JOURNAL OF INTERNATIONAL CRISIS AND RISK COMMUNICATION RESEARCH
ISSN: 2576-0017
2024, VOL 7, NO S8

The Development of a Health Literacy Model for Promoting Oral Health among Parents of Preschool Children in Phuket Province

Ploypaphatt Surachotpuwapat[1] and Prapapen Suwan[2]

1 Doctor of Philosophy in Public Health Program, Western University Thailand.
2 Associate Professor Doctor of Public Health Program, Western University Thailand.
Corresponding Author, E-mail: healthy_smile57@hotmail.com

ABSTRACT
This research and development study aims to develop a health literacy model for promoting oral health among parents of preschool children in Phuket Province. The study is divided into three phases: Phase *1:* Situation analysis, Phase *2:* Development of the health literacy model, and Phase *3:* Pilot implementation and evaluation. The study period is from May to August *2024.* The population of the study consists of parents of preschool children aged *3-5* years in Phuket Province. The tools used include: *1)* a questionnaire to assess oral health promotion literacy for preschool children, *2)* a learning activity, and *3)* a satisfaction assessment form. Data were analyzed using Independent t-test and Repeated Measures ANCOVA. The results revealed that in Phase *1*, parents' overall health literacy regarding oral health promotion for preschool children was at a moderate level. In Phase *3*, pre-intervention results showed that both the experimental and comparison groups had similar moderate levels of health literacy. After a four-week intervention, the experimental group demonstrated a significant increase in oral health literacy compared to their pre-intervention levels and the comparison group ($p < 0.05$). Additionally, the experimental group showed better oral health care behaviors for preschool children, with scores significantly higher than their pre-intervention levels and the comparison group ($p < 0.05$). At the follow-up phase, the experimental group maintained significantly higher oral health literacy scores compared to the comparison group ($p < 0.05$). The analysis of variance (Repeated Measures ANCOVA) indicated that the experimental group's oral health literacy, both post-intervention and during the follow-up period, was significantly better than that of the comparison group ($p < 0.001$). To help parents prevent oral health issues in preschool children, it is essential to continue developing health literacy regarding oral health promotion for parents on an ongoing basis.

Keywords: Development, Health Literacy Model, Preschool Children

INTRODUCTION
The FDI World Dental Federation (FDI) designates oral health as an essential part of overall health, encompassing both physical and mental well-being. Good oral health, supported by an appropriate environment, positively impacts overall health and quality of life (World Health Organization, 2013). A survey on oral health status in Thailand conducted in 2017 found that among 5-year-old children, 31.3% had early-stage dental caries, with a caries prevalence rate of 75.6%. The average number of decayed, missing, or filled teeth (DMFT) was 4.5 teeth per person. Additionally, it was found that children began to experience tooth decay as early as 9 months old, with 3-year-olds having an average of 3 decayed teeth per person. Over 40% of children showed plaque buildup, which increases the risk of developing dental caries. Furthermore, children with extensive primary teeth decay are more likely to experience decay in their permanent teeth as well. These findings align with studies from the Office of Dental Public Health, which indicate that 5-year-old preschool children exhibit higher levels of dental caries than 3-year-olds. Comparing the dental caries situation for 3-year-old children between

2019 and 2020, the prevalence rate of caries was lower than the national average at 39.74%. (Office of Dental Public Health, Department of Health, Ministry of Public Health, 2017)

Addressing dental health issues and oral care for preschool children requires collaboration from families, including parents, as well as other stakeholders and educators in schools. The main factors influencing national oral health initiatives stem from social determinants in oral health. Success in promoting oral health for preschool children depends on the creation and execution of these factors. One critical aspect is the communication process among the involved parties. The success of preschool oral health care involves: 1) the family, 2) the school, 3) oral health promotion activities, 4) public awareness, and 5) the fostering of participation. These can be summarized into external factors, such as policies, the beliefs of parents and teachers, public relations efforts, and network management, while internal factors include methods for caring for preschool children's oral health and taking children to see a dentist or visit a dental clinic for check-ups. The communication process consists of: 1) the sender, which includes schools, hospitals, and community health promotion hospitals; 2) the main content, which includes methods for preventing and caring for children's oral health; 3) the communication channels used, such as teachers, dentists, brochures, websites, training, and activities like storytelling; and 4) the outcome, which results in accurate knowledge and improved attitudes and behaviors toward children's oral care. The most commonly used communication strategy is working through networks and participation. The communication model employed is both two-way and one-way, starting from the policy level and moving to operational levels, such as schools, families, and communities. Factors that facilitate communication, such as teachers and families, correlate with health literacy and children's health behaviors. Therefore, promoting oral health for preschool children effectively requires the involvement of three key groups: parents, teachers in early childhood education centers, and dental professionals. These groups must possess a high level of oral health literacy and be able to apply this knowledge in organizing learning activities for preschool children, enabling them to properly care for their oral health. This approach will lead to better oral health outcomes and reduce dental health issues for preschool children both now and in the future. (Office of Dental Public Health, Department of Health, Ministry of Public Health, 2017 and Suwan, P.,2020)

The lack of oral health literacy regarding preschool children's care among parents can be attributed to factors such as not receiving relevant information, lacking opportunities to ask questions or clarify doubts with trusted sources, poor information management, and limited media literacy. These issues often lead to inadequate oral health practices in caring for their children. Therefore, developing a model to enhance oral health literacy for parents of preschool children could improve the children's oral health and contribute to the desired oral health outcomes. Furthermore, research from abroad has shown a relationship between maternal oral health literacy and preschool children's oral health, resulting in improved oral health status for the children, helping prevent dental caries, and influencing the likelihood of caries development. Given this, the researcher is interested in studying the development of an oral health literacy model to promote oral health for parents of preschool children in Phuket. Since parents play a direct role in caring for their children's oral health, enhancing their oral health literacy is expected to be a crucial strategy and measure for promoting oral health for preschool children in Phuket.

OBJECTIVES

1. To develop a model for enhancing oral health literacy to promote oral health among parents of preschool children in Phuket.
2. To develop a model for enhancing health literacy to promote oral health among parents of preschool children in Phuket.
3. To implement and evaluate the developed model for enhancing oral health literacy to promote oral health among parents of preschool children in Phuket.

METHODOLOGY

This study is a research and development (R&D) project conducted from May to August 2024. After participating in a 4-week activity, follow-up will continue for 8 weeks. The research is divided into three phases:

Phase 1: Situational Study

The situational study will be conducted from May to June 2024. The population for the study includes parents of preschool children aged 3-5 years in Phuket, totaling 6,304 individuals (Department of Health, Public Health Ministry, 2018). A sample of 300 individuals will be randomly selected from various areas in Phuket, based on the sample size formula by Daniel (Daniel, W.W., 2010). Additionally, 10 key informants from the dental health network will be included. The research instruments include, Quantitative data collection tool: A questionnaire assessing parents' knowledge of promoting preschool children's oral health, consisting of three parts: Part 1: General information (17 items), including gender, age, marital status, education, occupation, income, relationship with the child, dental care history, access to oral health information, and the child's oral health status. Part 2: Knowledge of promoting oral health for preschool children (34 items) measured using a Likert scale (Likert, R., 1967). This includes 7 questions on knowledge and understanding, 5 on access to dental services, 5 on communication skills, 5 on self-management, 5 on media literacy, and 7 on decision-making and intent to act. The total score is 170. Part 3: Behavior regarding preschool children's oral health care (27 items), with a total score of 140. A 5-point scale is used, with 5 points given for performing the behavior 6-7 days a week, 4 for 4-5 days, 3 for 3 days, 2 for 1-2 days, and 1 for no behavior. Qualitative data collection tool: In-depth interviews will be conducted with 10 key informants from the dental health network to explore the challenges parents face in promoting preschool children's oral health in Phuket. The purpose is to identify community needs and develop strategies for helping parents promote oral health correctly. The interview will focus on skills in knowledge/understanding, accessing dental health services, communication, self-management, media literacy, decision-making, and oral health care behaviors, such as oral hygiene practices, diet, taking children for dental appointments, and performing dental checks. For content validity, the Index of Item-Objective Congruence (IOC) was calculated to be greater than 0.8 for all questions (David Kolb, 2017). For reliability, the researcher pre-tested the questionnaire with a group of 30 individuals similar to the research population, yielding a reliability coefficient of 0.94.

Phase 2: Development of Health Literacy Model for Promoting Preschool Children's Oral Health

This phase will be conducted from June to July 2024. It focuses on 1) developing a health literacy model for promoting preschool children's oral health for parents in Phuket, in collaboration with members of the public health dental network. The model is based on a participatory planning approach (A-I-C). After the dental health network members review the issues and discuss strategies to address oral health problems for preschool children, the research team will integrate experiential learning principles and learner-centered strategies into the learning activities. These activities will aim to develop six key health literacy skills: 1) Knowledge/understanding, 2) Accessing information, 3) Communication skills, 4) Self-management, 5) Media literacy, and 6) Decision-making. Learning activities will be designed for each of these six skills, with six distinct activities implemented throughout the study.

Phase 3: Trial and Evaluation of the Health Literacy Model

This phase will be carried out from July to August 2024. It involves testing the developed health literacy model with a sample group of 30 parents of preschool children from a kindergarten in Phuket, compared with a control group of 30 parents from a different school. The model will be evaluated through a pre-test and post-test using questionnaires, group discussions, observations, and interviews to assess both health literacy and behaviors related to preschool children's oral health care. For data

collection: Pre-test Phase: The sample group will complete a pre-test questionnaire, and data will be collected through group discussions, observations, and interviews regarding health literacy on promoting preschool children's oral health and the caregivers' behaviors related to oral health care.
Intervention Phase: The sample group will undergo the intervention, responding to post-test questionnaires and evaluating their satisfaction with the model. The learning activities will be structured as follows: Activity 1 (Knowledge/Understanding): In Week 1, a 1-hour session using PowerPoint, video clips on proper tooth brushing, handouts, and flip charts will be conducted at a dental clinic. Activity 2 (Accessing Information): In Week 1, a 1-hour session using PowerPoint, video clips on child developmental stages, handouts, and flip charts will be held. Activity 3 (Communication Skills): In Week 2, a 1-hour session with PowerPoint, video clips on building happiness, handouts, and flip charts will take place. Activity 4 (Self-Management): In Week 3, a 1-hour session focusing on self-management of oral health from an early age, using PowerPoint, video clips, handouts, and flip charts. Activity 5 (Media Literacy): In Week 4, a 1-hour session focusing on media literacy and access to oral health information through various media channels, using PowerPoint, video clips, handouts, and flip charts. Activity 6 (Decision-Making): In Week 4, a 1-hour session on decision-making regarding the prevention of tooth decay through correct tooth brushing, using PowerPoint, video clips, handouts, and flip charts. The research tools will include the oral health literacy questionnaire, which differs from the questionnaire used in Phase 1 (Situational Analysis). The new questionnaire includes four parts: General Information (17 items) such as gender, age, marital status, education, occupation, income, relationship with the child, dental care history, access to oral health information, and children's oral health status. Health Literacy for Promoting Oral Health (34 items) assessed using a Likert scale, covering: knowledge/understanding (7 items), accessing information and dental services (5 items), communication skills (5 items), self-management (5 items), media literacy (5 items), and decision-making/intention to act (7 items), for a total score of 170. Behavioral Assessment of Oral Health Care (27 items) with a total score of 140, rated on a 5-point scale, assessing how often caregivers implement oral health practices weekly. Satisfaction Evaluation for the intervention, with 5 response options ranging from "Very satisfied" to "Very dissatisfied." The data will be analyzed using descriptive statistics, Independent t-test, and Repeated Measures ANCOVA.

RESULTS

Phase 1: Situation Analysis of Health Literacy for Promoting Oral Health Among Preschool Children's Caregivers in Phuket. The research findings indicate that the majority of the sample group were female (70.3%), aged between 20-40 years (47.0%), married or in a partnership (53.0%), with a secondary education or vocational certificate (36.0%). The primary occupation for most participants was in casual employment (46.3%), and their average monthly income was less than 15,000 THB (59.3%). The relationship with the child was primarily as a parent (37.4%), with 72.3% of participants having one child aged 3-5 years under their care. Regarding dental care access, 95.7% of the caregivers had utilized dental services in the past year, such as dental checkups, fillings, extractions, and root canal treatments. Similarly, 94.0% of their children had received dental services within the past year, with 94.0% of children having undergone dental checkups. Most caregivers had access to healthcare benefits, such as the Gold Card (94.0%), and nearly all children (99.7%) had the same healthcare benefits. In terms of information access, 99.0% had access to a television, and 96.7% had received oral health information from public health officers within the past six months. Additionally, 96.0% of caregivers had sought or received oral health information for preschool children via the internet. The findings of Phase 1 show that, overall, the sample group exhibited a moderate level of health literacy in promoting oral health for preschool children (77.7%). When broken down by skill, the levels of health literacy were as follows: 1) Knowledge/understanding: 58.0% 2) Accessing information and dental health services: 56.7% 3) Communication skills

related to oral health promotion: 56.7% 4) Self-management of children's oral health: 52.7% Media literacy: 45.7% 5) Decision-making/intention to act: 35.7%. In terms of caregivers' behaviors related to the oral health care of their preschool children, the overall level was classified as acceptable (91.3%). When categorized by area, the following behaviors were observed: 1) Cleaning the child's mouth: 88.0% 2) Promoting oral health through diet: 53.3% 3) Taking children for dental checkups: 58.0% and 4) Self-checking the child's teeth: 84.7%.

Phase 2: Development of a Health Literacy Model for Promoting Oral Health Among Preschool Children's Caregivers in Phuket. The results of the development phase revealed a health literacy model for promoting oral health, specifically designed for caregivers of preschool children in Phuket. The model consists of six key skills: 1) Knowledge/Understanding 2) Accessing Information and Dental Health Services 3) Communication Skills 4) Self-Management Skills 5) Media and Information Literacy and 6) Decision-Making/Intentions to Act.

Phase 3: Evaluation of the Effectiveness of the Oral Health Literacy Model for Promoting Preschool Children's Oral Health among Caregivers in Phuket Province. Part 1: Demographic Information, The study involved 60 participants, divided equally between the experimental and comparison groups (n=30 for each). In the experimental and comparison groups, 73.3% and 100% were female, respectively. Participants in the experimental group were aged between 20–30 years (36.7%), while the comparison group had a higher proportion in this age range (66.7%). Marital status data showed that 36.7% of the experimental group and 93.3% of the comparison group were married. Educational attainment of a bachelor's degree or higher was reported by 30.0% of the experimental group and 73.3% of the comparison group. The experimental group primarily consisted of laborers (36.7%), whereas the comparison group was predominantly self-employed (63.3%). Monthly income ranged between 15,000–30,000 THB for 43.3% of the experimental group and 70.0% of the comparison group. Regarding the relationship to the child, 60.0% of the experimental group and 100% of the comparison group were parents. Most participants in both groups had one child aged 3–5 years (80.0% for the experimental group and 66.7% for the comparison group).

Dental service utilization in the past year was reported by 96.7% of the experimental group and 100% of the comparison group, including treatments such as check-ups, fillings, extractions, or root canal therapy. Similarly, 96.7% of the experimental group and 100% of the comparison group reported their children receiving dental services within the past year, primarily for check-ups (43.3% and 100%, respectively). The gold card (universal health coverage scheme) was the primary healthcare benefit for both groups, utilized by 63.3% of the experimental group and 100% of the comparison group. Regarding information access, 90.0% of the experimental group used mobile phones, while 96.7% of the comparison group used television. Within the past six months, 76.7% of the experimental group had received oral health information from dentists, compared to 100% of the comparison group receiving it from public health officials. Internet use for accessing information about children's oral health was reported by 96.7% of both groups. Part 2: Effectiveness of the Oral Health Literacy Model, Post-intervention, the experimental group demonstrated significantly higher oral health literacy scores compared to pre-intervention levels ($p<0.01$). The average oral health literacy score post-intervention was significantly greater than pre-intervention ($p<0.01$). Additionally, paired t-tests indicated a significant difference in oral health literacy scores between pre- and post-intervention within the experimental group ($p<0.05$). Independent t-tests revealed that before the intervention, the overall oral health literacy between the two groups differed significantly ($t = 0.20$, $df = 89$, $p < 0.01$). A comparative analysis of the mean scores of oral health literacy and oral hygiene behaviors between pre-intervention, post-intervention, and follow-up phases demonstrated that the differences observed were due to the oral health literacy intervention rather than pre-existing disparities in quality of life. In specific skill domains, the experimental group

consistently outperformed the comparison group with statistically significant differences ($p<0.01$). Similarly, the experimental group demonstrated significantly higher oral hygiene behavior scores across all time points (pre-intervention, post-intervention, and follow-up) compared to the comparison group ($p<0.05$).

Table 1: Presents the Comparison of Mean Scores for Oral Health Literacy and Preschool Children's Oral Hygiene Behaviors among Caregivers in the Experimental and Comparison Groups before the Intervention, Using Independent t-tests (n=30).

Oral Health Literacy	**Pre-Test**		**t**
	Experimental Group $\bar{X}$**, (S.D.)**	**Comparison Group** $\bar{X}$**, (S.D.)**	
Oral Health Promotion Literacy			
1. Knowledge and Understanding Skills	3.50, (0.80)	3.52, (0.61)	0.87
2. Skills in Accessing Oral Health Information and Services	3.28, (0.52)	3.19, (0.59)	0.20**
3. Communication Skills	2.88, (0.77)	2.90, (0.61)	0.79
4. Self-Management Skills	2.83, (0.82)	2.85, (0.62)	0.86^{ns}
5. Media and Information Literacy Skills	2.99, (0.70)	2.97, (0.65)	0.79^{ns}
6. Decision-Making/Intention to Act Skill	2.91, (0.86)	2.99, (0.68)	0.36
Overall	**3.09, (0.82)**	**3.10, (0.70)**	$\mathbf{0.86^{ns}}$
Oral Health Care Behaviors			
1. Oral Hygiene Practices	**2.80, (0.64)**	**2.75, (0.66)**	**0.30**
2. Oral Health-Promoting Consumption	**2.75, (0.80)**	**2.74, (0.69)**	**0.05***
3. Seeking Oral Health Services for Children	**3.08, (0.70)**	**3.06, (0.67)**	$\mathbf{0.11^{ns}}$
4. Self-Examination of Children's Teeth	**2.85, (0.55)**	**2.85, (0.62)**	$\mathbf{0.00^{ns}}$
Overall	**2.84, (0.97)**	**2.81, (0.91)**	**0.12**

ns = not significant, *p < 0.05, **p < 0.01, df = 89

The study results comparing the mean scores of oral health literacy and oral health care behaviors of preschool children's caregivers before the intervention between the experimental and comparison groups revealed that the mean scores of oral health literacy in the experimental and comparison groups did not differ significantly at the 0.01 level. Similarly, the mean scores of oral health care behaviors of preschool children's caregivers before the intervention in both groups showed no statistically significant difference at the 0.05 level, as presented in Table 2.

Table 2: Comparison of Mean Scores for Oral Health Literacy and Oral Health Care Behaviors of Preschool Children's Caregivers After the Intervention and During the Follow-Up Phase Between the Experimental and Comparison Groups Using Independent t-Test (n = 30)

Oral Health Literacy	**Post-Test**		t	**Follow-Up**		t
	Experimental Group $\bar{X}$**, (S.D.)**	**Comparison Group** $\bar{X}$**, (S.D.)**		**Experimental Group** $\bar{X}$**, (S.D.)**	**Comparison Group** $\bar{X}$**, (S.D.)**	
Oral Health Promotion Literacy						
1. Knowledge and Understanding	4.35,(0.59)	3.49,(0.58)	5.98	4.94,(0.29)	3.48,(0.64)	5.74

Skills						
2. Skills in Accessing Oral Health Information and Services	4.47,(0.70)	3.37,(0.50)	1.73	4.79,(0.50)	3.38,(0.50)	7.00
3. Communication Skills	3.59,(1.36)	3.01,(0.67)	6.40	3.87,(1.45)	3.02,(0.67)	2.09*
4. Self-Management Skills	4.36,(0.70)	2.88,(0.62)	7.25	4.63,(0.62)	2.88,(0.60)	8.67
5. Media and Information Literacy Skills	4.57,(0.62)	2.99,(0.66)	1.30*	4.81,(0.48)	3.00,(0.65)	9.56
6. Decision-Making/Intention to Act Skill	4.47,(0.52)	2.98,(0.72)	1.57	4.82,(0.45)	2.99,(0.69)	9.19
Overall	**4.36,(0.84)**	**3.13,(0.67)**	**3.99**	**4.67,(0.78)**	**3.14,(0.67)**	**6.27**
Oral Health Care Behaviors						
1. **Oral Hygiene Practices**	4.47,(0.64)	2.79,(0.68)	5.58	4.71,(0.57)	2.80,(0.67)	9.84
2. Oral Health-Promoting Consumption	4.14,(0.77)	2.78,(0.72)	1.88**	4.29,(0.62)	2.78,(0.70)	5.90
3. Seeking Oral Health Services for Children	4.67,(0.60)	3.10,(0.70)	6.97	4.69,(0.57)	3.08,(0.66)	8.52**
4. Self-Examination of Children's Teeth	4.42,(0.57)	2.90,(0.61)	1.52**	4.78,(0.48)	2.90,(0.67)	9.87
Overall	**4.36,(0.76)**	**2.85,(0.92)**	**6.73**	**4.57,(0.73)**	**2.86,(0.92)**	**4.42**

ns = not significant, *p < 0.05, **p < 0.01, df = 58

The findings from the comparative analysis of mean scores for oral health literacy after the intervention and during the follow-up phase between the experimental and comparison groups revealed that the mean scores for oral health literacy in the experimental group differed significantly at the 0.05 level. Additionally, the oral health care behaviors of preschool children's caregivers after the intervention and during the follow-up phase in both groups showed statistically significant differences. Notably, the pre-intervention mean scores for oral health care behaviors of the caregivers were significantly different at the 0.01 level, as detailed in Table 3.

Table 3: Comparison of Mean Scores for Overall Oral Health Literacy of Caregivers and Oral Hygiene Practices for Preschool Children Across Pre-Test, Post-Test, and Follow-Up Phases in the Experimental Group Using Paired t-Test Statistics

Oral Health Literacy of Preschool Children's Caregivers	**Average**	**S.D.**	**t**
Pre-Test	3.09	0.82	8.38
Post-Test	4.36	0.84	
Pre-Test	3.09	0.82	2.09**
Follow-Up	4.67	0.78	
Post-Test	4.36	0.84	1.63
Follow-Up	4.67	0.78	
Oral Hygiene Practices			
Pre-Test	2.84	0.97	6.76
Post-Test	4.36	0.76	
Pre-Test	2.84	0.97	1.09*
Follow-Up	4.57	0.73	
Post-Test	4.36	0.76	0.97
Follow-Up	4.57	0.73	

ns = not significant, *p < 0.05, **p < 0.01,

Section 3: Results of Caregivers' Satisfaction Assessment Towards the Learning Activities, the evaluation of the experimental group's caregivers' satisfaction with the received learning activities revealed an overall satisfaction level of "highest satisfaction" ($\bar{x}$ = 4.92, SD = 0.23). Additionally, all individual items in the assessment were rated at the highest satisfaction level. **The health literacy model for promoting oral health among caregivers of preschool children in Phuket** should be structured as follows: **1) Core Principles**, 1.1) Participatory Design: Involve stakeholders such as public health officials, dental care providers, and caregivers in co-creating the model. 1.2) Cultural Relevance: Ensure the model aligns with local customs, practices, and socio-economic conditions in Phuket. 1.3) Sustainability: Incorporate elements that encourage long-term behavioral changes and ongoing support. **2) Key Components**: 2.1) Knowledge and Understanding Provide caregivers with foundational knowledge about oral health, including proper hygiene techniques, dietary impacts, and the importance of regular dental visits. 2.2) Access to Information and Services. Develop easy-to-use resources such as brochures, mobile applications, and local health service directories, ensuring accessibility for all socio-economic groups. 2.2.1) Communication Skills Train, caregivers to effectively communicate with dental professionals and their children about oral health practices. 2.2.2) Self-Management Skills Encourage, the establishment of daily oral health routines, such as supervised brushing and monitoring sugar intake. 2.2.3) Media and Information Literacy, teach caregivers how to critically evaluate oral health information from digital and traditional media sources. 2.2.4) Decision-Making Skills, empower caregivers to make informed decisions about dental care, including seeking professional services and adopting preventive measures. **3) Implementation Strategies**, 3.1) Interactive Learning Activities: Use experiential learning methods such as role-playing, hands-on demonstrations, and group discussions. 3.2) Technology Integration: Leverage mobile apps and social media to disseminate information and provide reminders for oral health practices. 3.4) Community-Based Approach: Conduct workshops and campaigns within schools, childcare centers, and community hubs. And **4.) Evaluation and Feedback**, 4.1) Develop measurable indicators to assess changes in caregivers' knowledge, skills, and behaviors. 4.2) Conduct pre- and post-intervention assessments using tools like surveys, interviews, and observation. 4.3) Use feedback to refine the model and ensure its continued effectiveness. This comprehensive and adaptive model would address the unique needs of caregivers in Phuket while fostering an environment conducive to improved oral health outcomes for preschool children.

CONCLUSIONS

This study focuses on the development of an oral health literacy model for promoting oral health among preschool children's caregivers in Phuket Province. Most caregivers of preschool children are concerned about the oral health of their children, prompting their interest in participating in the learning activities, which included PowerPoint presentations and video clips. The main objective was to enhance caregivers' knowledge of oral health literacy to foster proper oral hygiene habits in preschool children, thus reducing oral health issues. The model involves six key competencies: 1) Knowledge and understanding, 2) Access to oral health information and services, 3) Communication skills, 4) Self-management skills, 5) Media and information literacy, and 6) Decision-making skills. The activities were conducted over a four-week period and involved participation in the Line group "Healthy Teeth, Beautiful Smile" to continue applying the acquired information. The follow-up lasted for eight weeks, during which oral health assessments of preschool children were conducted. The study utilized a mixed-methods approach to enhance the effectiveness of the oral health literacy model for caregivers in Phuket. The researchers applied principles of experiential learning and learner-centered education. Caregivers were encouraged to engage in activities with children to promote proper brushing techniques, such as conversations, play, singing, and storytelling. This not only promoted oral health literacy but also contributed to the children's overall well-being, fostering positive environmental influences. Such activities enhance children's engagement and social relationships, laying a strong foundation for good oral health as permanent teeth emerge.

The findings revealed that, before the intervention, both the experimental and control groups exhibited similar average scores for oral health literacy and caregiving behaviors regarding preschool children's oral health, with no statistically significant differences at the 0.01 level. These results align with the study by Kittiboonthawan et al. (2022), which found that most caregivers had a moderate level of oral health literacy and caregiving behaviors for preschool children. Factors associated with caregiving behaviors included caregiver education levels, experience taking children for dental check-ups, and knowledge of health management. After the intervention and follow-up, the experimental group showed statistically significant improvements in both oral health literacy and caregiving behaviors compared to the control group ($p<0.05$). These results are consistent with the findings of Ampawa (2022), which demonstrated that an intervention program focused on self-efficacy and participatory learning led to significant improvements in the experimental group's behavior compared to the control group ($p<0.05$).

Additionally, when comparing the average scores of the experimental group in all six oral health literacy competencies and caregiving behaviors before, after, and during follow-up, significant improvements were observed in all aspects, with scores higher than those of the control group. This outcome is consistent with Chatchanapa (2022), which found that an intervention led to improvements in knowledge, self-efficacy, and behaviors, along with better oral health conditions for preschool children.

The study concludes that the developed oral health literacy model for caregivers in Phuket Province is effective and can be applied to promote caregiver involvement and enhance the oral health care behaviors of preschool children, appropriately adapted to the context of local health services.

RECOMMENDATIONS

1. Public health agencies and early childhood development centers in Phuket Province should adopt the developed model of oral health literacy for promoting preschool children's oral health as part of surveillance and intervention efforts for children with oral health issues. This model should be implemented in local contexts by extending the duration of activities and emphasizing practical training for caregivers. Such training should focus on enhancing caregivers' skills in promoting and fostering oral health literacy for preschool children, ensuring competency in each dimension of oral health literacy.
2. Relevant personnel should prioritize empowering caregivers to enhance their oral health

literacy in promoting preschool children's oral health. This is critical, as caregivers play a direct role in sustaining the development of children's oral health literacy over time.
3. Application of the oral health literacy promotion model for caregivers in monitoring and fostering preschool children's oral health literacy should include extended durations for other developmental activities. This approach aims to ensure sustainability and the caregivers' ability to address a broader range of developmental challenges comprehensively.

ACKNOWLEDGMENTS
I extend my sincere gratitude to the esteemed experts and specialists who provided invaluable guidance and instrument validation, including the faculty of the Dental Clinic of Morwan Group, Sweet Dental Clinic, My Sweety Dental Clinic, and the oral health network partners in Phuket Province. My heartfelt thanks also go to the directors of the Si Sunthon Subdistrict Early Childhood Development Center, Phuket Kindergarten School, and Wittaya Satit School for their support in facilitating data collection and coordinating the completion of questionnaires for this research. Lastly, I deeply appreciate the cooperation of all the caregivers of preschool children who participated in the questionnaire survey, making the successful completion of this dissertation possible.

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