Journal Center of Excellent : Health Assistive Technology
Volume 4, Number 2, Tahun 2026, pp. 113-118
ISSN (Online): 2987-2200 DOI: 10.36082/jchat.v4i2.3503
Open Access: https://ejournal.poltekkesjakarta1.ac.id/index.php/jchat

The Effect of Family-Based Dental Nursing Care Through *Home Visits* on Mother's Knowledge

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ARTICLE INFO

Article history:
Received: September 2, 2026
Revised: September 10, 2026
Accepted: September 14, 2026
Available online: September 15, 2026

Keywords:
Dental nursing care, home visit, mothers' knowledge, oral and dental health, family.

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ABSTRACT

Oral health problems remain a challenge in Aceh Province, including Ateuk Pahlawan Village, Banda Aceh City. A survey conducted in October 2025 showed that all 73 children aged 6–12 years had dental caries. The high prevalence of dental caries among children may be influenced by mothers' low knowledge regarding the maintenance of oral and dental health for children and families. One promotive approach to improve mothers' knowledge is family-based dental nursing care through home visits. This study aimed to determine the effect of family-based dental nursing care through home visits on mothers' knowledge in Ateuk Pahlawan Village, Banda Aceh City. This research employed a quasi-experimental design with a pre-test and post-test with control group approach. The total sample consisted of 76 mothers. The research instrument used was a questionnaire sheet. The results showed an increase in mothers' knowledge in the intervention group after receiving the home visit intervention, with the mean score increasing from 5.34 to 6.79. Statistical analysis indicated a significant improvement in knowledge in the intervention group ($p<0.05$), whereas no significant improvement was found in the control group. A significant difference in knowledge was also observed between the intervention and control groups after the intervention. It can be concluded that family-based dental nursing care through home visits has a significant effect on improving mothers' knowledge in Gampong Ateuk Pahlawan, Banda Aceh City. This home-visit approach is recommended as a family based promotive preventive strategy to enhance community dental health.

INTRODUCTION

Health is a state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity. An essential component of achieving overall health is oral health. Oral health plays a vital role in maintaining an individual's quality of life, as it affects the ability to eat, speak, smile, and engage in social interactions properly. Conversely, oral health disorders—such as caries, periodontal disease, oral infections, and tooth loss—can cause physical, psychological, and social impacts that affect individual well-being (Manbait et al., 2019).

Oral diseases remain a major public health issue globally. The World Health Organization (WHO) reported that approximately 3.5 billion people worldwide suffer from oral diseases, with around 2 billion experiencing caries in permanent teeth and 514 million children suffering from caries in primary teeth. The WHO also stated that untreated dental caries in permanent teeth is the most common global health condition (WHO, 2022). In Indonesia, the prevalence of oral health problems remains high. Based on the 2023 Indonesian Health Survey (SKI), the prevalence of oral health problems reached 56.9% of the total population, indicating that more than half of the population experiences various oral health issues (Badan Kebijakan Pembangunan Kesehatan, 2024). Meanwhile, the 2018 Basic Health Research (Riskesdas) results showed that Aceh Province had an oral health problem prevalence of 30.5%, but only about 14% of cases received care from professional health workers. Among children under 12 years of age, caries prevalence reached 42.6%, highlighting the persistent high burden of oral health problems among children in the region (Kemenkes, 2018).

Dental caries in children is influenced by various factors, one of which is parental knowledge, particularly that of mothers. Within the family unit, mothers play a crucial role in shaping children's health behaviors by providing information, supervision, and decision-making regarding oral health maintenance. Good maternal knowledge regarding oral hygiene maintenance, proper tooth-brushing techniques, and

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caries prevention measures supports positive health behaviors in children and families. Conversely, low maternal knowledge can elevate the risk of oral health issues due to sub-optimal health maintenance practices within the household (Ramadhan et al., 2025; Solekhah, 2021).

One strategy to enhance mothers' knowledge and awareness regarding family oral health is family-based dental nursing care via home visits. A home visit is a healthcare delivery approach conducted through direct visits to families' homes to provide health education, screening, assistance, and continuous guidance (Nurhidayat, 2023). This approach is deemed more effective because healthcare providers can interact directly with family members, assess their living environment, and tailor interventions according to specific family needs (Reca et al., 2025).

The effectiveness of home visits in improving family oral health has also been in Cot Mesjid Village, Lueng Bata District, Banda Aceh City (Imran et al., 2024). Their findings revealed significant improvements in mothers' knowledge, attitudes, and practices following a family empowerment program delivered through oral nursing home visits.

Other studies have similarly shown that oral health education provided during home visits—accompanied by tooth-brushing demonstrations, educational media, and repeated guidance—effectively enhances knowledge retention and family compliance with oral hygiene practices. One-on-one education within the home environment is considered more effective than group health talks because it allows for two-way communication customized to the family's conditions (Nuraisya et al., 2024).

According to a survey conducted by Dental Therapy students in October 2025 in Ateuk Pahlawan Village, Banda Aceh City, all 73 examined children aged 6–12 years had dental caries in either their permanent or primary teeth. The mean DMF-T score of 3.5 indicated that each child had approximately three to four decayed permanent teeth, while the mean def-t score of 4.1 indicated that each child had around four decayed primary teeth. These scores remain above national targets and WHO indicators, which aim for DMF-T and def-t values in the low category (<2) and ideally close to 1. This situation indicates that pediatric oral health in the area requires targeted attention through promotive and preventive efforts centered on the family as the primary health-maintenance unit.

Given the high prevalence of pediatric caries and the essential role of mothers in family oral health, effective interventions are needed to boost maternal knowledge. Family-based dental nursing care through home visits offers a promising avenue because it operates directly within the family domain. Therefore, this study aimed to analyze the effect of family-based dental nursing care through home visits on mothers' knowledge in Ateuk Pahlawan Village, Banda Aceh City.

METHOD

This study was conducted in Ateuk Pahlawan Village, Baiturrahman District, Banda Aceh City, from March to April 2026. The sample consisted of 76 mothers with children aged 6–12 years, selected using a purposive sampling technique.

The study utilized a family dental nursing home-visit model consisting of three home visits over one month, with each education session lasting 20 minutes:

1. **Visit I (Assessment, Diagnosis, and Planning):** Initial assessment to determine baseline maternal knowledge prior to intervention, formulation of family dental nursing diagnoses, and preparation of a tailored family dental nursing care plan.
2. **Visit II (Implementation):** Delivery of family dental nursing care through oral health education using a family dental health module for the intervention group. The control group received simple education without the module. A primary post-test (Post-test 1) was administered immediately following the intervention.
3. **Visit III (Evaluation):** Evaluation of family dental nursing care outcomes. Re-assessment of maternal knowledge (final Post-test 2) to evaluate knowledge changes and retention post-intervention.

This approach was designed to be educational, participatory, and family-based to sustainably improve mothers' oral health knowledge.

Data collection was carried out using an oral health knowledge questionnaire. Univariate and bivariate data analyses were performed using Paired t-tests and Independent t-tests.

RESULT

Table 1. Frequency Distribution of Respondent Characteristics by Age, Education, and Occupation

Characteristic	Intervention Group		Control Group	
	N	%	N	%
1. Age				
a. 26-35 years	12	31.6	17	44.7
b. 36-45 years	25	65.8	12	31.6
c. 45-55 years	1	2.6	7	18.4
d. >55 years	0	0	2	5.3
2. Education				
a. Primary School / Equivalent	1	2.6	2	5.3
b. Junior High School / Equivalent	1	2.6	2	5.3
c. Senior High School / Equivalent	29	76.3	21	55.3
d. Diploma / Bachelor's Degree	7	18.4	13	34.2
3. Occupation				
a. Housewife	36	94.7	30	78.9
b. Civil Servant	1	2.6	4	10.5
c. Private Employee	1	2.6	4	10.5

Table 1 shows that in the intervention group, the majority of respondents were aged 36–45 years (25 respondents; 65.8%), whereas in the control group, most respondents were aged 26–35 years (17 respondents; 44.7%). Based on educational attainment, the majority in both groups held a high school education or equivalent (29 respondents or 76.3% in the intervention group; 21 respondents or 55.3% in the control group). Regarding occupation, most respondents were housewives (36 respondents or 94.7% in the intervention group; 30 respondents or 78.9% in the control group).

Table 2. Distribution of Mothers' Knowledge Levels Before and After Intervention in the Intervention Group

Knowledge Category	Intervention Group					
	Pre-Test		Post-Test 1		Post-Test 2	
	f	%	f	%	f	%
Good	17	44.7	30	78.9	32	84.2
Poor	21	55.3	8	21.1	6	15.8
Total	38	100	38	100	38	100

Table 2 highlights a progressive increase in mothers' knowledge levels in the intervention group after receiving family-based dental nursing care via home visits. The proportion of respondents in the "Good" knowledge category increased steadily from 44.7% at pre-test to 78.9% at post-test 1, reaching 84.2% at post-test 2. Correspondingly, the proportion in the "Poor" category continuously declined through the final evaluation.

Table 3. Distribution of Mothers' Knowledge Levels Before and After Intervention in the Control Group

Knowledge Category	Control Group					
	Pre-Test		Post-Test 1		Post-Test 2	
	f	%	f	%	f	%
Good	18	47.4	18	47.4	19	50
Poor	20	52.6	20	52.6	19	50
Total	38	100	38	100	38	100

Table 3 demonstrates that knowledge levels in the control group remained relatively static over the observation period. The percentage of respondents categorized with "Good" knowledge saw only a minor shift from 47.4% at pre-test to 50.0% at post-test 2.

Table 4. Paired t-Test Results of Mothers' Knowledge in the Intervention and Control Groups

Group	Comparison Pair	Standard Deviation (SD)	P-value
Intervention	*Pre-test to Post-test 1*	0.026	0.000*
	Post-test 1 to Post-test 2	0.033	0.017*
	Pre-test to Post-test 2	0.059	0.000*
Control	*Pre-test to Post-test 1*	0.093	0.109
	Post-test 1 to Post-test 2	0.000	1.000
	Pre-test to Post-test 2	-0.061	0.262

As shown in Table 4, all pair measurements within the intervention group yielded $p < 0.05$ (Pre-test vs. Post-test 1, $p = 0.000$; Post-test 1 vs. Post-test 2, $p = 0.017$; Pre-test vs. Post-test 2, $p = 0.000$). These findings confirm a statistically significant gain in knowledge following the intervention. Conversely, all comparative pairs in the control group resulted in $p > 0.05$, reflecting no significant change in knowledge.

Table 5. Independent t-Test Results Comparing Mothers' Knowledge Between Groups

Knowledge Measurement	Group	Standard Deviation (SD)	P-*value*	Description
Pre-test	Intervention	1.300	0.793	Not Significant
	Control	1.308		
Post-test 1	Intervention	1.326	0.000	Significant
	Control	1.308		
Post-test 2	Intervention	1.359	0.000	Significant
	Control	1.247		

Table 5 reveals no statistically significant difference in baseline knowledge between the intervention and control groups at pre-test ($p = 0.793$). Following the intervention, however, significant differences emerged at both Post-test 1 ($p = 0.000$) and Post-test 2 ($p = 0.000$). This demonstrates that family-based dental nursing care delivered through home visits is significantly more effective at improving maternal knowledge than simple educational delivery.

DISCUSSION

The results indicated a significant improvement in mothers' knowledge after receiving family-based dental nursing care via home visits. Paired t-test results confirmed that all interval comparisons within the intervention group (Pre-test vs. Post-test 1, Post-test 1 vs. Post-test 2, and Pre-test vs. Post-test 2) yielded $p < 0.05$. Furthermore, mean knowledge scores improved from 5.34 at pre-test to 6.61 at post-test 1, and further to 6.79 at post-test 2. These findings confirm that the intervention effectively fosters long-term, sustained comprehension of family oral health concepts.

This knowledge gain holds valuable potential for positively influencing children's oral health practices. This aligns with previous research, who noted that parental knowledge directly impacts children's dental status; educational programs not only enhance awareness but also help shape health behaviors that improve overall quality of life for children and families (Reca & Liana, 2022).

The improvement in knowledge was largely driven by the personalized, direct, and continuous nature of home visits. Delivering education within the home setting facilitates two-way dialogue rather than simple one-way information dissemination. This interactive format encourages mothers to ask questions,

voice specific family dental concerns, and receive guidance customized to their unique household circumstances.

Additionally, utilizing a family dental health module contributed significantly to intervention efficacy. The curriculum addressed essential topics such as oral hygiene routines, tooth-friendly nutrition, proper brushing techniques, common dental pathologies, and the importance of routine dental check-ups. Structured content supported by visual learning media made information easy to digest and recall.

The success of the intervention is also explained by the reinforced learning model used over the three home visits. The initial visit served as an assessment phase, the second delivered targeted education, and the third provided evaluation and reinforcement. This multi-touch approach prevented rapid memory decay, ensuring knowledge gains persisted through the final post-test.

These empirical outcomes align with Notoatmodjo's health education theory, which posits that knowledge gains are best achieved through planned, systematic, and continuous educational methods. The more engaging and targeted the delivery method, the better individuals process and retain information. These findings also mirror studies, who reported significant knowledge gains from home visits ($p < 0.05$), as well as Imran et al. (2024), who concluded that home-based education outperforms generic health talks because it addresses individualized family needs (Imran et al., 2024) .

Independent t-test evaluations showed no significant baseline difference between the intervention and control groups prior to treatment ($p = 0.793$). This confirms baseline equivalence between groups, demonstrating that post-intervention differences were directly attributable to the intervention.

Post-intervention assessments revealed significant differences between groups at both Post-test 1 and Post-test 2 ($p < 0.05$), with the intervention group demonstrating markedly higher knowledge scores. This underscores that structured family-based nursing care delivered at home is superior to basic, unassisted health education.

The structural differences between the two interventions explain these distinct outcomes. The intervention group benefited from a systematic nursing process—assessment, diagnosis, planning, implementation, and evaluation—allowing content to address specific household needs. Conversely, the control group received basic education without continuous follow-up, limiting opportunities for deeper comprehension or clarification.

These findings align with Knowles' Adult Learning Theory, which asserts that adults learn best when educational content is practical, relevant to daily life, and delivered in a comfortable setting. The home environment provides a supportive setting for focused learning. Furthermore, Bandura's Social Learning Theory supports the notion that direct interaction, practical demonstrations, and immediate feedback optimize learning outcomes.

The conclusions also align with findings by (Reca et al., 2025), who documented the efficacy of family-centered home visits in enhancing oral health literacy. Together, these studies highlight the potential of family-centered models as key promotive and preventive strategies in public health dentistry. (Wahyuni et al., 2021) similarly emphasized that family involvement is critical for establishing sustainable health habits, as family support heavily influences an individual's long-term adherence to hygiene practices.

Overall, the findings demonstrate that family-based dental nursing care through home visits is an effective educational framework for increasing mothers' knowledge regarding family oral health. By promoting active engagement, this strategy yields deeper and more sustainable knowledge improvements than standard educational methods.

CONCLUSION

It can be concluded that family-based dental nursing care through home visits significantly increases mothers' knowledge regarding oral health in Ateuk Pahlawan Village, Banda Aceh City. Mothers are encouraged to apply this knowledge to daily household routines. Community health centers (Puskesmas), healthcare providers, and local village leaders are recommended to support and sustain family-based dental home visit programs as a core promotive and preventive strategy to improve community oral health.

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