Original Article

Mothers' role in promoting oral health in children aged 6 months to 1 year

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Abstract

Introduction: It is essential for parents, and especially mothers, to become aware of the factors that affect oral health-promoting behaviors in children through behavior change theories. This study aimed to determine mothers' role in improving children's oral health based on the health belief model (HBM). **Methods:** The population of this descriptive, analytical, cross-sectional study comprised 240 mothers in Ilam (Iran), selected via stratified random sampling. The data collection instrument was a self-report questionnaire with two sections, including seven demographic and contextual questions, four items for perceived severity, four items for perceived benefits, four items for perceived barriers, three items for cues to action, and five items for perceived self-efficacy. The data were analyzed in SPSS 21 by using descriptive and inferential statistics, including independent samples *t*-test, linear regression analysis, and Pearson correlation coefficient, at a significance level of 0.05. **Results:** The participants aged 20–47 with a mean of 31.8 ± 5.67 years. The linear regression analysis indicated that the constructs of perceived severity ($B = 0.073$, $P < 0.001$), perceived benefits ($B = 0.013$, $P < 0.001$), perceived barriers ($B = 0.111$, $P < 0.01$), cues to action ($B = 0.517$, $P < 0.001$), and perceived self-efficacy ($B = 0.292$, $P < 0.001$) explained 55% of the variance of behavioral intention. **Conclusion:** With respect to the effects of perceived barriers and perceived severity on predicting oral health behaviors, effective outcomes can be achieved by emphasizing these two constructs in educational programs based on the HBM.

Keywords: Children, health belief model, oral health

Introduction

An examination of the level of oral health is a basic indicator of health in society. Oral health affects the general health of the body as a whole. Adherence to oral hygiene and brushing the teeth is not only a sociocultural principle, but also a religious requirement.[1]

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Oral health influences general health to the extent that some people regard the mouth as reflecting the condition of the whole body. As an important branch of general health, oral health can prevent many other diseases, including cardiovascular diseases. Promoting adherence to oral hygiene is a World Health Organization (WHO) policy for chronic disease prevention and health promotion.[2]

Oral hygiene is a vital aspect of a healthy lifestyle.[3] Despite the efforts made in developed countries, the prevalence of tooth decay is on the rise. It has also increased in some developing countries due to lifestyle changes.[4]

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Tooth decay is a multi-factorial infectious disease, destroying the hard tissue of the tooth and acting as the most important factor leading to the loss of a tooth. This disease is an oral health problem in industrial countries, experienced by 60%–90% of school children. Annually, 51 million school hours are lost in the USA due to oral and dental diseases.[5]

Deciduous teeth are the base for permanent teeth and are more prone to decay. The hygiene and maintenance of deciduous teeth are essential to children's health.[6]

The prevalence of early tooth decay in children aged <6 years is reported to be 6%–90% worldwide, with developed countries placed at the lower limit, and developing countries in the middle up to the upper limit of the range.[7]

Oral hygiene has an important effect on the quality of life. This is especially the case when it comes to young children as it can influence their growth, weight, self-confidence, sociability, and learning abilities, as well as the daily activities of the children and their parents.[8,9]

Today, due to increased communications and various social interactions, the necessity of adherence to oral hygiene and oral aesthetics is receiving more attention compared to previous decades.[10]

Children build the future of society; therefore, ensuring their physical, psychological, and social health promises a better future. To promote the health of society, plans to guarantee children's health should be designed and continued into their adulthood. Moreover, it is essential to have sufficient knowledge about major factors influencing general and oral health. If parents receive knowledge and motivation about oral health-related topics, the associated problems will be greatly alleviated because people's awareness has a fundamental effect on their attitude and is the bedrock of health-related behaviors. In fact, people's health-related behavior is formed based on their awareness, attitudes, and performance.[11]

Health education researchers have proposed various models with diverse psychological and social applications for behavior change.[12]

Educational planning and design would be impossible without knowing the attitudes about oral health. The identification of beliefs and attitudes requires the use of models and theories related to behavior change. An effective model for health education and promotion is the health belief model (HBM).[13] Based on this model, people adopt a preventive health behavior when they believe that they are exposed to a disease (perceived sensitivity); the disease will have serious consequences for them (perceived severity); there are components/behaviors that affect disease prevention or reduction of its severity and complications (perceived benefits); however, there are physical, psychological, or financial barriers to displaying these behaviors (perceived barriers). Moreover, to adopt a behavior, individuals should perceive themselves as competent in showing preventive behaviors (perceived self-efficacy).[14]

Few studies have tested the HBM for oral health, and their findings are contradictory in terms of the constructs affecting oral health. For instance, Buglar *et al.*[15] identified self-efficacy as an important predictor of oral health-related behaviors (7.2%).

Accordingly, the present study aimed to determine mothers' role in improving children's oral health based on the HBM.

Materials and Methods

This descriptive, analytical, and cross-sectional study was conducted on 240 mothers of children aged 6 months to 1 year residing in Ilam (Iran) during 2018–2019. The sample size was estimated at 240 with a confidence level of 95% (α =0.05) and a precision of 0.2.

Stratified random sampling was performed in proportion to the population size among the mothers visiting 18 comprehensive healthcare centers of Ilam (Northwest Iran).

The inclusion criteria were having a healthy child aged 6 months to 1 year, health records, and minimum literacy. The data were collected via a researcher-made questionnaire completed through interviews with the mothers. To examine the validity of the questionnaire, it was given to 10 health education and promotion experts and dentists for modification. Its reliability was assessed via Cronbach's alpha with α = 0.81 for perceived severity, α = 0.71 for perceived benefits, α = 0.76 for perceived barriers, α = 0.70 for behavior, α = 0.78 for perceived self-efficacy, and α = 0.73 for cues to action.

The questionnaire had two sections. The first section consisted of seven questions checking the participants' demographic and contextual information, while the second section examined the constructs of the HBM, including perceived severity (four items), perceived benefits (four items), behavior (five items), perceived self-efficacy (five items), and cues to action (three items). These questions were scored on a Likert scale from 1 (totally disagree) to 5 (totally agree).

The data were analyzed in SPSS via statistical tests for frequency distribution, the Pearson correlation test, and linear regression analysis.

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Results

The participants aged 20–47 with a mean of 31.8 ± 5.67 years; 105 mothers (43.7%) had an education level below high-school diploma; and 135 (56.3%) had academic education [Table 1].

Table 1: The participants' demographic and contextual variables

	Mother's education level		Father's education level			Mother's occupation			Father's occupation		
	Below high school diploma	University degree	Below high-school diploma	High-school diploma	University degree	Home maker	Employed	Self-employed	Retired	Employed	Self-employed
Number	105	135	27	78	135	175	46	19	3	232	5
Percentage	43.7	56.3	11.2	32.5	56.3	72.9	19.2	7.9	1.3	96.7	1.2

Table 2: Mean scores of various constructs of the HBM

Constructs	Mean	SD	Minimum	Maximum	Score range	Mean of the maximum score (%)
Perceived severity	14.98	3.1	6	20	4-20	3.1
Perceived benefits	18.0	1.9	12	20	4-20	1.9
Perceived barriers	13.63	3.9	4	20	4-20	3.9
Perceived self-efficacy	21.5	3.1	8	25	5-25	3.1
Cues to action	12.28	2.00	6	15	3-15	2.007

Table 3: Correlations among various constructs of the HBM

Constructs	Severity	Benefits	Barriers	Perceived self-efficacy	Cues to action
Severity	1	**322	—	**0.346	**0.255
Benefits	**0.322	1	**0.171	**0.572	**0.394
Barriers	—	**0.171	1	**0.261	—
Perceived self-efficacy	**0.346	**0.572	**0.261	1	**0.516
Cues to action	**0.255	**0.394	—	**0.516	1

** Significant at 0.01. * Significant at 0.05

Table 4: The prediction power of different constructs of the HBM for tooth decay prevention behavior

Variables	*B*	SE	Beta	*T*	R^2	*P*	Dependent variable
Perceived severity	0.75	0.050	0.073	1.49	55.38	0.001	Behavioral intention
Perceived benefits	0.21	0.089	0.013	0.23		0.001	
Perceived barriers	0.09	0.038	0.111	2.38		0.01	
Cues to action	0.82	0.084	0.517	9.86		0.001	
Perceived self-efficacy	0.29	0.062	0.292	4.79		0.001	

The participants achieved the highest score in the construct of perceived barriers (36% of the maximum possible score) [Table 2]. Among different constructs of the model, perceived self-efficacy and perceived benefits had the highest correlation ($r = 0.572$, $P < 0.001$) [Table 3]. Furthermore, perceived barriers and perceived severity were the strongest predictors of the behavioral intention and predicted 20% of its variance [Table 4].

Discussion

This study determined the factors affecting mothers' behavioral intention for promoting the oral health of their children aged 6 months to 1 year within the framework of the HBM. The results revealed that, among the constructs of this model, perceived severity and perceived barriers were the first and second constructs, respectively, most significantly affecting the adoption of behaviors. Similar results have been reported in some other studies. In the study by Zarea *et al.*,[16] perceived barriers were powerful predictors of oral health behavior. The findings of the present study are consistent with those of Schwarzer *et al.*, Buglar *et al.*, Padula *et al.*, and Sullivan.[17-19] examined the factors affecting oral health and reported that self-efficacy, positive feeling towards behavior, barriers, and commitment to action collectively explained 29% of the variance of oral health behaviors, with self-efficacy having the highest direct effect.[20]

This study regarded the dependent variable to be the construct of behavioral intention, whereas other studies considered behavior as the dependent variable and assessed how it was affected by the other constructs. It should be noted that this study did not examine the construct of perceived sensitivity, which justifies a difference between this study and other similar works.[21]

Overall, the HBM predicted 55.38% of the variance of behavioral intention. This difference in the explained magnitude can be attributed to the sociocultural background of the participants. The most important factors in oral health behavioral intention among mothers were demonstrated to be the perceived severity and perceived barriers based on the HBM. Thus, more effective measures can be taken by focusing on these two constructs in educational programs.

Conclusion

Based on the HBM, perceived severity and perceived barriers were the most important factors contributing to the behavioral intention for children's oral health. The findings of this study can be given an emphasis when designing preventive educational programs.

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Conflicts of interest

There are no conflicts of interest.

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