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Oral Health Knowledge and Practices and Its Association with the Demographic Characteristics among Longhouse Community in Julau, Sarawak

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ABSTRACT

Oral health gained attention worldwide as it exerted unfavourable and undesired influences on an individual's daily lives and wellbeing, especially among the rural population. In order to increase the understanding on the oral health among the rural community, this study aimed to determine the oral health knowledge and practice and its association with sociodemographic characteristics among the longhouse residents in Julau, Sarawak. In this cross-sectional study, a total of 105 residents were recruited from five longhouses, namely Rumah Panjang Mengga, Rumah Panjang Ikeh, Rumah Panjang Michael, Rumah Panjang Budit, and Rumah Panjang Manju. Information related to sociodemographic characteristics, as well as oral health knowledge and practice was gathered through face-to-face interview by using a structured questionnaire. Spearman rho correlation test, Mann-Whitney U-test, and Krukal-Wallis H-test were applied during data analysis**.** Median (interquartile) age of the children and adults was 10.0 (5.0) and 50.0 (22.0) years old, respectively. Findings revealed that oral health knowledge and practices among participants, both children and adults were inadequate as a high proportion of the participants were unable to provide answers for oral health related questions (functions of fluoride and correlation between gum disease with heart disease) and several oral health practices (regular oral check-up, change of toothbrush, and consumption of sweetened food) were also not being engaged in the daily life among the children and adult participants. A significant correlation was found between age and knowledge score among adult participants (r_s = -0.389, p < 0.001). Besides, significant higher oral health knowledge score were found among adult participants with higher education level (H = 27.466; p < 0.001) and significant higher in oral health practice score was found among unemployed adult participants when compared to self-employed and employed workers for government and private (H = 9.631, p = 0.008). In conclusion, younger and educated participants are more knowledgeable regarding oral health. Engagement of oral health practices were related to occupation of the adult participants. Provision of health education and education aid for longhouse community should be continued taking into consideration age, level of education level, and even occupation in order to improve their oral health knowledge and practice.

Keywords: Knowledge, longhouse community, oral health, practice, sociodemographic characteristics

INTRODUCTION

World Health Organization (WHO, 2020) defined oral health as '*a state of being free from chronic mouth and facial pain, oral and throat cancer, oral infection and sores, periodontal (gum) disease, tooth decay, tooth loss, and other diseases and disorders that limit an individual's capacity in biting, chewing, smiling, speaking and psychosocial wellbeing*'. Oral health gained attention worldwide as it exerted unfavourable and undesired influences on an individual's daily lives and wellbeing especially among the rural population (Baiju, Peter, Varghese, & Sivaram, 2017; Sahar, Lau, Wan Puteh, Amara, & Abdul Razak, 2019). First, impaired oral health was associated with obstructive sleep apnea (Schroeder & Gurenlian, 2019) and poor sleep quality (Setia et al., 2019). Second, it was also linked with psychological discomfort, such as feeling discomfort due to food stuck in teeth or feeling uncomfortable with their appearance. Third, it was related with functional limitation that

encompass aspects such as having difficulties in chewing food, and having bad breath caused by dental problems (Saub & Locker, 2006). Fourth, it increased the tendency for medical conditions that included heart disease, stroke, diabetes, pneumonia, and other respiratory diseases (Yap, 2017).

Despite the known negative effects, the prevalence of oral health-related diseases keeps increasing worldwide especially in the low- and middle income countries (WHO, 2020). According to the Global Burden of Diseases, Injuries, and Risk Factors Study 2016 (GBD 2016), approximately 3.6 billion people worldwide were affected by the oral diseases, with caries of the permanent teeth being the most prevalent of all cases reported. At the same time, 2.4 billion people suffered from caries of permanent teeth, and 486 million children suffered from caries of primary teeth (GBD Disease and Injury Incidence and Prevalence Collaborators, 2017). In Malaysia, the findings from the National Health and Morbidity Survey 2015 (NHMS 2015) presented that 5.2% of the Malaysian population had oral-health related problems, with the highest prevalence reported in Sabah/Labuan (Institute of Public Health [IPH], 2015). Other independent studies, similarly, showed a high prevalence of oral health problems among adults and children. For instances, a study by Kaur, Maykanathan, and Lyn (2015) showed that dental caries was 44.6% among the urban school children (aged seven to eleven years) in Kuala Lumpur, Malaysia. Meanwhile, another study conducted among the adult population at Kampung Kerinchi and Pantai Dalam in Kuala Lumpur showed that caries prevalence was 70.5% among the adult respondents (Jaafar et al., 2014). However, the prevalence of oral health for the current target group, that was rural population of Sarawak was not available.

One of the most common contributing factors for oral diseases was demographic and socioeconomic factors such as birth order, household size (Oyedele, Fadeju, Adeyemo, Nzomiwu, & Ladeji, 2018), sex, geographical region, and ethnicity (Simangwa, Åstrøm, Johansson, Minja, & Johansson, 2018). Besides that, many behavioural factors such as diet, nutrition, oral hygiene, tobacco, and alcohol can play an essential role in the prevention of dental caries (Cheah et al., 2010). Excessive amounts and frequent consumption of sugars are also one of the major causes of dental caries, and the risk of caries would be higher if population exposure to fluoride is inadequate (Gati & Vieira, 2011). In addition, in the World Oral Health Report, tobacco use has been estimated to cause over 90% of cancers in the oral cavity and is associated with an aggravated periodontal breakdown, the poorer standard of oral hygiene as well as premature tooth loss (WHO, 2003). Such evidence needed to be made available as the identified contributing factors were important for health care practioners during planning future interventions in promoting oral health among the general population.

Level of urbanization in Sarawak was reported at only 53.8% (Department of Statistics, 2015). This indicated that large proportion of the Sarawak population were residing at the rural area. Therefore, rural population was given priority in the present study. The target population was Dayaks, who composed of more than 40% of the population in Sarawak (Minority Rights Group International, 2018). The ethnic group has their own unique culture and belief that are totally different from the general population and the difference was believed to have influences on the health behaviours (Waterworth, Pescud, Beaham, Dimmock, & Rosenberg, 2015). Under such circumference, despite the information pertaining to negative influences and contributing factors of the oral health mentioned above is available in the literature, further exploration into the oral health issues among the Dayaks is still needed. Applicability of the findings on Dayaks remains doubt as the studies in the literature were conducted among the general population that were from distinguishable backgrounds.

This study was also conducted in line with the third Sustainable Development Goal, that is to promote healthy life and wellbeing for all (United Nations Department of Public Information, 2020). With the availability of the information, appropriate oral health practice can be instilled by having appropriate health education (Ab Murat & Watt, 2006). In order to create such health education, it is vital to assess the knowledge, attitude and practices of a community (Bala, Gupta, Ara, & Sahni, 2018). To the best of our knowledge, there are not many studies regarding oral health among longhouse communities. Thus, this study aims to assess the oral health knowledge and practices among the longhouse community and its association with sociodemographic characteristics. This data would provide valuable information on the oral health knowledge and practices among longhouse community which could aid in the the planning of oral health promotion programs.

METHODOLOGY

This cross-sectional study was conducted to collect information pertaining to oral health knowledge and practice among residents of the five longhouses in Julau, Sarawak. Julau is a district that is in Sarikei Division. It covers an area of 1,703.39 square kilometres. Majority of the ethnic groups are Iban, Chinese, and Malay. Most of the locals are involving in the agriculture sector, such as pepper, rubber, paddy, and fruits (The official website of Sarikei Divisional Administration, 2020). All the residents who met the inclusion criteria were recruited in this study. Firstly, a visit was made by the researchers to the longhouses in order to determine the suitability of the

longhouses as study location. The *Tuai Rumah* (Heads of the longhouses) was briefed regarding the purpose of the study and all the research activities that would be conducted. Negotiation was carried out with the *Tuai Rumah* seeking for their permission. Aside from that, permission to conduct research activities at the longhouses was also sought from the Sarikei Resident's Office and Julau District Office. Five longhouses that were selected through purposive sampling were Rumah Panjang Mengga, Rumah Panjang Ikeh, Rumah Panjang Michael, Rumah Panjang Budit, and Rumah Panjang Manju. Participants were 105 longhouse residents. Both male and female participants more than seven years old and above were eligible to participate. Participants should be permanent residents of the longhouses, who were currently staying in the longhouses for more than six months. Residents who were reported to be bedridden and to have mental problems were excluded from this study.

Sample Size

The sample size that has been calculated is 95 based on expected population of 125 residents at Rumah Panjang Mengga and Rumah Panjang Ikeh. The number of sample size is calculated by using Raosoft software sample size calculator (online). The confident level is set at 95% and the margin of error is at 5%. The sample size *n* and margin of error *E* are given by:

$$n = {}^{N\,x}/_{((N\text{-}1)\,E^2 + x)}$$
$$X = Z({}^{c}/_{100})^2\, r\,(100\text{-}r)$$
$$E = \text{Sqrt}\,[{}^{(N\,-\,n)\,x}/_{n\,(N\text{-}1)}]$$

where N is the population size, r is the fraction of responses that you are interested in, and Z(c/100) is the critical value for the confidence level c.

Procedures

Data collection was conducted in October and November 2019. Before data collection, all the participants were briefed regarding the purpose of the study and the planned research activities. Written informed consents were obtained from the participants that agreed to involve. For participants that were less than 18 years old, written informed consents of the parents and caretakers were sought. Information on sociodemographic characteristics, as well as oral health knowledge and practices, was gathered through face-to-face interviews, with aid from a questionnaire.

Instrument

For data collection, a structured questionnaire was used. For better understanding and to ensure a smooth interview, the questionnaire was translated into Iban and Malay languages. In addition, the questionnaire was divided into three sections, namely section A, B, and C. Section A was related to information about respondent sociodemographic characteristics, such as name, age, sex, race, religion, marital status, educational background, occupation, and associated disease. Section B was on the assessment of oral health knowledge. The instrument has 16 items and the response options based on a dichotomous scale (yes or no). Items of the questionnaire adopted from several sources (Al-Zarea, 2013; Al-Omiri, Wahadni, & Saeed., 2005; Al-Subait, Alousaimi, Geeverghese, Ali, Metwally, 2016; Philipp & Niknamdeh 2017; Chen, Huang, Huang & Wu, 2011; Lang, Woolfolks, & Faja, 1989). One score would given to a correct answer. A total score was calculated by summing the scores of the16 items. A higher score indicates higher oral health knowledge. Internal consostency of the instrument was found to be good, with a Kuder Richardson's coefficient of 0.715.

The instrument in Section C was to assess oral health practice among the participants. It was adopted from Carneiro, Kabulwa, Makyao, Mrosso, and Choum (2011), Rad, Shahravan, and Haghdoost (2016), Albashtawy and Khamaiseh (2013), and Alhaj and Jawfi (2018). The instrument consists of nine items. Response for each item was different in accordance to the intention of the question. For instance, the responses could be in the form of frequency (example: do not brush teeth, once, twice, or more than twice), methods applied (mouth wash, dental floss, tooth pick, or none) as well as "yes" or "no". The responses provided were categorized into "appropriate" and "inappropriate" based on the guidelines from the Minitery of Health. A score was assigned to every "appropriate" response. A summative score was calculated by summing the all the nine scores. A higher score indicates better oral health practices among the participants.

Content Quality Control

Pretest and pilot test were conducted at another Rumah Panjang Sebastian, Sibu on October 2019. The pretest that involved nine Iban participants showed no presence of any unclear wordings that might lead to confusion. On the other hand, the pilot test that involved 30 Iban participants showed that data collection was practical and managible.

Statistical Analysis

Data cleaning was done to minimize outliers and statistical analysis was performed using the IBM SPSS statistics

version 22.0 (IBM Corp., Armonk, NY, USA). Separate analysis was performed on children and adults. The descriptive data for continuous variables were presented in median and interquartile range meanwhile, categorical data were presented in count and percentage. Spearman rho correlation test was used to examine the associations between numerical sociodemographic variables with oral health knowledge and practice. Mann-Whitney U-test and Krukal-Wallis H-test were applied to compare oral health knowledge and practice scores among participants with different sociodemographic status (categorical variables). Significant level was set at a p-value less than 0.05.

RESULTS

Details regarding sociodemographic characteristics are shown in Table 1. A total of 105 respondents were recruited. Among them, 26.7% were children while another 83.3% were adults. For children, median age was 10.0 (5.0) years old. More females (64.3%) than males (35.7%) were recruited. All the children were still studying: primary education (64.3%), secondary education (32.1%), and pre-U / university (3.6%). On the other hand, for adult participants, median age was 50.0 (22.0) years old. Majority of them (58.4%) was from 35 to 60 years old. One third of them (69.4%) were females. Almost all of them were married (93.5%). Regarding education level, almost equal number of the participants were reported to have "no formal" (31.2%), "primary" (29.9%), and "secondary" (37.7%) education. More than half of the participants were unemployed (51.9%) and it was followed by self-employed (42.9%).

Table 1. Sociodemographic characteristics of participants in Julau (n=105).

Characteristics	n (%)	Median (Interquartile)
CHILDREN (7 to 17 years)		
Age group (years)		
7 to 12	18 (64.3)	
13 to 18	10 (35.7)	
Gender		
Male	17 (60.7)	10.0 (5.0)
Female	11 (39.3)	
Educational background		
Primary education	18 (64.3)	
Secondary education	9 (32.1)	
PreU/University	1 (3.6)	
ADULTS (18 and above)		
Age group (years)		
< 35	13 (16.9)	
35 to 60	45 (58.4)	
> 60	19 (24.7)	
Gender		
Male	27 (35.1)	
Female	50 (64.9)	
Marital status		
Single	5 (6.5)	
Married	72 (93.5)	50.0 (22.0)
Educational background		
No formal education	24 (31.2)	
Primary education	23 (29.9)	
Secondary education	29 (37.7)	
University	1 (1.3)	
Occupation		
Government	1 (1.3)	
Private	3 (3.9)	
Self-employed	33 (42.9)	
Unemployed	40 (51.9)	

Distribution of children and adult participants regarding oral health knowledge and practices according to the response is shown in Table 2. For children, the median (interquartile range) for knowledge is 8.0 (3.0).

Among the 16 items, only three items managed to be answered by a high percentage the participants (75.0% to 85.7%) while another five items could be answered by a moderate-high proportion of the participants (50.0% to 64.3%). Lastly, eight items were answered correctly by less than 50% of the participants (7.1% to 46.4%). The eight items included "is there any relation between gum disease and smoking", "is there any relation between gum disease and diabetes", "oral health affects general health", "have you heard about fluoride", "fluoride can strengthen your teeth", "toothbrushes can be used for as long as they are not bent, deformed or worn out", "is there any relation between gum disease and heart disease" and "fluoride can whiten your teeth". The median for practice score was 7.0 (2.0). Out of nine practices, six of them were practised by a high percentage of the participants (71.4% to 96.4%), another two were engaged by a moderate proportion of the participants (67.9%). Lastly, the least practice (32.1%) were the item "when will you change your toothbrush".

For adult participants, the median (interquartile range) for knowledge is 9.0 (4.0). Among the 16 items, only five items managed to be answered by a high percentage the participants (70.1% to 85.7%) while another four items could be answered by a moderate-high proportion of the participants (57.1% to 62.3%). Lastly, seven items were answered correctly by less than 50% of the participants (45.5% to 10.4%). The seven items included "toothbrushes can be used for as long as they are not bent, deformed or worn out", "is there any relation between gum disease and diabetes", "have you heard about fluoride", "children's caries does not require treatment because they will be replaced by permanent teeth", "fluoride can strengthen the teeth", "fluoride can whiten the teeth", and "is there any relation between gum disease and heart disease". The median for practice was 6.0 (3.0). Out of nine practices, five of them practised by a high percentage of the participants (70.1% to 97.7%), another three were engaged by a moderate proportion of the participants (56.3% to 62.1%). Lastly, the least practice (37.9%) were the item "I checked my oral health with the dentist within the past six months".

Sociodemographic characteristics with oral health knowledge and practices

Table 3 shows the associations between the sociodemographic characteristics with oral health knowledge and practice scores. For children, age did not have significant associations with knowledge and practice score. At the same time, there were no significant differences in the oral health knowledge and practice scores with gender and education levels. For adult participants, a significant and negative correlation was found between knowledge score and age of the adult participants. Besides that, significant differences were found in oral health knowledge score with different levels of educational background ($H = 27.466$; $p < 0.001$) and practice score with occupations ($H = 9.631$, $p = 0.008$) among adult participants. There were no significant differences in the oral health knowledge and practice score with gender and marital status.

Table 2. Distribution of oral health knowledge and practices according to responses.

Assessment on oral health knowledge		
	CHILDREN (n = 28)	**True**
1.	Does eating sweets can cause tooth decay?	24 (85.7)
2.	Do we get rid of bad breath by using mouthwash?	22 (78.6)
3.	Does cleaning the teeth can prevent tooth decay?	21 (75.0)
4.	Does drinking sweets can cause tooth decay?	18 (64.3)
5.	Dental visit every 6 months.	18 (64.3)
6.	Gum bleeding is a primary sign of poor oral health.	15 (53.6)
7.	Children's caries does not require treatment because they will be replaced by permanent teeth.	15 (53.6)
8.	If I rinse my mouth after I eat, I don't need to brush my teeth.	14 (50.0)
9.	Is there any relation between gum disease and smoking?	13 (46.4)
10.	Is there any relation between gum disease and diabetes?	12 (42.9)
11.	Oral health affects general health.	10 (35.7)
12.	Have you heard about fluoride?	9 (32.1)
13.	Fluoride can strengthen your teeth.	6 (21.4)
14.	Toothbrushes can be used for as long as they are not bent, deformed or worn out.	5 (17.9)
15	Is there any relation between gum disease and heart disease?	3 (10.7)
16.	Fluoride can whiten your teeth.	2 (7.1)
	Median (Interquartile)	8.0 (3.0)

Table 2. Cont…

	ADULTS	
1.	Does cleaning the teeth can prevent tooth decay?	66 (85.7)
2.	Does eating sweets can cause tooth decay?	65 (84.4)
3.	Do we get rid of bad breath by using mouthwash?	65 (84.4)
4.	Does drinking sweets can cause tooth decay?	65 (84.4)
5.	Dental visit every 6 months.	54 (70.1)
6.	Gum bleeding is a primary sign of poor oral health.	48 (62.3)
7.	Oral health affects general health.	45 (58.4)
8.	If I rinse my mouth after I eat, I don't need to brush my teeth.	44 (57.1)
9.	Is there any relation between gum disease and smoking?	44 (57.1)
10.	Toothbrushes can be used for as long as they are not bent, deformed or worn out.	35 (45.5)
11.	Is there any relation between gum disease and diabetes?	27 (35.1)
12.	Have you heard about fluoride?	27 (35.1)
13.	Children's caries does not require treatment because they will be replaced by permanent teeth.	26 (33.8)
14.	Fluoride can strengthen your teeth.	22 (28.6)
15.	Fluoride can whiten your teeth.	9 (11.7)
16.	Is there any relation between gum disease and heart disease?	8 (10.4)
	Median (Interquartile)	9.0 (4.0)
Assessment on oral health practices		
	CHILDREN	**Appropriate**
1.	Do you use any of these oral hygiene methods in addition to tooth brushing?	27 (96.4)
2.	Did you use toothpaste to clean your teeth?	26 (92.9)
3.	I wash or rinse mouth or brush my teeth.	26 (92.9)
4.	Rinse your mouth after each meal?	24 (85.7)
5.	I consume sugary food.	20 (71.4)
6.	How much do you clean your teeth per day?	20 (71.4)
7.	I checked my oral health with dentist within the past 6 months.	19 (67.9)
8.	I consume sweet/ soft drinks.	19 (67.9)
9.	When will you change your toothbrush?	9 (32.1)
	Median (Interquartile)	7.0 (2.0)
	ADULTS	
1.	Do you use any of these oral hygiene methods in addition to tooth brushing?	85 (97.7)
2.	Did you use toothpaste to clean your teeth?	82 (94.3)
3.	I wash or rinse mouth or brush my teeth.	77 (88.5)
4.	How much do you clean your teeth per day?	62 (71.3)
5.	I consume sugary food.	61 (70.1)
	When will you change your toothbrush?	54 (62.1)
6.	Rinse your mouth after each meal?	51 (58.6)
7.	I consume sweet/ soft drinks.	49 (56.3)
8.	I checked my oral health with dentist within the past 6 months.	33 (37.9)
	Median (Interquartile)	6.0 (3.0)

Table 3. Distribution of mean score of oral health knowledge

Sociodemographic Characteristics	Knowledge		Practices	
	Median (Interquartile)	***H / U / r_s***	Median (Interquartile)	***H / U / r_s***
CHILDREN				
Age (years)		0.114[a]		0.050[a]
Gender		73.500[b]		81.500[b]
Male	8.0 (4.0)		7.0 (2.8)	
Female	8.0 (2.0)		7.0 (2.0)	
Educational background		57.500[b]		79.000[b]
Primary school	7.0 (4.0)		7.0 (2.0)	
Secondary school/Pre-U/ University	8.0 (6.0)		7.0 (3.0)	
ADULTS				
Age (years)		-0.389[d]		-0.175
Gender		566.500[b]		541.500[b]
Male	9.5 (2.8)		8.0 (4.3)	
Female	7.0 (2.0)		6.0 (2.3)	
Marital status		175.500[b]		169.000[b]
Single	7.5 (5.0)		5.5 (4.5)	
Married	9.0 (4.8)		6.0 (3.0)	
Educational background		27.366[c,d]		1.813[c]
No formal education	6.0 (4.0)		5.5 (3.8)	
Primary education	9.0 (3.0)		7.0 (2.0)	
Secondary education/ University	10.0 (3.0)		7.0 (2.0)	
Occupation		5.786[c]		9.361[c,d]
Employed (Government/ Private)	7.5 (4.0)		5.0 (5.5)	
Self-employed	8.0 (5.5)		6.0 (2.0)	
Un-employed	9.0 (3.0)		7.0 (2.0)	

[a] Correlation coefficient for the Pearson's product moment correlation test
[b] U-value
[c] H-value
[d] Significant at $p < 0.05$

DISCUSSION

Several social issues were found worthy of being given priority among the participants. In this study, about one-fifth of the participants did not receive any formal education, especially among the elderly. Lack of educational opportunity among the group could be due to the scarcity of education facilities in Julau during the old time. Similar to their counterparts in Peninsular Malaysia, low education access was due to lack of parental involvement, poverty, transportation problems or involvement in self-employed activities at home (Sharifah et al., 2011). At the same time, a high proportion of the participants were self-employed and unemployed. High involvement in self-employed activities was in line with their counterparts in the Peninsular Malaysia as engagement in agricultural activities was a form of traditional socioeconomic activity among the indigenous population (Gan et al., 2020). High percentage of unemployment, on the other hand, could be attributed to involvement of the elderly in the current study. Due to the age factor, the elderly participants could no longer withstand the workload in the plantation sector. As such, majority of this particular age group chose to run small-scale agricultural activities that could provide them with food sources in return.

Overall, oral health knowledge among longhouse participants was not in a satisfactory manner. The findings were consistent with a study in Cameron Highland that involved 11 to 12 years old Orang Asli children, in which only 6.2% of the participants reported having good oral health knowledge (Samosir, Yusof, Mohamed, & Shoaib, 2018). General health knowledge among indigenous people in Malaysia that included knowledge related to child health and nutrition (Ng et al., 2005), antenatal care (Rosliza & Muhamad, 2011), and soil-transmitted helminth infection (Nasr, Al-Mekhlafi, Ahmed, Roslan, & Bulgiba, 2013) was low. Possession of knowledge is essential as it leads to a change in the awareness and thus directs individual to adopt a healthier lifestyle (Al-Darwish, 2016). Similarly, the participants scored low in certain oral health practices. For example, regular check-up to a dental clinic every six months could not be achieved due to low physical access towards the health services (Akbar, Pasinringi, & Awang, 2019), which were usually available at the larger city nearby such as Sarikei, Bintangor, or Sibu. Regular changing of a toothbrush was not performed by most of the participants could be restricted by the low socioeconomic status (Younus & Qureshi, 2016). Lastly, high consumption of sweets/sugary drinks among participants could be attributed to high affordability even under limited financial status. Cheaper low quality food was always found to be loaded with high amount of added suagr (Thompson et al., 2010).

A significant and negative association was reported between age and oral health knowledge among adult participant only. The findings were found consistent with Abu-Gharbieh, Saddik, El-Faramawi, Hamidi, and Basheti (2019), in which age was reported to be significantly associated with oral health knowledge score among adults in the United Arab Emitates. In addition, Patino (2015) also showed that older age was found to have a significant lower oral health knowledge score among Hispanic adults in Iowa. Younger adults were found to have better oral health knowledge could be attributed to higher exposure of oral health information online as searching online for oral health information was related to higher tendency of having better knowledge than those did not search online (Yuen, Azuero, & London, 2011). However, a contracditive findings were reported by Geethapriya, Asokan, and Kandaswamy (2017), who presented that older children of older age in India had higher oral health knowledge, but this protective factor did not influence the oral hygiene practices of children in general.

The findings showed that a significant difference was found in the oral health knowledge score between adult participants with different educational levels. Participants with formal education are more knowledgeable regarding oral health compared to participants with lower formal education level. Importance of personal education level on oral health knowledge was consistent with Movahhed, Dehghani, Karbasi, Khaki, and Dorri (2014) and Márquez-Arrico, Almerich-Silla, and Montiel-Company (2019). The significant findings could be attributed to the success of oral health care services that were provided by the Ministry of Health in promoting oral health among students in public primary and secondary schools (Ministry of Health, 2020). The services covered promotive, preventive, and curative activities (Oral Health Division, 2005). Furthermore, a significant difference was reported in the oral health practice score of the adult participants with different occupations, in which unemployed adults scored higher when compared to self-employment and employment in government / private. The findings were inconsistent with a study that conducted in the United Arab Emirates, as the employed participants had a higher mean oral health behaviour scores than their unemployed counterparts (Abu-Gharbieh et al., 2019).

Lastly, no significant differences were found in the oral health knowledge and practice score of the adult and children participants with different gender and marital status. This is in agreement with Cheah et al. (2010), in which no significant difference of the knowledge score between gender of the secondary school students in Kuching, Sarawak. Moreover, Rasouli-Ghahroudi et al. (2016) also revealed that no significant associations were

found between oral health practices with age and marital status among patients with heart disease. The possible explanation of the insignificant interaction between sociodemographic characteristics of the participants and oral health practices are still unclear and more exploration into a similar topic is warranted.

Limitation

This current study, however, was subjected to certain limitations. The use of cross-sectional study design indicated that the temporal relationships between the sociodemographic characteristics with oral health knowledge and practice are unclear. Therefore, the causal inferences between sociodemographic characteristics with oral health knowledge and practices cannot be drawn. In this case, it is recommended that longitudinal study design should be applied in future research. Secondly, the representativeness of the respondents might be influenced due to the use of purposive sampling during selection of longhouses. Thirdly, the data collection was based on interview using survey instrument, which might introduce recall bias. Fourthly, the suitability of the items of knowledge in the instruments that be used among children raised doubt. Certain items such as relationship between oral health with gum bleeding, heart disease, and diabete were considered as "too hard" for children. Similar to the practice instrument, where using of toothpaste, changing of toothpaste, and dental visits were depended on their parents. Fifthly, translation that was conducted without referring to a guideline might introduce errors and influence the accuracy of the findings. Lastly, absence of oral health expert during content validation was also identified as a limitation of the the present study. As such, the findings of this study should be interpreted with cautious.

CONCLUSION

Several issues among longhouse community such as low education level and high unemployment require more attention. The findings also provide proof that oral health knowledge and practice among the longhouse community are not in a satisfactory manner. Age and education level are the factors that have significant associations with oral health knowledge among adult participants. Occupation was found to play a role in influencing the oral health practices among adult participants. The identified factors should be incorporated into the scheme of any future oral health intervention in order to increase its effectiveness. Due to little understanding towards oral health issues among indigenous people, especially in Sarawak, more exploration into the related topics are highly recommended.

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