

**ORIGINAL ARTICLE****KNOWLEDGE, ATTITUDE, AND PRACTICE OF PEDIATRIC RESIDENTS TOWARDS ORAL HEALTH OF CHILDREN IN ADDIS ABABA: A CROSS-SECTIONAL STUDY**Endalamaw Asnake<sup>1</sup>, Damte Shimelis<sup>1\*</sup><sup>1</sup>Department of Pediatrics and Child Health, College of Health Sciences, Addis Ababa University, Addis Ababa, Ethiopia\*Corresponding author: [damte.shimelis@aau.edu.et](mailto:damte.shimelis@aau.edu.et)**ABSTRACT**

**Background:** : The state of good oral health in children is mainly contributed by the knowledge, practice and attitude of front-line health workers like general practitioners, family physicians, postgraduate pediatric residents, and pediatricians. Assessing the knowledge, practice, and attitude of residents would give directions for further quality improvement projects. This study aimed to assess the knowledge, attitude and practice of pediatric residents on oral health in children in 3 public post-graduate teaching institutions in Addis Ababa, Ethiopia.

**Methods:** Hospital-based cross-sectional study was conducted among 169 pediatric residents from 3 public postgraduate teaching institutions of Addis Ababa from June 1-August 30, 2022. The knowledge, Attitude and practice of residents were assessed by a structured questionnaire adapted from an extensive literature survey. Then the data was analyzed using SPSS version 25 software package. Descriptive summary statistics such as frequency and proportion were applied and finally, the results were presented using tables and figures.

**Results:** In this study, 169 residents were involved. Males were 106 (62.7%) and the remaining were females. Only 18 (10.7%) of participating residents had good knowledge but 43 (25.4 %) and 108 (70.2%) had moderate and poor knowledge of oral health in children respectively. Most 164 (97%) had a good attitude towards oral health, but 19 (11.2%), 86 (50.9%), and 64 (37.9%) had good, moderate, and poor practice respectively.

**Conclusion:** The majority of pediatric residents in Addis Ababa had good attitude toward oral health but moderate practice and poor knowledge about oral health in children. Residents should be trained to improve their knowledge and practice toward oral health.

**Keywords:** Knowledge, Attitude, Practice, Pediatrics, Oral Health, Ethiopia

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## Background

Oral health determines overall health, well-being, and quality of life (1). Dental caries is among the most common chronic diseases affecting children. It is a remarkable public health problem in early childhood, with unfavorable impacts across the lifespan. 60–90% of children are affected, with rates of dental caries higher than childhood asthma globally<sup>2</sup>. Dental caries is a progressive disease; if managed early can be reversed, but becomes more complex over time if left untreated (3,4). Chronic pain/discomfort related to dental caries affects the children's cognitive development commonly with poor school attendance and lack of concentration (5). Contributing factors for poor oral health in children include age, gender, geographic location, social disadvantage, socioeconomic status, and lifestyle factors (6-10).

It is recommended that dental care should be a priority in all health service programs including dental care starting from 6 months of age, regular exposure to small amounts of fluoride, and promotion of exclusive breastfeeding (11-18).

Parents visit a pediatrician than a dentist in the early lives of their children so pediatricians are considered to be the best for prevention of caries and early referral of children to the dentist when needed (19,20). For pediatricians to be successful in this regard, they should be equipped with up-to-date evidence-based knowledge and practice. On the contrary several studies have shown that the oral health

knowledge and practice of pediatricians is unsatisfactory though they are willing to practice oral health care (20-21). A study done in Ethiopia at different levels of health workers showed oral health-related knowledge was low (22).

The study aimed at finding the gap and provide the available information related to knowledge, attitudes, and practices (KAP) of pediatric residents working in the Department of Pediatrics of Addis Ababa University, St. Paul's Millennium Medical College, and Yekatit 12 Hospital Medical College.

There are no studies done regarding KAP on pediatric oral health among pediatric residents in the study area. The results of this study therefore will provide information about KAP among pediatric residents and plan for further educational interventions.

## Materials and Methods

### Study area

The study was conducted at three government teaching Hospitals, Tikur Anbessa Specialized Hospital, St. Paul's Hospital Millennium Medical College and Yekatit 12 Hospitals where post-graduate education is being conducted.

Tikur Anbessa Specialized Hospital is found in the capital city of Addis Ababa and is the largest referral hospital in the country, and serves approximately 370,000- 400,000 patients a year but the exact number is not known. It is one of the largest teaching hospitals in the country providing eight undergraduate and over 70 post graduate programs.

There are 123 residents attending the postgraduate program in the Department of Pediatrics and Child Health.

St. Paul's Hospital Millennium Medical College, is also located in the capital city of Addis Ababa. The college initiated Ethiopia's first integrated modular and problem-based curriculum for its undergraduate medical education and is currently expanding to postgraduate programs including pediatric residency. There are 72 residents enrolled in the postgraduate program of pediatrics and child health.

Yekatit 12 Hospital Medical College, is also located in Addis Ababa, and was established in 1923 as one of the modern medical service delivery centers in the country but started its postgraduate program recently and currently there are 37 residents enrolled in the postgraduate training of pediatrics and child health.

### **Study design and period**

An institution-based cross-sectional study was conducted from June 1-August 30, 2022. The study participants were all pediatric residents practicing in these 3 teaching hospitals during the study period and who were willing to participate in the study. All residents who were not available at the time of data collection because of various reasons and who were not willing to participate were excluded.

### **Sample size determination**

The required sample size of eligible participants for the study was determined by using a single population proportion formula, 5% margin of error and 95% confidence level. Using this formula, the sample size becomes 384. But

the total number of pediatric residents in the 3 hospitals was 232, so we took all the residents as study participants.

### **Data collection methods**

The questionnaire was distributed to the study participants by the principal investigator after their morning meetings by the principal investigator and collected on the spot. The data was obtained from residents by using structured questionnaire after getting verbal consent. The questionnaire was adapted from an extensive literature survey. It consisted of five parts. The first part contained basic demographic information. The second part included 7 Yes/No and 2 multiple choice questions to assess the participants' knowledge. The third part included 8 questions to assess the participants' attitude towards oral health care in children with the answers of Agree, Uncertain and Not agree. The fourth part contains 5 questions with the answers of always/sometimes/ rarely and not at all to assess practice of participants. The fifth part contains two multiple-choice questions to assess the oral health information sources of participants. The questionnaire was in English and it was distributed to residents at the same time and collected on the spot. The face and content validity of the questionnaire was established by experts' approval from previously done studies.

### **Data processing and analysis**

After data collection, it was entered using ODK version 1.25.2, each completed form was checked for completeness and exported to SPSS version 25 for analysis. The result is

presented using descriptive summary statistics such as frequencies, proportions and presented in tables and figures

### Study Variables:

Outcome variables: Knowledge, Attitude and practice of residents

Explanatory variables: age, sex, religion, marital status, year of residency, training about oral health care and work experience.

### Operational Definition (27)

#### Scoring criteria

- **Good Knowledge** - Respondents who score above or equal to the mean score (75%) of knowledge related questions.
- **Moderate knowledge**- Respondents who score above or equal to the mean score (50%) but below mean score (75%) of knowledge related questions.
- **Poor knowledge** - Respondents who score below mean score (50%) of knowledge related questions.
- **Good attitude** - Respondents who scored more or equal to mean score (75%) of attitude related questions.
- **Moderate attitude**- Respondents who score above or equal to the mean score (50%) but below mean score (75%) of attitude related questions
- **Poor attitude** - Respondents who scored below mean score (50%) of attitude related questions.
- **Good practice** - Respondents who scored more or equal to mean score (75%) of practice related questions.

- **Moderate practice**- Respondents who score above or equal to the mean score (50%) but below mean score (75%) of practice-related questions

- **Poor practice** - Respondents who scored below the mean score (50%) of practice-related questions.

### Ethical consideration

An ethical clearance and official letter were obtained from the Department Research and Publication Committee of Addis Ababa University, Department of Pediatric and Child Health. After getting permission from the hospitals to participate in the study, verbal consent was obtained from each resident. The data collection was anonymous which doesn't include the names of individual participants or any other personal identifiers and confidentiality was maintained at all levels of the study, and the collected information was kept in a secured place.

### Results

Out of the total 232 residents, 31 were excluded from the study due to annual and maternity leaves. The remaining 201 residents were given the questionnaire and 169 of them responded with a response rate of 84%. The majority of respondents 74 (43.8 %) were year two, 56 (33.1%) were year one, and 39 (23.1%) were year three residents. Males were 106 (62.7%) the remaining were females. The majority 77.5% were between 25-30 years old. The socio-demographic characteristic of the study participants is shown in (Table 1).

Table 1: Demographic characteristics of 169 participating residents on oral health survey in children, Addis Ababa

Variable		Frequency	Percent
Institution	Black lion	85	50.3
	St Paul	61	36.1
	Yekatit 12	23	13.6
Gender	Male	106	62.7
	Female	63	37.3
Age	below 25 years	1	0.6
	25-30 years	131	77.5
	31-35 years	35	20.7
	above 35 years	2	1.2
Marital status	Single	93	55.0
	Married	73	43.2
	Divorced	3	1.8
Year of residency	first year	56	33.1
	second year	74	43.8
	third year	39	23.1
Training on oral health	Yes	40	23.7
	No	129	76.3
Duration of the training	< 1 hour	6	3.6
	1-2 hours	15	8.9
	2-3 hours	3	1.8
	> 3 hours	16	9.5
	Total	40	23.7
Total		169	100.0

### Assessment of knowledge of 169 participating residents towards oral health in children

Knowledge of oral health in children was measured using the cumulative score of 9 questions. Sixty-one-point five percent of the residents feel that topical application of fluoride prevents tooth decay, 46.2% of the resi-

dents feel that fluoridated toothpaste is unsuitable for under 3 years of age and 85% of the residents feel that the first dental visit shall be started at 3 years of age. (table 2). The mean  $\pm$  SD knowledge score of the total residents were 3.95 ( $\pm$ 1.91).

Table 2: Knowledge of 169 participating residents on oral health in children, Addis Ababa

Items		Frequency	Percent
Fluoride prevents tooth decay when applied topically	No	33	19.5
	uncertain	32	18.9
	Yes	104	61.5
Fluoridated toothpaste is suitable under 3 years of age	No	78	46.2
	uncertain	56	33.1
	Yes	35	20.7
Are there any differences between breast and bottle feeding regarding their effect on the dentition?	No	4	2.4
	uncertain	16	9.5
	Yes	149	88.2
Prolonged and on-demand breastfeeding leads to dental caries.	No	96	56.8
	uncertain	30	17.8
	Yes	43	25.4
Cavity-causing bacteria can be transmitted from mother to child.	No	39	23.1
	uncertain	50	29.6
	Yes	80	47.3
What is the recommended age for initiating a toothbrush and using fluoridated toothpaste for brushing a child's teeth?	When the first teeth erupt	35	20.7
	After all primary teeth erupt	67	39.6
	When a child can hold a toothbrush	18	10.7
	after 5 years of age	49	29.0
Prenatal bad oral health of a mother can affect negatively the child's oral health.	No	35	20.7
	uncertain	39	23.1
	Yes	95	56.2
What is the recommended age for the first dental visit?	3 years old	85	50.3
	5 years old	24	14.2
	≤1-year-old	60	35.5
Can dental/fissure sealants prevent dental caries?	No	37	21.9
	uncertain	65	38.5
	Yes	67	39.6
Total		169	100

More than two third 108 (70.2%) of residents had poor overall knowledge on oral health in children, whereas 43 (25.4%) and 18 (10.7%) residents had moderate and good knowledge respectively (fig 1).

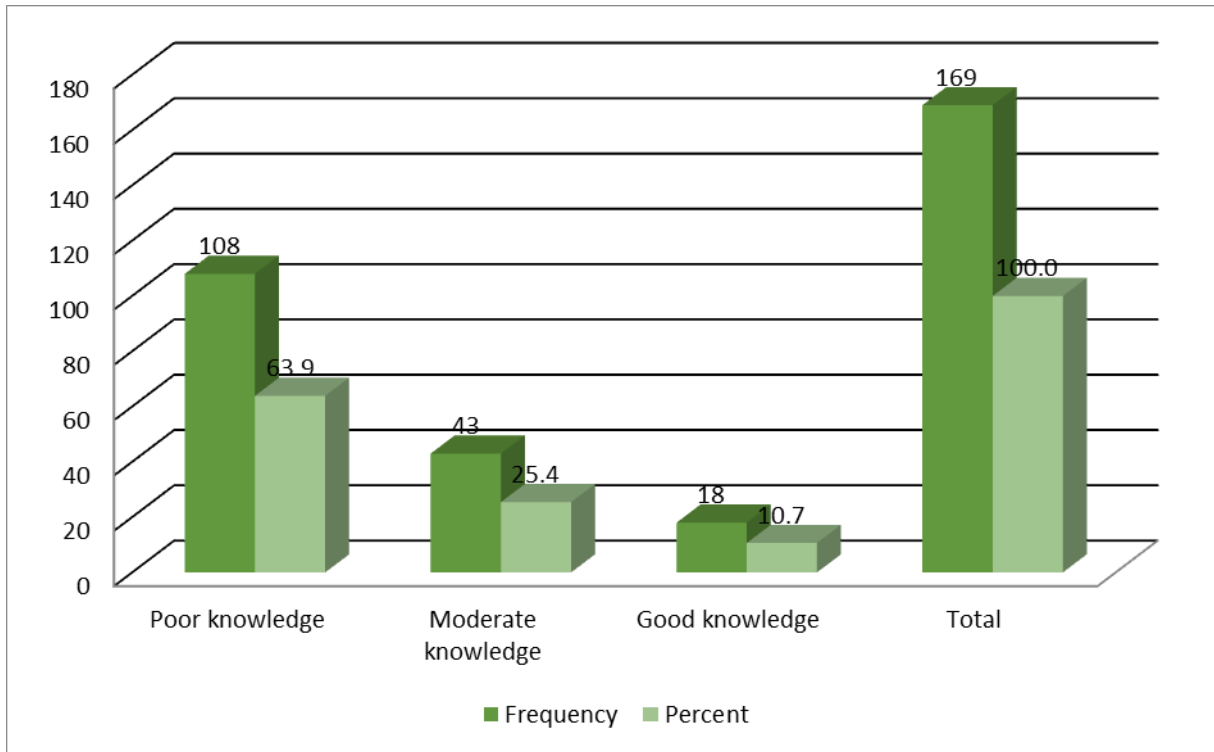


Figure 1: Knowledge of 169 participated residents on oral health in children, Addis Ababa

### Attitude toward oral health of 169 participating residents on oral health

To assess the attitude of residents toward oral health eight questions were designed with a total score of 16 as demonstrated in table 3.

The mean  $\pm$  SD attitude score of the total residents were 14.3 ( $\pm$ 1.4). Most 97% of the residents had good attitude on oral health in children. (fig 3).

Table 3: Attitude of 169 participating residents on oral health in children, Addis Ababa

Variable		Frequency	Percent
Dental caries may be prevented.	Disagree	1	0.6
	Uncertain	3	1.8
	Agree	165	97.6
Gingivitis may be prevented	Disagree	1	0.6
	Uncertain	4	2.4
	Agree	164	97.0
Malocclusion may be prevented	Disagree	13	7.7
	Uncertain	54	32.0
	Agree	102	60.4
Oral hygiene is important in preventing dental caries	Disagree	1	0.6
	Uncertain	5	3.0
	Agree	163	96.4
Routine dental visit is important in preventing oral diseases	Disagree	4	2.4
	Uncertain	10	5.9 %
	Agree	155	91.7
Fluoride supplement is important in preventing dental caries	Disagree	6	3.6
	Uncertain	36	21.3
	Agree	127	75.1
Pediatric residents have an important role in the prevention of oral diseases	Disagree	1	0.6
	Uncertain	8	4.7
	Agree	160	94.7
Pediatric residents should provide an oral cavity health examination	Disagree	2	1.2
	Uncertain	9	5.3
	Agree	158	93.5
Total		169	100

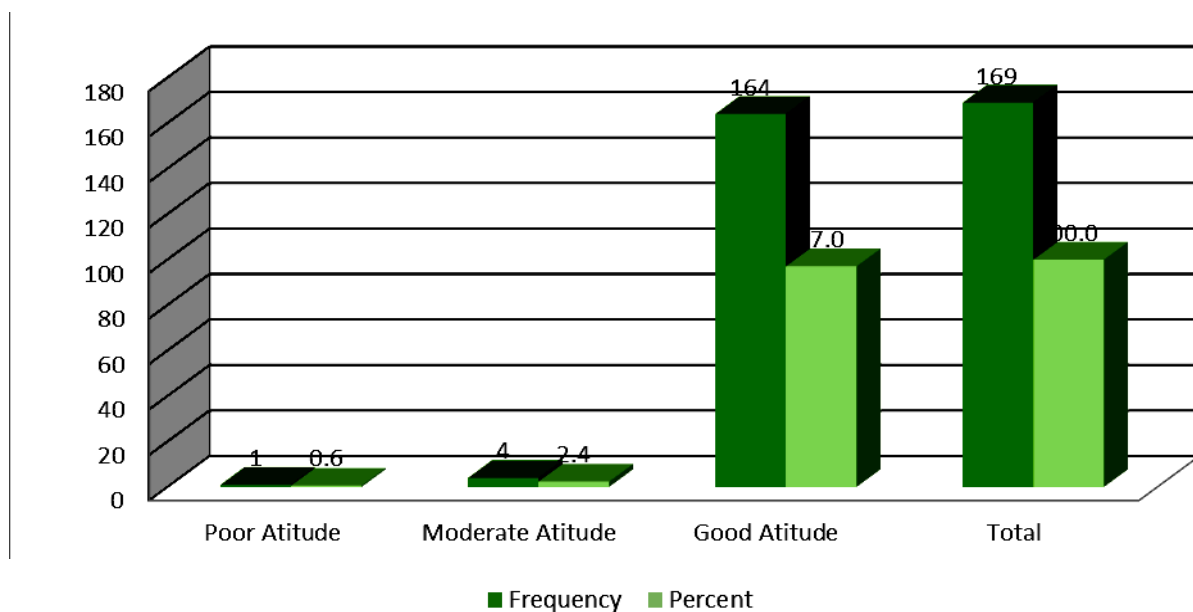


Figure 2: Attitude of 169 participating residents on oral health in children, Addis Ababa



### The practice of 169 participating residents toward oral health

Practice on oral health was measured using the cumulative score of 15 questions. Fifty-eight percent of residents sometimes examine children's teeth for cavities, 46.2% of the resi-

dents sometimes recommend a dental visit to patients and 48.5% do not provide educational material to patients. (table 4). The mean  $\pm$  SD Practice score of the total residents were 8.24  $\pm$ 3.04.

Table 4: Practice of 169 participating residents on oral health in children, Addis Ababa

Variable		Frequency	Percent
Do you examine children's teeth for cavities?	Not at all	6	3.6
	Rarely	35	20.7
	Sometimes	98	58.0
	Always	30	17.8
Do you routinely recommend a dental visit to patients?	Not at all	20	11.8
	Rarely	51	30.2
	Sometimes	78	46.2
	Always	20	11.8
Do you counsel patients and their guardians on regular tooth brushing?	Not at all	6	3.6
	Rarely	36	21.3
	Sometimes	86	50.9
	Always	41	24.3
Do you recommend parents brush their children's teeth?	Not at all	9	5.3
	Rarely	33	19.5
	Sometimes	91	53.8
	Always	36	21.3
Do you provide parents with educational or oral hygiene tools such as books, pamphlets, and toothbrushes?	Not at all	82	48.5
	Rarely	37	21.9
	Sometimes	36	21.3
	Always	14	8.3
Total		169	100 %

Figure 1: Participants' knowledge, attitude, and practice level (n = 141)

Only 11.2% of participating residents had good practice regarding oral health, 50.9% of

them had moderate practice but 37.9 % had poor practice (fig 4).

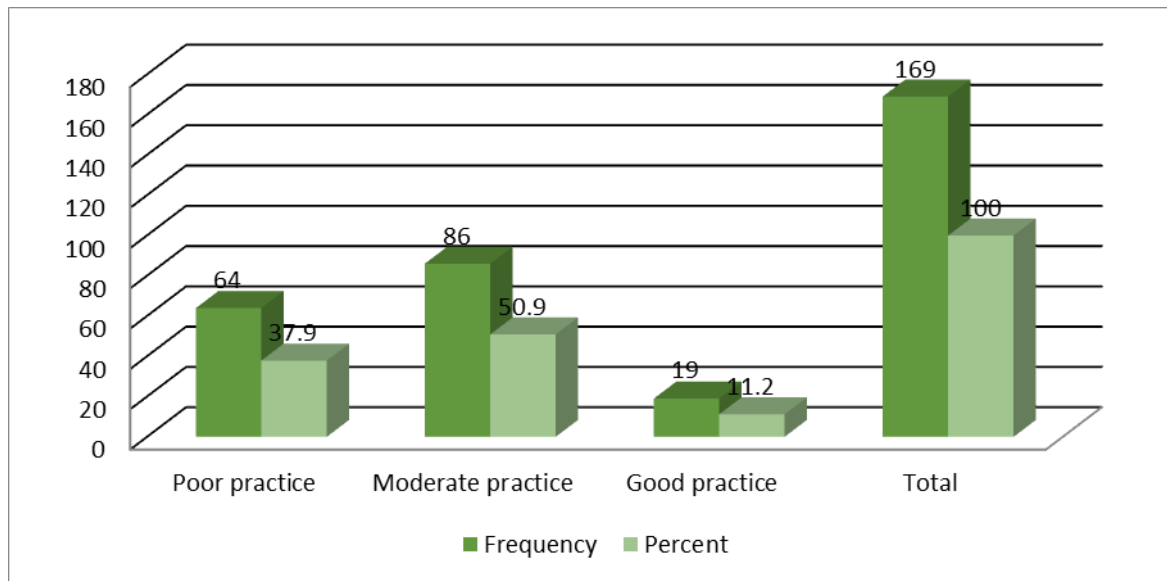


Figure 3: Practice of 169 participating residents on oral health in children, Addis Ababa .

### Source of information on oral health

Regarding the source of information about the prevention of oral disease, the most common sources were from undergraduate educational courses that account for more than two third 39.6%, followed by scientific journals and from colleagues, and other sources which accounts for 16.6%, 14.2%, 4.1%, and 7.1% respectively. The rest 18% didn't receive information about prevention of oral disease. Almost all (98.8%) of residents claimed that they need further information about the prevention of oral diseases.

### Discussion

#### Knowledge of 169 participating residents on oral health

This study was conducted with the objective to assess oral health-related knowledge, attitude, and practices among pediatric residents during their residency program. Children visit a pediatrician more often than a dentist but, in

this study, only 10.7% of pediatric residents have good knowledge on oral health. The rest 25.2 % and 70.2% of pediatric residents had moderate and poor knowledge on oral health in children respectively. A scoping review of studies done among 19 countries and 42 eligible articles showed that the knowledge of pediatricians on oral health was inadequate (23). In this same studies knowledge on the initial signs of dental caries, etiologic agents of dental caries, recommended dates of initial dental visit, mother to child transmission of cavity causing bacteria and on the use of fluoride supplements to prevent dental caries was poor like our study.

Previous studies have shown that cavity causing bacteria can be transmitted from mother/ care giver to a child (24,25), only less than half of participating residents know about it. Though the first dental examination is recommended at the time of the eruption of the first

tooth and no later than 12 months of age (18); only 20.7% of participating residents mention it correctly. Although the American academy of pediatric dentistry (AAPD) recommends tooth brushing as soon as first tooth erupts (26), only 20.7% of residents mention it correctly. A 2016 systematic review concluded that sealants are effective in preventing and arresting carious lesions of primary and permanent molars in children and adolescents and minimize the progression of carious lesions (18); but only 21.9% participating pediatric residents knew and 38.5% were uncertain about it. Studies done in Saudi Arabia, United Arab Emirates and Balkan countries (27-28, 29) have shown pediatricians knowledge on oral health in children was unsatisfactory.

### **Practice of 169 participating residents on oral health**

Participating residents' practice regarding oral health care is poor; only 11.2% of participating pediatric residents had good practice the remaining 50.9% and 37.9% of residents had moderate and poor practice respectively. A study done in Lagos, Nigeria also showed 71% of pediatricians have poor practice on oral health in children (30). Only 17.7% participating pediatric residents routinely examine children's teeth for cavity. A study done in Lagos, Nigeria showed only 30.8% of pediatricians routinely examine children's teeth for cavity (30), only 11.9% participating residents routinely advice children and their guardians for dental visit, less than a quarter of them council children and their guardians on the

importance of regular tooth brushing, 21.3 % routinely recommend parents to brush their children's tooth and only 8.3 % routinely provide parents educational and oral hygiene tools. This is similar with previous results (27,28,30,).

### **The attitude of 169 participating pediatric residents on oral health**

More than 93% of participating residents agree that residents should provide an oral cavity health examination, oral hygiene is important in preventing dental caries and dental caries could be prevented. More than 95 % had a good attitude toward oral health care. Studies done in Saudi Arabia, United Arab Emirates, and Lagos Nigeria have shown good attitude toward oral health in children and pediatricians were of the opinion that they have a role to play in preventing tooth decay in children (30).

There are some limitations in the current study. There could be response bias as in survey studies and other residents out of Addis Ababa were not included so generalization might not be possible.

In conclusion, participating pediatric residents in Addis Ababa have good attitude toward oral health in children but have poor knowledge and practice.

### **Recommendations**

The majority of participating residents have a good attitude toward oral health in children but poor knowledge and practice so we recommend oral health in children should be included in the post graduate curriculum.

**Declaration**

We declare that there is no conflict of interest.

**Authors' contribution:**

EA proposal writing, data collection, data analysis

DS proposal reviewing, data analysis, and writeup

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