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Oral Health Status and Special Health Care Needs of Disabled Individuals Attending Special School, Vientiane Capital

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

The purpose of this study to describe the prevalence of dental caries and the oral hygiene status of disabled individuals attending Special School.

Methods: Participants who were attending a special school, the survey document included questionnaire and consent form, both was sent to school principal, teachers and parents. The parents were asked, to completed a questionnaire. Dental caries examinations were carried out in accordance with WHO criteria in the school field and oral cleanliness was evaluated by visually assessing the presence of plaque on teeth.

Results: Total number of participants in this study were 127 children, mean age was 13.97±3.68. The prevalence of oral health status reported 74% of children had caries experiences, Pulpitis, Ulceration, Fistula, Abscess index (PUFA) reported 21%. The mean of untreated caries (DT) was 2.09±2.09 for deafness, mean DT was 2.54±2.44 for mental, mean DT was 2.66±1.94 for blind respectively, there was no significant difference, statistically between type of disabilities. Severe dental caries were reported high in Down's syndrome. 1.50±2.12 reported abscess in children. Then in other type of children. There was a statistically significant between disable children (p=.001). 70% children report fair oral hygiene of mild plaque and severe plaque attached on the tooth surface. This study invested that half of disable children (54%) needed dental treatment and 24% of children need urgent treatment because of tooth pain and abscess.

Conclusions: Among the children with disabilities, more attention should be paid to the oral hygiene and provide dental treatment program**s** for disability children.

Keywords: Oral health status; oral hygiene; dental care.

1. INTRODUCTION

"The American Academy of Pediatric Dentistry defined as any physical, developmental, mental, sensory, behavioral, cognitive, or emotional impairment or limiting condition that requires medical management" [1]. "UNICEF has been reported in 2017 that there is limited information on the number and status of children with disability in Lao PDR due to the lack of a data collection system" [2]. "The data indicates that 2% of children aged 2 to 4 have functional difficulty in at least one domain (seeing, hearing, walking, fine motor, communicating, learning, playing, controlling behaviors). In rural areas without road, 3.8% of children have functional difficulty in at least one domain. There are disparities between the North (1.7%) and the South (4.3%). In the Sekong province, the percentage increases up to 22%" [2]. "According to World Health Organization estimates, individuals with disabilities comprise 10% of the population in developed countries and 12% in developing countries" [3]. "In Turkey, there are an estimated 9 million children aged 0–18 years who have disabilities and have special needs" [4-6]. "This amounts to one member with disability per 7–8 households" [7]. "Because of their special care needs, daily care of children with disabilities is different from that of children with normal abilities, who can usually manage their own oral health. In contrast, children with disabilities may be partially or wholly dependent on someone else to perform their daily care activities, and this situation may cause difficulties for the families of these children" [8]. The oral health conditions of children with disabilities are reported to be worse.

"Dental care for special needs children are often neglected by both the dentists and the parents; since dentists may be reluctant to treat special needs children due to fear and lack of knowledge of various disorders that afflict special needs patients. The poor oral hygiene seen in this population may be a result of their medical conditions, lack of knowledge and understanding on oral care practices, limitations such as poor dexterity, not forgetting neglect from the caretakers. Mental, behavioral, physical, and congenital anomalies, as well as side effects of medications, contribute to the poor oral health condition of children with special needs" [9]. "Oral health issues are common among children with special healthcare requirements, making it difficult for parents and other caregivers to provide oral hygiene care" [10]. "Studies from Croatia, 2007 reported that the OHI-s index for disabled children ranges from 3.8 to 4.53 indicating poor oral hygiene in comparison with healthy children, whose OHI-S index ranges from 2.73 to 2.84. The average DMFT values in deciduous (1.41) and permanent (6.39) dentitions, there is an increase in the intensity of

caries" [11]. "In Laos, children with a disability are often kept at home, largely due to stigma and discrimination. Health, education, and social services are not commonly available to them, exacerbating isolation and limiting their opportunity to learn and develop like other children in their community" [12]. The aim of this study is to determine the prevalence of dental caries and the oral hygiene status of children and young adults attending a special school for the disabled and to investigate current oral status and dental treatment needs.

2. METHODOLOGY

A total of 127 children with disabilities between the ages of 6 to 24-year-old attending a special school, were selected for the study.

2.1 Questionnaire Survey

An investigator was sent with the survey document to deliver the questionnaire and consent form to discuss the protocols with the principal of special school, teachers and parent. The parents who are volunteered to participate in this survey were asked to sign the consent form and complete the questionnaire. The questionnaire consisted of four parts and the following information was collected:

1. The child's personal data sex, age, date of birth and type of disability including the children's socioeconomic background-parent education and family income;
2. Child's oral health care, number of Dental visits, describes the oral health of their child
3. Parent's dental knowledge, the child's oral health-related behaviors and frequency of tooth brushing
4. Oral health status special care needs

To assess the parent's knowledge, the questionnaire containing 21 questions about the causes and prevention of dental diseases. Pretesting of the questionnaire was carried out in Secondary School within 10 parents. Feedback was written into questionnaire and investigator was asked parent in case of some parent was not answer the question to validate our questionnaire. The questionnaire was modified and develop for easy and clearly to understand. One score was given to each correct answer; and no score was given to a wrong or "don't know" answer. Thus, the total dental knowledge score ranges from 0 to 21. The parents were then categorized into three groups according to their dental knowledge scores in 3 equal interval-low (score 0-7), middle (scored 8-14), and high (scored 15-21).

2.2 Clinical Examination

"Oral examination was took place on the school field, with participants seated on an ordinary chair and illumination was provided by an ordinary fluorescent lamp. Participants were not having their teeth brushed or professionally cleaned prior to the examination. Dental caries examinations were carried out using a mirror and explorer in accordance with World Health Organization criteria and methods" [13]. The total number of decays, missing and filled permanent teeth (DMFT) were recorded for each participant without radiographic examination. Oral cleanliness was evaluated by visually assessing the buccal and lingual surfaces of the upper and lower incisors and canines for the presence of plaque using the Silness & Loe [14] index, which are as follows: (0) no visible plaque; (1) visible plaque; (2) an abundant amount of visible plaque.

2.3 Statistical Analysis

Data analysis was performed using the software statistical package for social sciences version 17.0. Data were recorded in an Excel table using patient names and identification numbers. Statistical analysis was carried out using the SPSS software program. Chi-square test was used to determine significant differences in data ($P<.05$).

3. RESULTS

Total number of participants in this study were 127 children, 53% was female and 47% were male. The age ranged between 6-year-old to 24-year-old, mean age was 13.97±3.68. Table 1 shows the distribution of student in relation to different degree of disability. 51% of children were deafness/loses hearing, 19% of student were blind following with 17% were with mental problem. Only 2% of children were with Down's Syndrome and Autism.

Table 2 shows the history of dental visits in disabled children. Half of disabled children reported that they had never visited a dentist in their life time 53.5% and 17.3% reported that they do not remember or don't know of dental visit was. Only 29.1 % reported that they have dental visited. The most common reason for the last visit of dentist was tooth pain 18%, tooth extraction 9% and check-up 2%. On contrary the main reason that they have never

visited dentist was child's fear (20%), parents have no time (13%) and other reason (18%).

Forty-two (42%) of parents had poor knowledge with oral hygiene, 58% fair oral hygiene, and 9% good knowledge for oral hygiene, with no significant statistically significant different between sex (p=0.056). However, there was a statistically significant difference between oral hygiene between disable children (P=0.001) (Fig. 1).

Table 1. Frequency and percentage (%) general information of disable children in special school Vientiane Capital

General information	N	%
Sex		
Female	67	52.8
Male	60	47.2
Age		
Mean±SD	13.97±3.68	
Min-max	6 to 24	
Type of disable		
Deafness/loses hearing	65	51.2
Down's Syndrome	2	1.6
Mental	22	17.3
Autism	2	1.6
Blind	24	18.9
Multiple	12	9.4
Total	127	100

The prevalence of oral health status reported in Table 3. 74% of disabled children has caries experiences,72% has untreated caries, 21% of children was pain and abscess swallow 5%, oral hygiene status shown 41% in children age 6 to 12-year-old and 59% with children 13 to 24-years-old had visible and abundant plaque attached on the tooth surface. Overall, the disease increase with older age group that because very rarely of caries treatment in children who attending special school, Vientiane Capital. There was non-statistically significant with oral health disease and oral hygiene status between two age group.

Table 2 Frequency and percentage (%) historical of dental visits in disabled children in special school Vientiane Capital

History of dental visited	N	%
Have your child ever visited dentist		
Yes	37	29.1
No	68	53.5
Don't know/not remember	22	17.3
Reason of last dental visited		
Tooth pain/ abscess	23	18.1
Tooth extraction	11	8.7
Annual Check-up	2	1.6
Other	1	0.8
What was the reason no visited dentist		
Child's fear	23	33.8
Parent's fear	2	2.9
Child no need treatment	12	17.6
Parent has no time	17	25.0
Has no money to pay	11	16.1
Transportation	3	4.4

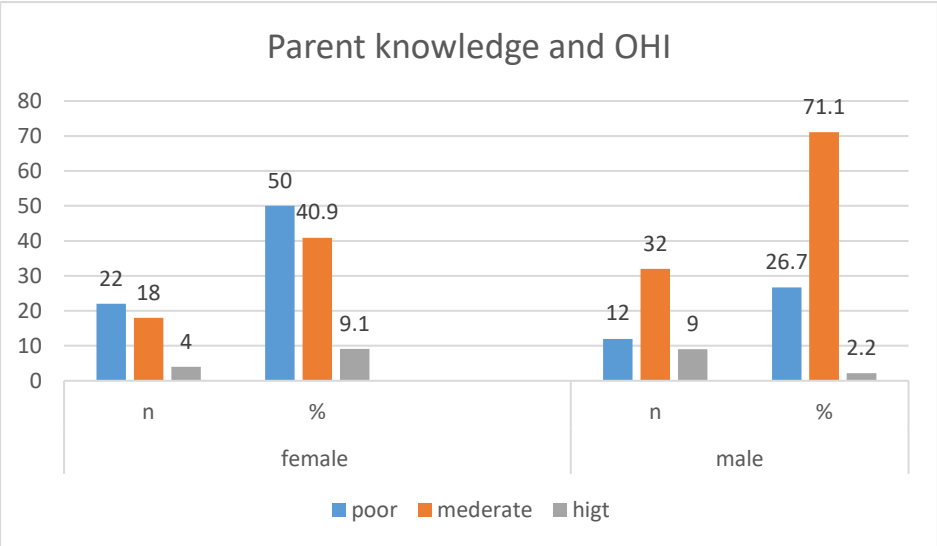

Fig. 1. Oral hygiene status of the study population according to gender

Table 3. Prevalence of untreated dental caries (DT>0) and caries experience (DMFT>0) among children in different age groups

Age group (years)	DT>0[1]		dmft-DMFT>0[2]		PUFA[3]		Oral Hygiene[4]	
	N	%	N	%	N	%	N	%
6-12	40	43	40	42	11	42	36	41
13-24	53	57	54	58	15	58	53	59
Total	93	72	94	74	26	21	89	70

** Untreated decay with age group chi-square 0.613, df=1, p=0.434[1]*
** Caries experience with age group chi-square 0.387, df=1, p=0.534[2]*
** PUFA index between two age group Chi-square 0.025, df 1, p=0.874[3]*
** Oral hygiene index between age group chi-square 0.030, df=1, p=0.862 [4]*

Table 4. Mean standard deviation of the components decayed, missing, filled teeth and healthy for the different degrees of disability children.

Disabilities	Decay	Missing	Filled	DMFT	Pulpitis	Abscess	PA
	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD
Deafness	2.09±2.09	0.13±0.58	NA	2.23±2.28	0.33±0.85	0.06±0.29	0.40±0.91
Down's Syndrome	5.50±4.94	0.50±0.70	NA	6.00±5.65	0.50±0.70	1.50±2.12	2.00±2.82
Mental	2.54±2.44	0.22±0.86	NA	2.77±2.40	0.13±0.35	0.04±0.21	0.18±0.51
Autism	1.00±1.41	NA	NA	1.00±1.41	NA	NA	NA
Blind	2.66±1.94	0.25±0.60	NA	2.91±2.10	NA	NA	NA
Multiple	2.25±1.17	0.08±0.28	0.08±0.288	2.41±2.23	0.66±0.98	NA	0.66±0.98
Total	2.33±2.18	0.17±0.61	0.01±0.08	2.51±2.32	0.29±0.72	0.07±0.39	0.37±0.85

**Decay and type of disabled student df=5, F=1.315, P=0.262*
** Filled and type of disabled student df=5, F= 1.992, P=0.085*
**Missing teeth and type of disabled student df=5, F= 0.333, P=0.892*
**DMFT and type of disabled student df=5, F= 1,482 P=0.200*
**Pulp infection and type of disabled student df=5, F= 0.657 P=0.028*
**Abscess and type of disabled student df=5, F= 6.710 P<0.0001*
** PUFA and type of disabled student df=5, F= 2.350 P=0.045*

The overall mean DMFT were 2.51±2.32, mean dental caries was high in Down's syndrome DMFT were 6.00±5.65 and children with mental health DMFT were 2.77±2.40. Participants reported about dental treatment were very rare for filled teeth and missing teeth. Severe of dental caries in Down's syndrome children reported Abscess (1.50±2.12). There was a statistically significant between disabled children (p=.001). The mean of Pulp and Abscess (PA) index was high value (2.00±2.82) in children with Down's Syndrome compared to other type of disabilities children. This study reported that half of disable children (54%) needed dental treatment and 24% of children need urgent treatment because of tooth pain and abscess.

4. DISCUSSION

"Children with disabilities are at greater risk of maltreatment, violence, abuse and exploitation compared to other non-disable peers. Physical inaccessibility of facilities, distance and poverty are the key barriers that limit their access to services in education, health and welfare. Children with severe disabilities are usually kept at home, and often 'hidden' from the outside world, due to stigma and discrimination. A study done in 2007-2008" [1]. The result shows caries prevalence 72% and dental caries were on increase when children get older. Mean score of DT was 2.33±2.18 and mean DMFT was 2.51±2.33 in disabled children compared to healthy children report caries prevalence was 86.1% and the mean DT was 3.04 [15]. "While the studies from Hong Kong showed mean of DMFT index was 1.23 for 14 year-olds was lower than our study" [16]. "Comparing the latest surveys of the Project SB Brazil 2003 and 2010, it was noticed that there was a decrease in DMFT at 12 years, from 2.8 to 2.1 and between the aged 15 to 19 fell from 6.1 to 4.2. The mean values were 3.93 for the 11-14 age group, 3.47 for the 15-19 age group, 4.74 for the 20-29 age group and 5.68 for the 30-38 age group, thus

indicating that the DMFT index increased with age. In a study with Thai children aged 6 and 12 years, also concluded that the number of caries increased with age" [17]. In this study showed high prevalence of dental caries in Down's Syndrome children with mean DMFT was 6.00±5.65, mean abscess was 1.50±2.12. "However, Mata-analysis from seven studies indicated that children and adolescents with DS had lower caries experience when compared to the non-syndromic individuals" [18]. Oral hygiene is essential for the prevention of oral diseases. Although various studies and systematic reviews have observed poor oral hygiene, especially in children having intellectual disabilities, as compared to the general population [19], in the present study, 70% of children reported fair oral hygiene of mild plaque and severe plaque attached on the tooth surface, 42% of had poor knowledge with oral hygiene, study from Deepika found a higher portion (43.6%) of special healthcare needs children showing good oral hygiene while 31.5% and 22.2% showing fair and poor oral hygiene respectively [20]. Half of disabled children need dental treatment and 24% of them need urgent treatment because of tooth pain and abscess. Nine percent of disabled children reported abundant amount of visible plaque in every tooth. Parents needs more control over their oral hygiene, but as they grow older, most of them seem to be more independent, refusing the constant help from their caregivers. The observed of prevalence of dental caries was high, DMFT indexes were relatively low for individuals with different levels of disability but there were no difference among them. Parents had poor knowledge of oral health care affecting children to have poor oral hygiene. The limitations of study were small number sample size. Most of parent still hide the disabilities at home, some of disability of children was scar especially blind children didn't want to open mouth for oral examination, for deaf and speaking loss of children they need specific language to explain in some question.

5. CONCLUSION

The results found in this study emphasize the need of treatment and for understanding of parents and caregivers about their oral hygiene. Children with mental problem should meet dentist regularly. It is important to have a focused, constant and multidisciplinary monitoring of young adult with disabilities who attending special school in Vientiane capital.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (Chat GPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of manuscripts.

CONSENT

Written consent was obtained from parents or guardians of the children before participating in the study. Children with disabilities unable to answer questions also were included in the study and checked for oral examination and their parent or guardians answered the question in the school filed. Children who were unable to cooperate during the clinical examination were excluded from the study.

ETHICAL APPROVAL

The protocol was reviewed and certified by the Medical Ethical committee of the University of Health Sciences, Laos PDR. The study was committed to avoid any physical or psychological harm to the children of their families.

COMPETING INTERESTS

The Authors have no financial or proprietary interests in any material discussed in this article. No other relationships/ conditions/ circumstances that present a potential conflict of interest.

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