

The Impact of Brochures Versus Mobile Applications on Mothers' Knowledge and Attitudes Regarding Topical Fluoride Application for Their Children

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Abstract

Objective(s): Due to the high prevalence of dental caries among children, and considering the effectiveness of fluoride in caries prevention, coupled with the significant role of mothers in children's oral health, enhancing maternal knowledge about fluoride therapy can improve children's oral health. This study aimed to compare the impact of education using two methods, brochures and mobile applications, on knowledge and attitude of mothers, concerning topical fluoride application for their children. **Methods:** This longitudinal interventional study involved 140 mothers attending the Pediatric Dentistry Department, divided into two groups. A questionnaire regarding children's topical fluoride application was administered to them. After receiving the completed questionnaires, brochures were provided to the mothers in the first group, while a mobile application was provided to the second group. Immediately following the educational intervention, the same questionnaire was re-administered. Three months later, both groups were recalled to complete the questionnaire to assess information retention. Finally, the data were analyzed using Pearson's correlation, chi-square, analysis of variance, independent samples t-test, and Bonferroni post-hoc test ($p < 0.05$). **Results:** Mothers' knowledge and attitude significantly increased in both groups immediately after the intervention ($p < 0.001$). There was no significant difference in attitudes between the two groups immediately after the intervention ($P = 0.17$), but three months after the intervention, attitudes were higher in the mobile application group compared to the brochure group ($P = 0.01$). Knowledge was higher in the brochure group immediately after the intervention ($p < 0.001$), but three months after the intervention, it was higher in the mobile application group ($p < 0.001$). **Conclusion:** Maternal knowledge and attitudes toward topical fluoride application significantly improved following the brochure study and the mobile application use. In the long term, the mobile application demonstrated superior efficacy in enhancing knowledge and attitudes.

Keywords: Pamphlets; Mobile Applications; Fluoride Treatment; Knowledge; Attitude

Introduction

Children are the future builders of any society, and in order to improve community health, planning must be undertaken to ensure children's well-being.¹ Dental caries remains a significant problem in most societies.² This disease is the most common chronic childhood condition and a major cause of tooth loss and pain in the oral cavity.³ Prevention is the first and most effective way to combat any disease, including dental caries, as the cost of prevention is negligible compared to the costs of treatment.⁴ Fluoride therapy, defined as the periodic topical application of fluoride to children's teeth, aims to enhance their resistance to decay.⁵

The responsibility for educating and implementing children's oral health measures lies primarily with parents. Parents play a crucial role in establishing and maintaining healthy habits in children.⁶ Poor parental knowledge and practices contribute to an increased prevalence of many

common childhood diseases, and oral and dental diseases are no exception. Knowledge refers to the extent of parents' information acquired through education on various topics, while attitude reflects an individual's personal beliefs regarding the learned subject. Knowledge has a fundamental impact on attitude and serves as the foundation for healthy behavior. Healthy behavior is indeed formed based on knowledge, attitudes, and practices. Research indicates that children's oral hygiene behaviors are influenced by their parents' knowledge, attitudes, and beliefs about oral health, and parental cooperation is an essential element in preventive dentistry.⁷ Parental practices in oral health directly impact their children's practices, and economic status, gender, age, place of residence, race, social level, and parental occupation are also directly related to parental practices in children's oral health.⁷ Basic parental knowledge about caries prevention is not precisely aligned with their practices in caring for their children's teeth, and they

require better education in promoting oral health with an emphasis on implementing appropriate measures.⁸ Being aware of the current knowledge status of parents is necessary for proper planning regarding the level and amount of health information provided to parents in this area. Knowing the impact of parental education level and culture, occupation, and age on current health knowledge, attitudes, and behaviors can identify weaknesses so that, by placing greater emphasis on them, both parental insights and health habits can be improved and children can be indirectly affected.⁸

Written educational media, such as brochures, are frequently employed to enhance community health and prevent oral and dental diseases. However, the suboptimal quality of educational content and the lack of pre-publication content evaluation can impede the delivery of effective information. Furthermore, with the advancement of technology and the readily available access to educational mobile applications, the utilization of this innovative method for health education (including oral and dental health) has emerged. Nevertheless, this approach also necessitates rigorous evaluation before widespread adoption within the community.

Given the proven efficacy of fluoride in caries prevention, coupled with the pivotal role of mothers in their children's oral health, enhancing maternal knowledge about pediatric fluoride therapy methods is considered a valuable step toward promoting children's oral health. Considering the widespread adoption of educational mobile applications and the increasing utilization of smartphones by mothers, this study aimed to investigate and compare the impact of education using two distinct methods—educational brochures (conventional method) and mobile applications (innovative method)—on the knowledge and attitudes of mothers, concerning topical fluoride application. This comparison was conducted to identify educational needs and to take steps toward enhancing parental knowledge, attitudes, and practices related to promoting children's dental health.

Methods

This longitudinal interventional study was conducted among mothers attending the Pediatric Dentistry Department at the School of Dentistry, Shahid Beheshti University of Medical Sciences, in 2022. Ethical approval was obtained from the Ethics Committee of Shahid Beheshti University of Medical Sciences (IR.SBMU.DRC.REC.1401.055). Based on Razeghi et al.'s study⁹, considering a significance level of 5% and a

statistical power of 90%, the minimum required sample size for this study was calculated to be 130 individuals using GPower software. Given the longitudinal nature of the study and the possibility of participant attrition, the sample size was increased to 140. A total of 140 literate mothers with smartphones and Android phone applications, who consented to participate voluntarily after being informed of the study's objectives, were selected using a convenience sampling method. These mothers expressed their willingness to continue cooperation by completing questionnaires over the following three months. Sample allocation was conducted using a random number table and based on the date of referral to the School of Dentistry, dividing participants into two groups receiving educational interventions: A brochure (Group 1) and a mobile application (Group 2). The brochure was prepared by a group of professors in the Pediatric Dentistry Department at the School of Dentistry, Shahid Beheshti University of Medical Sciences, and the mobile application was developed at the Faculty of Information Technology at Tehran University in cooperation with professors at the Pediatric Dentistry Department of Shahid Beheshti University of Medical Sciences.

Data were collected using the Questionnaire in the study by Rahaei et al.¹⁰ This questionnaire was standardized in simple language suitable for the mothers' level of knowledge. The questionnaire had been developed using credible sources, textbooks, and relevant scientific articles. Its content validity had been confirmed by five health education specialists and five pediatric dentistry specialists. The reliability of the questionnaire was assessed by conducting a pilot study on 20 mothers who were not among the participants. Reliability (using test-retest) and internal consistency (using Cronbach's alpha coefficient), were confirmed equal to 0.7 and 0.9, respectively.

Initially (time 0), the method of completing the questionnaire and explanations regarding the confidentiality of responses were provided to the mothers by the researcher, a senior dental student. The volunteers completed the questionnaire within 5-10 minutes, under the supervision of the researcher. The questions were designed as multiple-choice, and the inclusion of self-assessment and specialized questions about fluoride therapy was avoided. The questionnaire consisted of three sections: The demographic section, the knowledge assessment section, and the attitude assessment section. The demographic section included questions about the

mother's age, education level, and occupation, as well as the child's gender. The knowledge assessment questions comprised of nine multiple-choice questions, each worth one point, to assess the mothers' general knowledge about the effects of topical fluoride application, its method of administration, and pre- and post-requisites, the age of performing fluoride therapy, and its frequency. In the final section, the attitude questions included four multi-part questions (16 parts in total) with responses of "agree," "disagree," and "no idea," each valued at 0.5. After collecting the completed questionnaires, an educational brochure and a mobile application were provided to the mothers of the two target groups, based on the assigned group. Immediately after studying the brochure and mobile application, the same questionnaire was given to the same mothers (time 1).

Three months after the first day of sampling, both groups were called based on the order of their codes, to complete the questionnaire again, for assessment of information retention (time 2). All 140 mothers participated until the end of the study. To prevent potential errors, the completion date was written on each questionnaire. All mothers provided their mobile phone numbers with full consent and were contacted to coordinate with the re-completion of the questionnaire. Finally, the data from all questionnaires were transferred as a Microsoft Excel file to SPSS version 25 software.

First, the questions were scored, and then each individual's knowledge score was calculated separately by summing

the questionnaire. The attitude score was obtained by summing the scores obtained from the four specialized questions of the questionnaire and calculated separately for each individual. Attitude and knowledge scores were categorized into three categories: Above 2/3 (good), scores between 2/3 and 1/3 (moderate), and scores below 1/3 (poor). For statistical analysis, the homogeneity of the two groups in terms of background variables was assessed using the Pearson chi-square test. Given the normal distribution of the data, repeated measures analysis of variance (ANOVA), one-way ANOVA, independent samples t-test, and Bonferroni post-hoc test were used at a significance level of 0.05 to examine differences in knowledge and attitude between the two groups at various intervention time points.

Results

A total of 140 participants were randomly assigned to two groups: A brochure group (N = 70) and a mobile application group (N=70). Table 1 presents the demographic information of the participants. Using the Pearson chi-square test, no statistically significant differences were found between the two groups in terms of the distribution of child gender ($p = 0.06$), employment status ($p = 0.71$), and education level ($p = 0.68$). Additionally, using the independent samples t-test, no statistically significant difference was observed between the two groups in terms of mothers' age ($p = 0.72$).

Table 1- Demographic information based on number (%)

		Brochure	Mobile application	Total	P- value
Gender of the child (%)	Girl	37 (52.9)	26 (37.1)	63 (45)	0.06
	Boy	33 (47.1)	44 (62.9)	77 (55)	
Education level of the mother (%)	Sub-diploma	9 (12.9)	7 (10)	16 (11.4)	0.68
	Diploma	33 (47.1)	38 (54.3)	71 (50.7)	
	University-educated	28 (40)	25 (35.7)	53 (37.8)	
Employment of the mother (%)	Housewife	44 (62.9)	40 (57.1)	84 (60)	0.71
	Employed	18 (25.7)	19 (27.1)	37 (26.4)	
	Self-employed	8 (11.4)	8 (11.7)	19 (13.5)	
Mother's age mean (SD)	25-50	37.99 (8.01)	37.50 (7.80)	37.7 (7.91)	0.72

the scores obtained from the eight specialized questions in

Table 2 presents the statistical indices of mothers' attitudes and knowledge variables, measured at three

different time points based on the educational intervention group.

Table 2- Statistical indices of mothers' attitudes and knowledge variables, measured at three different time points based on the educational group; mean (SD)

	Attitude at baseline	Attitude right after the intervention	Attitude after three months	knowledge at baseline	Knowledge right after the intervention	Knowledge after three months
Brochure	4.59 (0.98)	6.90 (0.65)	7.50 (0.44)	3.30 (1.27)	7.67 (0.51)	7.02 (0.98)
Mobile application	4.58 (1.12)	7.05 (0.63)	7.68 (0.37)	3.10 (1.41)	7.20 (0.82)	7.63 (0.58)

At baseline (time 0), there were no statistically significant differences in maternal attitude and knowledge between the two groups, as determined by independent samples t-tests ($p = 0.97$ and $p = 0.36$, respectively). Both groups fell within the moderate category in terms of attitude and knowledge at baseline. Repeated measures ANOVA revealed a statistically significant difference in maternal attitude and knowledge over time ($p < 0.001$). Maternal attitude showed an increasing trend over time (Figure 1). The pattern of increase in attitude scores was similar between the two groups; however, the slope of increase was steeper in the mobile application group, and the interaction effect between attitude and time was not significant between the two groups ($p = 0.35$). Maternal knowledge also showed an increasing trend over time (Figure 2). Furthermore, a significant interaction effect between knowledge and time was observed between the two groups, indicating that the pattern of increase in knowledge scores was not uniform across the groups. A comparison of attitudes and knowledge between the two groups immediately after the intervention and three months after the intervention, using an independent

samples t-test, revealed that immediately after the intervention, the difference in attitudes between the groups was not statistically significant ($p = 0.17$). Three months after the intervention, mothers in the mobile application group exhibited a significantly higher attitude compared to those in the brochure group ($p = 0.01$). Immediately after the intervention, the knowledge score was significantly higher in the brochure group ($p < 0.001$). Conversely, three months after the intervention, mothers in the mobile application group demonstrated significantly higher knowledge compared to those in the brochure group ($p < 0.001$). Pairwise comparisons of maternal attitude scores over time using the Bonferroni method revealed significant differences in attitude scores across all three time points, with an increasing trend over time ($p < 0.001$). Within the brochure group, Bonferroni post-hoc analysis indicated significantly higher knowledge scores at time points 1 and 2 compared to time 0. However, knowledge at time 2 was significantly lower than at time 1 ($p < 0.001$). In the mobile application group, knowledge scores were significantly higher at time 1 compared to time 0, and at time 2 compared to both time 0 and 1 ($p < 0.001$).

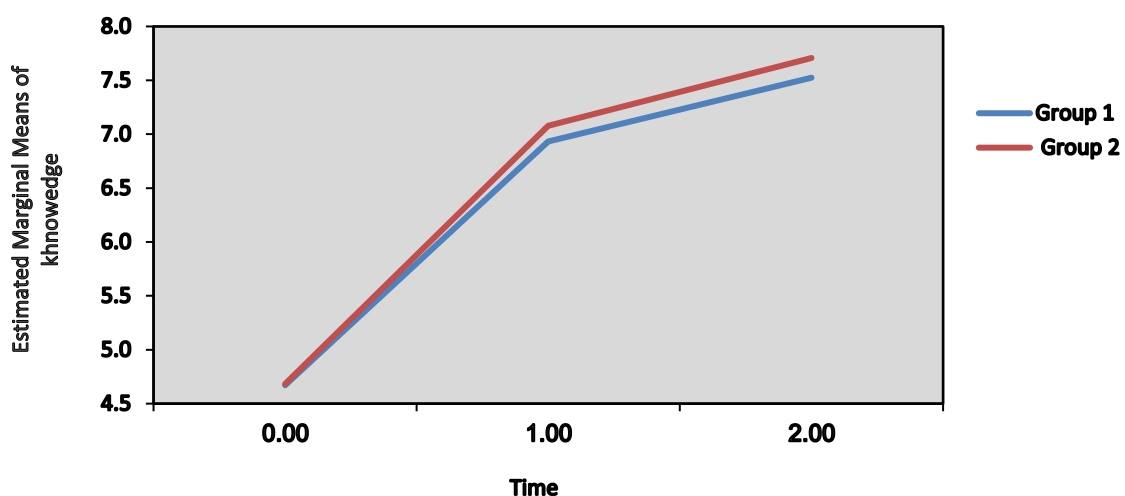


Figure 1: The diagram of the estimated marginal mean scores of mothers' attitudes over time based on the educational group. Group 1: Brochure / Group 2: Mobile application / Time 0: Baseline / Time 1: Immediately after the intervention / Time 2: Three months after the intervention.

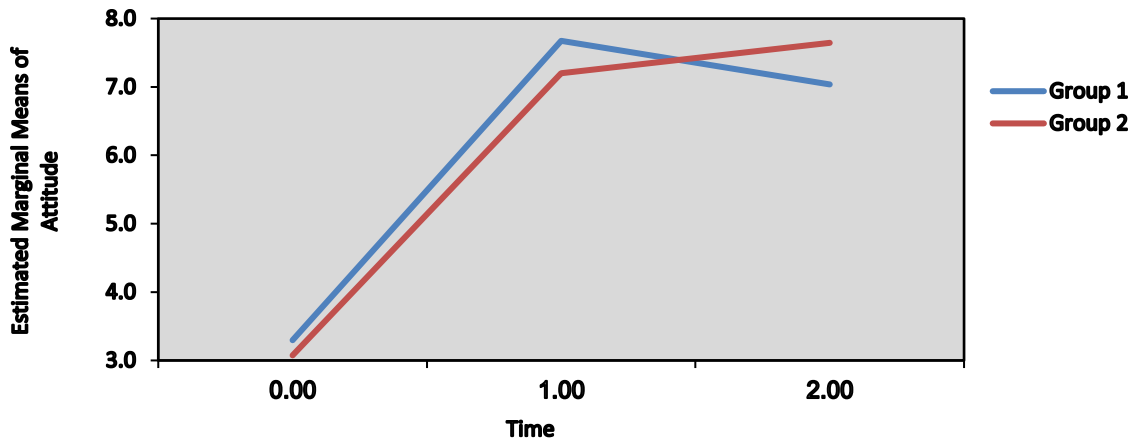


Figure 2: The diagram of the estimated marginal mean scores of mothers' knowledge over time based on the educational group. Group 1: Brochure / Group 2: Mobile application / Time 0: Baseline / Time 1: Immediately after the intervention / Time 2: Three months after the intervention.

Education levels demonstrated a significant association with knowledge ($p = 0.01$) and attitude ($p = 0.02$). Pairwise comparisons of knowledge levels revealed the lowest knowledge in the sub-diploma group and the highest in the university-educated group. In terms of attitude, pairwise comparisons demonstrated the lowest attitude scores in the sub-diploma group and the highest in the diploma

group (Figure 3). Occupation was significantly associated with knowledge ($p = 0.002$), but not with attitude ($p = 0.45$). Pairwise comparisons of knowledge levels based on occupation indicated the lowest knowledge among housewives and the highest among employed women (Figure 4).

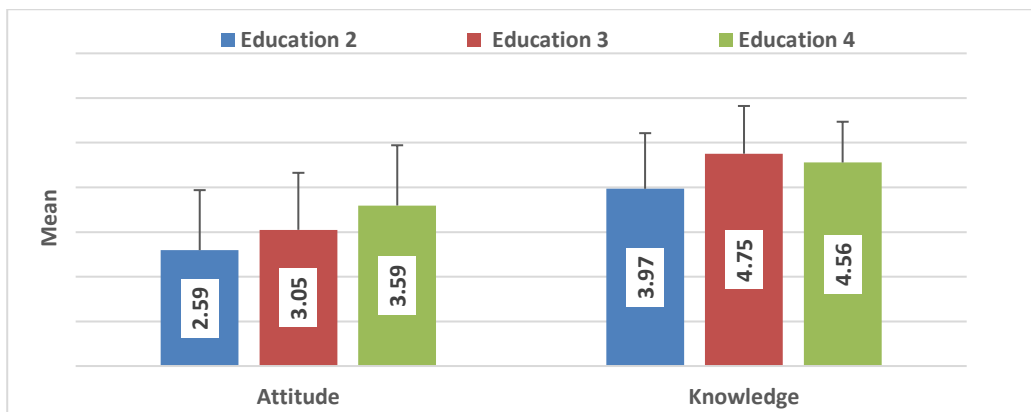


Figure 3: The diagram of the relationship between education levels and knowledge/attitude; education 2: sub-diploma; education 3: university degree; education 4: diploma

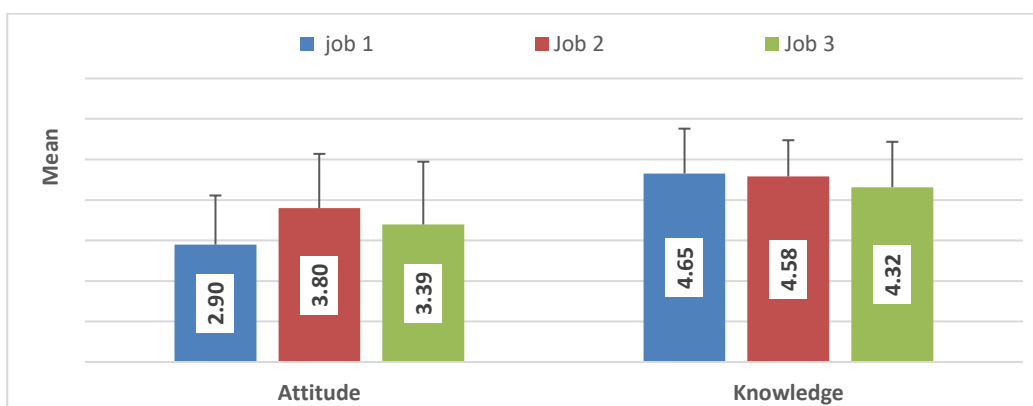


Figure 4: The diagram of the relationship between occupation and knowledge/attitude; job1: employed; job 2: self-employed; job 3: housewife

Discussion

Given the proven efficacy of fluoride in caries prevention, coupled with the significant role of mothers in their children's oral health, enhancing maternal knowledge about pediatric fluoride treatments is considered a valuable endeavor in promoting children's oral health. Health behaviors are predicated on knowledge, attitudes, and practices. Research indicates that children's oral hygiene behaviors are influenced by parental knowledge, attitudes, and beliefs concerning oral health, and parental cooperation is a fundamental component of preventive dentistry.⁷ The results of the present research revealed that the baseline attitude and knowledge among mothers were at a moderate and insufficient level. This could be attributed to the lack of adequate education in this regard. A study by Moallemi et al.¹¹ showed that parents' beliefs and attitudes regarding oral health influenced their children's behavior. Additionally parental attitudes had a positive significant impact on dental caries and children's gum health. Thus, elevating parental knowledge and attitudes using appropriate methods seemed essential. Similar to the present study, Faezi et al.'s study¹² assessing the knowledge, attitudes, and practices of mothers of children aged 1-6 years in the field of oral health evaluated maternal knowledge levels and attitudes toward oral health as moderate, and concluded that educational interventions were necessary to educate mothers regarding the oral health of their children.

The present study also demonstrated a significant relationship between mothers' knowledge and their education levels, with mothers holding university degrees exhibiting higher knowledge compared to those with diploma or sub-diploma. This difference can be attributed to the impact of education in enhancing knowledge levels, as individuals with higher education receive more comprehensive training on various subjects, including oral health, culminating in their elevated knowledge. Numerous studies (Ghaderi¹³, Naderifar¹⁴, and Nazari¹⁵) have demonstrated a statistically significant association between maternal knowledge and education level.

As shown by the results of the present research, there is a significant association between maternal attitudes and education levels. Mothers with university and diploma education levels exhibited higher attitudes compared to those with sub-diploma education levels. However, mothers with diploma education levels showed slightly higher attitudes than those with university education. This discrepancy may be attributed to the fact that attitudes, in addition to education, are also influenced by personal

beliefs. According to Faezi's study¹², maternal education levels have a significant correlation with maternal knowledge and attitudes toward children's oral health so that the mean knowledge and attitude scores of mothers with master's degree and higher education levels were significantly different from those of other education levels. The present study also yielded similar results for the knowledge, but not necessarily for the attitude.

Regarding the relationship between maternal occupation and knowledge, a significant association was observed in the present study, similar to Naderifar's study¹⁴, where employed mothers exhibited higher knowledge compared to self-employed mothers and housewives. Moreover, self-employed mothers demonstrated higher knowledge than housewives. This finding can be attributed to the education acquired from the environment and increased interaction with other members of society, which enhances knowledge across various subjects, including oral health, thereby culminating in increased knowledge. Moreover, Nazari's study¹⁵ yielded results consistent with the present study, indicating a statistically significant difference in knowledge between working and non-working mothers, with working mothers demonstrating significantly higher mean knowledge scores. The present study also revealed no significant relationship between maternal attitude and occupation, whereas Faezi's study¹² demonstrated that maternal employment had a significant association with both knowledge levels and attitudes. This discrepancy may be attributed to the fact that attitudes, in addition to environmental factors, are influenced by personal beliefs, family culture, and the level of trust in information obtained from virtual spaces.

In this study, maternal attitudes significantly increased in both the brochure and mobile application groups immediately after the intervention. Additionally, three months post-study, attitude scores in both groups exhibited a slight increase with a similar pattern and remained significantly stable. Similarly, maternal knowledge significantly increased in both the brochure and mobile application groups immediately after the intervention, with the brochure group demonstrating higher knowledge scores than the mobile application group. However, in the long term, the mobile application proved to be more effective than the brochure in enhancing maternal knowledge of fluoride therapy. The observed increase in attitudes and decrease in knowledge over time can be attributed to the fact that knowledge, being linked to information, necessitates continuous study and review, while attitudes, being rooted in beliefs, tend

to evolve and strengthen over time through an individual's interactions with the dental environment. The difference in knowledge scores between the two groups after the intervention can be explained by the variations in visuals and content between the brochure and the mobile application. Additionally, the condensed nature of the information in the brochure may facilitate greater short-term learning. However, the sustained increase in knowledge in the mobile application group can be attributed to the accessibility of mobile devices across various settings and times, allowing for more frequent review of the material compared to the brochure. While the accessibility of educational content via mobile phones presents a significant challenge concerning misinformation in the virtual space, the widespread adoption of standardized mobile applications can help mitigate this challenge to some extent.

In Motalebi's study¹⁶ that compared mothers' knowledge of dental trauma and the impact of two educational interventions, including brochures and mobile applications, in the field of dental trauma management, the mean knowledge score increased significantly immediately after the intervention, which is aligned with the present study. However, there was no statistically significant difference between the intervention methods. The reason for this result can be attributed to the fact that in Motalebi's study¹⁶, the images and content of both methods were exactly the same. Additionally, the knowledge level in both methods remained significantly high in the long term after the intervention, which is consistent with the current research. In the long term, the decrease in knowledge was greater in the brochure intervention than in the mobile application intervention, but the study did not specify the significance of this result. In Razaghi's study⁹, the effects of brochures and posters on mothers' knowledge of dental trauma management were compared, and indicated that the mean knowledge score was significantly higher in the brochure group three months after the intervention, which is consistent with the present study. In Mollaasadolah's study¹⁷, only the impact of brochures on parents' knowledge of dental trauma was compared to that of the control group, and the mean knowledge score was significantly higher three months after the intervention, which is aligned with the current study. Al-Gharani's study¹⁸ explored only the effect of a mobile application on parents' knowledge of oral health, and the mean knowledge score was found to be significantly higher immediately after the intervention, which is in line with the present study.

Due to time constraints in this study, a clinical examination of mothers, the determination of the Decayed, Missing, and Filled Teeth (DMFT) index, and the assessment of oral hygiene habits, and the influence of knowledge and attitudes on maternal practices were not feasible. It is recommended that future studies examine mothers for the DMFT index and oral hygiene habits. Moreover, it is suggested that these studies be conducted in diverse populations and with larger sample sizes. Additionally, considering the advancement of technology, it is recommended to utilize various educational methods, such as educational videos, workshops, and others, either independently or in combination.

Conclusion

The baseline knowledge and attitudes of mothers regarding topical fluoride application were at a moderate level. Following the study of the brochure and mobile application, mothers' knowledge and attitudes significantly increased. In the long term, the mobile application demonstrated superior efficacy in enhancing knowledge and attitudes.

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Informed Consent Statement: Written informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The datasets generated during and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Using AI: This manuscript was written entirely by the authors without the assistance of any AI tools or large

language models.

Conflict of Interest: No conflicts of interest to declare.

References

1. Rösing C K, Loesche W. Halitosis: an overview of epidemiology, etiology and clinical management. *Braz Oral Res.* 2011;25(5):466-71. doi: [10.1590/s1806-83242011000500015](https://doi.org/10.1590/s1806-83242011000500015)
2. Reynolds E C. Calcium phosphate-based remineralization systems: scientific evidence? *Aust Dent J.* 2008;53(3):268-73. doi: [10.1111/j.1834-7819.2008.00061.x](https://doi.org/10.1111/j.1834-7819.2008.00061.x)
3. Ueno M, Shinada K, Zaitzu T, Yokoyama S, Kawaguchi Y. Effects of an oral health education program targeting oral malodor prevention in Japanese senior high school students. *Acta Odontol Scand.* 2012;70(5):426-31. doi: [10.3109/00016357.2011.634834](https://doi.org/10.3109/00016357.2011.634834)
4. Golpaygani MV, Mehrdad K, Mehrdad A, Ansari G. An evaluation of the rate of dental caries among hypoplastic and normal teeth: A case control study. *Res J Biol Sci.* 2009;4(4):537-41.
5. Laing E, Ashley P, Naini FB, Gill DS. Space maintenance. *Int J Paediatr Dent.* 2009;19(3):155-62. doi: [10.1111/j.1365-263x.2008.00951.x](https://doi.org/10.1111/j.1365-263x.2008.00951.x)
6. Daly C.G. Prescribing good oral hygiene for adults. *Aust Prescr.* 2009;32(3):72-5. doi: [10.18773/austprescr.2009.036](https://doi.org/10.18773/austprescr.2009.036)
7. Kabiri B, Shakerinejad G, Karami KH, Ahmadi Angalli K. The effect of training on students' oral and dental health behaviors and health belief model constructs. *Sadra Med Sci J* 2014; 2(4): 327-338.
8. Larmas M, Makinen K K. Dental caries prevalence and incidence in pediatric dentistry. *jcp.* 2015;6(1): e21174. doi: [10.17795/compreped-21174](https://doi.org/10.17795/compreped-21174)
9. Razeghi S, Mohebbi SZ, Mahmoudi M, Ahmadian M, Kharazifard MJ. Effect of two educational interventions regarding the management of traumatic dental injuries on mothers of 8-year-old children. *Front Dent.* 2020;17:33. doi: [10.18502/fid.v17i33.5197](https://doi.org/10.18502/fid.v17i33.5197)
10. Rahaei Z, Zare Bidoki M, Fotouhi Ardakani F, Jambarsang S. Improving the participation of preschool children's mothers in fluoride varnish program: an educational intervention. *J. Educ. Community. Health.* 2023;10(1):43-8. doi: [10.34172/jec2023.A-10-1131-2](https://doi.org/10.34172/jec2023.A-10-1131-2)
11. Saied-Moallemi Z, Virtanen JI, Ghofranipour F, Murtomaa H. Influence of mothers' oral health knowledge and attitudes on their children's dental health. *Eur Arch Paediatr Dent.* 2008; 9(2): 79-83. doi: [10.1007/bf03262614](https://doi.org/10.1007/bf03262614)
12. Faezi, M, Rejeh N, Hojjati A, Hojjati R. Determination of the mothers' knowledge, attitude, and practice about orodental health of their 1-6 years children in regions 3 and 16 of Tehran in 2015. *Daneshvar Medicine;* 2017; 24(6): 7-14. (Persian)
13. Ghaderi F, Sharif Zadeh Ardakani M, Bakhtiar M. The relationship between oral health literacy and oral health behavior in pregnant women referring to health centers in Shiraz. *J Mashhad Dent Sch.* 2024;48(3):773-85. doi: jmds.mums.ac.ir/article_24790
14. Naderifar M, Akbar Sharifi A, Peyrovi H, Haghani H. Mothers' awareness, regarding orodental health of their children at age of 1-6 years old. *Iran. J. Nurs.* 2006;19(46):15-27.
15. Nazari Z, Taherpour M. Mothers' awareness, regarding orodental health of their children at age of 1-6 years old in Shirvan. *J North Khorasan Univ Med Sci.* 2014;5:979-86. doi: [10.29252/jnkums.5.5.S5.979](https://doi.org/10.29252/jnkums.5.5.S5.979)
16. Motallebi A, Bozorgnia Y, Salari S. Comparing the efficacy of mobile application vs. educational pamphlets in awareness of dental trauma among mothers referring to Bojnourd dental school and private clinics. *J North Khorasan Univ Med Sci.* 2023;15(2):22-30. doi: [10.32592/nkums.15.2.22](https://doi.org/10.32592/nkums.15.2.22)
17. Molaasadolah F, Gorbani Z, sharaj Sharif F, Bargrizan M, Poorzandpoush K. Effect of an Informative Leaflet on Knowledge Level of Mothers Regarding Traumatic Dental Injuries. *J Dent Sch.* 2021; 39(1):7-11. doi: [10.22037/jds.v39i1.34689](https://doi.org/10.22037/jds.v39i1.34689)
18. Alqarni AA, Alfaifi HM, Aseeri NA, Gadah T, Togoo RA. Efficacy of a self-designed mobile application to improve child dental health knowledge among parents. *J Int Soc Prev Community Dent.* 2018;8(5):424-30. doi: [10.4103/jispcd.jispcd_195_18](https://doi.org/10.4103/jispcd.jispcd_195_18)