

“Knee-To-Knee” Position for Minor Procedures in Infants and Toddlers- Dentists Attitudes

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Objective: The objective of this survey was to assess attitudes of pediatric dentists in Israel toward using “knee-to-knee” positioning for dental examinations and for minor procedures in infants and toddlers. **Study design:** An anonymous questionnaire was distributed among specialists in pediatric dentistry. Eleven questions accessed demographic data, professional experience and attitudes toward the use of the “knee-to-knee” position. **Results:** Of 68 respondents, 66 (97%) reported using “knee-to-knee” positioning for dental checkups. In addition, 52 (76%) reported performing other procedures in the “knee-to-knee” position. Fluoride application and oral hygiene instructions are the most common procedures performed in the “knee-to-knee” position. **Conclusions:** “Knee-to-knee” positioning was found very convenient for dental examinations and other simple procedures in very young children.

Keywords: Knee-to-knee, dental examination

INTRODUCTION

The American Academy of Pediatric Dentistry guidelines on infant oral health care recommends an oral examination for infants of any age including newborns, even in the absence of any known problems¹. A child’s first dental visit and oral examination should occur by at least 1 year of age¹.

Various positions are possible for facilitating a toddler’s dental examination. The dental chair can be raised and adjusted to simulate a physician’s examination table. The infant then lies supine at the foot of the dental chair. This position enables adequate visualization of the teeth and oral cavity². A designated dental examination table was developed to perform oral examinations of infants until they are old enough to be seated on the conventional dental chair³.

An effective and comfortable position for the patient, parent, and dentist is the “knee-to-knee” position^{2,4,5}. The dentist and the parent are seated face to face with their knees touching. The infant is placed on the parent’s lap, facing the parent, with legs wrapped around the parent’s waist. While the parent holds the child’s hands, the child is laid back, resting the head in the dentist’s lap (fig.1). This position enables the child to see and feel the parent while the dentist performs the examination. The position allows for visualization of the oral cavity by both the parent and the dentist. Another option is to use a lap cushion device that flexes with the baby, and allows the tilt-back to feel more secure². In the “knee-to-knee” position, in contrast to lying in the dental chair, the direct

Fig. 1: The “knee-to-knee” position



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involvement of the parent provides emotional support to the child, and enables the parent to help restrain the child⁴.

“Knee-to-knee” positioning has been described in the literature only as an aid for pediatric dental examinations^{2,4,5}. The approach requires no additional devices and enables the child to see and feel the parent, while allowing visualization of the oral cavity by the dentist. The option of using this position for simple procedures, such as fluoride application, oral hygiene teaching, interim therapeutic restorations (ITR), composite bandage for fractured anterior teeth, and even for extraction of anterior teeth is absent from the literature.

To the best of our knowledge, there is no published data evaluating the use of the “knee-to-knee” approach among pediatric dentists. Therefore, we conducted a survey to assess attitudes of pediatric dentists in Israel toward using “knee-to-knee” positioning for dental examinations and for minor procedures performed on infants and toddlers.

MATERIALS AND METHOD

For the year 2017, 153 specialists in pediatric dentistry were registered in Israel. Some of them reside abroad or no longer practice dentistry, so there are actually 133 active pediatric dentists in Israel. An anonymous questionnaire was distributed among pediatric dentists who attended a professional conference of the Israeli Society of Dentistry for Children, on March 31st, 2017. Of the 142 dentists who attended, 102 were specialists in pediatric dentistry. The questionnaire was handed out to the specialists at the registration desk, and collected during the conference. The survey contained 11 questions that accessed demographic data, professional experience and attitudes toward the “knee-to-knee” position (fig.2).

Statistical analysis

Data were analyzed using the IBM SPSS statistics software. Pearson Chi-Square and Fisher’s Exact Test were applied. $P < 0.05$ was considered a significant difference.

RESULTS

Of the 102 pediatric dentists who attended the conference, 68 (67%) participated in this study; this represents 51% of the active pediatric dentists in Israel. Of the 68 respondents, 45 (66%) were female and 19 (28%) male; four did not respond regarding their gender. Twenty-two (32%) had 0.5-5 years professional experience, 22 (32%) had 6-13 years, 23 (34%) had more than 14 years experience, and one respondent did not provide this information. Sixty-six (97%) respondents reported using “knee-to-knee” positioning for dental checkup. Fifty-two (76%) of specialists in pediatric dentistry also perform certain procedures in the “knee-to-knee” position (table 1). Gender and seniority of the respondents did not correlate with the use of this positioning for additional procedures (table 2). Almost half (47%) the respondents reported using such positioning very often, especially with children up to 3 years old (table 1). Fluoride application and oral hygiene instructions (OHI) are among the procedures most commonly performed in the “knee-to-knee” position. The majority of respondents, 62%, performed 2-4 types of procedures in this position (table 3). Classifying the procedures as non-invasive (fluoride application, OHI) and invasive (manual

calculus removal, ITR, extraction of incisors, fractured tooth restoration, fractured tooth smoothing) revealed that 38% perform only non-invasive procedures and 59% perform even invasive procedures in the “knee-to-knee position (table 4). Nine respondents specified additional procedures that they perform in this position, namely composite bandage, pumice prophylaxis, fissure sealants, slicing, and OHI after dental trauma. Only 11 respondents reported that they sometimes stop the procedure in the “knee-to-knee” position and continue in the dental chair. Reasons for such were: a high level of patient cooperation, the need for a radiographic exam, the need for inhaled sedation, discomfort from this position for the patient or for the dentist, poor restraint and the need for power suction. There was no correlation between the type of procedure performed and switching from the “knee-to-knee” position to the dental chair. Of 29 respondents who reported using the “knee-to-knee” position with children up to age 2 years, 4 (14%) sometimes switch to the dental chair during procedures. This compares with 7/23 (30%) with children up to age 3 years and older. This difference between the age groups was not statistically significant.

DISCUSSION

This is the first study to evaluate the attitudes of pediatric dentists toward using the “knee-to-knee” position for dental examinations and minor procedures. Ninety-seven percent of the dentists use this position for dental examination and 76% use this position for minor and short procedures in infants and toddlers.

There is also no published data on the behavior of infants and toddler during examination or minor treatment in the “knee-to-knee” position. Almost half the respondents to the current survey reported using the “knee-to-knee” position to perform procedures in very young patients. This suggests that the benefits this position offers in facilitating dental examinations may make it suitable for minor and short dental procedures as well. Only three respondents mentioned that they stopped treatment because of poor restraint and three mentioned that it is sometimes uncomfortable for the patient or for the dentist.

The events for which respondents mentioned using the “knee-to-knee” procedure were: fluoride application, OHI, manual calculus removal, ITR, extraction of incisors, fractured tooth restoration, fractured tooth smoothing, composite bandage, pumice prophylaxis, fissure sealants and slicing. The ITR procedure involves removal of caries using hand or rotary instruments, with caution not to expose the pulp. Following preparation, the tooth is restored with an adhesive restorative material such as a glass ionomer or a resin-modified glass ionomer cement⁶. A composite bandage procedure involves sealing exposed dentin, due to crown fracture, with a glass ionomer or composite to prevent microleakage⁷. Slicing is a preventive procedure that involves opening the contact point of the anterior teeth where minor proximal caries is observed. This arrests progression of the lesion, by enabling better saliva and fluoride flow to the area⁸. Application of Silver Diamine Fluoride is an alternative treatment approach for cavitated caries lesions in very young children. This is used as an interim approach for managing caries in toddlers who are unable to tolerate more invasive treatment in the dental chair, and to avoid dental treatment under general anesthesia⁹.

Some of the above-mentioned procedures require the use of hand instruments, high-speed or low-speed turbine, power suction,

Fig. 2: The questionnaire

1. Gender: M / F

2. Seniority as a specialist: _____ years

3. Do you use the "knee-to-knee" position for dental examinations? Yes / No

4. How old are the patients you examine in the "knee-to-knee" position?
0-1 yr. / 0-2 yr. / 0-3yr. / also older than 3yr.

5. What proportion of the above patients do you examine in the "knee-to-knee" position?
All (100%) / half (50%) / less than half

6. How do you perceive that the parents respond to the "knee-to-knee" position for dental examination? Mostly positive / they are indifferent / mostly negative

7. Do you perform other procedures in the "knee-to-knee" position? Yes / No

8. If your answer was yes, which of the following procedures do you perform in the "knee-to-knee" position? (you can mark more than one answer)
fluoride application / oral hygiene instructions / manual calculus removal / interim therapeutic restorations / extraction of incisors / fractured tooth restoration / fractured tooth smoothing / other: _____

9. How often do you use the "knee-to-knee" position for procedures other than examinations? Very often / rarely

10. How old are the patients for whom you use the "knee-to-knee" position for procedures other than examinations?
0-1 yr. / 0-2 yr. / 0-3yr. / also older than 3yr.

11. Do you ever stop a procedure in the "knee-to-knee" position and continue in the dental chair? No / Yes Why? _____

Table 1: Response to the questionnaire

Question	Responses			
Use the "knee-to-knee" position for dental examination	No: 2(3)	Yes: 66(97)		
Age of the patients you examine in the "knee-to-knee" position	0-1 yr.: 3(4)	0-2 yr.: 36(53)	0-3yr.: 13(19)	Even older than 3yr.: 14(20.5)
The proportion of those mentioned patients that you check in the "knee-to-knee" position	All: 19(27.9)	Half: 32(47)	Less than half: 14(21)	NR: 1(1.4)
Parents' satisfaction from the "knee-to-knee" position for dental examination	Mostly positive 60(88)	Indifferent 6 (9)	Mostly negative 0	
Do you perform other procedures in the "knee-to-knee" position	No: 14(21)	Yes: 52(76)		
Frequency of the use of the "knee-to-knee" position for procedures other than examinations	Very often: 32(47)	Rarely: 19(28)		
The types of procedures you perform in the "knee-to-knee" position	Fluoride application: 51(68)	OHI: 40(58.8)	Manual calculus removal: 25(37)	ITR: 13(19)
	Extraction of incisors: 4(6)	Fractured tooth restoration: 6(9)	Fractured tooth smoothing 27(40)	Other: 9(13.2)
The age of the patients for whom you use the "knee-to-knee" position for other procedures	0-1 yr.: 4(6)	0-2 yr.: 25(37)	0-3 yr.: 20(29)	Also older than 3yr.: 3(4)
Do you ever stop a procedure that used the "knee-to-knee" position and continue it in the dental chair?	No: 41/68(60.2)	Yes: 11/68(16.1)		
The proportion of all respondents	41/52(79)	11/52(21)		
The proportion of those who use the positioning for procedures other than examinations				

Data are presented as numbers (%). NR: no response; OHI: oral hygiene instructions; ITR: interim therapeutic restorations

Table 2: Performance of other procedures in the "knee-to-knee" position according to gender and seniority

No [no.(%)]	Performance of other procedures in the "knee-to-knee" position		p- value	
	Yes	[no.(%)]		
gender	M	2 (11.8)	15 (88.2)	0.313
	F	12 (26.7)	33 (73.3)	
seniority	0.5-5y	5 (22.7)	17 (77.3)	0.654
	6-13y	5 (23.8)	16 (76.2)	
	14-40y	3 (13.6)	19 (86.4)	

Table 3: Responses of pediatric dentists regarding the number of procedures performed in the "knee-to-knee" position

Number of procedures	Frequency	Percent
-1*	2	2.9
0**	14	20.6
1	4	5.9
2	14	20.6
3	14	20.6
4	14	20.6
5	1	1.5
6	4	5.9
7	1	1.5
Total	68	100.0

*-1 =not using "knee-to-knee" at all, even not for examination

**0= using "knee-to-knee" only for examination

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Table 4: Responses of pediatric dentists regarding the number of invasive procedures performed in the knee-to-knee position

Number of invasive procedures	Frequency	Percent
-1*	2	2.9
0**	26	38.2
1	17	25.0
2	17	25.0
3	1	1.5
4	4	5.9
5	1	1.5
Total	68	100.0

*-1=not using “knee-to-knee” at all, even not for examination

**0 =using “knee-to-knee” only for examination, or for non-invasive procedures

and local anesthesia injection. Some of the respondents limit the use of “knee-to-knee” positioning to procedures that do not require instruments, while others do not limit as such. This choice is probably influenced by the dentist’s personal convenience and comfort in the position. The decision may also be explained by safety considerations of the procedure. Some of the procedures may involve foreign bodies such as calculus, restoration materials, and extracted teeth. While the toddler is seated in the “knee-to-knee” position, managing the airway may be more difficult than were the same procedure performed in the dental chair. The dental chair provides a flat and hard pallet, while in the “knee-to-knee” position the toddler is laid on the flexible and soft thighs of the parent and the dentist. In case of a foreign body falling into the oral cavity, uncontrolled movements of the toddler on the parent’s thighs, and limited or difficult suction access, might facilitate foreign body aspiration, which is a considerable concern in young patients. This may explain why some of the participants in this survey used the “knee-to-knee” position only for less invasive procedures.

More often for older (over age 3 years) than younger children were procedures in “knee-to-knee” positioning stopped, and continued in the dental chair. Presumably, for older children, radiographic exams may be more often needed, or better cooperation of the patient may enable examination or minor treatment in the dental chair. In situations of poor cooperation, particularly for older children, the “knee-to-knee” position may be uncomfortable for the patient or for the dentist. It does not enable good patient restraint, and dental procedures sometimes require inhaled sedation.

Local and regional insurance policies regarding treatment in a non-conventional position should be considered in selecting the “knee- to-knee” position. Since this approach is not performed in the dental chair, it may be considered as non-conventional practice especially in the case of an adverse effect. The limited ability to perform power suction or to fully use dental light, as well as the greater difficulty in restraining younger children should be considered.

The authors emphasize that the current publication is not a recommendation to use the “knee-to-knee” position in performing dental procedures, but rather only a report of the frequency of its practice. Dentists who use this practice should consider quality of treatment and safety issues.

One limitation of this study is the small number of practicing pediatric dentists in Israel. A larger study population may have revealed other perceptions of the procedure.

CONCLUSIONS

Most of the pediatric dentists who responded to our survey reported performing dental examinations to toddlers up to 3 years old using the “knee-to-knee” position. The majority of the pediatric dentists use this position also to instruct parents regarding dental hygiene, and to apply fluoride varnish. The “knee-to-knee” position has been found to be very convenient for dental examinations and other minor procedures in very young children.

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