

Oral Health Knowledge, Attitude, and Practices of Sharjah Mothers of Preschool Children, United Arab Emirates

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ABSTRACT

Objective: The improvement of children's oral health, a world global health target, is essential to general health and quality of life. Hence, the aim of this study was to assess the knowledge, attitude, and practices of mothers toward their children's oral health in Sharjah, United Arab Emirates (UAE).

Materials and Methods: A cross-sectional interview-based study was conducted among 383 mothers of preschool children (average age 3.49 [+1.63 years]) attending Sharjah Dental Center, UAE. Statistical analysis was performed using SPSS software for Windows, version 20.0 (SPSS Inc., Chicago, IL, USA).

Results: Adequate knowledge was found among 58.2% of mothers, 99% exhibited excellent attitude, and only 20% followed good practices toward their children's oral health. Poor knowledge and practice of mothers were significantly associated with mothers' occupation and education. Employed mothers had a significantly higher score of knowledge. Mothers with secondary education and university qualifications had significantly higher scores of practice compared with mothers with primary education.

Conclusions: Although mothers had better than average knowledge and excellent attitude toward their children's oral health issues; most of them carried out improper practices. Mothers' educational and employment backgrounds were significant influencing factors.

KEYWORDS: Knowledge, maternal practices, oral health, preschool children, Sharjah, United Arab Emirates

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INTRODUCTION

According to the World Health Organization (WHO), oral health is essential to general health and quality of life.^[1] It is a state of being free from mouth diseases such as dental caries (tooth decay), gum disease, tooth loss, and other diseases and disorders that limit an individual's capacity in biting, chewing, smiling, speaking, and psychosocial well-being. Oral disease in children is higher among poor and disadvantaged population groups.^[2] Conditions such as early childhood caries (ECC) has the most significant negative impact on children's oral health.^[3] The American Academy of Pediatric Dentistry described ECC as "the presence of one or more decayed (non-cavitated or cavitated lesions), missing (due to caries), or filled tooth surfaces in any primary tooth in a child 71 months of age or younger."^[4] Determining the oral health of children is highly

influenced by their mothers; as primary caregivers. The lack of knowledge in part combined with behaviors and beliefs that lead to poor feeding practices, poor oral hygiene maintenance, and failure to seek professional dental care appear to place a given child at a higher risk of developing caries than other children with more care.^[5]

Other important factors influencing children's oral health are the parental cultural and moral interpretations. Therefore, in an effort to achieve the best oral health outcomes for children; parents should be considered to

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be key persons to educate about the ideal dental hygiene practices such that the well-being of young children is ensured.^[6] Some other parental factors might include the level of education of the mother, her occupation, age, current knowledge, attitudes, and behaviors toward health. These factors determine the decisions mothers make concerning the health of her child.^[7] As dental caries is epidemic in the world and in the United Arab Emirates (UAE) in particular,^[2] an attempt has been made in this study to assess the knowledge, attitude, and practices of mothers and relate it to their educational and occupational background in Sharjah, an Emirate of the UAE. To the best of our knowledge, no similar study had been conducted in the same geographical area.

MATERIALS AND METHODS

A cross-sectional study was conducted among UAE citizens in Sharjah. Mothers of preschool children who visited the Sharjah Dental Center (SDC) from November 1, 2015 to February 29, 2016 were surveyed. SDC is considered the only specialized dental center in the Northern Emirates of the UAE (Sharjah, Ajman, Al Fujairah, Ras al-Khaima and Umm al Quwain). All general dental practitioners working in the primary health care centers of the Ministry of Health refer patients to different specialists in the center. Ethical approval was obtained from Hamdan Bin Mohamed College of Dental Medicine (HBMCDM) Research and Ethics Committee (Reference # HBMCDM/EC/2020, dated 10 September 2015) and consent was obtained from the study participants. A pilot study was conducted to validate the questionnaire among 30 mothers visiting HBMCDM pediatric dentistry clinics. These questionnaires were not included in the final analysis. All mothers of regularly scheduled dental appointments at the center were invited to participate in the study on arrival at the dental clinic; mothers were asked if they have a preschool child. All questionnaires were administered by direct interview by the principal investigator and four trained and calibrated GDPs in a standardized manner to avoid leading questions, the questionnaire was completely anonymous.

Cochrane's sample size calculation was used. A survey concept was used by assuming, the probability of having knowledge is 50%, and the suggested number of mothers (power calculation) completing the survey for this study was 400 mothers. The questionnaire used in this study was a modified structured one adopted from the questionnaire tested and used by Jain *et al.* in 2014.^[8] The English version was translated to the Arabic language. The Arabic version was back-translated into English by another person fluent in both Arabic and English. The back-translated version was compared with the English version to verify that the questions were

properly translated. The first part of the questionnaire consisted of demographical information such as the age, gender of the child, mother's education, and occupation. The second part consisted of 21 questions related to knowledge, attitude, and practices toward children's oral health. Ten questions were related to knowledge, five were related to attitude and six were related to practices. The responses for the attitude questions used the Likert scale and rated as (1) agree, (2) uncertain, or (3) disagree.

A meeting was conducted with the assigned GDPs to explain the point of the questionnaire and the process of filling it precisely. At the end, all GDPs were calibrated and standardized by an expert pediatric dentist. Kappa statistics were calculated, and an inter-examiner agreement of 80% was achieved between all direct interviewers. Data were entered into a computer and analyzed using SPSS for Windows version 20.0 (SPSS Inc., Chicago, IL, USA). Results were cross-tabulated to examine the independence between variables. Statistical analysis was performed using Chi-square or Fisher's exact test as appropriate to test for association. Where two or more continuous independent variables were examined, *t*-test and analysis of variance were used. Logistic regression was used to explain factors of knowledge. The value of $P < 0.05$ was considered statistically significant in all statistical analysis.

There were ten questions evaluating the knowledge of participants, and the score of knowledge was calculated for each of them, a cutoff point was considered on the function of the accumulation of the score of the participant by plotting the data on a normal distribution curve, this was applied also to both practice and attitude.

RESULTS

We interviewed 383 mothers of preschool children (average age 3.49 [+1.63 years]) and report the following.

MOTHERS' KNOWLEDGE

Ten questions were asked covering the participants' knowledge. A summary of the questions and results of the answers of the mothers to each question is presented in Table 1.

Treatment of tooth irregularities (malocclusion) and common dental problems was ranked the highest in knowledge as 295 (75.7%) and 282 (73.6%) mothers, respectively, responded with the correct answers. While the answers given by the mothers for the number of milk teeth, and the causes of gum diseases were ranked the lowest in knowledge; as only 85 (22.2%) and 109 (28.5%) mothers, respectively responded correctly. These findings are illustrated in Figure 1.

Table 1: Responses of participants to knowledge questions

Items	n (%)
How many teeth are there in a child's mouth	
10	29 (7.6)
12	55 (14.4)
20*	85 (22.2)
28	32 (8.4)
I don't know	182 (47.5)
Does the tooth paste contain fluoride?	
Yes*	215 (56.1)
No	51 (13.3)
I don't know	117 (30.5)
What is the role of fluoride in the tooth paste?	
Prevent tooth decay*	198 (51.7)
Prevents gum problems	42 (11.0)
Gives freshness	5 (1.3)
I don't know	138 (36.0)
What is the most common dental disease in the child?	
Tooth decay*	282 (73.6)
Bleeding gum	0
Discolored tooth	48 (12.5)
I don't know	53 (13.8)
Which of the following tooth items can lead to tooth decay?	
Chocolates	144 (37.6)
Bakery products	100 (26.1)
Soft drinks	136 (35.5)
All of the above*	3 (0.8)
I don't know	0
Causes for gum disease?	
Improper brushing	109 (28.5)
Tatar	68 (17.8)
All of the above*	191 (49.9)
I don't know	15 (3.9)
Which of the following do you think prevents the gum disease?	
Regular brushing	89 (23.2)
Professional cleaning	64 (16.7)
All of the above*	198 (51.7)
I don't know	32 (8.4)
Which of the following can lead to irregular teeth?	
Thumb sucking/tongue thrusting/mouth breathing	182 (47.5)
Runs in family	25 (6.5)
All of the above*	153 (39.9)
I don't know	23 (6.0)
Can irregular placed teeth be aligned in the correct position?	
Yes*	290 (75.7)
No	25 (6.5)
I don't know	68 (17.8)
Which of the following do you think prevents tooth decay?	
Restricting sweets	87 (22.7)
Tooth brushing	5 (1.3)

Contd...

Table 1: Contd...

Items	n (%)
Regular dental visits	31 (8.1)
Fluoridated tooth paste	23 (6.0)
All of the above*	237 (61.9)

*The most favorable answer for each question is bolded

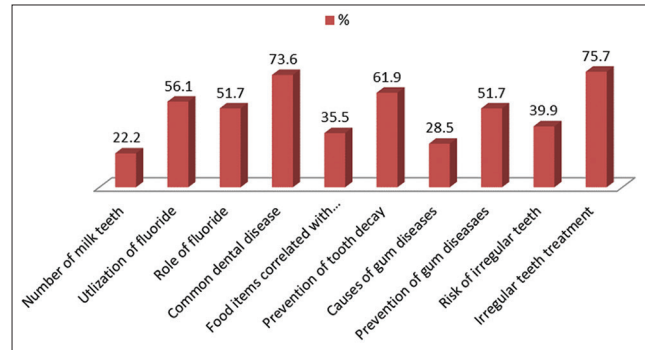


Figure 1: Percentage of correct answers for knowledge of mothers toward children oral health

MOTHERS' PRACTICE

The results of the six questions for the mothers about their practices are summarized in Table 2. Almost half of the mothers 155 (40.5%) had not taken their children to visit the dentist yet. Regarding children's dental visits, about 152 (39.7%) of the mothers reported that they visited the dentist with their children only during problems, and 169 (44.1%) reported that they take their children to the dentist every six months. For the issue of commencing the cleaning of the child's teeth, 75 (19.6%) of the mothers reported that they started cleaning the teeth after the first milk tooth erupted. For the frequency of brushing of a child's teeth, 230 (60.1%) of the mothers reported brushing their children's teeth twice a day. Changing child's toothbrush every 2-3 months was reported by 143 (37.3%) mothers. Only 13 (3.4%) reported changing the brush once bristles fray out.

SOURCE OF KNOWLEDGE

Regarding the source of knowledge for the mother's dental information [Figure 2], data revealed that there were different sources of knowledge of mothers about the oral health of their children, with relatives being the source ranked first by 102 (27%) mothers. The other sources in descending order were; friends (89 [23%] mothers), other sources of knowledge such as TV/Radio media (77 [20%] mothers), reading (64 [17%] mothers), and the least was the educational programs (51 [13%] mothers).

OVERALL SCORE OF KNOWLEDGE, ATTITUDE, AND PRACTICES

To evaluate the overall responses of the mothers, a scoring system was established; scores were based

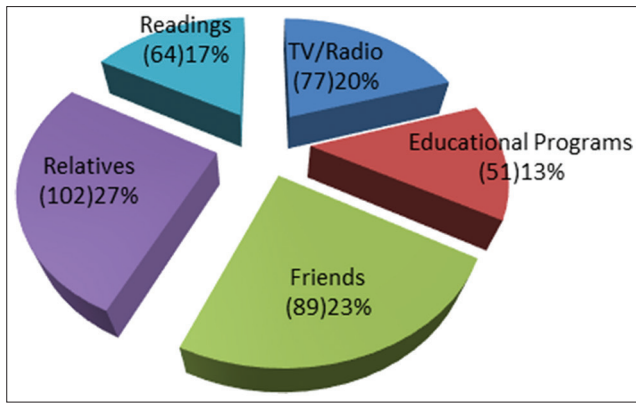


Figure 2: The distribution of the source of knowledge of mothers

on the number of correct/favorable answers given by mothers as described in the methodology section. The average score of knowledge was found to be 4.97 (standard deviation [SD] = 1.89) and according to this scale, adequate knowledge was found among 223 mothers (58.2%), and poor knowledge was found among 160 mothers (41.8), 99% of the mothers exhibited excellent attitude and only 20% were following good practices toward their children's oral health.

ASSOCIATION BETWEEN MOTHERS' EDUCATION AND KNOWLEDGE, ATTITUDE, AND PRACTICES

The association between the level of education of the mothers and their knowledge, practice, and attitude was investigated according to the scale method described in the materials and methods section. Figure 3 demonstrates this association. Mothers with at least primary level of education scored a mean knowledge of 5.18 (SD = 2.15). Those who had secondary education had a score of 5.09 (+1.92). Mothers with university qualification scored 5 (+1.90) compared with illiterate mothers 4 (+1.06). The differences between these scores were statistically significant with $P = 0.02$.

Mothers with secondary level of education and university qualification had higher scores of practice, 2.04 (+1.33) and 1.8 (+1.0), respectively, compared with mothers with primary education and illiterate mothers 1.64 (+1.49) and 1.49 (+0.80), respectively, the P value was found to be 0.036. No statistically significant association was found between the level of education of the mothers and their attitude.

ASSOCIATION BETWEEN OCCUPATION OF THE MOTHERS AND THEIR KNOWLEDGE, ATTITUDE AND PRACTICES

Employed mothers scored significantly higher mean of knowledge than the others. The average ranks were as follows: employed mothers score was 5.8 (+1.68), whereas student mothers scored 5.24 (+1.62), businesswomen scored 4.96 (+2.18) compared with

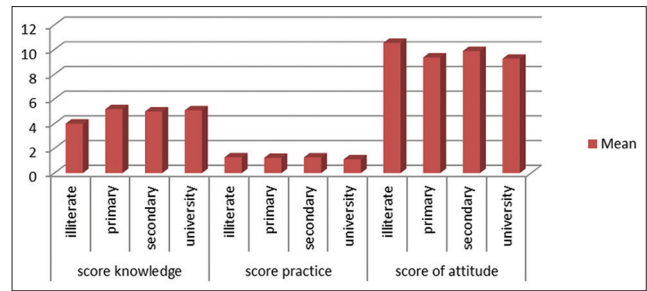


Figure 3: Association between educational level of mothers and knowledge, practice, and attitude

Table 2: Responses of participants to the practices questions

	n (%)
When was the child's fist dental visit?	
6 months after birth	8 (2.1)
After eruption of first milk tooth	87 (22.7)
1 year after birth	133 (34.7)
Not yet visited	155 (40.5)
When do you take your child to visit the dentist?	
Only during problem	152 (39.7)
Every 6 months*	169 (44.1)
Every year	43 (11.2)
Not regular	19 (5.0)
When did you commence the cleaning of your child's teeth?	
Soon after first milk tooth eruption*	75 (19.6)
After 4-6 of eruption of milk teeth	76 (19.8)
After the eruption of all milk teeth	63 (16.4)
I don't remember	169 (44.1)
How many times do you brush your child's teeth?	
Once in a day	71 (18.5)
Twice in a day*	230 (60.1)
After meal	63 (16.4)
Not regular	19 (5.0)
When do you change your child's tooth brush?	
Once in 15 days	15 (3.9)
Once in a month	120 (31.3)
Every 2-3 months	143 (37.3)
Once the bristles fray out*	13 (3.4)
Not regular	92 (24.0)
I don't know at what time do you give the sugary food items to your child?	
With meals*	19 (5.0)
In between meals	266 (69.5)
Before going to bed	0
Not regular	98 (25.6)

*The most favorable answer for each question is bolded

unemployed mothers who scored 4.34 (+1.76) with the value of $P < 0.001$.

Employed mothers had higher scores of attitude with an average score of 9.69 (+0.81), student mothers had 9.69 (+0.47), and unemployed mothers had an average score of 9.01 (+1.41) compared with women owning

their private businesses who scored 8.74 (+1.65). The difference was highly statistically significant with $P < 0.001$. No association was found between mothers' occupation and practice of the mothers [Figure 4].

DISCUSSION

In an effort to achieve the best oral health outcomes for children; parents should be considered as key persons to educate about the ideal dental hygiene practices such that the well-being of young children is ensured.^[6] It is known that prevention is the key to good oral health and knowledge is the key to implementing prevention.

The maternal knowledge, attitude, and practice toward their children's oral health in the UAE was never studied before, this study provided needed information about this topic in the Emirate of Sharjah.

In this study, adequate knowledge was found among 58.2% of the mothers, 99% exhibited the excellent attitude, and only 20% followed good practices toward their children's oral health. Poor knowledge and practice of mothers were significantly associated with mothers' occupation and education. Employed mothers had a significantly higher score of knowledge. Mothers with secondary education and university qualifications had significantly higher scores of practice compared with mothers with primary education.

The main source of knowledge for mothers in this study was found to be from family members and friends and not from health professionals or other sources highlighting the importance of cultural factors such as strong family cohesion and the involvement of extended family members in taking care of the child as reported by Pine *et al.*^[9] Patients attending the SDC clinic usually receive some oral health information leaflets. However, this was not demonstrated to be an effective tool in our study population. In addition, the attendance to the dental clinic as shown in this study was not sufficient, since only 44.1% of mothers took their children to the

dentist every 6 months, and 39.7% took their children to the dentist only when a problem existed. Therefore, it is imperative to establish proper knowledge and instill accurate information in the early stages of life regardless of the status of dental visits.

In the study at hand, 52.5% of mothers were aware of the accurate number of the primary teeth that a normal preschool child has. However, most of the mothers (99.9%) agreed that primary teeth are essential for children to chew food properly and that good oral health is related to good general health. This was a satisfying result, and subsequently, information should be constantly applied to motivate mothers on the need to protect their children's primary teeth.

Optimal exposure to fluoride is essential for the prevention of dental caries. The use of fluoride for prevention and control of caries is recognized to be both safe and effective.^[10] Although the majority of participants (56.1%) used a toothpaste containing fluoride for their children; 30.5% were uncertain whether the toothpaste their child was using contained fluoride or not and only 13% reported that they did not use a fluoride-containing toothpaste as they thought that fluoride was either harmful or they did not know what the exact benefit of fluoride was. As stated by the WHO and numerous other international health organizations, the use of fluoridated toothpaste is considered as one of the most effective approaches in preventing tooth decay.^[10] This should be emphasized early in the parenteral counseling sessions during the prenatal period or immediately after birth. The presence of this deficiency in knowledge regarding the importance of fluoride, one of the most cost-effective, safe, and easy methods in caries prevention is a matter that should be addressed.

As for the role of fluoride in the prevention of tooth decay; the majority (51.7%) of the mothers recognized that fluoride plays an important role. However, 36% did not know the exact benefit of fluoride. These results were comparable to the results of the study conducted by Gussy *et al.* 2008.^[11] Kamolmatyakul 2007^[12] stated that their study group had good knowledge about fluoride. We believe that having proper knowledge about the fluoride content of the toothpaste and its benefits will have a great impact on the children's oral health status, especially that the current data available on the dmft and DMFT (indices for recording decayed missing and filled primary and permanent teeth) respectively indicated that childhood dental caries is still a serious dental public health problem in the UAE.^[1] Therefore, it is also empirical to emphasize on the importance of using age-appropriate amount of fluoridated toothpaste. It was

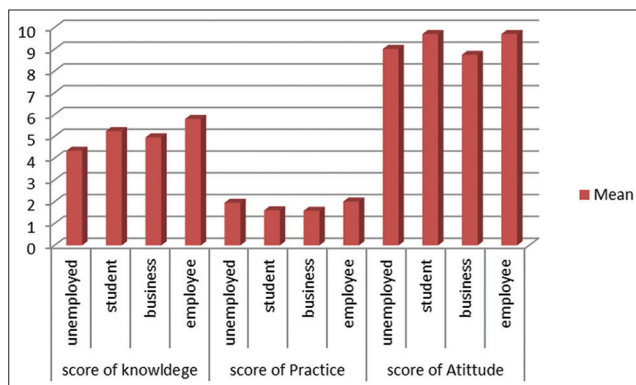


Figure 4: Association between occupation of mothers and their knowledge, practice, and attitude

recommended that to balance the benefits of preventing dental caries against the potential harms of fluorosis associated with ingesting fluoride toothpaste, children under 3 years of age should use no more than a smear of toothpaste and children 3–6 years old should only use a pea size amount of toothpaste.^[13]

Regarding the awareness about the role of sugar-containing items in the production of dental caries, the results of this study were similar to the results of studies conducted by Kamolmatyakul 2007,^[12] where only 37.7% of the mothers were aware that sugary item likes chocolates can lead to dental caries. Moreover, there was limited awareness of various formulas of sugary items, which also can contribute to the production of dental caries. This was demonstrated in our findings as only (0.8%) reported that all of the mentioned food items can cause tooth decay. This highlights insufficient knowledge about the role of sugar and the relationship between the different forms of sugar consumption and dental caries having a lack of knowledge in understanding the main food items that are related to caries formation can affect caries progression to a great extent, especially with food items that contain a large amount of sugar or those with a sticky consistency.^[14] The majority of the mothers did not know the importance of the time of intake of sugars, as 69% gave sugary snacks between meals while only 5% limited the intake of sugary foods to meal times.

Regarding the methods of prevention of tooth decay, the majority (61.9%) of mothers chose the favorable answer. The majority believed that to prevent tooth decay, a multiple method approaches should be employed early as reported by Kowash *et al.*^[15] Restricting sugar use plays an important role in caries control. Other factors were included in answering this question as the majority of mothers also recognized that tooth brushing, regular dental visits and fluoridated toothpaste are essential factors in the prevention of dental caries.

A majority (99.9%) of the mothers believed that it was essential to take their child for regular dental visits, which was comparable to the results of Oredugba *et al.* 2014.^[16] Nevertheless, this belief was not translated into practice since only 44.1% of the surveyed mothers took their children to see a dentist every 6 months. In this study, even though a large proportion of the mothers agreed that regular dental visits were required, 39.7% of the participants believed that they should take their children only if there was a problem.

It had been shown by Kowash *et al.*^[15] that the younger the child was when they started tooth brushing, the lower the possibility of developing tooth decay and that

mechanical cleaning of teeth helps to decrease dmft in children.^[17] For those who begin tooth brushing before 3 years of age are more probably going to remain caries free.^[18] In this study, only 19% of the mothers began brushing their children's teeth immediately after the eruption of the first primary tooth. This is in contrast to the findings of Wulaerhan *et al.*^[19] who found that 95% of the parents in rural Australia thought that they should start brushing when the first tooth erupts.

It was demonstrated that the occurrence and severity of ECC are correlated with the educational level of the parents.^[20] Lower prevalence of dental caries and lower mean dmft scores were associated with higher levels of parental education.^[21] The overall mean score of knowledge obtained for each group of mothers in this study demonstrated significant differences in relation to their level of education. Mothers with elementary education had a mean score of 5.18 (+2.15) and mothers with high school education had a mean score of knowledge of 5.09 (+1.92) University educated mothers had a mean score of knowledge of 5 (+1.90), whereas illiterate mothers had the lowest score of 4 (+1.06). The authors postulate that the elementary and secondary educated mothers might depend more on health education programs as a source of knowledge while university educated mothers are more likely to seek the knowledge independently from available sources such as the internet. The independent sources might not be completely accurate and might be affected by certain point of views. An example of that is the fluoride controversy as many sources on the internet claim that fluoride is a harmful substance for children.

CONCLUSIONS

This study demonstrated that although mothers had better than average knowledge and excellent attitude toward their children's oral health issues; most of them carried out improper practices toward their children's oral health. A significant relationship existed between mothers' knowledge and practices and mothers' occupation and education. The main source of oral health education and knowledge of participants was from family and friends.

Although the design of the questionnaire was validated and piloted, the interviewers were calibrated, the number of the study participants was representative of the Emirate of Sharjah; the mothers participating were not randomly chosen but were mothers seeking dental treatment for their children. There was a problem with the first section of the questionnaire regarding the demographic information such as age, educational level, and occupation, many of the mothers felt uncomfortable

answering related questions which might be due to cultural issues. Furthermore, oral health behavior of both parents affects their children's oral health behavior. As this study has interviewed only mothers, it is essential to conduct further epidemiological research involving both the parents.

It is suggested that the survey conducted in this study to be conducted in all other Emirates of the UAE to provide a better and more comprehensive view of the issue at hand. The relationship between the mothers' educational level and employment status can be investigated further to shed a clearer light on the findings in this study. The study findings implied the need for properly structured educational programs for the mothers, dentists and allied health professionals as well as day care providers, to reduce the burden of such preventable diseases on the children of the UAE.

Currently, there are no systematic reviews available regarding this topic. The conduction of a systematic review to summarize the mothers' knowledge about their children's oral health would be beneficial.

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We applied the "first-last-author-emphasis" norm for the sequence and credit of authors' contributions.

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CONFLICTS OF INTEREST

There are no conflicts of interest.

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