



Oral Health Behaviours and Preventive Dental Care Experiences Among Patients with Special Health Care Needs at Special Care Dentistry Clinic, University of Malaya

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ABSTRACT

To assess the oral health behaviour and preventive dental care experiences of patients with special health care needs (SHCN) who attended the Special Care Dental (SCD) Clinic at University of Malaya. Data were collected from 31 patients using a self-administered questionnaire which consisted of questions pertaining to their oral health behaviours and experiences on receiving preventive dental care (PDC). For patients who were unable to answer due to existing health conditions, parents or primary caregivers were approached as proxy. Descriptive analysis was conducted and reported based on percentages to identify the oral health behaviour and PDC of the individuals. Majority brushed their teeth at least once a day (84%), used fluoridated toothpaste (87%) and oral hygiene aids (58%). However, almost half of them (48%) required assistance from parents or caregivers during tooth brushing and consumed sugary snacks in between meals (58%). About 80% had received PDC where the type of care received was mainly oral hygiene advice (77%). Slightly more than 80% preferred the one-to-one demonstration method during PDC. Most gave positive evaluation on their PDC experience especially on items pertaining to the dentist's attitude. Whilst most of the SHCN patients in this study had positive perception on the PDC that they received and practised good brushing behaviour, their dietary habits need to be improved. Thus, regular preventive dental visit amongst SHCN patients is important for appropriate and comprehensive dental care in maintaining oral health.

Keywords: special health care needs, oral health behaviour, dietary habits, preventive dental care, special care dentistry, oral hygiene.

INTRODUCTION

Despite continuous efforts that are made by health authorities, oral diseases remain highly prevalent worldwide. Individuals with special health care needs (SHCN) are more affected by oral diseases when compared to general population (1). A retrospective study on the oral health status of 4,732 adults with SHCN in the United States revealed that 32.2% of the subjects had untreated caries, whilst 80.3% presented with periodontal disease (2). Similarly, a

national survey conducted by the Belgian National Institute for Health and Disability Insurance (NIHDI) on 707 SHCN individuals showed that one in four persons had oral health problems (3). Most of the individuals with SHCN were presented with poor oral hygiene and high level of caries (3). Thus, the establishment of Special Care Dentistry (SCD) is indeed vital to provide SHCN individuals with good oral health. SCD is defined as "the oral health management of patients adversely affected orally

by intellectual or physical disability and medical or psychiatric issues, or more often, a combination of a number of these factors where such conditions necessitate a modified delivery of oral healthcare for the patient's total health and well-being" (4).

According to the Department of Social Welfare in Malaysia, there were 420,201 of people with disabilities in the year 2017 (5). The special need children in Malaysia receive oral health care and advise by paediatric dentists, but once they reach adulthood, there seems to be a lack of continuity care (4). While oral diseases are known to have direct and devastating consequences on oral health and quality of life of individuals, especially on those with complex medical issues, effective and consistent preventive dental care is indeed important as part of holistic approach to enhance their oral health status.

Preventive Dentistry is defined by the Oxford Dictionary of Dentistry as "the branch of dentistry concerned with the prevention of dental diseases" (6). Preventive dental care (PDC) includes measures such as dietary advice, plaque control, fluoride application and the application of fissure sealants". The main aim of Preventive Dentistry is to promote and educate individuals the importance and effective ways of maintaining oral health. PDC is better achieved through collaboration between dental team and patients in decision making. It is indeed a process of two-way communication in sharing information about evidence-based approach of disease prevention and emphasizing responsibility for oral self-care (7).

According to the guidelines provided by American Academy of Paediatrics Dentistry (AAPD) in 2012, the SHCN individuals should brush twice daily with fluoridated toothpaste to prevent caries and periodontal disease (8). The AAPD also recommends that toothpaste is replaced with fluoridated mouth rinse for individuals who are unable to tolerate the taste or texture of fluoridated toothpaste (8). Caregivers should provide assistance to individuals with SHCN who have limited manual dexterity (8). Additionally, SHCN individuals should be advised to have non-cariogenic diet (8).

Oral health self-care is not solely a matter of individual patients changing their oral health behaviour. In fact, changes occur based on a good relationship between patient and the dental team. According to Sbaraini *et al.* (2012), dentist who portrays empathy and remain passionate, supportive, patience without giving blame would facilitate the patients' understanding towards PDC (9). Moreover, patients and their caregivers would perceive preventive care as a caring action if the dentist is committed in saving their patients' teeth. Good rapport between dentist and patient can be

built when delivering the knowledge of preventive dental care through oral health education (OHE) to SHCN individual and their caregiver.

Emphasis on preventive care in dentistry is indeed beneficial for individuals with SHCN. Through preventive dental care, good oral health behaviour can be inculcated in SHCN patients to improve their oral health conditions which would consequently improve their oral health related quality of life. Therefore, this study aims to assess the oral health behaviours and PDC experiences amongst SHCN patients.

MATERIALS AND METHOD

Study Design

This was a cross-sectional, descriptive and quantitative study, assessing the oral health behaviours and PDC experiences among SHCN patients at SCD clinic, Faculty of Dentistry, Universiti Malaya. These patients including those patients with intellectual, physical, psychiatric problems that may also have complex medical conditions need special care in terms of oral health care to meet their complex requirements. All the study procedures, including the informed consent process, that were earlier approved by the Medical Ethics Committee, Faculty of Dentistry, Universiti Malaya.

Study Participants

All patients who are aged 16 years old and above who attended the SCD clinic were included. The data was collected twice a week for 10 weeks, starting from mid-June 2017 till the end of August, 2017. These patients and their next-of-kin were approached by the researchers to gauge their interest in participating in this study. Consent was taken either from the patient and/or their next-of-kin prior to answering the questionnaires. The patients' details were taken from the appointment book and Dental Information System (DEISY) at the SCD clinic.

Study Instruments

A questionnaire was constructed based on a literature review and discussion with a panel of experts from the SCD and Paediatric Dentistry fields. The questionnaire consisted of a range of questions from demographic background of the patient and parents/caregiver; oral hygiene practices such as brushing frequency, type of toothbrush used, type of toothbrush bristle, tooth brushing assistance, type of toothpaste used, amount of toothpaste used and oral hygiene aids used. Information about dietary

habits was assessed based on frequencies of daily sugar intake, consumption of sugary beverages or snacks between meal and as reward/during temper tantrums. In addition, last dental attendance and the reasons for dental visit were included in the questionnaire.

Previous PDC experiences were evaluated using the questions on the source of information regarding oral health, types of information received and feedback for the experiences which were further categorized into the previous PDC experiences, types of PDC received, perception towards the PDC given, followed by most preferred method to receive PDC, location of PDC and methods of receiving PDC. Participants' feedback on the PDC that they received included questions about the dentist, use of models and tools and environment factors. Multiple answers were reported descriptively or based on percentages. The Likert scale responses were used with numerical value, in which; 1= disagree strongly, 2=disagree, 3=neither agree nor disagree, 4=agree, and 5= agree strongly.

All variables were grouped according to oral health practices including brushing behaviours, dietary habits, history of dental attendance and lastly the previous dental experiences. The developed questionnaire then underwent a face and content validation process by a panel of experts, which consisted of one SCD and one Paediatric Dentistry specialists. The questionnaires were then evaluated by conducting a pilot study on similar patients (n=5) attending the SCD clinic. After validation, the questionnaires were distributed to the patients who came for their appointment at the SCD clinic. For patients who were unable to answer for themselves, the questionnaires were answered through a proxy, either patient's parents or primary caregiver.

Data Analysis

The quantitative data were collected and analysed using the Statistical Package for Social Sciences (SPSS Incorporated, Chicago, Version 12.0 Illinois, USA) software for Windows. The descriptive analysis was performed on the socio-demographic of the participants, for example gender, age, parents' occupation and family income; and also on the oral health behaviours and PDC questions. PDC experiences were evaluated through feedback from the participants.

RESULTS

Table 1 shows the sociodemographic distribution of the participants (n=31). Almost half of the participants were males (48%) and most were Chinese (58%).

Their age ranged between 16 to 76, with mostly from the age group of 21-30 years old (35%). The proportions of participants from age group of 16-20 years old and more than 60 years old, were similar at 10%. Almost half of the participants went to special school to pursue their studies while 19% of them received no education.

Table 1: Demographic characteristics of participants with SHCN (N=31)

Background	N (%)
Gender	
Male	15 (48)
Female	16 (52)
Ethnicity	
Malay	7 (23)
Chinese	18 (58)
Indian	6 (19)
Age (Age ranged from 16 to 72)	
16-20 years old	3 (10)
21-30 years old	11 (35)
31-40 years old	5 (16)
41-50 years old	5 (16)
51-60 years old	4 (13)
> 60 years old	3 (10)
Education level	
No education	6 (19)
Primary school	3 (10)
Secondary school	4 (13)
Tertiary education	4 (13)
Special education	14 (45)
Medical / Health information 1*	
Physical disabilities	12 (39)
Intellectual disabilities	24 (77)
Psychological disabilities	4 (13)
Complex medical issues	10 (32)
Behavioural problems	4 (13)
*Multiple answers were allowed for the question	
Medical/ Health information 2	
Single disability	14 (45)
Multiple disabilities	17 (55)

Intellectual disabilities (39%) were the most common type of health issues among the participants in this study. There were only 13% of participants with either psychological disabilities or behavioural problems. A total of 55% of the participants had multiple disabilities, whilst 45% had single disability. For those with multiple disabilities, most of them had cerebral palsies with intellectual disabilities. The second most common combination was intellectual disabilities and behavioural problems, such as Autism Spectrum Disorder. One of the participants had complex medical problems including Pierre Robin syndrome, cerebral palsy, depression and vision problem.

Table 2 describes the brushing behaviours among patients with SHCN. Majority (84%) brushed teeth more than once a day. Regarding the type of toothbrush used, most of them (68%) used manual toothbrush and only two used electrical toothbrush. About 26% used specially modified toothbrush which is 360° do toothbrush. Majority of the participants (58%) used toothbrush with soft bristled type.

Dietary habits among patients with SHCN is shown in Table 3. Frequency of sugary beverages and snacks intake in a day were mostly 1-3 times (77% and 65% respectively). More than half of the participants consumed sugary snacks between meals while 36% of the individuals were treated with sweets when they were having temper tantrums. With regards to dental attendance, 90% of the participants had their last dental visit less than a year ago and the reason was mainly for treatment purposes. In terms of smoking habit, only one of the participants reported to have past smoking habit. The participant claimed that he only smoked occasionally due to peer influence.

Table 4 shows the PDC experiences among participants with SHCN. From the data obtained, 25 participants had received PDC (81%) and it was mainly about the oral hygiene care (77%). Slightly more than half of the participants agreed that the PDC given can be easily understood (56%). Most of the participants who had PDC preferred to receive it through one-to-one demonstration by the dentist (84%). Most of these participants received PDC from dentists (68%) in a dental clinic (61%). Information on PDC was mostly received through printed pamphlets (68%) or through a one-to-one chairside demonstration by the dentist (64%). Besides, 52% of them were familiar with the term of topical fluoride and dental sealant.

Table 2: Brushing Behaviours among participants with SHCN (N=31)

Brushing Behaviours	N (%)
Frequency of brushing	
More than once a day	26 (84)
Once a day	4 (13)
A few times a week	1 (3)
Type of toothbrush used	
Manual toothbrush	21 (68)
Specially Modified toothbrush (360° do)	8 (26)
Electric toothbrush	2 (6)
Type of toothbrush bristles	
Extra soft	4 (13)
Soft	18 (58)
Medium	7 (23)
Hard	1 (3)
Not sure	1 (3)
Tooth brushing assistance	
On their own but supervised by parents/ caregiver	
Assisted by parents/ caregiver	15 (48)
On their own and not supervised	15 (48)
Type of toothpaste used	
Fluoridated	27 (87)
Non-fluoridated	1 (3)
Do not use	3 (10)
Amount of toothpaste used	
Smear layer	5 (16)
Pea sized	6 (19)
Half-length of bristle	4 (13)
Full length of bristle	12 (39)
Not sure	1 (3)
Do not use	3 (10)
Oral hygiene aids used*	
Floss	6 (19)
Interdental brush	2 (6)
Mouthwash	12 (39)
Others (tongue brush, toothpick)	2 (6)
None	13 (42)

*Multiple answers were allowed for the question

Table 3: Sugar Intake among participants with SHCN (N=31)

Items	N (%)
Frequency of sugary intake in a day	
Beverages	
1-3 times	24 (77)
More than 3 times	2 (7)
Never	5 (16)
Snacks	
1-3 times	20 (65)
More than 3 times	2 (6)
Never	9 (29)
Sugary snacks in between meal	
Always	1 (3)
Sometimes	17 (55)
Never	13 (42)
Treated with sugary snacks as reward	
Always	2 (6)
Sometimes	9 (29)
Never	20 (65)
Treated with sugary snacks during temper tantrums	
Always	3 (10)
Sometimes	8 (26)
Never	8 (26)
Not relevant	12 (38)

Table 4: Preventive Dental Care (PDC) experiences among participants with SHCN

Preventive Dental Care (PDC)	N (%)
Previous PDC Experiences	
Yes	25 (81)
No	6 (19)
Types of PDC received*	
Oral hygiene care	24 (77)
Dietary advice	3 (10)
*Multiple answers were allowed for this question	
Perception if PDC given was easy to understand	
Yes	14 (56)
No	10 (40)
Not sure	1 (4)
Most preferred method to receive PDC	
One-to-one demonstration by dentist	26 (84)

Lecture / Health talks	2 (7)
Video	1 (3)
Social media (E.g.: Facebook)	1 (3)
Others	1 (3)

Location of PDC*

Dental clinic	19 (61)
Consultation room	2 (6)
Oral health programme	4 (13)

*Multiple answers were allowed for this question

Person who gave PDC*

Dentist	21 (68)
Dental nurse	4 (13)

*Multiple answers were allowed for this question

Methods of receiving PDC*

One-to-one chairside demo	20 (64)
Lecture from health officer	4 (13)
Information from pamphlets	21 (68)
Video teaching	1 (3)

*Multiple answers were allowed for this question

Table 5 presents the perceptions amongst those who had experience PDC (N=25). Majority of those participants gave positive evaluation towards the dentist's attitude where 96% perceived that the dentist was friendly, patient and willing to listen to their problems. Overall, the participants perceived that the models or tools used during PDC were interesting and aided in better understanding. Almost half who had experienced PDC before strongly agreed that the environment in which they received it was relaxing and comfortable (48%).

Table 5: Participants Who Answered Agree and Strongly Agree on the Feedback for the PDC Given. (n=25)

Feedback for PDC given	Agree	Strongly Agree
Dentist's attitude		
1. Proactive and supportive dentist	9 (36)	13 (52)
2. Willing to listen to patient problems	10 (40)	14 (56)
3. Did not blame patient for their mistake	13 (52)	9 (36)
4. Simple and clear instructions given	11 (44)	11 (44)

5. Friendly and patient	10 (40)	14 (56)
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Models and tools

1. Interesting models / tools / pictures	15 (60)	6 (24)
2. Aid in understanding	16 (64)	7 (28)

Environment factor

1. Relaxing and comfortable setting	11 (44)	12 (48)
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DISCUSSION

People with SHCN were shown to have poorer oral hygiene and periodontal status with more rampant caries and fewer remaining teeth in the oral cavity (10). The progression of dental diseases could be due to impaired motor coordination and muscular limitations amongst some SHCN patients with neuromuscular problems and the difficulty in understanding the significance of oral hygiene amongst individuals with intellectual disability. It is encouraging to note that most of the people with SHCN had positive perception on the PDC that they received and practised good brushing behaviour. This could be attributed to their regular visit to SCD clinic, hence they were more likely to be aware of the importance of oral health. Earlier it was reported that dental visit on a regular basis was associated with better oral health behaviour where dentist can constantly instil positive oral health behaviour in their patients (11). In addition, a study reported that positive parental knowledge and attitude were strongly correlated with children dental health status (12). Thus, efforts made by caregivers to maintain the oral health of patients with SHCN have positive impact on their oral health behaviour.

Tooth brushing has been recognised as one of the most effective oral physiotherapy aids in plaque removal to prevent the occurrence of oral diseases. It is interesting to know that some of the participants used 360°do toothbrush. This specially modified toothbrush was used as some of the SHCN patient could not perform proper tooth brushing due to limitation in manual dexterity and short concentration period. It is believed that the invention of 360°do toothbrush helps to improve tooth brushing efficacy in SHCN patients. According to an evaluation reported by FCG Laboratory Inc. in 2011, the toothbrush was effective in removing 98.5% of dental plaque (13). The rounded 360° brush head design has higher number of bristles compared to a conventional toothbrush, thus, providing a better coverage of contacted tooth surface during manual tooth brushing action (13). Therefore, brushing time

can be reduced as tooth surface coverage increased. From this study, almost half of the participants with SHCN brushed on their own without supervision and assistance. Teaching brushing technique is a time-consuming procedure and requires skills of training. It involves repetitions of movements to incorporate brushing behaviour into an individual's habitual motor programme. Despite brushing every day, it is remained doubtful that the oral hygiene status will be improved because the habitual brushing techniques amongst SHCN patients who are not supervised and assisted might not be correct and effective to remove dental plaque. Hence, regular dental visit to the SCD clinic is imperative so that professional dental prophylaxis can be provided to some SHCN patients when indicated. Their parents and caregivers should also be reminded to monitor and assist them during daily tooth brushing activities at home.

Diet instructions are one of the integral parts of a total preventive programme in achieving better oral health care (14). It is utterly crucial to restrict sugary intake to less than 4 times in a day to prevent dental caries (15). Results showed that most of the SHCN individuals manage to restrict their sugary intake in 1-3 times in a day although only 3 patients reported received dietary advice during PDC visit. This is because most of the caregivers had strict restriction on the sugary diet given to the SHCN patients by limiting the sugary intake to 1-3 times in a day. Sugary reward was well controlled, however some of the caregivers treated the SHCN individuals with sugary snacks when they threw tantrums. Caregivers tend to give sweet treats during temper tantrums as a behaviour modification approach to withhold their tantrums (16). Cariogenic diet and poor brushing habits are the main culprit of dental caries thus, controlled sugary intakes could contribute to better oral health in SHCN patients.

PDC plays a major role in shaping oral health behaviour of an individual. Disease prevention and health promotion can be more effective if focused on the individual risk assessment. Clinical check-ups on a regular basis will enhance the acknowledgement of risk factor sooner and thus, maintain a high standard of oral health by treating the patients via preventive measures (17). Christensen (2005) proposed that behavioural change is affected primarily by education (18). When the rationale for the suggested changes in oral health behaviour and complications of having poor oral hygiene can be comprehend by an individual, there will be a greater potential for behavioural change. Hence, it is not a surprise that most of the participants in this study preferred receiving chairside one-to-one advise. Most of the participants of this study gave positive feedback on their previous PDC. Health promotion will be effective

only if a dentist possesses excellent attitudes in educating the patient. Dentists must be equipped with positive attitudes such as supportive, forgiving and patience when convincing SHCN individuals to follow the oral health instructions given. Simple and clear instructions using laymans' terms will ease in better understanding especially for patients with SHCN. Besides, individualised oral hygiene programmes which consider the disabilities of the patient should be conducted to meet different needs. Evaluation done by Sbaraini *et al.* (2012) regarding patient's experience on PDC revealed that all patients valued of having a caring dentist who would listen to their concerns without blaming on them (9). When the patients perceived PDC as a caring action, they will be motivated in taking an initiative to develop positive oral health behaviour. According to the recommendation by Jacorino (2009), tell-show-do approach using models and tools may be successful to draw the attention of SHCN individuals during PDC (16). Correspondingly, most of the SHCN patients in this study agreed that models and tools used will aid in a better understanding. Apart from that, Milgrom (2009) proposed that dental environment as one of important determinants for dental fear (19). Therefore, a relaxing and comfortable environment for PDC will be an added advantage to reduce anxiety and improve concentration level of SHCN patients.

The limitations of the study were due to time and financial constraints. The results obtained from this study were limited by the number of participants as the data collection period was short. As the questionnaires were answered by proxy for patients who were unable to answer, the data received may not be accurate. We recommend that future studies should include samples from different settings such as other special care centres in Malaysia.

CONCLUSION

Most of the SHCN patients in this study had positive perception on the PDC that they received and practised good brushing behaviour. However their dietary habits need to be improved. Surgical dental intervention may not be a long-term solution to eradicate dental diseases. Preventive dental care on the other hand is imperative and fundamental for oral health. Hence, regular preventive dental visit should be emphasised to individuals with SHCN.

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