

# Oral Hygiene Care for Patients with Disabilities: A Survey of Caregivers' Awareness and Practices in Jeddah, Saudi Arabia



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## Abstract:

**Background:** Obtaining oral health care can be challenging for individuals with disabilities, who often depend on caregivers for assistance with preventive dental practices. This study assessed caregivers' knowledge, awareness, and practices related to oral hygiene for individuals with special needs in Jeddah, Saudi Arabia.

**Methods:** A cross-sectional survey was conducted with 147 caregivers of individuals with intellectual, motor, psychological, medical, and sensory disabilities. Data were collected using a structured questionnaire that addressed dental visit frequency, oral hygiene practices, and the use of oral hygiene products. Descriptive statistical methods were used for analysis.

**Results:** Although 74.1% of caregivers recognized the relation between oral and general health, gaps in oral hygiene practices were evident. Only 4.1% used dental floss, and 54.4% reported irregular brushing. Moreover, 69.4% of caregivers visited the dentist only when necessary. Common dental problems included dental caries (45%) and gingival bleeding (66.7%). Additionally, 13.6% of caregivers reported that a dentist refused treatment, while 91.2% of them expressed interest in receiving free dental exams.

**Conclusion:** The study highlights the necessity for specialized educational programs to enhance caregivers' knowledge and practices regarding oral hygiene for individuals with special needs. Addressing these gaps and promoting preventive oral care could improve dental health outcomes for this vulnerable population.

**Keywords:** Oral hygiene, Oral health, Special needs, Disability, Special care, Caregivers.

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## 1. INTRODUCTION

Oral health, including dental health, is essential for both functional and psychological well-being, playing a crucial role in enhancing overall quality of life [1]. Poor oral hygiene can have substantial consequences, as it is known to be associated with various systemic diseases, such as cardiovascular conditions, diabetes, and stroke [2]. Individuals with mental and physical disabilities frequently have poorer oral health compared to those without disabilities, resulting in a higher prevalence of dental diseases [3, 4]. Regular dental hygiene practices are essential for improving oral health. However, individuals with disabilities often encounter distinct challenges due to physical and mental limitations, as well as chronic health and behavioral conditions. These factors frequently necessitate reliance on caregivers for assistance with routine oral care [5].

Caregivers are typically family members or support workers who help provide at-home care for individuals with disabilities rather than trained healthcare professionals [4]. Lower education levels among caregivers are often associated with less preventive dental care for their patients [6]. Many caregivers exhibit inadequate attitudes and practices in providing dental care for individuals with special needs. For example, tooth brushing usually happens at a lower frequency than recommended [7]. Additionally, many caregivers report that they never perform flossing [8]. Numerous factors, such as caregiver employment or financial limitations, the difficulty of the work, and patient behavioral issues, are associated with these inadequate practices [9-11].

Data on the roles of family caregivers compared to paid caregivers in healthcare is limited. Family caregivers exhibited less confidence compared to paid caregivers in assisting with tooth brushing, flossing, and managing behavioral challenges [5]. Moreover, patients with disabilities living with their families typically receive less assistance for oral hygiene than those in institutional settings [12]. Many individuals with disabilities encounter significant challenges in accessing oral healthcare, leading to infrequent utilization of recommended services [13]. As a result, they often have lower rates of regular dental visits and preventive care, increasing their reliance on emergency services while receiving fewer routine procedures [14, 15].

To effectively implement interventions that enhance the oral health of individuals with disabilities, it is essential to identify and address the barriers faced by their caregivers. This study aimed to obtain comprehensive insights from a sample of caregivers about their experiences in providing oral care to individuals with special needs.

## 2. MATERIALS AND METHODS

This cross-sectional study used a questionnaire to assess oral health knowledge among caregivers of individuals with special needs and their practice in Jeddah, Saudi Arabia. Caregivers who provide regular dental care to individuals with intellectual, motor, psychosocial, medical, and sensory challenges were included in the study. The study received ethical approval from the Faculty of

Dentistry Ethics Committee at King Abdulaziz University (Ethical approval number: 211-12-24). Anonymity and confidentiality were maintained throughout the study, and participation was entirely voluntary.

The sample size was determined using convenience sampling through the Raosoft website, with a confidence level of 95%, a response distribution of 10%, and a margin of error of 5%, resulting in a recommended sample size of 140 participants. Caregivers were randomly enrolled from families of individuals with special needs attending King Abdulaziz University Dental Hospital (KAUFD) for dental treatment. To meet inclusion criteria, participants had to be actively responsible for providing oral hygiene care to individuals with documented disability, either as family members or paid support workers. Exclusion criteria included caregivers with less than six months of caring for an individual with special needs or those providing irregular care. Accordingly, 147 caregivers participated in the study.

Data was collected through a questionnaire developed using Google Forms (Google LLC, Mountain View, California, USA). The questionnaire included a consent form presented as a cover letter that provided a brief overview of the study. A pilot study with 15 participants was conducted to assess the survey questionnaire's validity and reliability. Validity testing using Pearson's correlation coefficient revealed significant correlations between the questionnaire's items and their respective dimensions. Reliability analysis, with a Cronbach's alpha of 0.9, validated the questionnaire's reliability and appropriateness for the study. The first part of the questionnaire included demographic questions, followed by four questions on caregivers' general awareness of oral hygiene, and then twelve questions on caregivers' practices and behavior with the individuals in their care.

### 2.1. Statistical Analysis

The data collected was analyzed using the Statistical Package for the Social Sciences (SPSS) version 29 (IBM Corp., Armonk, NY). Descriptive statistics, including frequencies and percentages, were applied to summarize the responses. Chi-square tests were conducted to examine associations between different categorical variables. A significant level of 0.05 was applied to assess statistical significance. The distribution of responses across various categories is displayed in tables.

## 3. RESULTS

### 3.1. Demographic Results

The study included 147 caregivers of individuals with special needs. As shown in Table 1, most participants with special needs were females (83.7%). In terms of age distribution, the largest group of individuals with special needs was aged 13-18 years (38.8%), and the smallest group was those aged over 41 years (2.0%) ( $\chi^2 = 44.973$ ,  $df = 3$ ,  $p < 0.0001$ ). Mental disabilities were the most prevalent, accounting for 41.8% of the participants, while psychiatric disabilities were the least common (10.7%) ( $\chi^2 = 65.071$ ,  $df = 4$ ,  $p < 0.0001$ ).

**Table 1. Distribution of participants with special needs by gender, age, and type of disability.**

| Variables          |                                | n (%)       | $\chi^2$ (Degrees of Freedom) | p-value  |
|--------------------|--------------------------------|-------------|-------------------------------|----------|
| Gender             | Male                           | 24 (16.3%)  | 66.673 (1)                    | < 0.0001 |
|                    | Female                         | 123 (83.7%) |                               |          |
| Age                | 6-12                           | 41 (27.9%)  | 44.973 (3)                    | < 0.0001 |
|                    | 13-18                          | 57 (38.8%)  |                               |          |
|                    | 19-40                          | 46 (31.3%)  |                               |          |
|                    | 41 and more                    | 3 (2.0%)    |                               |          |
| Type of Disability | Mental disability              | 82 (41.8%)  | 65.071 (4)                    | < 0.0001 |
|                    | Motor disability               | 42 (21.4%)  |                               |          |
|                    | Psychiatric disability         | 21 (10.7%)  |                               |          |
|                    | Medically compromised patients | 27 (13.8%)  |                               |          |
|                    | Sensory disability             | 24 (12.2%)  |                               |          |

Note: Chi-square test. p-value is significant at 0.05 level.

**Table 2. Caregivers’ knowledge and awareness of oral hygiene practices for individuals with special needs.**

| Question   | Response             | n (%)       | $\chi^2$ (DF) | p-value  |
|--|----------------------|-------------|---------------|----------|
| Is there an established relationship between dental health and general health?     | Yes                  | 109 (74.1%) | 110.857 (2)   | < 0.0001 |
|  | No                   | 15 (10.2%)  |               |          |
|  | Maybe                | 23 (15.6%)  |               |          |
| Are you aware of specialized oral hygiene aids for individuals with special needs? | I Know               | 32 (21.8%)  | 46.864 (1)    | <0.0001  |
|  | I don't know         | 115 (78.2%) |               |          |
| What is the recommended brushing frequency for individuals with special needs?     | At least twice daily | 64 (43.5%)  | 8.612 (2)     | 0.0135   |
|  | Once daily           | 35 (23.8%)  |               |          |
|  | Whenever possible    | 48 (32.7%)  |               |          |
| What is the recommended frequency for visiting dental clinics for maintenance?     | 3-4 Months           | 30 (20.4%)  | 41.871 (3)    | < 0.0001 |
|  | Every 6 Months       | 32 (21.8%)  |               |          |
|  | Once a Year          | 16 (10.9%)  |               |          |
|  | When Necessary       | 69 (46.9%)  |               |          |

### 3.2. Response to Questions on General Awareness of Caregivers about Oral Hygiene

Table 2 presents the caregivers' responses to four questions regarding their general knowledge of the oral health of the individuals in their care. When questioned about the perceived link between oral health and overall health, 74.1% of caregivers acknowledged that such a relationship exists. However, the caregivers' awareness of specialized oral hygiene aids for individuals with special needs was limited, with only 21.8% of respondents being familiar with these devices.

When caregivers were asked about the appropriate frequency of visits to dental clinics for maintenance, only 20.4% selected the correct interval of 3-4 months. Interestingly, most respondents, 43.5%, believed that individuals with special needs should brush their teeth at least twice daily, while 23.8% suggested brushing once daily, and 32.7% recommended brushing whenever possible ( $\chi^2=8.612$ ,  $df=2$ ,  $p=0.0135$ ).

### 3.3. Response to Questions on the Practice and Behavior of Caregivers for Individuals with Special Needs in Their Care

Table 3 shows that the frequency of dental visits varied

among the participants. Of those surveyed, 69.4% visited the dentist only when necessary, while 8.8% had never seen a dentist. Additionally, participants had different oral hygiene practices: 51% cleaned their teeth independently, 40.1% relied on parents or family members for assistance, and only 8.8% received help from support workers ( $p < 0.0001$ ).

Regarding brushing frequency, 33.3% of participants reported brushing their teeth twice daily, 36.1% brushed once daily, and 30.6% did not brush regularly. There was also notable variation in the type of toothbrush used; the soft toothbrush was used by 33.3% of participants, and only 5.4% used an electric toothbrush.

The majority of participants (78.9%) did not use dental floss at all, with only 4.1% using it regularly. Mouthwash usage also varied among participants: 54.4% reported not using it, 20.4% used it regularly, and 25.2% used it occasionally ( $p < 0.0001$ ). Furthermore, most caregivers (91.2%) indicated that they did not use specialized tools for individuals with special needs.

The most commonly reported dental issues among participants were dental caries, affecting 45%, with an additional 66.7% experiencing gingival bleeding. Notably, 13.6% of participants reported that a dentist had refused to treat them, while a significant 91.2% expressed strong interest in free dental check-ups.

**Table 3. Caregivers' oral hygiene practices and behaviors for individuals with special needs.**

| Question   | Response                               | n (%)       | $\chi^2$ (DF) | p-value  |
|--|--|-------------|---------------|----------|
| How frequently does the individual in your care visit a dental care provider?  | 3-4 Months                             | 13 (8.8%)   | 155.122 (3)   | < 0.0001 |
|  | Every 6 Months                         | 19 (12.9%)  |               |          |
|  | When Necessary                         | 102 (69.4%) |               |          |
|  | Never Visited Dentist                  | 13 (8.8%)   |               |          |
| Who assists the individual in your care with cleaning their teeth?   | Himself                                | 75 (51.0%)  | 42.286 (2)    | < 0.0001 |
|  | Family Member                          | 59 (40.1%)  |               |          |
|  | Another Person (e.g., support workers) | 13 (8.8%)   |               |          |
| How often does the individual with special needs in your care brush their teeth?   | Twice a day                            | 49 (33.3%)  | 0.653 (2)     | 0.721    |
|  | once a day                             | 53 (36.1%)  |               |          |
|  | Irregular brushing                     | 45 (30.6%)  |               |          |
| What type of toothbrush is used by the individual with special needs in your care?   | Soft                                   | 49 (33.3%)  | 30.497 (3)    | < 0.0001 |
|  | Medium                                 | 47 (32.0%)  |               |          |
|  | Electric                               | 8 (5.4%)    |               |          |
|  | I Don't Know                           | 43 (29.3%)  |               |          |
| Does the individual with special needs in your care use dental floss?  | Yes                                    | 6 (4.1%)    | 141.102 (2)   | < 0.0001 |
|  | No                                     | 116 (78.9%) |               |          |
|  | Sometimes                              | 25 (17.0%)  |               |          |
| Does the individual with special needs in your care use mouthwash?   | Yes                                    | 30 (20.4%)  | 29.918 (2)    | < 0.0001 |
|  | No                                     | 80 (54.4%)  |               |          |
|  | Sometimes                              | 37 (25.2%)  |               |          |
| Do you use specialized oral hygiene aids for individuals with special needs in your care?  | I use some                             | 13 (8.8%)   | 99.599 (1)    | < 0.0001 |
|  | I don't use                            | 134 (91.2%) |               |          |
| What are the common dental problems experienced by the individual with special needs in your care?                                       | Gum Redness                            | 15 (10%)    | 65.551 (4)    | < 0.0001 |
|  | Dental caries                          | 66 (45%)    |               |          |
|  | Dental calculus                        | 28 (19%)    |               |          |
|  | Dryness and ulcers                     | 10 (7%)     |               |          |
|  | Bad breath                             | 28 (19%)    |               |          |
| Does the individual with special needs in your care experience gum bleeding while brushing their teeth?                                  | Yes                                    | 98 (66.7%)  | 16.333        | < 0.0001 |
|  | No                                     | 49 (33.3%)  |               |          |
| Has treatment ever been refused by a dentist for an individual with special needs in your care?  | Yes                                    | 20 (13.6%)  | 77.884 (1)    | < 0.0001 |
|  | No                                     | 127 (86.4%) |               |          |
| Would you be interested in bringing an individual with special needs into your care for a free dental check-up at a government hospital? | Yes                                    | 134 (91.2%) | 99.599 (1)    | < 0.0001 |
|  | No                                     | 13 (8.8%)   |               |          |

**Note:** Chi-square test. p-value is significant at 0.05 level.

#### 4. DISCUSSION

The study evaluated the knowledge and practices of oral hygiene among caregivers of individuals with special needs in Jeddah, Saudi Arabia. The findings provided valuable insights into caregivers' oral care practices and challenges, in addition to the common dental health problems among individuals with disabilities. While caregivers demonstrated a moderate understanding of oral health and related practices, the findings highlight the need for specialized educational programs and support to enhance their abilities to provide effective oral care.

The study revealed notable gender imbalance, with a significantly higher proportion of females with special needs (83.7%), suggesting that there may be gender-specific challenges in caregiving or potentially a higher diagnosis rate among females in this population. Moreover, the age distribution showed that most participants were aged 13-18 (38.8%) and 19-40 (31.3%). This pattern

indicates potential gaps in care for younger children and older age groups. Children with special needs often encounter significant barriers to accessing dental care, mainly due to dentists' reluctance to provide treatment. These challenges are especially evident among older males with cognitive impairments, who are less inclined than females to seek medical and dental services [16, 17]. The high prevalence of mental disabilities (41.8%), which are often associated with inadequate oral hygiene and severe periodontal diseases, emphasizes the need for specialized dental care tools designed for the cognitive abilities of these individuals [4, 18].

In the study, most of the caregivers demonstrated a basic understanding of the importance of oral health, with 74.1% acknowledging a relationship between oral and general health. This is consistent with previous studies that emphasize the essential role of oral health in maintaining overall well-being [19, 20]. The study revealed substantial gaps in knowledge regarding oral hygiene

practices despite the recognition of the importance of oral care. Only 21.8% of participants were aware of specialized oral hygiene aids designed for individuals with special needs. Furthermore, there was a deficiency in the knowledge about the recommended frequency of tooth brushing for these patients. Only 43.5% of participants were aware that it is recommended to brush at least twice a day, and significantly, 54.4% reported not brushing regularly [21]. While this study did not obtain specific data regarding the caregiver's educational level, it has been shown that caregiver education significantly influences their knowledge and oral hygiene practices [22, 23]. The findings highlight the necessity for educational interventions to address both knowledge gaps and practical deficiencies among caregivers [24].

A notable observation in the study was the dependence on caregivers to assist with daily oral care, with 40.1% of individuals requiring help from their parents and 8.8% relying on other caregivers. This indicates that individuals with intellectual and motor disabilities often lack the dexterity needed for effective oral self-care [25]. The study also found that the frequency of dental visits among individuals with special needs is insufficient, with 69.4% seeking dental care only when necessary. Several factors contribute to the lack of routine dental care, including financial barriers, treatment fear, and caregivers' limited awareness [26]. This inconsistency in dental visits can lead to untreated oral health issues that may worsen over time. The study identified several significant oral health concerns, with dental caries affecting 45% of individuals with special needs. Additionally, 66.7% of individuals in the study experienced frequent gingival bleeding, further suggesting a high prevalence of periodontal disease within this population [4]. These findings suggest that individuals with special needs are less likely to receive regular dental care, which can adversely affect their overall health [27-29].

In this study, 13.6% of surveyed caregivers reported that a dentist had refused to treat a patient with special needs under their care, which highlights the necessity for improved dental education to better prepare students for treating these patients [30]. The Commission on Dental Accreditation established a standard in 2004 requiring dental students to demonstrate competence in evaluating and addressing the treatment needs of individuals with special needs [31, 32]. Although this study found variation in the types of dental problems experienced by individuals with special needs, 86.4% of participants reported no difficulties in accessing dental services [33]. Also, 91.2% of caregivers expressed interest in bringing people with special needs to a governmental hospital if they were offered a free check-up. Improving access to affordable dental care services and encouraging regular check-ups could significantly enhance the oral health of individuals with special needs [34]. Additionally, developing educational programs for caregivers that emphasize the importance of regular dental visits, effective oral hygiene practices, and the use of specialized tools for individuals with disabilities is essential [24].

One of the study's limitations is the use of self-reported questionnaires, which may have introduced recall bias and socially desired responses. The findings are not generalizable due to the convenience sampling and limited geographic scope of the study, emphasizing the need for larger future research to validate these findings. Furthermore, the study did not collect detailed caregiver demographics, such as educational level and specialized training, which could provide insights into the factors influencing caregiving oral hygiene practices. Future studies investigating the effectiveness of different interventions aimed at enhancing caregiver knowledge and practices would be beneficial. Additionally, longitudinal studies could provide insights into how improvement in caregiver education would impact the oral health of individuals with special needs.

## CONCLUSION

In conclusion, while caregivers demonstrate a general understanding of the importance of oral health, significant gaps remain in their knowledge and practices. The irregularity of dental visits, insufficient oral hygiene practices, and lack of awareness about specialized oral hygiene aids all contribute to the poor oral health outcomes of this population. Addressing these concerns through caregiver education and improved access to dental care services is essential for promoting better oral health among individuals with special needs.

## AUTHORS' CONTRIBUTION

It is hereby acknowledged that all authors have accepted responsibility for the manuscript's content and consented to its submission. They have meticulously reviewed all results and unanimously approved the final version of the manuscript.

## ABBREVIATION

KAUFD = King Abdulaziz University Dental Hospital

## ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The study was approved by the ethical approval committee at King Abdulaziz University, Faculty of Dentistry, Jeddah, Saudi Arabia (Ethical approval number: 211-12-24).

## HUMAN AND ANIMAL RIGHTS

All procedures performed in studies involving human participants were in accordance with the ethical standards of institutional and/or research committee and with the 1975 Declaration of Helsinki, as revised in 2013.

## CONSENT FOR PUBLICATION

Informed consent was obtained from all participants of this study.

## STANDARDS OF REPORTING

STROBE guidelines were followed.

## AVAILABILITY OF DATA AND MATERIALS

The data and supportive information are available within the article.

## FUNDING

None

## CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

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