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KNOWLEDGE OF EATING DISORDERS AMONG DENTAL PROFESSIONALS AND STUDENTS: A MALAYSIAN CROSS-SECTIONAL STUDY

Conocimientos sobre trastornos de la conducta alimentaria entre profesionales y estudiantes de odontología: Un estudio transversal en Malasia

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ABSTRACT

Background: Eating disorders (EDs) are serious mental health conditions characterized by disordered eating behaviors and excessive concern about body weight, shape, or food intake, affecting an individual's psychological, physical, and oral health. Oral health professionals are often the first to recognize these signs and symptoms, thus playing a crucial role in early detection and timely intervention. **Aim:** To assess the knowledge of dental students and professionals regarding the psychological, physical, and oral health implications of EDs.

Material and Methods: A cross-sectional study was conducted using a structured and validated questionnaire among 193 clinical-year dental students (DS) and 40 practicing dental professionals (DP) in Malaysia, selected through a convenience sampling method. The questionnaire consisted of three sections: demographic data, and assessments of knowledge and awareness regarding the psychological, physical, and oral health manifestations of EDs. Differences in participants' knowledge was assessed using Fisher's exact test and the Chi-square test. A *p*-value of <0.05 was considered statistically significant.

Results: Participants showed poor knowledge of certain EDs symptoms, including gender predilection (DS: 34.7%, DP: 35.0%), low body weight (DS: 41.5%, DP: 52.5%), parotid gland enlargement (DS: 28.5%, DP: 25.0%), and poor oral hygiene (DS: 36.3%, DP: 47.5%). Good level of knowledge was noted for associations with stress and anxiety (DS: 89.6%, DP: 90.0%), and mirror checking (DS: 78.2%, DP: 65.0%). Moderate knowledge was observed for social withdrawal (DS: 51.3%, DP: 50.0%), knuckle bruises, (DS: 51.3%, DP: 57.5%), low self-esteem (DS: 69.4%, DP: 72.5%), nail erosion, dental caries, hypersensitivity, angular cheilitis, and oral pain/burning(DS: 59.6%, DP: 55.0%). Significant differences between DS and DP were found for mirror checking ($p<0.05$), oral candidiasis ($p<0.05$), and symptoms such as burning sensation, taste changes, and unexplained oral pain ($p<0.05$).

Conclusions: DS and DP demonstrated varying levels of knowledge about EDs, with poor levels of knowledge on certain key physical and oral manifestations. Therefore, integrating education on EDs into dental training is essential to support early diagnosis and timely referral.

Keywords: *Feeding and eating disorders; Students, dental; Dentists; Health, oral; Knowledge; Awareness.*

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RESUMEN

Introducción: Los trastornos de la conducta alimentaria (TCA) son afecciones graves de salud mental caracterizadas por conductas alimentarias desordenadas y una preocupación excesiva por el peso, la figura o la ingesta de alimentos, lo que afecta la salud psicológica, física y bucal de la persona. Los profesionales de la salud bucal suelen ser los primeros en reconocer estos signos y síntomas, desempeñando así un papel crucial en la detección temprana y la intervención oportuna. **Objetivo:** Evaluar los conocimientos de estudiantes y profesionales de odontología sobre las implicaciones psicológicas, físicas y bucales de los TCA.

Materiales y métodos: Se realizó un estudio transversal mediante un cuestionario estructurado y validado con 193 estudiantes de odontología de primer año y 40 profesionales de odontología en ejercicio en Malasia, seleccionados mediante un muestreo por conveniencia. El cuestionario constaba de tres secciones: datos demográficos y evaluaciones de conocimientos y concienciación sobre las manifestaciones psicológicas, físicas y bucales de los TCA. Las diferencias en los conocimientos de los participantes se evaluaron mediante la prueba exacta de Fisher y la prueba de chi-cuadrado. Se consideró estadísticamente significativo un valor $p< 0,05$.

Resultados: Los participantes mostraron escaso conocimiento de ciertos síntomas de los trastornos de la conducta alimentaria (TCA), como la predisposición por sexo (DS: 34,7%, DP: 35,0%), el bajo peso corporal (DS: 41,5%, DP: 52,5%), el agrandamiento de la glándula parótida (DS: 28,5%, DP: 25,0%) y la higiene bucal deficiente (DS: 36,3%, DP: 47,5%). Se observó un buen nivel de conocimiento en cuanto a las asociaciones con el estrés y la ansiedad (DS: 89,6%, DP: 90,0%) y la revisión compulsiva frente al espejo (DS: 78,2%, DP: 65,0%). Se observó un conocimiento moderado sobre el retraimiento social (DS: 51,3%, DP: 50,0%), las contusiones en los nudillos (DS: 51,3%, DP: 57,5%), la baja autoestima (DS: 69,4%, DP: 72,5%), la erosión ungueal, las caries dentales, la hipersensibilidad, la queilitis angular y el dolor/ardor bucal (DS: 59,6%, DP: 55,0%). Se encontraron diferencias significativas entre DS y DP en cuanto a la comprobación frente al espejo ($p< 0,05$), la candidiasis oral ($p<0,05$) y síntomas como la sensación de ardor, las alteraciones del gusto y el dolor bucal inexplicable ($p<0,05$).

Conclusiones: DS y DP demostraron distintos niveles de conocimiento sobre los trastornos de la conducta alimentaria (TCA), con un conocimiento deficiente sobre ciertas manifestaciones físicas y bucales clave. Por lo tanto, integrar la educación sobre los TCA en la formación odontológica es fundamental para apoyar el diagnóstico precoz y la derivación oportuna.

Palabras clave: *Trastornos de Alimentación y de la ingestión de alimentos; Estudiantes de odontología; Odontólogos; Salud bucal; Conocimiento; Concienciación.*

INTRODUCTION

Eating disorders (EDs) are debilitating health conditions that present a significant public health challenge, marked by abnormal and harmful eating behaviors.[1] These disorders contribute to considerable morbidity and mortality, affecting various body systems, including physical health, mental wellbeing, and oral health.[1] The most common EDs are anorexia nervosa and bulimia, both arise from a complex interaction of genetic, environmental, psychological, and cultural factors.[2]

The global prevalence of EDs has been progressively rising, particularly in regions experiencing swift economic and social transitions such as Southeast Asia.[3] In Malaysia, previous studies have identified the risk of EDs occurrence among university students to be 13.8% and 13.9%.[4,5] This rate surpasses the prevalence reported in neighboring countries, including Indonesia (7.4%), Thailand (6.8%), and Vietnam (9.1%).[4,5] Recent surveys suggest that over 50% of Malaysians show symptoms of EDs, with significantly higher rates of positive eating pathology screenings among Malays compared to Chinese individuals.[3,6]

This trend may be attributed to Malaysia's transition to an upper-middle-income nation and associated shifts in dietary habits and physical activity patterns.[3,6] Additionally, factors such as Westernization, the influence of social and traditional media, academic stress, internet addiction, and reliance on convenience foods also contribute to this issue.[7]

EDs manifest through a wide spectrum of systemic symptoms and are associated with numerous risk factors such as obesity, malnutrition, reduced bone density, mood disorders, and suicidal ideation. These patients exhibit a complex presentation, often lacking prominent symptoms in the early stages of the illness, with most remaining unaware of their condition.[8] This asymptomatic or subtle onset complicates early detection by primary care physicians, as systemic signs are either mild or absent. Likewise, the oral health implications of EDs are substantial, including enamel erosion, dry lips, burning tongue, parotid gland enlargement, xerostomia, dental caries, and periodontitis.[9] In many instances, oral symptoms precede systemic manifestations, positioning dentists as the first healthcare providers to identify these patients, thereby playing a crucial role in the early detection of EDs.[10,11]

A recent systematic review emphasized the importance of increasing awareness among dental students regarding the identification of the psychological, physical and oral health implications of EDs.[12]

However, much of the current research focuses on the impact of EDs behaviors on oral health, with limited litera-ture addressing the knowledge and training provided to dentists and dental students.[1] Despite the significant prevalence of EDs within the Malaysian population, research remains limited regarding the knowledge of dental students and professionals about EDs. Moreover, there is insufficient data on the necessity of integrating these topics into dental curricula to ensure a comprehensive approach to the diagnosis and management.

Hence, this study aims to assess the knowledge among dental students and professionals concerning the oral health, physical, and psychological implications of EDs.

MATERIALS AND METHODS

Study Design, Settings and Duration

This cross-sectional study was conducted over a period of six months, from January 2024 to June 2024, among Bachelor of Dental Surgery clinical-year students from both private and public universities, as well as practicing dental professionals in Malaysia.

Ethical clearance

The research received approval from the SEGI Ethical Committee (SEGIEC/SR/FOD/88/2024-2025) and used a structured questionnaire to gather quan-titative data. The study was conducted in accordance with the declaration of Helsinki and reported according to STROBE guidelines.

Inclusion and Exclusion criteria

-All clinical-year dental students and practicing dental professionals, including dental specialists, were included in the study, while those who did not provide consent were excluded.

Data Collection

A convenience sampling method was utilized, with the survey distributed online via Google Forms through WhatsApp and email to clinical-year dental students from both public and private institutions and practicing dental professionals in Malaysia. Information about the

study was presented on the first page of the Google Forms, with a consent box at the end requesting participants' agreement to participate. Data collection commenced only after participants provided informed consent by selecting the consent box.

The questionnaire was divided into three sections: the first gathered demographic information, the second assessed knowledge of the physical and psychological implications of EDs, and the third focused on the oral health impacts associated with these disorders. To ensure anonymity and encourage honest responses, personal identifiers such as names and emails were not collected. Only participants who completed the entire questionnaire were included in the statistical analysis, while incomplete submissions were excluded.

Pilot study

An initial pilot study was conducted involving 20 participants (10 dental students and 10 dental professionals). Participants completed the questionnaire and provided feedback. The pilot study revealed that approximately 82% of respondents were aware of EDs.

Based on this finding, the minimum required sample size was calculated to be 226 using the formula $N = (Z\alpha)^2pq/d^2$, where $Z\alpha = 1.96$, $p = 0.82$, $q = (1 - p) = 0.18$, and $d = 0.05$. Pilot participants were assigned codes based on their initials, and their demographic details, including names and emails, were recorded separately to ensure they were not included in the main survey.

Questionnaires Validation

The questionnaire was developed based on a review of the literature and previously published studies, with input from subject experts.[13-17] A pilot test demonstrated satisfactory content and face validity. To ensure further content validity, the questionnaire was reviewed by the subject experts, who evaluated it using Lawshe's Criteria, resulting in a content validity ratio of 0.85, indicating strong content validity.

Bias

To reduce bias from convenience sampling, the survey was distributed via mailing lists, WhatsApp groups, and relevant professional organizations to reach a diverse participant pool. Participation was voluntary, anonymous, and open for six months to encourage broader and more honest responses.

Statistical analysis

Descriptive statistics were reported as frequencies and percentages. Knowledge levels

Table 1

Shows the demographic details of study participants and their awareness level

Dental Students N (%)			Dental professionals N (%)		Total
DS 3 Year		74 (32)	General Dental Practitioner	16 (6.9)	233
BDS 4 Year		61 (26)			
BDS 5 Year		58 (25)	Dental Specialists	24 (10.3)	
N (%)		193(83)		40 (17.2)	
Age		23.08±1.434		32.63±9.301	24.65±5.312
Gender	Males	48 (25)		9 (22.5)	57 (24.5)
	Females	145 (75)		31 (77.5)	176 (75.5)

(mean±SD): Standard Deviation.

Table 2

shows the participants' knowledge about physical and psychological manifestations of EDs (Whether the statement is true or false is indicated in parentheses).

Physical and psychological manifestations	Dental Students n (%)	Dental Professionals n (%)		*p*-value
EDs are equally prevalent in both females and males. (False)	Agree	90 (46.6)	18 (45.0)	0.961[a]
	Disagree	67 (34.7)	14 (35.0)	
	Don't know	21 (10.9)	4 (10.0)	
	Unsure	15 (7.8)	4 (10)	
Adolescents are more frequently affected by EDs than adults. (True)	Agree	127 (65.8)	28 (70.0)	0.848[a]
	Disagree	35 (18.1)	5 (12.5)	
	Don't know	12 (6.2)	3 (7.5)	
	Unsure	19 (9.8)	4 (10.0)	
Individuals with EDs always exhibit low body weight (False)	Agree	63 (32.6)	11 (27.5)	0.629[a]
	Disagree	80 (41.5)	21 (52.5)	
	Don't know	22 (11.4)	3 (7.5)	
	Unsure	28 (14.5)	5 (12.5)	
People with EDs tend to have low self-esteem (True)	Agree	134 (69.4)	29 (72.5)	0.967[a]
	Disagree	18 (9.3)	3 (7.5)	
	Don't know	17 (8.8)	4 (10.0)	
	Unsure	24 (12.4)	4 (10.0)	
EDs are associated with higher levels of stress and anxiety (True)	Agree	173 (89.6)	36 (90.0)	0.789[a]
	Disagree	5 (2.6)	0 (0.0)	
	Don't know	5 (2.6)	1 (2.5)	
	Unsure	10 (5.2)	3 (7.5)	
Individuals with EDs typically avoid social gatherings (True)	Agree	99 (51.3)	20 (50.0)	0.829[b]
	Disagree	36 (18.7)	6 (15.0)	
	Don't know	20 (10.4)	6 (15.0)	
	Unsure	38 (19.7)	8 (20.0)	
Affected individuals often prefer to eat alone (True)	Agree	106 (54.9)	26 (65.0)	0.537[b]
	Disagree	13 (6.7)	2 (5.0)	
	Don't know	42 (21.8)	5 (12.5)	
	Unsure	32 (16.6)	7 (17.5)	
People with EDs tend to frequently examine themselves in mirrors (True)	Agree	151 (78.2)	26 (65.0)	<0.05[a]
	Disagree	5 (2.6)	5 (12.5)	
	Don't know	16 (8.3)	3 (7.5)	
	Unsure	21 (10.9)	6 (15.0)	
Patients with EDs may develop rough, dry skin covered by fine, lanugo-like body hair (True)	Agree	97 (50.3)	19 (47.5)	0.575[b]
	Disagree	9 (4.7)	3 (7.5)	
	Don't know	49 (25.4)	13 (32.5)	
	Unsure	38 (19.7)	5 (12.5)	
Bruises, abrasions, and calluses may be observed on the knuckles and dorsal surfaces of the hands in those with EDs (True)	Agree	99 (51.3)	23 (57.5)	0.911[b]
	Disagree	7 (3.6)	1 (2.5)	
	Don't know	50 (25.9)	9 (22.5)	
	Unsure	37 (19.2)	7 (17.5)	

a: Fisher's exact test. **b:** Chi square test, Level of significance at $p<0.05$

Table 2 continues on the next page →

Physical and psychological manifestations	Dental Students n (%)	Dental Professionals n (%)		*p*-value
Individuals with EDs may experience brittle hair that easily falls out (True)	Agree	129 (66.8)	22 (55.0)	0.241[a]
	Disagree	6 (3.1)	0 (0.0)	
	Don't know	28 (14.5)	8 (20.0)	
	Unsure	30 (15.5)	10 (25.0)	
Nail erosions and inflammation may occur in individuals suffering from EDs (True)	Agree	103 (53.4)	24 (60.0)	0.087[b]
	Disagree	6 (3.1)	4 (10.0)	
	Don't know	43 (22.3)	4 (10.0)	
	Unsure	41 (21.2)	8 (20.0)	

a: Fisher's exact test. **b:** Chi square test, Level of significance at $p<0.05$

Table 3

Shows the participants' knowledge about oral manifestations of eating disorders (Whether the statement is true or false is indicated in parentheses).

Oral Manifestations of EDs	Dental Students n (%)	Dental Professionals n (%)		*p*-value
Individuals with EDs often exhibit poor oral hygiene. (True)	Agree	70 (36.3)	19 (47.5)	0.444[a]
	Disagree	52 (26.9)	11 (27.5)	
	Don't know	28 (14.5)	3 (7.5)	
	Unsure	43 (22.3)	7 (17.5)	
Caries are more commonly observed in individuals with EDs. (False)	Agree	107 (55.4)	23 (57.5)	0.205[a]
	Disagree	27 (14.0)	10 (25.0)	
	Don't know	24 (12.4)	3 (7.5)	
	Unsure	35 (18.1)	4 (10.0)	
Individuals with EDs frequently experience hypersensitivity of their teeth to cold and heat (True)	Agree	116 (60.1)	26 (65.0)	0.410[a]
	Disagree	13 (6.7)	5 (12.5)	
	Don't know	34 (17.6)	4 (10.0)	
	Unsure	30 (15.5)	5 (12.5)	
Angular cheilitis and erythematous lesions are commonly found in EDs (True)	Agree	102 (52.8)	20 (50.0)	0.902[a]
	Disagree	13 (6.7)	3 (7.5)	
	Don't know	35 (18.1)	6 (15.0)	
	Unsure	43 (22.3)	11 (27.5)	
Injuries, bruises, and abrasions may occur on the soft palate of patients with EDs (True)	Agree	107 (55.4)	24 (60.0)	0.119[a]
	Disagree	8 (4.1)	5 (12.5)	
	Don't know	37 (19.2)	5 (12.5)	
	Unsure	41 (21.2)	6 (15.0)	

a: Chi square test. **b:** Fisher's exact test, Level of significance at $p<0.05$

Table 3 continues on the next page →

Oral Manifestations of EDs	Dental Students n (%)	Dental Professionals n (%)		*p*-value
Individuals with EDs have an increased risk of developing oral candidiasis (True)	Agree	96 (49.7)	17 (42.5)	<0.05[a]
	Disagree	5 (2.6)	5 (12.5)	
	Don't know	45 (23.3)	7 (17.5)	
	Unsure	47 (24.4)	11 (27.5)	
Individuals with EDs have burning sensation in the mouth, changes in taste, and unexplained oral pain (True)	Agree	115 (59.6)	22 (55.0)	<0.05[a]
	Disagree	4 (2.1)	5 (12.5)	
	Don't know	38 (19.7)	4 (10.0)	
	Unsure	36 (18.7)	9 (22.5)	
Painless enlargement of the parotid glands is observed in cases of EDs (True)	Agree	55 (28.5)	10 (25.0)	0.198[a]
	Disagree	11 (5.7)	5 (12.5)	
	Don't know	67 (34.7)	9 (22.5)	
	Unsure	60 (31.1)	16 (40.0)	
Loss of tooth structure (erosion) is evident in individuals with EDs (True)	Agree	133 (68.9)	26 (65.0)	0.698[b]
	Disagree	11 (5.7)	4 (10.0)	
	Don't know	17 (8.8)	4 (10.0)	
	Unsure	32 (16.6)	6 (15.0)	
Individuals with EDs may	Agree	120 (62.2)	24 (60.0)	0.908[b]
	Disagree	7 (3.6)	1 (2.5)	
	Don't know	24 (12.4)	4 (10.0)	
	Unsure	42 (21.8)	11 (27.5)	

a: Chi square test. **b:** Fisher's exact test, Level of significance at $p<0.05$

were categorized as poor (<50%), moderate (50%-75%), and good (>76%-100%) according to the percentage of correct responses, following the criteria used in previous studies.[18-20] Differences in knowledge levels between DS and DP were evaluated using Fisher's exact test and the Chi-square test, with statistical significance set at $p<0.05$. All analyses were performed using Statistical Package for the Social Sciences Version 28.0 (IBM Corp, Armonk, NY).

RESULTS

A total of 350 invitations were sent via email and WhatsApp to dental students and professionals in Malaysia.

Of these, 233 participants completed the survey, yielding a response rate of 66.57%, comprising 193 dental students (DS) and 40 dental practitioners (DP). The mean age of DS was 23.08 years, while the mean age of DP was 32.63 years. A significant female predominance (75.5%) was noticed (Table 1).

Both DS (46.6%) and DP (45.0%) concurred that EDs are equally prevalent among both genders (Table 2). Participants demonstrated poor to moderate knowledge of certain physical and psychological manifestations of EDs, such as low body weight (DS: 32.6%, DP: 27.5%), avoidance of social gatherings (DS: 51.3%, DP: 50.0%), preference for eating in solitude (DS: 54.9%, DP: 65.0%), rough, dry skin with lanugo-like hair (DS: 50.3%,

DP: 47.5%), visible bruises, abrasions, and calluses on the hands (DS: 51.3%, DP: 57.5%), brittle hair prone to falling out (DS: 66.8%, DP: 55.0%), nail erosions with inflammation (DS: 53.4%, DP: 60.0%), higher prevalence among adolescents compared to adults (DS: 65.8%, DP: 70.0%), and low self-esteem (DS: 69.4%, DP: 72.5%).

In contrast, good knowledge was demonstrated regarding the association of EDs with increased stress and anxiety (DS: 89.6%, DP: 90.0%) and frequent mirror checking (DS: 78.2%, DP: 65.0%) (Table 2).

A statistically significant difference was observed in the perception that individuals with EDs frequently check their appearance in mirrors (p<0.05), while other aspects of knowledge showed no significant differences between the two groups.

A comparable level of knowledge between DS and DP was observed (Table 2). Less than half of the participants had poor knowledge on the associations between poor oral hygiene (DS: 36.3%, DP: 47.5%), swelling of the parotid glands (DS: 28.5%, DP: 25.0%), and an increased risk of developing oral candidiasis, which was statistically significant between the two groups (DS: 49.7%, DP: 42.5%; p<0.05) (Table 3).

Nearly half of the participants demonstrated moderate knowledge on the oral manifestations of EDs. This includes increased caries risk (DS: 55.4%, DP: 57.5%), angular cheilitis and erythematous lesions (DS: 52.8%, DP: 50.0%), bruises and abrasions in the soft palate (DS: 55.4%, DP: 60.0%), injury to the soft palate (DS: 55.4%, DP: 60.0%) (Table 3).

A statistically significant difference was observed between the two groups for symptoms such as oral burning, taste changes, and unexplained oral pain (DS: 59.6%, DP: 55%, p< 0.05). Moderate knowledge was also demonstrated regarding the association of EDs with loss of tooth structure due to erosion (DS: 68.9%, DP: 65.0%), dental hypersensitivity (DS: 60.1%, DP: 65.0%), and xerostomia (DS: 62.2%, DP: 60.0%) (Table 3).

DISCUSSION

EDs are recognized as debilitating mental illnesses, with a notable rise in incidence across Asian countries. According to the National Eating Disorders Association, more than 70 million individuals globally are estimated to suffer from EDs, yet many do not seek timely treatment.[21,22]

Previous studies have reported an increase in cases of EDs among Malaysians possibly attributed to shifts in dietary habits and physical activity patterns, along with the stigma associated with Increased body weight.[3,6,21] Therefore, the current study aimed to assess the knowledge of EDs among DS and DP in Malaysia.

In our study, fewer than 47% of participants agreed that EDs affect both genders equally. While these disorders are more prevalent in females, the morbidity rate is notably higher in males.[23,24] Recent findings suggest that the gender gap is narrowing,[4] with males increasingly exhibiting symptoms of muscle dysmorphia or a desire for increased leanness and muscle mass, rather than thinness. Social stigma and underreporting in males may contribute to the misconception that EDs are primarily a female issue.[25]

Another European study has concluded that this gender difference in prevalence of EDs could be due to dynamic interactions between biology and the environment.[26]

The majority of participants concurred that

adolescents are more frequently affected by EDs than adults. Studies show that EDs often emerge during adolescence, a phase marked by physical, emotional, and psychological changes that increase vulnerability. Mangweth-Matzek *et al.*,[27] found that gradual decreasing trend in the cases of EDs with age due to increasing awareness about these disorders. However, EDs can develop at any age, with many adults either continuing symptoms from adolescence or developing them later.[1,2]

More than 50% of participants responded positively to questions regarding the physical manifestations such as calluses on the knuckles, rough, dry skin covered with lanugo-like body hair and brittle hair that easily falls out. Patients who engage in self-induced vomiting often develop calluses on their knuckles, known as Russell's sign. These findings are consistent with a previous study conducted among Polish dentists, where the percentage was slightly higher.[28]

Lanugo-like body hair typically develops as the body's adaptive response to extreme malnutrition or significant weight loss, serving to preserve warmth in the absence of sufficient body fat.[29] Additionally, malnutrition often leads to dry, rough skin due to the lack of essential nutrients required for maintaining healthy skin integrity.

Higher agreement rates were observed for the association of EDs with psychological issues such as low self-esteem, increased stress and anxiety, and frequent mirror checking.Low self-esteem drives individuals to seek validation through controlling their body image, which can lead to extreme dieting, binge eating, or purging. Similarly, heightened stress and anxiety are due to constant preoccupation with weight, appearance, and eating rituals. Frequent mirror checking reflects an obsessive concern with body shape and appearance, reinforcing negative body image and worsening psychological distress. These factors are interrelated, creating a complex web of emotional and behavioral issues that perpetuate EDs.[7] In the present study, over 60% of participants demonstrated moderate knowledge regarding the link between tooth sensitivity and dental erosion, though their knowledge of other oral manifestations of EDs was poor. A similar trend was noted in another study, where dental professionals identified tooth hypersensitivity and erosion correctly.[30]

Tooth erosion is often linked to the purging behavior and typically becomes apparent within six months on the palatal surfaces of the anterior maxillary teeth. In severe cases, erosion can affect the occlusal surfaces of mandibular posterior teeth, potentially extending to the pulp. This erosion results in heightened tooth sensitivity due to dentin exposure.[31] Fewer than half of the participants concurred on the association of EDs and parotid gland swelling. This observation was corroborated by other researchers, who also found that less than 50% of professionals could not associate parotid dysfunction with EDs.[16, 28] These symptoms are associated with self-induced vomiting, which stimulates the parotid glands, leading to their enlargement and contributing to hyposalivation or xerostomia.[32]

Around 50% of participants agreed upon the association of caries with EDs. However, only 10-15% have shown their doubt on this association. These findings coincide with the results of previous research conducted in North Carolina, as caries occurrence is multifactorial.[30] Differences in caries rates from disordered eating may stem from oral hygiene, diet, nutrition, genetics, fluoride exposure, and certain medications.[16] The correlation between oral candidiasis and EDs

remains contentious, with fewer than 50% of participants recognizing this association.

Although current literature does not comprehensively address this relationship, a recent study attributed it to disruptions in oral microflora caused by purging behaviors, leading to an increase in Candida. This can result in symptoms such as a burning sensation, altered taste, and injuries to the soft palate.[33]

The lower reported rates of clinical implications related to EDs indicate a deficiency in knowledge among both participant groups, likely due to limited educational training and a lack of clinical exposure to ED patients. A survey of dental and dental hygiene program directors in the United States highlighted the need for enhanced training to better equip oral health professionals for comprehensive patient care.[16]

Similarly, Presskreischer *et al.*,[1] reported that inadequate training adversely affected the ability of oral healthcare professionals to conduct early identification, treatment, and referral of individuals with EDs. The statistically significant differences obser-ved for few findings between the two groups could be attributed to variations in modes of knowledge acquisition. DS may benefit from structured curriculum content on EDs, whereas DP often gain knowledge through clinical exposure and continuing professional development (CPD) programs. However, the overall low level of knowledge observed in both groups suggests that neither curriculum-based learning nor clinical experience alone is sufficient.

An integrated approach that combines theoretical instruction with practical training and CPD activities may enhance understanding and support the early recognition of EDs in dental settings.[34,35]

Limitations and future recommendations

The present study provides preliminary data on an under-researched area by assessing knowledge of EDs among DS and DP in Malaysia using a validated questionnaire. These findings can guide stakeholders in integrating relevant training on EDs into dental curricula and in CPD. However, the study has several limitations, including its regional focus on undergraduate DS and DP, without the inclusion of postgraduate DS. Additionally, the use of convenience sampling on a relatively small cohort of DS and DP limits the generalizability of the findings to the broader population. Therefore, future research should incorporate larger sample sizes, include clinical interviews across both undergraduate and postgraduate DS and DP, and consider a broader range of variables related to different types of EDs to provide more comprehensive insights.

CONCLUSIONS

This study highlights a lack of knowledge regarding certain key physical manifestations of EDs, particularly their impact on oral health, among dental students and professionals despite their pivotal role in early identification during routine dental care.

Therefore, the implementation of targeted educational programs to enhance understanding, along with the development of guidelines for oral health professionals on recognizing, managing, and referring patients with EDs, is recommended.

CONFLICT OF INTERESTS

The authors declare no competing interests with regards to the authorship and/or publication of this article.

ETHICS APPROVAL

The research received approval from the SEGI Ethical Committee (SEGIEC/SR/FOD/88/2024-2025). All participants provided written informed consent prior to enrolment.

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AUTHORS' CONTRIBUTIONS

Suresh Kandagal Veerabhadrappa: Conceptualization, Methodology, Formal Analysis, Writing – Original Draft, Writing – Review & Editing, Supervision, Resources, Data Curation.
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Vipin Kailasmal Jain: Writing – Original Draft, Formal Analysis (Statistical Analysis).
Vivek Vijay Gupta: Writing – Original Draft, Resources, Data Curation.
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