3
No	11	26.2
I have never felt it necessary	4	9.5
Total	42	100.0
When do you recommend for commencement of toothbrushing		
After eruption of milk teeth	17	40.5
After eruption of some milk teeth	20	47.6
After eruption of all milk teeth	5	11.9
Total	42	100.0

were conversant with risk factors for dental caries such as inadequate toothbrushing, overcrowding and malpositioned teeth; as was well as the fact that family tendency is a factor in the formation of dental caries further highlights the attendant diffusion of critical information from the dental community to the child health practitioners; this was particularly consistent with findings from studies amongst Italian[7] and Indian pediatricians.[10]

Similar levels of appreciation were evident in the responses with majority of the respondents agreeing that the amount of sugar and frequency of sugar intake also

played key roles in the formation of caries while a greater number of respondents also agreed that night feeding (76.2%) and bottle feeding (61.7%) were contributory to dental caries formation, these findings were in keeping with similar studies amongst pediatricians in India and Turkey,[10,11,12] although there was no significant difference between the respondents who were aware that dental caries causing bacteria can be transmitted from mother to child and those who were not aware. This is also similar to findings in similar studies.[12,13]

The researchers found that more than half of the respondents (57%) believe that the first dental visit of a child should be at 1 year which is in keeping with the position of the American Academy of Pediatric Dentistry (AAPD) guideline and the AAP (American Academy of Pediatrics) [14,15]which says that the first dental visit should be within the first 6 months of the eruption of the first tooth per year. This is also similar to findings by Poornima*et al,* and Rabia *et al,*[10,11] but at variance with studies amongst post-residency fellows of the American Academy of Pediatricians (or is it Pediatrics?) and graduating pediatric residents where 17% and 23% respectively recommended that the first dental visit should occur by one year of age while 29% recommend that the first dental visit should be by two years of age.[11]

While a previous study amongst paediatricians in Saudi Arabia[16] showed that most of the respondents (83%) examined the teeth for caries, the researchers noted that only half (50%) of the respondents in this study examine the teeth of children for dental caries. This was observed to be less in a US survey (33%) [17] but more in an Indian study[10] (59%) which also showed that only 44% of respondents counseled children and parents on toothbrushing as against the 64.5% noted in this study.

The researchers found that majority of respondents were knowledgeable about the use of dentifrices and fissure sealants in the prevention of dental caries, this is converse to findings from other previous studies amongst paediatricians in India and Saudi Arabia[12,16] which both concluded that there is need for an increased collaboration between the paedodontists and the paediatricians. It was also noted in this study that most of the respondents (97.6%) agree that paediatricians have a role in promoting oral health and prevention of dental caries. This is similar to the findings reported in previous studies. [10,16]

Sabbagh et al,[18] reported that only 47.7% of paediatricians referred their patients to dentists while another study noted that 86% of paediatricians referred their patients to a a paedodontist.[10]This study however noted that 76.5% of respondents referred patients to the paedodontist.

Conclusion

This study indicates that the pediatric residents in the University of Benin Teaching Hospital and the Irrua Specialist Teaching Hospital have good attitude, knowledge and awareness about the prevention of dental caries in children. The researchers feel that this is a good basis on which further collaboration between the Paedodontist and Pediatricians can be encouraged to emphasize training and retraining on the early screening and diagnosis of dental caries. The paediatricians, who are the bridge between the patients and the paedodontists, appreciate their role in the prevention of dental caries and as this study suggests, and are willing to play their role to ensure maximum preventive and interceptive benefits in the prevention of dental caries in children.

TABLE 4 – PAEDIATRIC RESIDENTS'S AWARENESS TOWARDS PREVENTION OF DENTAL CARIES

Variable	Frequency (n = 42)	Percentage
Use of fluoride dentifrices and fissure sealants in prevention of caries		
Yes	26	61.9
No	5	11.9
I don't know	11	26.2
Total	42	100.0
Recommendation that parents clean their children's teeth twice daily		
Yes	38	90.5
No	3	7.1
Sometimes	1	2.4
Referral of children with caries to paedodontist		
Yes	32	76.2
No	5	11.9
I have never felt it necessary	2	4.8
There is no established protocol for referral	3	7.1
Total	42	100.0
Routine dental visit in preventing dental caries		
Yes	38	90.5
No	0	0.0
I cannot stick out my neck	s4	9.5
Total	42	100.0
Recommend the use of pacifiers		
Yes	2	4.8
No	37	88.1
The use of pacifiers have never come up	3	7.1
Total	42	100.0
Paediatrician's role in promoting oral health/in preventing dental caries		
Yes	41	97.6
No	1	2.4
Not sure	0	0.0
Total	42	100.0

REFERENCES

1. Kassebaum N, Bernabe E, Dahiya M, Bhandari B, Murray C, Marcenes W. Global burden of untreated caries: a systemic review and metaregression. Journal of Dent Research 2015;94:650-658
2. Boyce WT, Den Besten PK, Featherstone JD, Adler EN, Stamperdahl J, Zhan L, Jiang Y. Social inequalities in childhood Dental caries: The convergent roles of stress, Bacteria and Disadvantage. Soc Sci Med 1982 ;71 : 1644-1652
3. Gussy MG, Waters EG, Walsh O, Kilpatrick NM. Early childhood caries: current evidence for aetiology and prevention.

Journal of Pediatrics and Child Health 2006 ;42 :37-43.
4. Tinnanoff N, O'Sullivan DM. Early childhood caries: overview and recent findings. Pediatr Dent 1997; 19:12-16
5. Febres C, Echeverri EA, Keene HJ. Parental awareness, habits and social factors and their relationship to baby bottle tooth decay. PedriatrDent.1997; 19: 22-27
6. Subramaniam P. Babu KLG, Bbu PS, Naiudu P. Oral health care of children: gynecologists and pediatricians' perspective. J Clin Pediatr Dent 2008; 32:253-8
7. DI Giuseppe G, Nobile CGA, Marinelli A, Angelillo IF. Knowledge, attitude and practices of pediatricians regarding the prevention of oral diseases in Italy. BMC Public Health 2006; 6:176
8. Schafer TE, Adair SM. Prevention of dental disease. The role of the Pediatrician. Pediatr Clin North Am 2000;47: 1021-1042
9. Ismail AI, Hashim Nainar SM, Sohn W. Children's first dental visit: attitudes and practices of US pediatricians and Family physicians. Pediatr Dent 2003; 25: 425-430.
10. Poornima P, Bajaj M, Nagaveni NB, Roopa KB, Neena IE, Bharath KP. Evaluation of the knowledge, attitude and awareness in prevention of dental caries amongst pediatricians. Int J Community Med Public Health. 2015 ; 2:64-70
11. Rabia GS, Cem P, Abdulkadir B. Pediatricians' awareness of children's oral health: Knowledge, training, attitudes and practices among Turkish pediatricians. Pediatr Child Health 2013;18:15-19
12. Murthy GA, Mohandas U. The knowledge, attitude and practice in prevention of dental caries amongst pediatricians in Bangalore: a cross-sectional study. J Indian SocPedod Prevent Dent. 2010;28:100-103
13. Berkowitz RJ, Jones P, Mouth -to- Mouth transmission of the bacterium Streptococcus mutans between mother and child. Arch Oral Biol. 1985; 30:377-379
14. Sanchez OM, Childres NK, Fox L, Bradley E. Physicians' views on pediatric preventive dental care. Pediatr dent.1997;19:377-383
15. American academy of Pediatrics policy statement. oral risk assessment timing and the establishment of the dental home. Pediatrics. 2003; 11:1113-1116.
16. Al-Hussyen A, Al- Sadhan S, Al- Dhalaan R, Al-Ghanim B. Pediatricians knowledge and practices towards children's preventive oral health care in Saudi Arabia. Egypt Dent J 2003; 49:827-834
17. Ismail AI, Nainar SM, Sohn W. Children's first dental visit: Attitudes and practices of US pediatricians and family physicians. Pediatr Dent 2003; 25:425-430.
18. Sabbagh HJ, El-Kateb M, al Nowaiser A, Hanno AG, Alamoudi NH. Assessment of pediatricians dental knowledge, attitude and behavior in Jeddah, Saudi Arabia. J Clin Pediatr Dent, 2011; 35:371-376.