



General and Oral Health Status and Behaviours of Group of Children with Down Syndrome in Riyadh, Saudi Arabia: Cross-Sectional Study



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Abstract

Background: Children with Down syndrome exhibit certain general and oral health characteristics that increases their risk to develop certain diseases and conditions, however, behaviours towards healthcare and prevention might not be as needed. This study aims to explore some general and oral health status and behaviours among group of Saudi children with Down syndrome from mothers' perspectives.

Method: This cross-sectional study targeted 63 children with Down syndrome aged 10-14 years old attending special Down syndrome centre in Riyadh, Saudi Arabia. Self-reported questions exploring several demographic, oral and general health statuses and behaviours were collected from the mothers using a piloted questionnaire. Statistical Package for Social Sciences (SPSS) Version 17 was used for analyzing the data.

Results: Parents of 63 children with DS (43% boys, 57% girls, age 10-14 years) participated in the current study. Of the surveyed sample, 96.8% reported that their children have oral health problems. 73% of parents rated their child's general health as good while only 25.4% rated their child's oral health as good. Although parents rated the children general health as good, 41% of them reported to visited physician for regular check-ups while only 8% reported to visit dentists for regular check-ups, and 60% reported to visit dentists only when their children have dental problems.

Conclusion: The study suggested high prevalence of oral health problems among children with Down syndrome from parents' perspective. Parents ranked their children's oral health lower than their general health, although they reported significantly lower levels of access to dental care services. Study also showed that dental visit was often problem-oriented

Keywords: Down syndrome; Oral Health Status; Mother's perception; Children with Down syndrome; Saudi Arabia

Introduction

Down Syndrome is considered to be one of the most common chromosomal anomalies among live-born infants causing intellectual disabilities having an incidence of 1:600 to 1:900 Yang [1]; Canfield, et al. [2]. Individuals with Down syndrome are characterised by special physical characteristics for example, mouth, ears, upward slanting eyes, a low nasal bridge, and epicanthal folds Jorde [3]; Zigman [4]. The birth prevalence of individuals with Down syndrome remains to be relatively stable during the last decade Collins but survival rates have improved Weijerman et al. [5]. Despite the improvements in the survival rates of people with Down syndrome, studies have shown that they still face challenges at different aspects of their life, such

as economic, environmental, and cultural challenges. They are still at a higher risk of health inequalities in comparison to the mainstream population. Ensuring satisfactory oral health care is vital for psychological and physical well-being World Dental Federation [6]. Poor oral health and diseases that may occur can lead to difficulties with social acceptance, school attendance, sleep, pain, speech, difficulties with eating, and self-esteem causing a dramatic effect on the quality of life and health of the children Jackson [7]. However, some of the populations for example, such as children with special health care needs are almost twice as likely to have unmet oral health care needs compared to peers regardless of special needs and have a higher prevalence of dental disease Holt, Barzel, & Bertness [8].

Several studies have revealed that people with intellectual disabilities including those with down syndrome have poorer health than their non-disabled peers, and in addition to inequalities in health status, they also experience inequality in medical care utilization compared to the general population Emerson [9]; O'Hara et al. [10]. Similarly, research on oral health field showed that compared to general population, individuals with intellectual disabilities including those with Down syndrome experienced poorer oral health and higher unmet oral health needs Zhou [11]. A study aimed at assessing the health conditions and their impact among adolescents and young adults with Down syndrome found that dental treatments and surgery were the most common reasons for hospitalization of children suffering from Down Syndrome Pikora, et al. [12]. In Saudi Arabia, there is very little research on how parents perceive general and oral health status and behaviours of children with Down Syndrome. Such information would allow healthcare practitioners to better understand their current situation, and therefore plan and offer suitable preventive protocol to improve their health and overall wellbeing. Therefore, this study was conducted among group of children with Down Syndrome attending special need centre in Riyadh, Saudi Arabia to assess their general as well as oral health status and behaviours from parents' perspectives.

Methods

Study Design

This study was a descriptive cross-sectional study conducted in two special need centres (SAUT & DSCA). in Riyadh city of Saudi Arabia.

Target Population/Sample size

During the conduction of the study, there were 63 children with Down Syndrome aged 10-14 attending the centres for children with Down syndrome. The mothers/guardians of the children filled out the study questionnaire and also provided consent to participate in the research study.

Inclusion and Exclusion Criteria

The criteria for inclusion were children with Down syndrome attending a special need centre, aged 10-14 years old, children with confirmed diagnoses of trisomy 21, and children whose informed consent was obtained from their parents/legal representatives. The exclusion criteria were children with severe form of intellectual disabilities, children with multiple disability, children with detrimental systemic diseases, and uncooperative children. Also, children whom parents/legal representatives did not provide consent were not included.

Data Collection/Data Source

A self-administered structured questionnaire was completed by the mother or guardian of the participating child. The study questionnaire included few demographics (age, gender, etc.), questions on subjective evaluation of children's general and oral health status, child's oral health behaviours and habits were also

included.

Data Analysis

The collected data was entered into Excel Spreadsheet. Responses were coded and weighs were assigned. Data was analysed using the Statistical Package for the Social Sciences (SPSS Inc., Chicago, IL, USA). The data was presented as frequencies and percentages.

Ethical Approval

The study proposal was approved by the Institutional Review Board Ethics Committee at King Khalid University Hospital with registration no. E-19-3657. Consent for participating in the study was obtained from the parents /legal representatives of the children.

Results

Demographic

Table 1: Demographic characteristics of the Study Sample (n=63).

Variable	Number (%)
Child's Age (in Years)	
10	2 (3.0)
11	7 (11.0)
12	25 (40.0)
13	14 (22.0)
14	15 (24.0)
Mother's Age	
34-39	11 (17.0)
40-45	15 (24.0)
46-51	28 (44.0)
52-57	6 (10.0)
58 and more	3 (5.0)
Mother's Occupational Status	
Yes, full time	8 (13.0)
Yes, part time	3 (5.0)
Not working	52 (82.0)
Mother's Marital Status	
Married	60 (95.0)
Divorced	1 (2.0)
Widowed	2 (3.0)
Mother's Educational Level	
Uneducated	8 (13.0)
Primary	12 (19.0)
Intermediary	10 (16.0)
Secondary	14 (22.0)
University	18 (29.0)
Postgraduate Studies	1 (1.0)

A total of 63 children (aged 10-14 years old) with mothers (age range 34 – 58 years and above) were included in this study (Table 1). The children and their corresponding mothers varied in age, whereas the children age ranged between (10 to 14) years with about 40% of them aged 12 years old. The majority of subjects (mothers) (8%) were not working at time of data collection, while only 13% reported that they work in full time jobs. With respect to the distribution of mothers by the marital status, results suggest

that majority (95%) of the mothers were married during the data collection. The educational level of mothers showed that in general, parents of child enrolled in this study were educated with (29%) of mothers having university degree and (22%) of mothers had secondary level of education. Moreover, 19% of mothers completed primary education whereas, only 13% were uneducated (Figure 1).

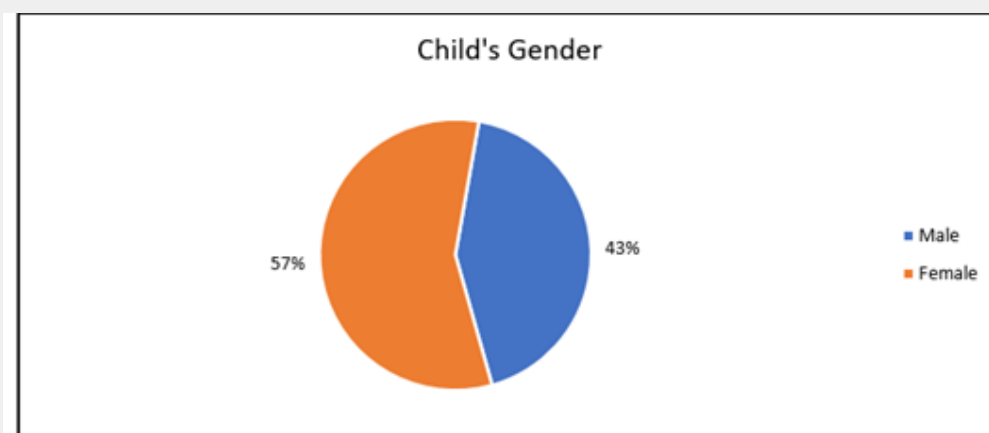


Figure 1: Distribution of Child's sample by gender (n=63).

General Health

Table 2: Descriptive Statistics for Child's General Health Status Questions.

Variable	Frequency	Percent (%)
General Health Status (n = 63)		
Poor	3	4.8
Fair	14	22.2
Good	46	73
Child Use a Medication (n = 63)		
Yes	9	39.1
No	14	60.9
Visited Physician (n = 63)		
Yes	37	58.7
No	26	41.3
Pattern of Physician's visits (n = 63)		
Regular	26	41.3
Occasional	11	17.4
Only with problems	26	41.3
How Difficult to Find a Physician (n = 63)		
Difficult	15	23.8
Moderate	18	28.6
Easy	30	47.6
Child Diagnosed with Medical conditions (n = 63)		
Yes	54	85.7
No	9	14.3

Question on the general health status for the child was recorded on three-point scale (poor, fair, and good). The results suggested that 73% of mothers reported the general health status for the participating children with Down syndrome to be good, while 4.8% reported it to be poor from their mothers' perspective. Moreover, the child's health status in terms of whether the child was diagnosed in the past with any medical condition or not, the use of medication, and the purpose of using such medication were also collected. The results demonstrate that around 85.7% participants were diagnosed with different types of medical conditions. Results also showed that 39.1% of the participating children used at least one type of medication, whereas 60.9% of them did not report to use any medication. The parents were inquired whether their children have a physician, how frequent did the child visit physician, and the difficulty level for finding physician to care for their children. Results indicated that more than two-third (58.7%) of families participating in this study had a physician providing medical care for their children. Around 23.8% of the parents mentioned that it was difficult for them to find a physician compared to 47.6% of parents who reported it to be easy to find a physician to care for a child's general health. Around 41.3% of the participating mothers said that they visit the

physician on a regular basis and only when in trouble compared to 17.4% who reported that they visit the physician occasionally (Table 2).

Oral Health

Table 3 demonstrates the distribution of children with down syndrome according to their oral health status. A three-point scale (poor, fair, and good) was used to record the oral health status of the children. According to 46.7% of parents, the oral health status for the child under study was described as fair while, the oral health status was reported as poor for 27% of children from their parents' point of views. Only, 25.4% reported a good oral health status. Moreover, 96.8% reported to have oral health problems. Table 3 also illustrates the dental visits and previous dental treatments of the children. Overall, 85.7% of children under study visited a dentist for oral health examination with 71.4% reporting to consult the dentist previously. Majority of the children (60.3%) visited the dentist only when having problems. According to 34.9% of the parents, finding a dentist to care for their child oral health was difficult. Conversely, 30.2% of mother mentioned that it is easy to do so, while 15.9% of mothers never tried to visit the dentist.

Table 3: Descriptive Statistics for Child's Oral Health Status.

Variable	Frequency	Percent (%)
Oral Health Status (n = 63)		
Poor	17	27
Fair	30	46.7
Good	16	25.4
Oral Health Problems (n = 63)		
Yes	61	96.8
No	2	3.2
Visited Dentist (n = 63)		
Yes	54	85.7
No	9	14.3
Pattern of Dental Visits (n = 63)		
Regular	5	7.9
Occasional	11	17.5
Only with problems	38	60.3
Not applicable	9	14.3
How Difficult to Find a Dentist (n = 63)		
Difficult	22	34.9
Moderate	12	19
Easy	19	30.2
Not tried before	10	15.9
Previous Dental Treatment (n = 63)		
Yes	45	71.4
No	18	28.6

Oral Health Behaviour

The oral health behaviour for the Children was also recorded. Around 63% of mothers reported that their children brush their teeth by themselves. While 35% do so with the help from an adult

(Figure 2). It is worth to note, that 54% of the children brush their teeth twice or more daily, followed by 17% children reporting to brush their teeth three times per day, 11% more than three times per day, 16% once daily and 2% percent never brushed their teeth (Figure 3).

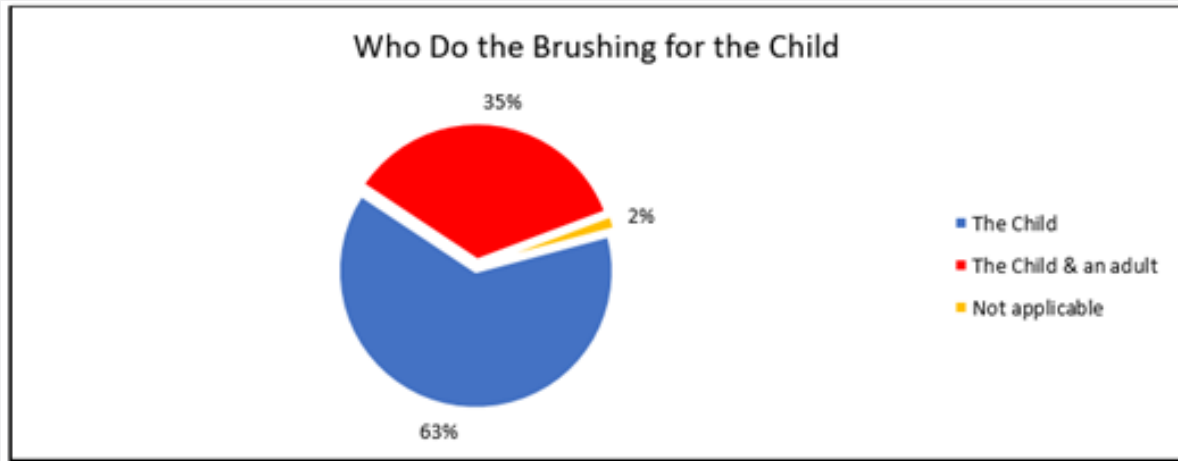


Figure 2: Distribution of Childs According to Who Do the Brushing for the Child (n=63).

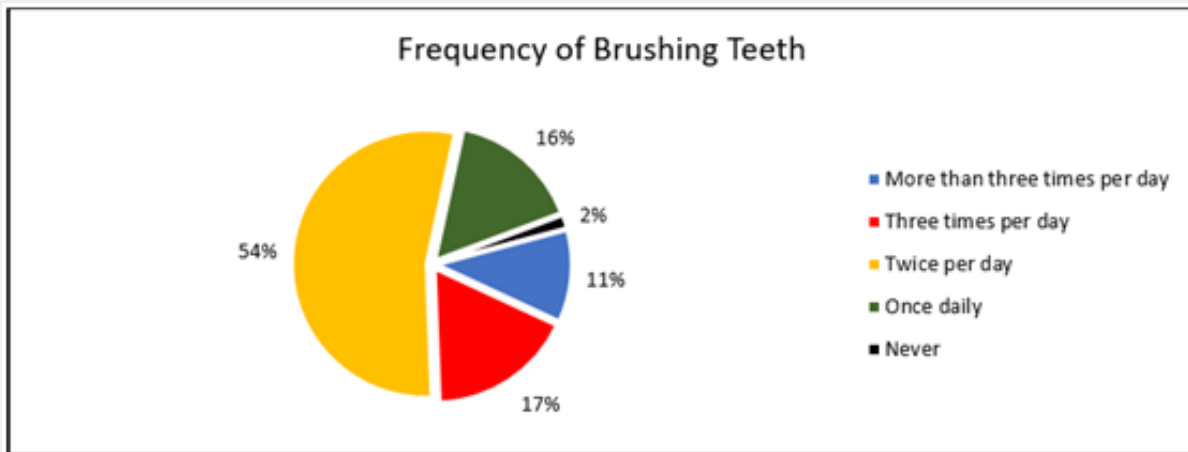


Figure 3: Distribution of Childs According to Frequency of Brushing Teeth (n=63).

Table 4: Cross-Tabulation and Correlation between Child's General Health from Mother's Perspective and Physician's.

Variable	Child's General Health Status		
	Poor (%)	Fair (%)	Good (%)
Visited Physician			
Yes (n=37)	3 (8.1)	9 (24.3)	25 (67.6)
No (n=26)	0 (0.0)	5 (19.3)	21 (80.7)
P-value		0.289	
Pattern of physician's visits			
Regular (n=27)	1 (3.7)	6 (22.2)	20 (74.1)
Occasional (n=12)	1 (8.3)	4 (33.3)	7 (58.4)

Only with problems (n=24)	1 (4.2)	4 (16.7)	19 (79.1)
P-value		0.927	
General Health Problems			
Yes (n=54)	3 (5.5)	13 (24.1)	38 (70.4)
No (n=9)	0 (0)	1 (11.1)	8 (88.9)
P-value		0.295	

Correlation

Table 4 shows the results from cross tabulation and correlational analysis of the child’s general health from the parents’ perspectives and physician visits. Of the 37 participant

who visited the physicians, 67.7% demonstrated a good general health status. Results also showed that 79.1% of those reported their child general health as poor visit physician only when having problems.

Table 5: Cross-Tabulation and Correlation between Child’s Oral Health from Mother’s Perspective and Dentist’s Visits.

Variable	Child’s Oral Health Status		
	Poor	Fair	Good
Visited Dentist			
Yes (n=54)	14 (25.9)	25 (46.3)	15 (27.8)
No (n=9)	3 (33.3)	5 (55.6)	1 (11.1)
P-value		0.366	
Pattern of dental visits			
Regular (n=5)	1 (20.0)	3 (60.0)	1 (20.0)
Occasional (n=11)	2 (18.2)	7 (63.6)	2 (18.2)
Only with problems (n=38)	11 (29.0)	15 (39.5)	12 (31.5)
P-value		0.897	
OH Problems			
Yes (n=61)	17 (27.8)	30 (49.2)	14 (23.0)
No (n=2)	0 (0)	0 (0)	2 (100)
P-value		.046*	

*Spearman’s Correlation coefficient value denoted by (rs =-.253).

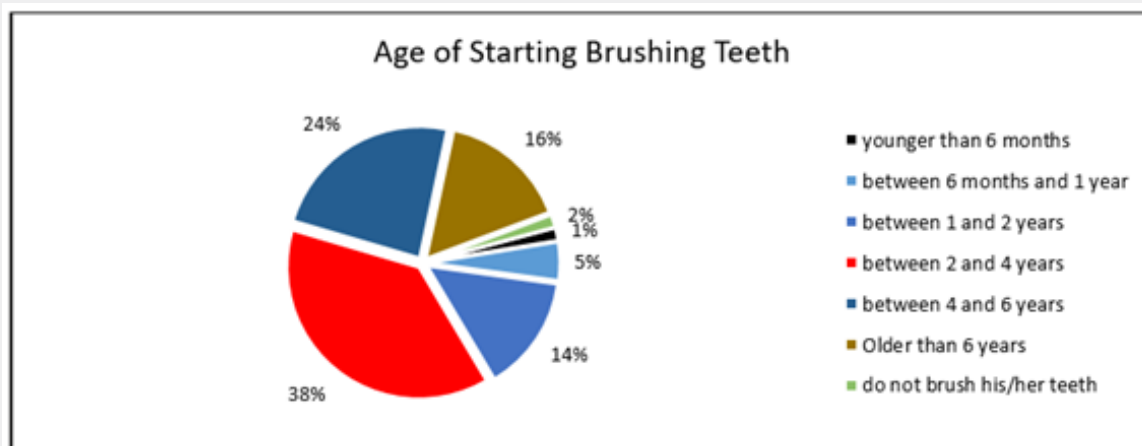


Figure 4: Distribution of Childs according to Child’s Age When Started Brushing his/her Teeth (n=63).

Discussion

The present study provides a comprehensive overview of the general and oral health Status and some oral health behaviours of group of children with Down syndrome who were attending special need centres which is to the best of our knowledge there are very few studies in Saudi Arabia explored the general and oral health status and behaviour using parental evaluation as opposed to researcher-led by clinical studies.

The results suggested that the majority of parents reported the general health status for the participating children with Down syndrome to be good, and oral health status was described mainly as fair and this was comparable to the findings of a recently published study in Sweden Stensson, et al. [13]. Majority of the participants demonstrated good oral hygiene practices. Majority of the children brush their teeth twice or more daily, followed by 17% children reporting to brush their teeth three times per day, The rate is comparable to that reported in Jordan (77.7%) and Australia (90%) Habashneh [14]; Randell, Harth & Seow [15]. This may reflect that parent had a good understanding about the significance of oral health care for a child with Down syndrome. Improved knowledge of caregivers and parents of children is expected so as to build awareness and enhanced collaboration with dentists specifically paediatric dentistry specialist allowing children with Down syndrome to have preserved oral health along with improving their quality of life.

The study showed that most of the participated children with Down syndrome attended dental facilities only when a dental problem was reported. The factors which can contributed to the dental service utilization included limited knowledge about good oral hygiene practices, low priority offered to dental care, limited facilities for regular and early oral health checkup and cost of treatment, however such area was not explored in this research and further studies should aim at exploring barriers to health care services including oral health of individuals with disabilities in Saudi Arabia. Improved knowledge of caregivers and parents of children is expected so as to build awareness and enhanced collaboration with dentists specifically paediatric dentistry specialist allowing children with Down syndrome to have preserved oral health along with improving their quality of life. In regard to offering assistance with brushing, one third on the participated children received help from adults during brushing. This is still lower than 84% of non-disabled children receiving help during tooth brushing in a study conducted by Randell, Harth & Seow [15]. This may reflect a parental belief of a limited importance for oral health. Most likely, more time is devoted to help these children in other daily activities that are considered to be more essential.

On comparison of our sample to the 2013–2016 NHANES data for children 3–15 years, parent reported similar frequency of toothbrushing per day Thornton-Evans, et al. [16], showing

around sixty one percent of both groups reporting brushing 2 times per day. Caries preventive programs must be conducted intensively to later avoid oral health problems that comprises of topical fluoride application, dietary counselling and control, oral hygiene instruction and motivation along with fissure sealant Ronald [17]. Approaches on how to maintain the dental health of DS children is essential to be imparted to caregivers and parents at an earlier stage and it is also important to be repeatedly adjusted to the child's development and growth. It is important that the oral health instruction shall ideally be undertaken on the first dental visit and oral hygiene control shall be undertaken at regular visit every three months or more often for DS children Gupta [18]; Nirmala & Saikrishna [19]. Utilization of module print or leaflet as media can be re-learned at home by caregivers or parents is effective Ronald [17]. In the current digital era, Dental Health Education by means of the audio-visual media either with or without interactive games can gain interest for children with Down syndrome as well. One primary limitation was that this study had no control/comparison subjects. However, this issue will be taken into consideration by the investigators in future research. Moreover, this study was undertaken among parents of children with Down syndrome attending special need centres which mean excluding those who are not attending such centres, hence, generalization was performed carefully as this study population may not reflect the children with Down syndrome in Riyadh [20].

Conclusion

Parents rated their children's oral health lower than their general health however they reported accessing dental care services at much lower levels which reflects prioritizing general over oral health. This might be a result of multiple factors such as their level of awareness about oral health importance, or obstacles on accessing and providing the dental care services, such issue mandate further investigations. Future research should also focus on programs that encourage parents to improve their children with Down syndrome oral health condition and enhance their knowledge of the significance of regular preventive dental appointments.

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