

Knowledge Level of Primary Care Givers and Teachers of Students with Intellectual Disabilities' regarding Oral Hygiene



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ABSTRACT

Background: People with intellectual disabilities, especially students experienced inferior health and poor access to good quality. Students with intellectual disabilities usually prevailed oral health disparities than their normal peers as they have lower oral health index. Optimum oral health is associated with improvement in the quality of students' life. Those students need support to maintain optimal oral health outcomes for that good oral health education can have a positive impact on students with intellectual disabilities. **The aim of this study** is to assess knowledge level of primary caregivers and teachers of students with IDs regarding oral hygiene. **Method.** A cross-sectional study design was utilized to accomplish this study. A sample of 54 students with Intellectual Disabilities (IDs), 54 of their primary caregivers, and 54 of their teachers recruited conveniently. **Results** indicated that 100 % of primary care givers and 98.1% of teachers had poor level of knowledge regarding oral hygiene. The researchers conclude that almost all primary care givers and teachers of students with IDs have poor level of knowledge regarding oral hygiene. Accordingly, the researchers' recommend design educational program to raise primary care givers and teachers of students with IDs awareness' regarding oral hygiene.

Keywords: knowledge, oral hygiene, primary caregivers, students with intellectual disabilities, teachers.

Introduction:

Disability refers to any condition that restricts the interaction between an individual and the environment that can be visible or invisible. World Health Organization (WHO) estimates that over one billion people are disabled. Intellectual disability (ID) is one of many types of disabilities that limit one or more major life activities (World Health Organization, 2021). The Global Burden of disease is estimated that Intellectual Disability (ID) is around 3.2% of the population less than 20 years of age.

American Association on Intellectual and Developmental Disabilities, defined IDs as an impairment in an individual's cognitive ability as well as in their ability to do their everyday routine and interact with people (Abdullah et al., 2022). Diagnostic, Statistical Manual of Mental Disorder (DSM-5), and the International Classification of Diseases (ICD-11) determined the diagnostic criteria of IDs as: limitations in intellectual functioning domain such as reasoning, planning, problem solving and, adaptive functioning. These functions refer to the level of performance for everyday tasks that are needed for individuals to function independently and, meet cultural expectations regarding their societal responsibilities (Patel, Cabral, Ho, & Merrick, 2020).

Based on these criteria there are subtypes of IDs based on clinical severity through estimation of intelligence quotient (IQ) tests, along with other neuropsychological testing. These subtypes are classified to: Mild (IQ level 50–69), Moderate (IQ level 35–49), Severe (IQ level 20–34), and Profound (IQ level below 20) (Gaunkar et al., 2021). Also they are diagnosed before the age of 18 years (American Psychiatric Association & Association, 2013). But the prevalence increased with mild IDs subtype (IQ scores of 50–69) among children (Olusanya, Wright, & Nair, 2020).

Children with IDs developed many health issues. Poor oral health is one of disturbing health problems and a great burden that affect their daily life and general health condition (Vermaire, Kalf, & Schuller, 2021). Those children tend to have more missing teeth, untreated caries as well as more dental extractions compared to restorations that has a negative impact on digestion, nutrition and speech as well as self-esteem (Waldron et al., 2019; Ward, Cooper, Hughes - McCormack, Macpherson, & Kinnear, 2019; Wilson et al., 2019).

World Dental Federation (FDI) defined oral health as the ability to speak, smile, smell, taste, touch, chew, swallow and convey a range of emotions through facial expressions with confidence and without pain, discomfort, and disease of the craniofacial complex. It is also a fundamental component of health, physical, mental well-being, reflects the physiological, social and psychological attributes essential for quality of life (QoL) (Flyborg, Renvert, Sanmartin Berglund, & Anderberg, 2023).

The management of intellectually disabled populations, and maintaining their oral hygiene are a significant challenge for parents and care providers (Vermaire et al., 2021). Students can develop well if their teachers and primary caregivers apply appropriate roles to overcome students' obstacles in the self-care level to be independent in the future carrying out daily activity as well as oral hygiene. This can happen if using teaching methods and media greatly helps the students ability in terms of carrying out daily activity as well as oral hygiene (Jiu, 2023).

Community Health Nurses (CHN) frequently provides direct care for vulnerable and underserved populations. Workforce supply and worker characteristics, such as educational background, continue to be important considerations when assessing the capacity of the CHN workforce to effectively deliver public health services (Dieckmann, 2021). Community health nursing interventions are nursing activities that promote mental health, prevent mental illness assess dysfunction, and assist clients to regain, improve the coping abilities and prevent further disabilities (Elsaid El-Emam, Elshair, Mohamed Moussa, & Mohammed Mossad, 2021).

Aim of the Study

1. To assess primary caregivers and teachers of students with ID levels of knowledge regarding oral hygiene.

Method

Design

A descriptive cross-sectional study design was utilized to accomplish this study.

Setting

This study was carried out in all educational settings caring for students with mild ID with intelligence quotient (IQ) from (50-69) in Mansoura city. Four settings, three of which are located in western Mansoura city; El-Fikreya Governmental School, and three classes from integrated school of special needs affiliated to, El-

Khalig Governmental School, Meet Mahmoud Governmental School and Ahmed Lofty Governmental School located in eastern Mansoura city.

Participants

The study included three groups of participants as the following.

1. Students with intellectual disability.
2. Primary care givers of the recruited students.
3. Teachers of the same recruited students.

Inclusion criteria of students with ID.

- Have mild ID (I.Q 50-69).
- Both sex (boys and girls) students.
- Age from 6 to less than 18 years.
- Students with some degree of independence.

Exclusion Criteria of students with ID.

- Co-morbidity with other disabilities such as visual disability.
- Sever degree of attention deficit hyperactivity disorder (ADHD).
- Students with special oral conditions include (dental prostheses, oral appliances, and dentures).

Sampling

The researcher used purposive sampling technique to select all participants.

Tools for Data Collection

After the researchers reviewing the relevant literature, used the following three tools

Tool (I) Structured interview to identify demographic characteristics of students with intellectual disabilities and their primary care givers. The researchers used this questionnaire to identify demographic data of students with IDs and their primary care givers (age, gender) and socioeconomic level by updating socioeconomic status scale. This scale used for measuring family socioeconomic status (SES) (El-Gilany, El-Wehady, & El-Wasify, 2012) for health research in Egypt. It includes 7 domains with a total score out of 84. It classifies socioeconomic level into very low, low, middle, and high levels depending on the quartiles of the score calculated as the following:

- Very low socio-economic level. (0 - 20)
- Low socio-economic level. (21 - 41)
- Middle socio-economic level. (42 - 62)
- High socio-economic level. (63 - 84)

Tool (II) Self-administrated structured questionnaire to identify demographic and occupational characteristics for teachers of students with ID. The researchers used this questionnaire to identify demographic and occupational data of teachers (age, gender, residence, level of education, years of teaching experience, years of experience teaching students with intellectual disabilities, attended training courses related to the teaching process for students with intellectual disabilities).

Tool (III) Semi-structured interview to assess primary care givers and teachers ' level of knowledge regarding oral hygiene for students with ID. The researchers used this tool to assess knowledge of primary care givers and teachers regarding oral hygiene for students with ID such as definition, principle of oral hygiene, importance of oral hygiene.

The tool is composed of 41 questions and classified into 7 categories. One mark was awarded for each correct answer, and zero was awarded for wrong answer as the following:

1. Definition of oral health (It includes 1 item = 1 mark).
2. Definition of oral hygiene (It includes 1 item = 1 mark).
3. Principles of oral hygiene (It includes 7 items = 7 marks).
4. Importance of oral hygiene (It includes 6 items = 6 marks).
5. Signs and symptoms of oral hygiene neglecting (It includes 8 items = 8 marks).
6. Effects of oral hygiene neglecting on the health (It includes 10 items = 10 marks).
7. Effects of oral hygiene neglecting on daily activity (It includes 8 items = 8 marks).

Scoring System; the total score of knowledge ranged from 0 to 41 marks. According to the researcher's cut of point, the knowledge scores was categorized into three levels as:

- Poor. Scores less than 60% of total scores (0 < 24.6)
- Fair. Scores 60% to less than 80% of total scores (24.6 < 32.8)
- Good. Scores 80% and more of total scores (32.8 - 41)

Procedure

Preparatory phase. It included the following:

Administrative process. The researchers obtained approval to carried out the current study

according to the following lines of permissions: Faculty of Nursing, Mansoura University submitted an official letter to Directorate of Education, Mansoura city, followed to Directorate of Special Education, Mansoura city, the West and East Mansoura Educational District; lastly to the selected schools.

Ethical considerations. The researchers obtained approval from Research Ethics Committee, Faculty of Nursing, consequently obtained oral consents from primary caregiver and teachers of students with intellectual disabilities, after explaining the aim of the study and assured them that their data be treated anonymously and confidentially and used for research purpose only. In addition to each participant had the right to ask any question related to the study as well, withdraw at any time without given any reason.

Literature review. The researcher reviewed national and international literature regarding oral hygiene, textbooks and scientific revealed articles were a guide for developing the study tools.

Development of study tools. The researchers developed tools of data collection supported by reviewing the relevant literature.

A jury of five experts in community health nursing tested the **content validity** that evaluates how well the designed tools covers all relevant parts of the construct it aims to measure. They also tested the **face validity**, that is about whether a test appears to measure what it's supposed to measure. It is concerned with whether a measure seems clearly relevant and appropriate for what it's assessing and adequate for its purpose.

- The researchers conducted the pilot study which is preliminary study conducted on 10% (12) of the study participants (6 primary caregivers and 6 teachers) and excluded from the study. Pilot study uses the results to guide the methodology of the large-scale investigation and determine the feasibility of the study.
- Reliability. Cronbach's coefficient alpha tested the reliability of the study tools assessing primary caregivers and teachers' knowledge questionnaire, which value was 0.78.

Operational phase. It included the following steps:

Assessment. The researchers introducing themselves to the primary caregivers and teachers of students with ID and gave brief explanation of the study objective and obtained oral consent . Each interview lasted (25-30 minutes) to complete filling the study tools that depended on the

understanding and responses of the primary caregivers and teachers of students with ID through (Sunday and Tuesday)/week for three months at morning shifts 8.30 am to 1.00 pm.

The researchers used tools (I, II, and III) to identify students with IDs demographic characteristics, oral hygiene status, primary caregivers, teachers' socio-demographic characteristics and assess knowledge regarding oral hygiene.

Statistical analysis. The researchers sorted, coded, organized, categorized the data, then transferred into specially designed formats. Used Statistical Package for Social Science (SPSS) version 21/International Business Machines/IBM. Com, U.S.A to analyze the data and presented the data by using simple frequency tables. Mean and standard deviation for continuous variables and percentages for categorical variables.

Results

Table 1 clarifies that 42.6% of the studied students aged ranged from 14 to 16 years with a mean age of $12.46 \pm (2.3)$. About two thirds of them 63%, 66.7 were boys and got their daily care at home and school respectively. Students' mothers reported that 55.6% of intellectual disabled students had the first birth order among their siblings.

Table 2 shows that 48.1% of primary care givers were in the age group ranged from 35 to less than 40 years with a mean of $36.77 \pm (4.76)$ years. All of primary care givers (100%) are students' mothers. Only 7.4 % attended courses regarding caring for ID students. The educational level of 57.4% of mothers was secondary school, 16.7% primary school and 9.3% of them had technical and bachelor's degree.

Figure 1 reveals that 64.8% of the studied students and their primary care givers belonged to

the middle socioeconomic level with a mean socioeconomic level of $44.3 \pm (8.24)$.

Table 3 shows that 42.6% of the studied teachers aged from 35 to less than 40 years with a mean age of 36.20 ± 5.1665 years, 90.7% are women and 66.7% of them their resident in rural. Regarding educational level 83.3% were highly educated and 88.9% had less than 5 years' experience of teaching with a mean 2.092 ± 1.915 of years. Only 11.1% of teachers attended training courses on caring for students with ID.

Table 4 indicates that 90.7%, 96.3%, 94.4%, 88.9%, 96.3 and 92.6% of the studied primary caregivers had poor score level of knowledge regarding the definition of oral hygiene terms, the principles of oral hygiene, signs and symptoms of oral hygiene neglecting, effects of oral hygiene neglecting on the health and effects of oral hygiene neglecting on daily activities with a mean of $1.185 \pm (0.585)$, $1.037 \pm (0.19)$, $1.07 \pm (0.328)$, $1.148 \pm (0.45)$, $1.037 \pm (0.19)$ and $1.07 \pm (0.26)$ marks, respectively. Also, 100% of the studied primary caregivers had poor score level of knowledge regarding oral hygiene with a total mean of $6.555 \pm (1.003)$.

Table 5 indicates that 98.1%, 96.3%, 90.7%, 88.9% and 92.6% of the studied teachers had poor score level of knowledge regarding the definition of oral hygiene terms, the principles of oral hygiene, the importance of oral hygiene and the effects of neglecting oral on the health, signs and symptoms of neglecting oral hygiene and the effects of oral hygiene neglecting on daily activities with a mean of $1.0185 \pm (.136)$, $1.037 \pm (.190)$, $1.111 \pm (.3719)$, $1.148 \pm (.4517)$, $1.148 \pm (.4517)$ and $1.074 \pm (.264)$ marks, respectively. Also, 98.1% of the studied teachers had poor score level of knowledge regarding the oral hygiene with a total mean $6.48 \pm (.8846)$.

Table 1. Demographic characteristics for students with IDs

Items	N= 54	%
Age (in years):		
8 < 12 years	15	27.8
12 < 14 years	16	29.6
14 < 16 years	23	42.6
Mean \pm (SD) (Min – Max)	12.46 \pm (2.3) (8 – 16) year	
Sex		
Boy	34	63
Girl	20	37
Birth Order		
1 st	30	55.6
2 nd	17	31.5
3 rd	7	13

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Table 2. Demographic characteristics for primary care givers of students with IDs

Items	N= 54	%
Age (in years):		
25 < 30 years	5	9.3
30 < 35 years	9	16.7
35 < 40 years	26	48.1
40 < 45 years	14	25.9
Mean ± (SD) (Min – Max)	36.77 ± (4.76) (25-45 year)	
Gender:		
Women	54	100
Educational level:		
Illiterate	2	3.7
Read and write	2	3.7
Primary	9	16.7
Secondary	31	57.4
Technical institute	5	9.3
University graduate	5	9.3
Received courses to care for students with IDs	4	7.4
Primary care givers (Mothers)	54	100

Figure 1. Socioeconomic level for students with ID and their primary care givers (n =54).

Table 3. Demographic and occupational characteristics for teachers

Items	N= 54	%
Age (in years):		
25 < 30 years	7	13.0
30 < 35 years	10	18.5
35 < 40 years	23	42.6
40 < 5 years	14	25.9
Mean ± (SD)	36.20 ± (5.1665)	
Gender:		
Man	5	9.3
Women	49	90.7
Residence:		
Rural	36	66.7
Urban	18	33.3
Educational level:		
Technical high school	3	5.6
Average institute of two or five years	5	9.3
University education	45	83.3
Postgraduate studies	1	1.9
Years of experience in teaching for students with IDs		
< 5 years	14	25.9
≥ 5 years	40	74.1
Mean (SD)	8.055 ± (3.31)	
Received courses to care/ teach for students with IDs	6	11.1

Table 4. Score` level of knowledge regarding oral hygiene for primary care givers of students with ID (N=54).

Knowledge Items	Score levels						Mean ± (SD)
	Poor		Fair		Good		
	N	%	N	%	N	%	
Definition of oral health and oral hygiene (2 items)	49	90.7	0	0	5	9.3	1.185± (0.585)
Principles of oral hygiene (7 items)	52	96.3	2	3.7	0	0	1.037± (0.19)
Importance of oral hygiene (6 items)	51	94.4	2	3.7	1	1.9	1.07± (0.328)
Signs and symptoms of oral hygiene neglecting (8 items)	48	88.9	4	7.4	2	3.7	1.148± (0.45)
Effects of oral hygiene neglecting on the health (10 items)	52	96.3	2	3.7	0	0	1.037± (0.19)
Effects of oral hygiene neglecting on daily activities (8 items)	50	92.6	4	7.4	0	0	1.07 ± (0.26)
Total knowledge score (41 items)	54	100	0	0	0	0	6.555± (1.003)

Table 5. Score` level of knowledge regarding oral hygiene for teachers of students with ID (N=54)

Knowledge Items	Score levels						Mean± (SD)
	Poor		Fair		Good		
	N	%	N	%	N	%	
Definition of oral health and oral hygiene (2 items)	53	98.1	1	1.9	0	0	1.0185±(.136)
Principles of oral hygiene (7 items)	52	96.3	2	3.7	0	0	1.037± (.190)
Importance of oral hygiene (6 items)	49	90.7	4	7.4	1	1.9	1.111± (.3719)
Signs and symptoms of oral hygiene neglecting (8 items)	48	88.9	4	7.4	2	3.7	1.148± (.4517)
Effects of oral hygiene neglecting on the health (10 items)	49	90.7	5	9.3	0	0	1.092± (.2925)
Effects of oral hygiene neglecting on daily activities (8 items)	50	92.6	4	7.4	0	0	1.074± (.264)
Total knowledge score (41 items)	53	98.1	1	1.9	0	0	6.48± (.8846)

Note. Categories of score

Poor. less than 60% of total scores mark from (0 to less than 24.5 marks)

Fair. 60% to less than 80% of total scores mark from (24.6 to less than 32.7 marks)

Good. 80% and more of total scores mark from (32.8 to 41 marks)

Discussion

Students with intellectual disabilities have significant limitation in their intellectual functioning and adaptive behavior that reflected negatively on their everyday social and practical skills with dependency in self-care(Raghunath, 2023). That makes them differ from their normal peers. Therefore, they need more specific attention

and affection, in home and school environment (Prasetyowati & Isnanto, 2023).

The oral cavity has been described as “the window to general health.” According to Seymour, statements “You cannot have good general health without good oral health.” Maintaining optimal oral health can be quite challenging and remaining the most frequently cited unmet health need for students with ID (Abullais et al., 2020). Deshpande

et al., 2021; Tefera et al., 2023 studies concluded that students with intellectual disabilities have a high prevalence of poor oral hygiene as dental caries and periodontal diseases than general students due to lack of the cognitive ability to practice oral hygiene independently, and rely mainly on their surrounding for partial or even complete help (Shah et al., 2020; Tefera et al., 2023).

In relation to primary care givers, and teachers' level of knowledge regarding oral hygiene for students with ID the finding reveal that all of them had poor score level. This result is matched with (Abullais et al., 2020) who conducted study in Southern Region of Saudi Arabia, that aimed to assess the knowledge of the primary caregivers regarding oral health and revealed that one third of them had poor score. In addition to (Sireerat & Samnieng, 2018), (Shah et al., 2020) (Junnarkar, Tong, Hanna, Aishworiya, & Duggal, 2023), and (Teste et al., 2021) in Thailand, Al-Kharj Kingdom of Saudi Arabia, Singapore and France whose aim was similar in that they evaluate the oral hygiene knowledge of teachers and primary caregivers of students with ID, all agreed that caregivers and teachers had lack the necessary knowledge regarding basic oral care respectively.

May be because the majority of them did not attend training courses on oral hygiene for students with ID. The researchers interpret these results since most primary caregivers do not attend training courses on oral hygiene for students with ID. Improvement in care givers' practice with more compliance in oral hygiene mainly tooth-brushing habits based on changing of their knowledge after the completion of the intervention period. Improves students' oral health knowledge also regular dental visits reduce gingival inflammation and improve oral hygiene index. As in the systematic review of (Rojo, Brown, Barnes, Allen, & Miles, 2023) and (Waldron et al., 2019)

Conclusion

The researchers concluded that more all primary care givers and the majority of teachers of students with ID have poor level of knowledge regarding oral hygiene.

Recommendations

1. Design educational program to raise primary care givers and teachers of students with ID awareness' regarding oral hygiene practice and assured of regular dental visits.
2. Implement health educational programs regarding oral hygiene practice and the importance of regular dental checks to

primary caregivers and teachers of students with ID.

1. Provide training on oral hygiene practice for students with ID in homes and schools.
2. Train students with ID on oral hygiene practice.

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