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ORIGINAL ARTICLE / ARAŞTIRMA MAKALESİ

The Content of a Dental Mobile Application for Children from the Perspectives of Parents and Pre-School Teacher Trainees

Ebeveynler ve Okul Öncesi Öğretmen Adaylarının Perspektiflerinden Çocuklara Yönelik Dental Mobil Uygulama İçeriği

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ABSTRACT

Objective: The aim of this study was to describe the most desirable content of a dental application (dental app) for children from the perspectives of parents and preschool teacher trainees.

Materials and methods: In this cross-sectional study, 51 parents whose children (36-72 months) were students in a preschool educational institution and 99 preschool teacher trainees in the same institution were included. Data were collected by the structured questionnaire in the face-to-face interviews regarding the desirable content of the dental app. The ratios of 1st ranked of the most prominent content and videos were noted.

Results: In the study, *"List of institutions for oral and dental health services*" and *"Importance of regular dental examinations"* were observed to be important items for both (21,6%) and teacher trainees (24,2% and 19,2%) according to the scores of 1st ranked contents in a dental app. Moreover, the item "*Funny and educational games containing oral health*" for the video theme were 1st ranked item in the one-third of the parents (33,3 %).

Conclusion: In a dental app, list of dental services was the prominent item for both parents and preschool teacher trainees. Moreover, the use of educational and entertaining videos may help the improvement of children's oral health for them.

Keywords: Oral health, children, parents, preschool teacher trainees, dental app.

ÖZ

Amaç: Bu çalışmanın amacı, ebeveynler ve okul öncesi öğretmen adaylarının bakış açılarından çocuklar için bir diş hekimliği uygulamasında en çok istenen içeriği tanımlamaktır.

Gereç ve Yöntemler: Kesitsel tipte tanımlayıcı araştırmaya, çocukları (36-72 aylık) bir okul öncesi eğitim kurumunda öğrenci olan 51 ebeveyn ve aynı kurumdaki 99 okul öncesi öğretmen adayı dahil edilmiştir. Veriler, dental uygulamanın istenen içeriğine ilişkin yapılandırılmış anket formuyla yüz yüze görüşmelerle toplanmıştır. İçerik ve videolar için 1. sıradaki puanlama oranları dikkate alınmıştır.

Bulgular: Ağız ve diş sağlığı mobil uygulamasında istenilen içerikler için hem ebeveynlerin (%21,6) hem de okul öncesi öğretmen adaylarının (%24,2 ve %19,2) *"Ağız ve diş sağlığı hizmeti almak için başvurulabilecek kurumların listesi"* ve *"Düzenli diş hekimi muayenesinin önemi" maddelerini* öncelikli olarak belirttiği görülmüştür. Ayrıca, video temasındaki *"Oral sağlığa yönelik eğlenceli ve eğitici oyunlar"* maddesi ebeveynlerin (%33,3) üçte biri tarafından 1.sırada belirtilmiştir.

Sonuç: Ebeveynler ve okul öncesi öğretmen adayları perspektifinde, çocuklara yönelik dişhekimliği mobil uygulamalarında ağız ve diş sağlığı hizmeti veren kurumlar listesinin yer alması önerisi öne çıkan madde olmuştur. Ayrıca, eğitici ve eğlenceli videoların kullanılmasının çocukların oral sağlığının geliştirilmesine yardımcı olabileceği düşünülmüştür.

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Anahtar Kelimeler: Oral Sağlık, çocuklar, ebeveynler, okul öncesi öğretmen adayları, dental aplikasyon.

INTRODUCTION

Mobile applications, the delivery of health services via mobile communication devices (Jahan & Chowdhury, 2014; Bhuyan et al., 2016; Fernández-Luque & Bau, 2015), provide an important contribution to health promotion by increasing health literacy with their informative contents (Bhuyan et al., 2016; Ventola, 2014; Liu et al., 2011; Barton, 2012; Buhi et al., 2013). In this perspective, mobile applications for dentistry (dental apps) could provide information regarding oral health, oral hygiene applications, and emergency conditions (Djemal & Singh, 2016; Scheerman et al., 2018; Khehra et al., 2021; Kaczmarczyk et al., 2021). Therefore, well-designed dental apps could be an effective tool for the improvement of oral health (Tiffany et al., 2018). The use of dental apps in oral health education for children through school health projects could contribute to the improvement of oral health (Veiga et al., 2015; Abedi, 2019). Since the oral health of children is affected by the guidance of both their parents and their teachers (Veiga et al., 2015; Ozbek et al., 2015; Liontou et al., 2016; FDI World Dental Federation, 2014), parents' and teacher trainees' opinions and needs are important for the contents of a dental app. Therefore, the aim of this study was to define the desirable content of a dental app for improving oral health in children from parental and preschool teacher trainees' perspectives.

MATERIALS AND METHODS

In this cross-sectional study, 51 parents (F/M: 35/16; 38,92±4,94 years) whose children (36-72 months) were students of preschool education institution in Marmara University were included. These parents were academic staff or employees of the university. In addition, 4th grade students as teacher trainees (F/M: 88/11; 22,84±1,9) were also attended the study. They are students in Preschool Teacher Education Programme at Atatürk Faculty of Education in Marmara University. Data were collected with face-to-face interviews by using the structured questionnaire regarding the frequency of tooth brushing, duration to last dental visit, information sources for oral health, and opinions about dental treatments. In addition, parents and preschool teacher trainees ranked top priority subjects in content and videos of a dental app. It was asked to rank from 1 point (the most important) to 12 points (the least important) to find priorities of the contents and proper video content required to be in a dental app.

This study was approved by the Ethical Committee of Marmara University, Institute of Health Sciences (05.02.2018-42).

Statistical Analysis

Data were analysed by SPSS 26.0 (IBM, USA). Mann-Whitney U Test was used in the analysis due to the non-normal distribution of data. P-value < 0.05 was accepted as significant.

RESULTS

The profile of the study group was presented in Table 1. The mean age of the children was 59,76±8,81 months (36-72 months). As predicted, their parents were older (38,92±4,94) and had longer education period (18,90±4,57) than those of the teacher trainees (22,84±1,90 and 16,32±1,25, respectively) (p=0.000; p=0.003). The frequency of tooth brushing, the reason and duration for the last dental visit, dental fear, and self-reported oral health status were similar in both groups (p>0.05) (Table 1).

Table 1: The Profile of the Study Group

	Parents		**Preschool Teacher Trainees**		
	Mean± SD		**Mean± SD**		**p***
Age (years)	38,92±4,94		22,84±1,90		**0.000**
Education years	18,90±4,57		16,32±1,25		**0.003**
Frequency of daily tooth brushing	1,86±0,60		1,87±0,51		0.768
Last dental visit (years)	1,09±1,41		1,55±2,53		0.581
The ability to use mobile technology (0-100 points)	71,27±21,16		80,71±18,37		**0.007**
	n	**%**	**n**	**%**	**p****
Self-Reported Oral Health Status					
• Poor/moderate	33	64,7	50	50,5	0.13
• Good	18	35,3	49	49,5	
Reason for Last Dental Visit					
• Control	8	15,7	30	30,3	0.08
• Treatment	43	84,3	69	69,7	
Information Source for Oral Health	51	100,0	99	100,0	
Dentist					
• Yes	38	74,5	39	39,4	**0.000**
• No	13	25,5	60	60,6	

Internet					
• Yes	11	21,6	73	73,7	**0.000**
• No	40	78,4	26	26,3	
Dental Fear					
Fear of Dental Treatments					
• Yes	7	13,7	26	26,3	0.115
• No	44	86,3	72	72,7	
Fear of Tools Used in Dental Treatments					
• Yes	11	21,6	31	31,3	0.286
• No	40	78,4	68	68,7	
Fear of Anaesthesia in Dental Treatments					
• Yes	8	15,7	25	25,3	0.258
• No	43	84,3	74	74,7	

*Mann-Whitney U Test and **Chi-square test were used in the analysis

The information source for oral health was dentists for parents (74,5%) and the internet for preschool teacher trainees (73,7%) (p=0.000 for both). The score of ability for mobile technology use was higher in preschool teacher trainees (80,71±18,37) than parents (71,27±21,16) (p=0.007) (Table 1). In the group, 80,4% of the parents and 69,7% of the preschool teacher trainees would like to use a mobile health application recommended by dental healthcare institutions.

Desired Content of a Dental App

When items were listed according to scores of 1st ranked desired features in a dental app for the improvement of children's oral health, *"List of institutions for oral and dental health services*" (parents: 21,6%, teacher trainees: 24,2%) and *"Importance of regular dental examinations"* (21,6%, 19,2%) were observed to be the most important items for both groups (Table 2) (Figure 1). Also *"Nutritional recommendations for the protection of oral health"* was one of the 1st ranked features for both groups (9,8%, 9,1%) (Table 2).

The other 1st ranked items were "*Protection of oral health*" and "*Condition to consult a dentist*" in parents (13,7%). In preschool teacher trainees, *"Oral health problems and their treatments"* (17,2%), "*Planning dental visits*" (6,1%), and "*Common terms used during dental treatments*" (4%) were observed to be other desired features in a dental app (Table 2).

Table 2: The Ratio of 1st Ranked the Most Desirable Features in a Dental App for the Improvement of Oral Health in Children

		Parents		Preschool Teacher Trainees	
		n	%	n	%
	Content				
1.	List of institutions for oral and dental health services	11	21,6	24	24,2
2.	Importance of regular dental examinations	11	21,6	19	19,2
3.	Oral and dental health problems and their treatments	4	7,8	17	17,2
4.	Protection of oral health	7	13,7	9	9,1
5.	Conditions to consult a dentist	7	13,7	8	8,1
6.	Nutritional recommendations for the protection of oral health	5	9,8	9	9,1
7.	Planning dental visits	1	2	6	6,1
8.	Common terms used during dental treatments	0	0	4	4
Videos					
1.	Procedures in dental visits and examinations	7	13,7	23	23,2
2.	Funny and educational games containing oral health	17	33,3	11	11,1
3.	Preventive applications for oral health	7	13,7	20	20,2
4.	Nutritional recommendations for oral health	6	11,8	17	17,2
5.	Dealing with dental fear	6	11,8	9	9,1
6.	Funny and educational songs containing oral health	6	11,8	3	3
7.	3D animations about dental treatments	1	2	9	9,1

Desired Videos of a Dental App

One-third of the parents (33,3 %) were 1st ranked "*Funny and educational games containing oral health*". This was the most prominent item among video contents in the study (Table 2)(Figure 1).

Preschool teacher trainees' 1st ranked items were "*Procedures in dental visits and examinations*" (23,2%), "*Preventive applications for oral health*" (20,2%), and "*Nutritional recommendations for oral health*" (17,2%). Moreover "*Dealing with dental fear*" (11,8%) and "*Funny and educational songs containing oral health*" (11,8%) in parents and "*3D animation about dental treatment*" (9,1%) in preschool teacher trainees were 1st ranked in the group (Table 2)(Figure 1).

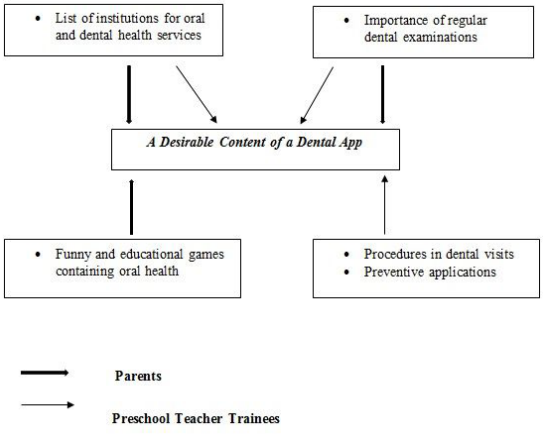

Figure 1: Prominent Desirable Features in a Dental App According to Parents and Preschool Teacher Trainees

DISCUSSION

Since the use of information and communication technologies are increasing in daily life, mobile apps are commonly used for health promotion (Bhuyan et al., 2016; Fernández-Luque & Bau, 2015; Ventola, 2014; Liu et al., 2011; Buhi et al., 2013; Kim & Xie, 2015). In the field of dentistry, dental apps are thought to have an important role in the improvement of oral health, oral health literacy, and oral hygiene habits (Khehra et al., 2021; FDI World Dental Federation, 2014). Since parents and preschool teacher trainees have critical roles in the improvement of the oral health of children (Veiga et al., 2015; Liontou et al., 2016; S Dhull K et al., 2018; Baltaci et al., 2019; Selvarajan et al., 2019; ElKarmi et al., 2019), the desirable content of a dental app was examined from the perspective of parents and preschool teacher trainees in the present study.

In a dental app related to oral and dental health, when looking at the content to be primarily desired; *"List of institutions for oral and dental health services"* and *"Importance of regular dental examinations"* of both parents and preschool teacher trainees were stated as the most priority content. Considering the role of parents and preschool teacher trainees who are effective in protecting the oral and dental health of children, it is expected to obtain information about health institutions in the process of benefiting from oral and dental health services. In addition, understanding the importance of regular examinations is important in terms of being one of the most critical factors in maintaining oral health.

Mobile apps in dentistry can contribute to the improvement of the oral health of children (Patil et al., 2017) because they help to decide the use of services for the children effectively (Iskander et al., 2016) and to overcome dental anxiety of children (Patil et al., 2017; Goldschmidt & Woolley, 2017). Since children could learn the procedure of dental examination with fun by using a dental app (Elicherla et al., 2019; Rasmus et al., 2021), the content of a dental app has a critical role in the utilization of dental services of children and the improvement of oral health literacy of individuals (Glick et al., 2012). For example, the information regarding dental injuries as emergency conditions could be provided to parents and educators by using a dental app (Djemal & Singh, 2016; Khehra et al., 2021).

When looking at the video content that is required to be in a dental app, it was seen that *"Funny and educational games for oral health"* had priority for parents. It is thought that the use of mobile applications containing information about medical applications will contribute positively to the process for children and parents (Voepel-Lewis, 2016; Tark et al., 2019). Oral health education videos are thought to be effective in terms of parents' guidance in protecting their children's oral health (Wilson et al., 2013). Gamification is also found to be an effective option for oral hygiene habits during orthodontic treatment (Scheerman et al., 2018). It was observed that learning by having fun with video content is a priority. In this perspective, tooth brushing could be fun by using a dental app (Rasmus et al., 2021; Aljafari et al., 2015). Similarly, children with asthma and their caregivers could improve their health information in a funny way by using a health application that is specific for asthma disease (Iio et al., 2020).

It was observed that the videos explaining the *"regular dental examination "* and *"preventive applications"* are important for the preschool teacher trainees. It is seen that preschool teacher trainees who are knowledgeable about this subject will be effective in regularly attending dental examinations of children and in raising awareness about protective practices. Due to the widespread use of technology in children's education, it is thought that a mobile application where information on preventive oral health practices can be transferred will provide positive contributions (Rasmus et al., 2021; McCloskey et al., 2018).

It is thought that preschool teacher trainees want to contribute to the oral health development of their students by learning about the importance of oral and dental health, preventive practices, and conditions that require treatment.

Innovative approaches to the delivery of preventive health services emerge with the development of technology (Ventola, 2014; Buhi et al., 2013; Khehra et al., 2021). Since children also come into close contact with technology, a well-designed dental app could be helpful for this purpose. For example, the diagnosis given by the Injured Tooth App is found to be in good agreement with the diagnosis given by health professionals (Mohan et al., 2018).

Another important result of this study was that the sources used to obtain information about oral and dental health are dentists for parents and the internet for preschool teacher trainees. Since preschool teacher trainees as young adults had high technology usage skills, these results could be expected (McCloskey et al., 2018). They prone to technology use the internet for getting information about health (Kim & Xie, 2015). It was expected that parents want to get information from the dentist with a more traditional approach.

CONCLUSION

The use of mobile apps in daily life is increasing day by day. In a dental app, utilisation of dental services was the prominent item for parents and preschool teacher trainees. Moreover, the use of a dental app that contains educational and entertaining videos under the supervision of parents and preschool teacher trainees may help the improvement of children's oral health.

Bullet Points

1. The content regarding the utilization of dental services is a priority for both parents and preschool teacher trainees in a dental app.
2. Videos containing funny and educational games are essential components of children health education from the perspective of parents.
3. Dentists are preferred by parents for getting information about oral health whereas preschool teacher trainees use the internet as a source of oral health information.

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Conflict of Interest Statement

The authors declare that there is no conflict of interest.

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