

Association between the health belief model and Karen's parent (Pgakenyau) behavior towards preventing dental caries for young children

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ARTICLE INFO

Article history:

- Received 19 January 2022

- Revised 1 March 2024

- Accepted 1 April 2024

Keywords:

karen (Pgakenyau), young children, health belief model, dental caries

ABSTRACT

Background: The Karen community (Pkakenyao) does not care about dental health. The perception of the value of baby teeth is low. The lifestyle and traditions of the Karen (Pkakenyao) people affected dental health care. Therefore, these factors influence people living in this area's oral health care activities, hygiene, and behavior.

Aim: aimed to conduct four objectives for studying on Karen parent's (Pgakenyau). 1) Exploring the association between the health belief model and behavior towards health belief model and behavior about the dental caries of young children, 2) Exploring the behavior in preventing dental caries, 3) Studying the relationship between individual factors and the behavior in preventing dental caries, and 4) focusing on the relationship between the health belief model and opinion about dental caries and their behavior in preventing dental caries.

Methods: This research was a cross-sectional descriptive study. The population was Karen's parents (Pgakenyau) who had young children, lived in Mae Yuam and Mae Hao sub-district, both in Mae Sariang district, Mae Hong Son province. We calculated the number of samples from the simple random sampling method, 109. First, we gathered the information from the surveying method, the duration from 1 to 15 November 2021. Afterward, we analyzed the data using the descriptive statistics and the inferential statistics analysis method, Spearman's rank correlation coefficient, and ETA correlation.

Results: The health belief models for caries prevention about the perceived risk of caries was at a moderate level, the perceived severity of caries was moderate, the perceived benefit of preventive training was high, the perceived barriers to health behavior practice were moderate, the perceived health motivation was high, and another cofactor perception was high. The caries prevention behaviors of Karen's parents had an overall average caries prevention behavior score at a moderate level. The personal factors of the parents were age, education, average monthly income, gender, relationships with children, occupation, religion, and the factor as children's age, which were not significantly related to early childhood dental care behaviors. The health belief model in terms of other cofactors showed a statistically significant positive relationship with early childhood caries prevention behaviors ($r=.310$; $p < .01$).

Conclusions: Lastly, according to the result, we suggested establishing the process for choosing or developing the person to be the dentist or related who has knowledge and capability of the culture and language, or that person's variety of culture might be the same as the people we chose to be our sample.

27

แบบแผนความเชื่อด้านสุขภาพ
กับพฤติกรรมการป้องกันโรค
ฟันของผู้ปกครองชาว
กะเหรี่ยง ปกาเกอญอ

ความสัมพันธ์ระหว่างแบบแผนความเชื่อด้านสุขภาพกับพฤติกรรมการ
ป้องกันโรคฟันผุในเด็กปฐมวัยของผู้ปกครองชาวกะเหรี่ยง ปกาเกอญอ
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ข้อมูลบทความ

ประวัติบทความ

- รับ 19 มกราคม 2565
- แก้ไข 15 มีนาคม 2567
- ตอรับ 1 เมษายน 2567

คำสำคัญ

ชาวกะเหรี่ยง ปกาเกอญอ, เด็ก
ปฐมวัย, แบบแผนความเชื่อด้าน
สุขภาพ, พฤติกรรมการป้องกันโรคฟัน
ผุ

บทคัดย่อ

ความเป็นมา ชุมชนชาติพันธุ์กะเหรี่ยงให้ความสำคัญกับสุขภาพฟันน้อย การรับรู้คุณค่าของฟัน
น้ำนมอยู่ในระดับต่ำ รวมทั้งวิถีชีวิตและประเพณีของชาวกะเหรี่ยงที่อาศัยอยู่ในพื้นที่ที่มีอิทธิพล
ต่อกิจกรรมการดูแลสุขภาพช่องปากและสุขอนามัยตลอดจนพฤติกรรมการดูแลสุขภาพ

วัตถุประสงค์การวิจัย มี 4 ข้อ คือ 1) เพื่อศึกษาแบบแผนความเชื่อด้านสุขภาพการป้องกันโรคฟัน
ผุ 2) เพื่อศึกษาพฤติกรรมการป้องกันฟันผุ 3) เพื่อศึกษาความสัมพันธ์ระหว่างปัจจัยส่วนบุคคล
กับพฤติกรรมการป้องกันโรคฟันผุ และ 4) เพื่อศึกษาความสัมพันธ์ระหว่างแบบแผนความเชื่อ
ด้านสุขภาพเรื่องการป้องกันฟันผุกับพฤติกรรมการป้องกันฟันผุ ของผู้ปกครองชาวกะเหรี่ยง ปกา
เกอญอ

วิธีการดำเนินการวิจัย การวิจัยครั้งนี้เป็นการวิจัยเชิงพรรณนาแบบตัดขวาง ประชากรที่ใช้เป็น
ผู้ปกครองชาวกะเหรี่ยง ปกาเกอญอ ของเด็กปฐมวัย ตำบลแม่ยวมและตำบลแม่เหาะ อำเภอแม่
สะเรียง จังหวัดแม่ฮ่องสอน มีขนาดกลุ่มตัวอย่าง คน โดยสุ่มกลุ่มตัวอย่างแบบอย่างง่าย 109
วิเคราะห์ข้อมูลโดย 2564 พฤติกรรม 15-1 สอบถาม ตั้งแต่วันที่เก็บรวบรวมข้อมูลโดยใช้แบบ
ใช้สถิติเชิงพรรณนาและวิเคราะห์สถิติเชิงอนุมาน โดยสถิติสัมประสิทธิ์สหสัมพันธ์สเปียร์แมน
(Spearman's rank correlation coefficient) และสหสัมพันธ์อีต้า (ETA Correlation)

ผลการวิจัย พบว่ากลุ่มตัวอย่างส่วนใหญ่เป็นเพศหญิง มีความสัมพันธ์เป็นพ่อหรือแม่ของเด็ก มี
อาชีพเกษตรกร อายุเฉลี่ย ปี 30.65การรับรู้ในด้าน การรับรู้ถึงประโยชน์ของการปฏิบัติ การรับรู้
ในด้านแรงจูงใจด้านสุขภาพ การรับรู้ในด้านปัจจัยร่วมอื่นๆ อยู่ในระดับสูง การรับรู้โอกาสเสี่ยง
ของการเกิดโรคฟันผุ การรับรู้ความรุนแรงของโรคฟันผุ การรับรู้ต่ออุปสรรคของการปฏิบัติ
พฤติกรรมสุขภาพ และพฤติกรรมการป้องกันโรคฟันผุในเด็กปฐมวัยอยู่ในระดับปานกลาง ผล
การวิเคราะห์ความสัมพันธ์พบว่า ปัจจัยร่วมอื่นๆ มีความสัมพันธ์กับพฤติกรรมการป้องกันฟันผุ
ในเด็กปฐมวัยในทางบวก อย่างมีนัยสำคัญทางสถิติ $r = .310$; $p < .01$

สรุป จากผลการศึกษามีข้อเสนอแนะให้มีการคัดเลือกหรือพัฒนาบุคลากรทางทันตกรรมให้มีความ
สามารถทั้งด้านวัฒนธรรมและภาษาศาสตร์ตลอดจน เป็นบุคลากรที่มีความหลากหลายทาง
วัฒนธรรมเช่นเดียวกับประชากรกลุ่มเป้าหมาย

Introduction

According to the report from the Ministry of Public Health (Health Data Center, 2020) showed that 3-year-old children living in Thailand 27.79 % of milk teeth had cavities among children aged three years, Mae Sariang district, Mae Hong Son province, in 2020, there was 53.33 % of milk tooth decay among 3-year-old children, Mae Yuam sub-district, Mae Sariang district, Mae Hong Son province, in 2017, there was 59.26 % of the milk teeth decay among the 3-year-old children, Mae Ho sub-district, Mae Sariang district, Mae Hong Son province, in 2017, 100% of milk teeth deteriorated.

A survey of behavioral data (Bureau of Dental Health, 2017) showed that 44.5 % of 3-year-olds drank sweetened and fermented milk at home, 39.5% used a bottle at home, and 39.5% of 5-year-olds drank sweetened and fermented milk. In addition, 47.6 % of fermented dairy at home, 11.9 % of them suckling from a bottle. Such behaviors increased the risk of developing dental caries (Promma, 2011). Many factors influence children's dental health behaviors, especially parents were one of the factors related to parents' incidence of dental caries in children aged 3-5 years was race and ethnic group. In addition, the feeding behavior and food, including the frequency of cleaning the child's oral cavity, were different (Panpraw, 2018).

The total population of Mae Sariang district of Mae Hong Son province is 54,529 people. Sixty percent of whom are hill tribes such as Karen (Pgakenyau), Lawa, and Tai Yai, with the Karen (Pgakenyau) population accounting for 0.53% of the total population in Thailand (National Statistical Office of Thailand, 2021). The Karen community (Pkakenyao) does not care about dental health. The perception of the value of baby teeth is low. The lifestyle and traditions of the Karen (Pkakenyao) people affected dental health care. Therefore, these factors influence people living in this area's oral health care activities, hygiene, and behavior. (Wai Yan Myint Thu, Ngeonwiwatkul, Maneekan, Phuanukoonnon, 2020). These factors lead to the belief that it affects health care behavior. Thus, the belief model is one of the predictions to behavior that finally solve the health care problem that causes by their thoughts. The health belief model is a set of beliefs about a person's health that affect illness and treatment. This model consists of awareness of the disease's cause, treatment perception, and severity. In addition, disease and caries prevention addressed the concerning factors that predicted parental behavior: values, beliefs, interests, factors driving action, and health motivation (Becker, Nathanson, Drachman & Kirscht, 1977). The health belief model correlated to dental caries prevention. For example, one study found that parental toothbrushing had a strong positive association with the belief that oral health is as important as physical health (Hiratsuka, Robinson, Greenlee & Refaat, 2019).

The researchers realized the importance of oral health problems in children aged 3-5 years as the primary cause from parents therefore interested in studying personal factors health belief model, caries prevention, and dental caries prevention behaviors of Karen's parents (Pgakenyau) for early childhood children in Mae Yuam and Mae Ho sub-district, Mae Sariang district, Mae Hong Son province. Furthermore, this research aimed to use the results as a guideline for solving tooth decay problems in children aged 3-5 years, Karen (Pgakenyau) people.

Objectives

This study aimed to explore 1) the health beliefs model on caries prevention, 2) Karen's parents' tooth decay prevention behaviors, 3) the relationship between personal factors and dental caries prevention behaviors, and 4) the relationship between the health beliefs model on tooth decay prevention behaviors, of Karen's parents (Pgakenyau) for early childhood children Mae Yuam and Mae Ho sub-district, Mae Sariang district, Mae Hong Son province.

Research method

This study was cross-sectional descriptive research. A health belief model surveyed Karen's parents' (Pgakenyau) of early childhood children in Mae Yuam and Mae Ho sub-district, Mae Sariang district, Mae Hong Son province. That was related to children's dental caries prevention behavior in these areas. This study's population, 130 people, was Karen's parents (Pkakenyao) of pre-school children in Mae Yuam and Mae Ho sub-district, Mae Sariang district, Mae Hong Son province. The sample of this research was Karen's parents (Pkakenyao) of pre-school children in Mae Yuam and Mae Ho sub-district, Mae Sariang district, Mae Hong Son province.

First, we determined the sample size from population 130 and the acceptable sampling error 0.05 by simple random sampling. Then, we calculated the sample size from Taro Yamane's formula. The sample size was 99 people. Then we added 10 % for the dropout rate that the sample should enroll. Finally, we randomly assigned a simple without returning to the research period from 19 June 2021 to 30 November 2021.

The selection criteria were 1) Karen's parents (Pkakenyao), Mae Yuam and Mae Ho sub-district, Mae Sariang district, Mae Hong Son province, who voluntarily agreed to participate in the research, and 2) Karen's parents (Pkakenyao), Mae Yuam and Mae Ho sub-district, Mae Sariang district, Mae Hong Son province, can understand the Thai language. The exclusion criteria were that the questionnaire was not filled out, unclear, and answered incorrectly.

The research tools that we used in this study and the data collection were questionnaires on the health belief model and tooth decay prevention behaviors among Karen's parents (Pkakenyao) in Mae Yuam and Mae Ho sub-district, Mae Sariang district, Mae Hong Son province. The questionnaires consist of 46 items divided into three parts as follows. The first part was the general information about parents. The second part was the health belief model for preventing tooth decay among parents composed of six aspects (perceiving the risk of tooth decay in early childhood, perceiving the severity of dental caries in children, perceived benefits of preventing tooth decay in early childhood, perceived barriers to health behavior practice, health incentives section, and other common factors). The third part was the prevention behaviors of tooth decay in children of parents.

The measurement variables that we applied were 1) Health Belief Model questionnaire of the preventing dental caries in parents consists of the perceived risk of caries in early childhood, the perceived severity of caries in early childhood, the perceived benefits of preventing childhood caries, the perceived barriers to the practice of health behaviors, health motivations, and coordinating factors. We measured each issue and analyzed the fundamental data by averaging then interpreting the overall score using the average according to Best's criteria (Best & Kahn, 1977). And 2) the dental caries prevention behavior questionnaire arranged on an ordinal scale of 5 levels of Likert daily practice, 5-6 days/week practice, 3-4 days/week practice, 1-2 days/week practice, and not practice at all (Likert, 1932). The researcher interpreted the mean criteria in positive and negative dimensions.

Testing the quality of research tools in this study, we employed 1) content validity measurement; the researcher consulted three experts to check the content validity of the questionnaire that covered the objectives and the appropriateness of content according to the concept and theory. Then considering the directness of the content, straightness was 0.9. And 2) content reliability measurement; the researcher tried on the questionnaires 39 records to the target sample. We found that Cronbach's alpha coefficient was 0.75 (we accepted a score at more than 0.7 (Tatha, Laorujisawat & Greenglass, 2013). Then we modified the data obtained to obtain a quality and complete questionnaire before collecting data.

After collecting 109 questionnaires, we checked the correctness, input the coding data, and analyzed data by using a computer program. Then we applied the descriptive statistics to describe personal factors of health beliefs models for preventing dental caries in children.

<https://thaidj.org/index.php/phird>

Citation: Kulkaew T., Phaisungsong C., Intarates M., Deekung P. (2024). Association between the health belief model and Karen's parent (Pgakenyau) behavior towards preventing dental caries for young children. *Public Health Innovation Research and Development*, 1(1), pp 26–37.

The researcher employed the frequency, percentage, mean, and standard variation for data attributes. We manipulated Spearman's rank correlation coefficient for statistical inferential analysis to find the correlation between ordinal personal factors and the scoring scale of the health belief model and teeth prevention and parents' behavior. We applied ETA correlation coefficient to determine the relationship between the nominal factors and the score.

Results

The study results found that the respondents were 109 Karen's parents. Most of them were female (73.4%), the average age was 30.65 years, graduated high school (33.9%), the religion was Buddhist (65.1%), the most occupation was agriculture (57.8%), and the average monthly income was 4,673.87 baht. In addition, the relation to their children (98.2%) was a parent, and most of the children were three years (72.5%). We found that factors of parents' age, education, average monthly income, and the child's age were not significantly related to early childhood dental care behaviors as shown in Table 1. The gender, relationship with children, occupation, and religion were not significantly related to early childhood dental care behaviors as shown in Table 2.

The health belief models for caries prevention are as follows. The study results found that the perceived risk of caries was at a moderate level (8.71 ± 1.23). The perceived severity of caries was moderate (11.28 ± 1.28). The perceived benefit of preventive training was high (13.57 ± 1.73). The perceived barriers to health behavior practice were moderate (11.44 ± 1.47). Perceived health motivation was high (19.19 ± 2.12). Another cofactor perception was a high mean (9.97 ± 1.24) as shown in Table 3.

The caries prevention behaviors of Karen's parents had an overall average caries prevention behavior score (24.64 ± 3.66) at a moderate level.

The personal factors of the parents were age, education, average monthly income, gender, relationships with children, occupation, religion, and the factor as children's age, which were not significantly related to early childhood dental care behaviors.

However, we found that the health belief model in terms of other cofactors showed a statistically significant positive relationship with early childhood caries prevention behaviors ($r = .310$; $p < .01$).

Health belief model and Karen's parent (Pgakenyau) behavior towards preventing dental caries

Table 1

The relationship between individual factors and early childhood dental care behaviors of Karen's parents (Pakagenyau)

Factors	Early childhood dental care behaviors of Karen's parents (Pakagenyau)		r*	p-value
	\bar{x}	S.D.		
Age of parents	30.65	6.14	-0.013	0.891
Education level			0.147	0.128
Not studied	21.50	1.732		
Educated	24.76	3.663		
Average monthly income			0.172	0.074
Income less than 5, 000baht	24.30	3.939		
Income greater than or equal to 5, 000baht	25.13	3.195		
child's age	3.27	0.45	0.028	0.776
3years old	24.51	3.886		
4years old	25.00	3.006		

The r* value uses Spearman's Correlation Coefficient statistic in the correlation test.

Table 2

The relationship between personal factors and caries prevention behaviors in the early childhood of Karen's parents (Pakagenyau)

Factors	Eta coefficient	P – value
Sex	0.002	0.983
Relationship with children	0.126	0.191
Occupation	0.083	0.389
Religion	0.113	0.241

*p < .05

Table 3

The health belief model and Karen's parents' (Pgakenyau) behavior towards preventing dental caries for young children

Health belief models	Karen's parents (Pgakenyau) behavior towards preventing dental caries for young children		r*	p-value
	\bar{x}	S.D.		
Perceived the likelihood of developing dental caries in early childhood	8.71	1.23	-0.138	0.153
Perceived severity of dental caries in early childhood	11.28	1.28	-0.074	0.466
Recognizing the benefits of practice for preventing caries in early childhood	13.57	1.73	0.141	0.145
Perceived barriers to health behavior practice	11.44	1.47	-0.002	0.984
Health motivation	19.19	2.12	0.161	0.095
Other contributing factors	9.97	1.24	0.310**	0.001
Health belief models (Overview)	74.16	4.93	0.126	0.191

The r* value uses Spearman's Correlation Coefficient statistic in the correlation test.

Discussion

The health belief models for caries prevention

The results showed that the risk perception group of caries was at a moderate level (8.71 ± 1.23). A study by Wai Yan Myint Thu et al (Wai Yan Myint Thu et al., 2020) found that Karen (Pgakenyau) believed that the cause of dental caries was in line with scientific knowledge of caries. Consuming sweet or sticky foods will make the worms that cause tooth decay stronger. Furthermore, the findings are consistent with the Jantorn (Jantorn, 2018) study, which found that parents' perceptions of food cause high caries levels.

The perceived severity of caries was moderate (11.28 ± 1.28), possibly due to low appreciation of baby teeth. Therefore, do not give value in maintaining oral hygiene or receiving dental services (Wai Yan Myint Thu et al., 2020) in line with the research of Kongmueanphet (Kongmueanphet, Kittipichai & Pitikultang, 2017), which received Knowing the severity of dental caries in early childhood at a moderate level 41.90%.

The perceived benefit of preventive practice was high (13.57 ± 1.73), possibly because 96.3% of the respondents who finished educated in educational institutions where schools taught how to brush person teeth properly and promote knowledge about dental hygiene health to students. The results of this research were consistent with the study of Yosit (Yosit, 2015), which found the perception of the benefits of preventing tooth decay. Therefore, the high level which recognizes the benefits of preventing dental caries was one of the essential factors that cause children's oral health care behavior properly.

The perceived barriers to health behavior practice were moderate (11.44 ± 1.47). Questions about language and travel showed to be at an intermediate level. Pgakenyau, who lives in Mae Hong Son province, has several Karen language speakers from Karen (Pgakenyau) who settled in other areas of Thailand. Furthermore, a study by Yosrungrach and Chunnual (Yosrungrach & Chunnual, 2018) found that the problems and obstacles of projects by government organizations caused the lack of civil servants in the area who can communicate in the Karen (Pgakenyau) language. Therefore, communication problems may cause Karen's parents (Pgakenyau) to use the dental services.

Furthermore, the study of Wai (Wai Yan Myint Thu et al., 2020) found that most Karen (Pgakenyau) fathers, mothers, or parents did not have time because of their work to earn money. Thus, there was a barrier to taking their children to the hospital. These results were consistent with the study of Yosit (Yosit, 2015) research, which found that parents' perceptions about obstacles in bringing their children to dental services were moderate. (You cannot take your child to the dentist every six months (46.7%), and the high cost of taking the child to the dentist (50%).

The perceived health motivation was high (19.19 ± 2.12), with two questions asked. First, the question was related to the parents. We found that parents wanted good oral health as a role model for their children (84.4 %). Furthermore, they believed they could take care of their children's oral health if they received the correct knowledge (63.3%). The issue was consistent with Kongmueanphet (Kongmueanphet et al., 2017) study results, which found parents had the perception of themselves to prevent dental caries in early childhood children with high-level (86%). Second, the questions related to early childhood. (Do you want the children to eat happily without suffering toothaches? Do you want the child to grow up with complete and no missing teeth? Do you not want to see a child cry while the dentist extracts a tooth? Do you not want to see a child suffer from toothache due to tooth decay? Do you not want your child teased by peers for having lost teeth?) The result was consistent with a study by Vichuta Kongmueanphet et al. (2017), which found a high expectation of the outcome for early childhood caries prevention (58.1%).

The perception of other common factors: the average was high (9.97 ± 1.24). It consists of 1) obtaining knowledge about preventing dental caries from medical and public health personnel, 2) having a good feeling for dental personnel, and 3) the parents believing that the family members had good protection against caries was high.

The caries prevention behaviors of Karen's parents

The caries prevention behaviors had an overall average caries prevention behavior score (24.64 ± 3.66) at a moderate level. The questions that moderate level was: 1) you let the child brush his teeth before bed 2) you brush the child's teeth again after the child brushes himself 3) you have a child's mouthwash 4) you give the child sweetened milk 5) you give the baby a snack whenever he wants to eat 6) you give the child water after eating the snack and 7) you let the children eat fruit as a snack instead of sweets. Only this question was high level: you let your baby drink from the glass or use a straw from the carton instead of bottle sucking.

Wai Yan Myint Thu et al. (Wai Yan Myint Thu et al., 2020) found that study participants or Karen's parents (Pgakenyau) sought out self-care for oral health problems while awaiting their village's annual dental mobile unit. The service of the mobile dental team led the parents to have a positive attitude towards dental personnel and found that the adults who participated in the study thought their oral health status was good. Furthermore, even having pain or losing teeth is a minor pain compared to other health problems. Therefore, it may be a reason for the parents who participated in the study to believe that their family members had good protection against caries.

Most parents' behavior of preventing dental caries in their children was moderate, maybe due to most parents working outside the home (91.7%), allowing parents to have less time to care for their children. Furthermore, the Coronavirus Disease 2019 (COVID-19) pandemic affects dental visits, which is consistent with the study of Vanka (Vanka, Jan, Alhazmi, Alsubhi, Allehyani, Wali, Vanka & Gajdhar, 2020), that the pandemic of COVID 19 compromised the dental health care system. Thus, the Mae Hong Son Primary Educational Service Area Office instructed closing school in that area of Mae Sariang district Mae Hong Son province. Therefore, the reasons above caused the burden parents worked and took care of their children may be a reason for the moderate level of dental caries prevention behaviors in early childhood. The result was consistent with Yosit's (Yosit, 2015) study, which found that the parents of the children's dental health care behaviors were moderate. Furthermore, a survey by Wai Yan Myint Thu et al. (Wai Yan Myint Thu et al., 2020) found that Karen's (Pgakenyau) bathrooms were usually built 5 to 20 meters away from their homes, where they stored personal hygiene supplies, including toothpaste and toothbrushes. Usually, Karen (Pgakenyau) brushed their teeth in the shower. When the bathroom and equipment are far from the house, it becomes an obstacle to brushing a person's teeth, especially during bedtime.

The personal factors of the parents

Parents' factors, we found no statistically significant relationship with early childhood caries prevention behaviors, the discussion of these issues is as follows.

The parents' age was not statistically related to caries prevention behavior in early childhood, which may be because the parents' generation in the study sample had a mean age of 30.65 years, with a standard deviation of 6.14 ranging in age from 19-47 years. They had experience in preventing dental caries in early childhood. The behavior of preventing caries in early childhood was higher than that of parents who had never experienced it. Compared to Kongmuanphet (Kongmuanphet et al., 2017) study explored preventing caries in early childhood parents in child development centers, the survey of Pho Thong district, Ang Thong province. Their results show parents had a mean age of 37.94, and the standard deviation was 12.65 years, near our study's mean parents' generation. In addition, the study found that more than half of parents (58.70%) had no experience preventing early childhood caries.

Parents' education was not statistically related to dental caries prevention behaviors in early childhood. According to the result of this study, even though most parents had a high school education (33.9%) consistent with Kongmai, Chaisang, Kajkumhaeng & Chaisang (Kongmai, Chaisang, Kajkumhaeng & Chaisang, 2019) study, found that the parents' educational level was not related to oral health care behaviors of parents to their preschool children even most parents graduated from high school or vocational certificate (55.4%)

The average monthly income of parents was not statistically related to dental caries prevention behavior in early childhood as may be a result of government policies that encourage Thai people to have easy access to public health services. In addition, the development of industrial technology and transportation has resulted in lower prices of oral health-related products such as toothpaste and toothbrushes. Furthermore, these products had a period of use of at least three months, which was consistent with the study of Thongrungruengchai and Banchonhattakit (Thongrungruengchai & Banchonhattakit, 2013), which found that the median income of the parents was not statistically related to the parents' children's brushing behavior.

The relationship with the children of the parents was not statistically related to caries prevention behaviors in early childhood, maybe because most preschool children lived with their parents (98.2%) and because of Karen (Pgakenyau) values. When a family member married, created a new family, or separated their homes and houses in their former family's neighborhood.

Therefore, the upbringing or behavior of early childhood caregivers as parents or grandparents was not related.

The parents' gender was not statistically related to caries prevention behavior in early childhood children. Most Karen (Pgakenyau) lived in an agricultural area that required much labor. As a result, male and female parents took identical responsibility for their occupation. This result was inconsistent with a study by Kongmai et al. (Kongmai et al., 2019); their results showed that the gender of parents related to early childhood dental care behaviors. This issue may be discussed in Karen (Pgakenyau) occupation more in agriculture than the comparing study, 57.8% and 29.1%, respectively.

Parents' occupations were not statistically related to dental caries prevention behaviors among early childhood children. However, the study results showed that most of the professions of this sample were farmers (57.8%), consistent with the study by Kongmai et al. (Kongmai et al., 2019), which found that occupations were not related to dental caries prevention behaviors in early childhood, most of the parents' occupations were farmers (29.1%). However, the results of this study were inconsistent with the study by Kongmueanphet et al. (Kongmueanphet et al., 2017), which found that occupation was associated with preventive behaviors from caries in early childhood. Most of the parents were factory workers (32.60%). It may be that different disciplines lead to additional parental awareness of health care, including other health care channels.

The parents' religion was not statistically associated with caries prevention behaviors among early childhood children, which may be because religion has little to do with caregivers' oral health. Furthermore, from the study results in the study sample, it was found that there was a limitation of having only two religions, Buddhism and Christianity. Therefore, maybe two beliefs do not differ in teachings related to oral health care.

The age of the children was not statistically related to caries prevention behaviors in early childhood. This result was consistent with Wai Yan Myint Thu et al. (Wai Yan Myint Thu et al., 2020) found that Karen's parents (Pgakenyau) had low awareness of the value of milk teeth. Parents' opinion that the value of milk teeth set diminished. In addition, the age range of children found in our study was low. Therefore, the slight age difference was unrelated to the parents' dental caries prevention behaviors.

The health belief model and early childhood caries prevention behaviors

Parents' health belief models and caries prevention behaviors did not correlate with caries prevention behaviors in early childhood. This research was inconsistent with Phanphasuk, Sakkunan, Nammontri and Savisit (Phanphasuk, Sakkunan, Nammontri & Savisit, 2018) research, which studied parents' oral health care perceptions and behaviors for children with oral health conditions of 3-5-year-old children in Sam Sung district Khon Kaen province, the eastern region of Thailand. Therefore, there were differences with our study in terms of understanding language, culture, beliefs, social conditions, and geographical factors.

The parents' health belief patterns and caries prevention behaviors consisted of 1) perceived the likelihood of developing dental caries in early childhood, 2) perceived severity of dental caries in early childhood, 3) recognized the benefits of practice for preventing caries in early childhood, 4) perceived barriers to health behavior practice, and 5) health motivation.

The health belief models for caries prevention, the results showed that the risk perception group of caries was at a moderate level which found that parents' perceptions of food cause high caries levels. The perceived severity of caries was moderate, possibly due to low appreciation of baby teeth. The perceived benefit of preventive practice was high, possibly because the respondents who finished education in educational institutions where schools taught how to brush person teeth properly and promote knowledge about dental hygiene health to students. The perceived barriers to health behavior practice were moderate, maybe the problems and obstacles of projects by government organizations caused the lack of civil servants in the area who can communicate in the Karen (Pgakenyau) language. Therefore, communication problems may cause Karen's parents (Pgakenyau) to dental services. The perceived health motivation was high, with two questions asked. First, the question was related to the parents. We found that parents wanted good oral health as a role model for their children. Furthermore, they believed they could take care of their children's oral health if they received the correct knowledge.

The other coordination factor that affected the parents' health belief patterns to caries prevention was a very low positive correlation with statistical significance with early childhood caries prevention behavior ($r=.310$; $p < .01$). The other coordinating factors were the relationship between the patient and the health care professionals. These relationships affect cooperation in implementing various recommendations that people adopt to describe behavior from the advice about the people participation, disease prevention, and treatment. Most of the questionnaire was related to dental personnel, consistent with Thongrungruengchai and Banchonhattakit (Thongrungruengchai & Banchonhattakit, 2013). They found the difference of parent's behavior among with and without dental personnel advised the parents to brush children's teeth, 35.37% and 16.67% respectively, may be the dental personnel influenced this sample of the population.

The other coordination factor that affected the parents' health belief patterns to caries prevention was a very low positive correlation with statistical significance with early childhood caries prevention behavior ($r=.310$; $p < .01$). Nevertheless, the correlation was positive, showing the relationship between the patient and the health care professionals. Thus, the recommendation from this study was the selection of the dental personnel who works in promoting oral health in diverse populations. Choosing dental personnel from diverse cultures, linguistic abilities, and proper to the target patient can be enabled dental personnel or public health officials to understand the community context and limitations of the area. Furthermore, this study could not represent Karen's parents (Pgakenyau) the Pakakayo population in Thailand; therefore, the conduction of subsequent studies should be in more extensive and more comprehensive people. Moreover, the following research should focus on the social support theory to find the correlation with caries prevention behaviors of Karen's parents (Pgakenyau).

<https://thaidj.org/index.php/phird>

Suggestion

The health belief models for caries prevention about the perceived risk of caries was at a moderate level, the perceived severity of caries was moderate, the perceived benefit of preventive training was high, the perceived barriers to health behavior practice were moderate, the perceived health motivation was high, and another cofactor perception was high. The caries prevention behaviors of Karen's parents had an overall average caries prevention behavior score at a moderate level. The personal factors of the parents were age, education, average monthly income, gender, relationships with children, occupation, religion, and the factor as children's age, which were not significantly related to early childhood dental care behaviors. The health belief model in terms of other cofactors showed a statistically significant positive relationship with early childhood caries prevention behaviors ($r=.310$; $p < .01$).

Acknowledgments

We would like to thank all the participants for their time and willingness to participate in this study. We also thank lecturer pharmacist Dr. Weerachart Kaewanan, lecturer dentist Anurak Sukrodom, and lecturer Songsak Suksan for assisting in checking the tools used in the research, including suggesting corrective guidelines and more complete. We would like to thank the course instructors, heads of departments, subject lecturers, and those involved in this fieldwork.

Funding

No funding

Ethics approval and consent to participate

The ethics committee of Sirindhorn College of Public Health Phitsanulok allowed the ethical study clearance (No. SCPHPL 2/2564.2.9). Before conducting the interviews, written obtained informed consents from all adult participants.

Consent to publication

The authors did not employ this consent because we didn't mention anyone's information in the original article as a competitive advantage and any potential conflicts of interest arising from this article.

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Health belief model and Karen's parent (Pgakenyau) behavior towards preventing dental caries

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