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Prevalence of Obsessive Compulsive Disorder and Its Linkage with Emotional Disturbances in Dental Healthcare Professionals: A Cross-sectional Survey

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ABSTRACT

Objectives: This study aimed to examine the incidence of obsessive-compulsive disorder (OCD) symptoms and its associated emotional disturbances in dental healthcare workers in Jordan.

Material and Methods: This study was based on a cross-sectional online survey. A total of 787 participants were included 354 (44%) were dentists (general practitioners and specialists) and 433 (56%) were dental supportive staff (dental assistants, dental hygienists, and dental technicians). The survey incorporated two instruments for a survey: Dimensional Obsessive-Compulsive Scale and Beck Anxiety Inventory (BAI).

Results: This study included 787 dental healthcare personnel of which 354 (44%) were dentists and 433 (56%) were dental supportive staff. The data revealed that emotional disturbances directly linked to OCD symptoms showed a significant positive correlation ($p < 0.001$). Dental supportive staff showed higher scores on contamination-related obsessions than dentists. However, dentists experienced greater responsibility-related obsessions. Between dentists and dental supportive staff, there was no significant difference in anxiety based on their professional roles.

Conclusions: The results of this study showed evidence of how anxiety creates OCD symptoms which appear most prominently in contamination-related obsessions among dental supportive staff and responsibility-related obsessions among dentists, thus requiring specific mental health treatment approaches. Furthermore, it was also observed that women with personal and family histories of psychiatric disorders were the most vulnerable to exacerbating the OCD symptoms and anxiety level among both dentist and dental supporting-staff members.

Keywords: Dentists, Dental supportive staff, Obsessive-compulsive disorder, Anxiety.

1. Introduction

The transmission of COVID-19 turned into a worldwide pandemic, dramatically increasing mortality rates among the infected while having a significant negative effect on mental health (1, 2). Apart from the

possible physiological effects of the virus, the pandemic aggravated psychological ailments like anxiety and obsessive-compulsive disorder (OCD), which increased emotional suffering in people, including healthcare providers (3). OCD is a chronic neuropsychiatric

disorder that is defined by intrusive and disturbing thoughts (obsessions) and repetitive behaviours or mental acts (compulsions) that are carried out to reduce anxiety. Behaviours may vary from extra checking to handwashing repeatedly and interfering with daily functioning (3,4). The World Health Organization (WHO) places OCD on the sixth rank of most prevalent psychiatric disorders, reflecting its high impact on mental health and overall well-being (5).

Although OCD directly does not raise mortality, if left untreated, symptoms can significantly impair a patient's quality of life. Osborn surveyed approximately 560 patients and found that 10% of OCD patients experience progressive deterioration, which most often leads to a higher risk for depression, substance abuse, and suicide ideation (6). Major life events, such as marriage or giving birth, may also participate in worsening symptoms of OCD, particularly contamination-based OCD (7). Repeated exposure to stress, compulsive personality, and increased anxiety can also cause severe physical health issues (7).

Not considering the need for OCD treatment can also impact the capacity to live a healthy lifestyle, resulting in negative impacts on physical health, such as social-interaction difficulties, and interference with daily functioning. The provision of OCD therapy and treatment methods significantly diminishes these risks and simultaneously improves patient's life quality (7,8).

Healthcare professionals, particularly those working under stressful conditions, have unique problems with anxiety and OCD. Medical and dental programs obtain their reputation from extensive academic coursework and clinical patient responsibilities that lead students to develop higher stress and anxiety levels plus depression symptoms (8). The dental profession exposes individuals to psychological stressors that can trigger or worsen OCD symptoms. Dental professionals handle high-risk environments with direct contact with body fluids, aerosols, and potential contamination, and hence are more susceptible to contamination-related obsessions (8). These obsessions may manifest as over-sterilization of instruments, excessive organization of clinical equipment, and excessive handwashing beyond infection-control standards. In severe cases, these compulsive behaviours disturb working efficiency, patient care, and overall professional functioning (8). The American Dental Association conducted a survey to assess the health and wellness of dentists, and the results

revealed that 11% of dentists who participated in the survey showed some degree of depression, 6% experienced anxiety disorder, and 4% suffered from frequent panic attacks (9). The COVID-19 pandemic further increased these psychological problems, as dental professionals were exposed to increased risk of exposure and increased infection control measures. As SARS-CoV-2 is spread through respiratory droplets, contaminated surfaces, saliva, blood, and aerosols, dental clinics inevitably present a high risk of viral transmission (10). The increased risk prompted the development of germophobia among healthcare professionals in the form of excessive fear of contamination and compulsive hygiene behaviours (7). Excessive handwashing, excessive use of sanitizers, and avoidance of clinical procedures were the norm among the majority of dental professionals, negatively impacting their mental status and professional responsibilities (11).

Previous studies have shown the prevalence of OCD symptoms among healthcare workers. SoleimanvandiAzar et al. (12) reported that 29% of medical professionals developed anxiety- and contamination-related OCD symptoms during the pandemic. Kurhan et al. reported that healthcare professionals were significantly more likely to develop anxiety-based OCD symptoms compared to non-healthcare professionals (13). Mrklas et al. (14) found that few people outside healthcare had worse OCD symptoms, probably because they were more worried about their health and did not know as much about preventing measures for infection. Even so, we do not have any evidence about how common or severe OCD is among dentists. The available research shows minimal emphasis on both the frequency and intensity of OCD symptoms among dental practitioners. Exposed to contamination-related OCD due to their line of work, dentists, dental assistants, hygienists, and technicians are among the most vulnerable to contamination-related OCD during the pandemic, because they are requested to adhere to strict infection-control practices while dealing with heightened anxiety and stress.

This study seeks to address this gap by investigating the prevalence of OCD symptoms among Jordanian dental practitioners with a focus on contamination and responsibility/control-type obsessions. The study also seeks to investigate the relationship between OCD symptoms, levels of anxiety, gender, and family or

personal history of psychiatric disorders. Examination of these factors in the study emphasizes the current knowledge of the psychological effect of the pandemic on dental professionals and highlights the necessity of targeted mental-health interventions for these professionals.

2. Materials and Methods

2.1 Study Design

A cross-sectional survey was designed to explore the prevalence of OCD and its linkage to emotional disturbances in dental healthcare professionals, residing in Jordan from December 2021 to June 2022. An online survey was sent to practicing dental practitioners (general practitioners and specialists) and their supportive staff (dental assistants, dental hygienists, and dental technicians).

2.2 Ethical Approval

The study was conducted in compliance with the World Medical Association Declaration of Helsinki of 1975 (revised in 1983). Approval for the study protocol was obtained from the Institutional Review Board (IRB) at Jordan University of Science and Technology (JUST).

2.3 Recruitment and Sample Size

An online survey questionnaire was distributed among dental practitioners and dental supporting staff. The respondents were selected by employing a random-sampling method in which every participant has an equal possibility of being selected. The sample size was calculated by using G*power analysis. For 5% Type-I error ($\alpha = 0.05$) and approximately 80% power at a 95% confidence level, the effect size (d, effect size) was taken as 0.5, for medium effect; i.e., the 0.5-unit difference was predicted to be statistically significant. Based on these values, the optimal sample size was estimated as 635, using the following equation (the Z-value for 95% confidence level was 1.96):

$$n = Z^2 \times \frac{\sigma^2}{d^2}$$

$$n = (1.96)^2 \times \frac{(0.7)^2}{(0.5)^2} = 635.$$

Based on these values, the optimum size of the sample was computed as 635. Based on the minimum sample size, the research was conducted with 787 sample members by considering the potential issues that may be incurred during the process of the research.

2.4 Study Population and Sampling

The sample was obtained using a random-sampling technique, hence providing each of them with an equal opportunity of being selected. The sample size of 787 sample members (dental supporting staff, specialists, and general dental practitioners) was ultimately settled from the optimum sample size of 635, leaving some leeway for possible data loss or incomplete responses during the study.

2.5 Study Instruments

Data was collected by using the Dimensional Obsessive-Compulsive Scale (DOCS) and Beck Anxiety Inventory (BAI).

2.5.1 Dimensional Obsessive-Compulsive Scale (DOCS)

The Dimensional Obsessive-Compulsive Scale was created to acknowledge the restriction to measure the existing symptoms of OCD since the Yale-Brown Obsessive-Compulsive Scale (Y-BOCS), generally employed to measure the symptoms of OCD, but did not give insights about the particular forms of compulsions and obsessions experienced by the individual, instead providing the overall intensity of seriousness in the symptoms of OCD. This can cause challenges in adapting the treatment to the psychological needs of the individual. The English version of the DOCS was adopted. This scale comprised four theme-based dimensions: (i) Contamination (obsessive thoughts about dirt, infection, germs, and other substances), (ii) Responsibility/Control (obsessive thoughts about cause hurt to others and their selves), (iii) Incompleteness (compulsive doubt about things not done perfectly or not being complete) and (iv) Unacceptable thoughts (Obsessive doubts about immoral and taboo topics; i.e., sex, violence, blasphemy, religion and immortality). To follow the purpose of the research, we used only the Contamination and Responsibility/Control dimensions.

2.5.2 Beck Anxiety Inventory (BAI)

Beck Anxiety Inventory is a self-reported questionnaire used to examine the severity of emotional disturbance (Anxiety or depression) in individuals. The scale entails 21 Likert-type items with multiple options and each item is scored from zero (not at all) to three (severe), providing an overall score range from 0 to 63.

2.6 Validity and Reliability

The validity of the questionnaire was confirmed through assessment by a committee from the Applied Medical Sciences Faculty at JUST. A pilot study was conducted among 10 participants. The reliability of instruments was computed through the internal-consistency coefficient (Cronbach's alpha). The reliability coefficient for the instrument for Dimensional Obsessive-Compulsive Scale-Abridge (DOCS-A) consisting of 10 items was 0.83 and for the Beck Anxiety Inventory (BAI) consisting of 21 items was 0.73, indicating a satisfactory internal consistency of the instruments.

2.7 Statistical Analysis

To analyse the data, Statistical Package for Social Sciences (SPSS), version 27, has been used in the research. Firstly, descriptive statistics were obtained; then, for the assessment of normality, Kolmogorov-Smirnov was used. The association between the scores of DOCS for responsibility and contamination dimensions and the scores of BAI were explored through the Spearman's rho correlation coefficient. Further, to determine the prevalence of OCD symptoms and emotional disturbances in dentists and dental supportive staff (dental assistants, hygienists, and technicians), the scores of DOCS (C) and (R) dimensions and the scores of BAI for the respondents were compared by employing Mann-Whitney U-test for

dependent samples. Further analyses were carried out using the linear-regression model.

3. Results

3.1 Socio-demographic Characteristics of the Participants

A total of 787 participants were analysed, out of whom 354 (44%) were dentists (general practitioners and specialists) and 433 (56%) were dental supportive staff (dental assistants, dental hygienists, and dental technicians).

3.1.1 Dental Professional

In the dentals' group, males were 218 (61.4%) and females were 137 (38.6%). Most of the participants were single and 182 (52.1%) participants were not living with their senior family member. 242 (68.2%) participants had no personal history of psychiatric disorder and 267(75.2%) had no family history of OCD (Table 1).

3.1.2 Dental Supportive Staff

In the case of dental supportive staff, males were 241 (55.8%) and females were 191(44.2%), 274 (63.4%) were married and 225 (52.1%) participants lived with their senior family member. 292 (67.6%) had no personal history of psychiatric disorder and 330(76.4%) had no family history of OCD (Table 1).

Table 1: Socio-demographic characteristics of dental practitioners and dental supportive staff

Socio-demographic Status		Dental Supportive Staff n=433 (54.8%)	Dental Professionals n= 354 (45.1%)
Gender	Male	241 (55.8%)	218 (61.4%)
	Female	191 (44.2%)	137 (38.6%)
Marital status	Single	106 (24.5%)	185 (52.1%)
	Married	274 (63.4%)	105 (29.6%)
	Divorced	52 (12.0%)	65 (18.3%)
Nationality	Jordanian	275 (63.7%)	210 (59.2%)
	Non-Jordanian	157 (36.3%)	145 (40.8%)
Living with a senior family member	No	207 (47.9%)	193 (54.4%)
	Yes	225 (52.1%)	162 (45.6%)
Personal history of psychological disorder	No	292 (67.6%)	242 (68.2%)
	Yes	140 (32.4%)	113 (31.8%)
family history of OCD	No	330 (76.4%)	267 (75.2%)
	Yes	102 (23.6%)	88 (24.8%)

3.2 Mean Score of Beck Anxiety Inventory and Dimensional Obsessive-Compulsive Scale

The mean Beck Anxiety Inventory (BAI) was slightly higher in dental supportive staff (30.80 ± 0.96) than in dental professionals (30.37 ± 0.75). But, it is quite a small difference reflecting the same anxiety level in both groups. In the Responsibility Dimensional Obsessive-Compulsive Scale (DOCS), the Responsibility score was higher among dental practitioners (11.34 ± 0.24) than among dental supportive staff (11.05 ± 0.26), which suggests slightly higher obsessive-compulsive symptoms about responsibility in dental practitioners. However, the Contamination score was greater in dental supportive staff (12.23 ± 0.28) compared to that of dental professionals (11.41 ± 0.28). In other words, dental supportive staff exhibit greater symptoms of contamination-related OCD compared to dental professionals, which is most likely a result of greater direct contact with clinical as well as with sterilization procedures.

3.3 Test for Normality

Kolmogorov-Smirnov and Shapiro-Wilk tests were employed to assess the normality of the data. The results indicated that the data is not normally distributed for both groups (dental practitioner and dental supportive staff) ($p\text{-value} = <0.001$). This result supports the use of non-parametric tests for further analysis.

3.4 Correlation Analysis

The correlation between the Beck Anxiety Inventory and the Dimensional Obsessive Cumulative Scale (Contamination and Responsibility) was analyzed using Spearman's Rho Correlation analysis. For dental practitioners, the BAI score has shown a significant correlation with DOCS-Contamination ($r = 0.991$, $p\text{-value} = <0.001$) and with DOCS-Responsibility ($r = 0.995$, $p\text{-value} = <0.001$) (Table 2). Similar results were found for the dental supportive staff; BAI score with DOCS-Contamination ($r = 0.996$, $p < 0.001$) and with DOCS-Responsibility ($r = 0.992$, $p < 0.001$) (Table 3), suggesting a highly correlated relation between Anxiety and OCD in both groups.

Table 2: Correlation of Beck anxiety scale and the dimensional obsessive-compulsive scale for responsibility and contamination in dental practitioners

			Total Beck Anxiety Inventory Score	Total Dimensional Obsessive-Compulsive Scale-Contamination	Total Dimensional Obsessive-Compulsive Scale-Responsibility
Spearman's rho	Total Beck Anxiety Inventory Score	Correlation Coefficient	1.000	0.991**	0.995**
		Sig. (2-tailed)		0.000	0.000
		N	432	432	432
	Total Dimensional Obsessive-Compulsive Scale - Contamination	Correlation Coefficient	0.991**	1.000	0.983**
		Sig. (2-tailed)	0.000		0.000
		N	432	432	432
	Total Dimensional Obsessive-Compulsive Scale - Responsibility	Correlation Coefficient	0.995**	0.983**	1.000
		Sig. (2-tailed)	0.000	0.000	
		N	432	432	432

** Correlation is significant at the 0.01 level (2-tailed).

Table 3: Correlation of Beck anxiety scale and the dimensional obsessive-compulsive scale for responsibility and contamination in dental supportive staff

			Total Beck Anxiety Inventory Score	Total Dimensional Obsessive- Compulsive Scale - Contamination Score	Total Dimensional Obsessive- Compulsive Scale – Responsibility Score
Spearman's rho	Total Beck Anxiety Inventory Score	Correlation Coefficient	1.000	0.996**	0.992**
		Sig. (2-tailed)		0.000	0.000
		N	355	355	355
	Total Dimensional Obsessive- Compulsive Scale - Contamination Score	Correlation Coefficient	0.996**	1.000	0.990**
		Sig. (2-tailed)	0.000		0.000
		N	355	355	355
	Total Dimensional Obsessive- Compulsive Scale – Responsibility Score	Correlation Coefficient	0.992**	0.990**	1.000
		Sig. (2-tailed)	0.000	0.000	
		N	355	355	355

** . Correlation is significant at the 0.01 level (2-tailed).

3.5 Mann-Whitney U-Test

The differences based on gender, living with a senior family member, personal history of psychological disorder, and family history of OCD were examined using Mann-Whitney U-test. Results showed significant differences across all groups. In gender, female dental supportive staff showed significantly higher BAI scores compared to males, showing significant association ($p\text{-value} < 0.001$). Similarly, DOCS for Contamination and Responsibility was significantly higher in females. Dental supportive staff living with family also reported significantly higher anxiety than those living alone ($p\text{-value} < 0.001$), DOCS for Contamination ($p\text{-value} < 0.001$), and DOCS for Responsibility ($p\text{-value} < 0.001$) showed a significantly higher level of OCD related to Contamination and Responsibility. Additionally, individuals with a personal history of psychological disorder showed significantly higher anxiety than those without a personal history ($p\text{-value} < 0.001$) (Table 4).

Mann-Whitney U-test results demonstrate significant differences in anxiety (BAI) along with obsessive-compulsive (DOCS) scores between dental professionals, based on gender, living with a senior family member, and having a personal history of psychological disorder and family history of OCD. Among dental professionals, female practitioners showed substantially higher anxiety levels (BAI) together with higher scores in Contamination (DOCS-C) and Responsibility (DOCS-R), showing OCD traits when compared to male practitioners ($p < 0.001$). Dental professionals who had a senior family member living with them showed higher symptoms of anxiety as well as DOCS-C and DOCS-R compared to others who lived alone ($p < 0.001$). Individuals who had previously experienced psychological disorders displayed considerably higher scores on the BAI, DOCS-C and DOCS-R ($p < 0.001$). Practitioners with OCD within their family history showed greater levels of BAI together with DOCS-C and DOCS-R scores than individuals without OCD history in their families ($p < 0.001$) (Table 5).

Table 4: Relationship of Beck anxiety inventory and dimensional obsessive-compulsive scale (contamination and responsibility) with gender, living with a senior family member, personal history of psychological disorder, and family history of OCD in dental supportive staff

Variable	Group	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Z	P-value (Asymp. Sig. 2-tailed)
Gender							
Total Beck Anxiety Inventory Score	Male	218	109.62	23,898.00	27	-15.845	<0.001
	Female	137	286.8	39,292.00			
Total Dimensional Obsessive-Compulsive Scale-Contamination Score	Male	218	109.79	23,933.50	62.5	-15.848	<0.001
	Female	137	286.54	39,256.50			
Total Dimensional Obsessive-Compulsive Scale-Responsibility Score	Male	218	110.74	24,141.00	270	-15.685	<0.001
	Female	137	285.03	39,049.00			
Living with a Senior Family Member							
Total Beck Anxiety Inventory Score	No	193	97.05	18,730.00	9	-16.232	<0.001
	Yes	162	274.44	44,460.00			
Total Dimensional Obsessive-Compulsive Scale-Contamination Score	No	193	97.08	18,736.00	15	-16.267	<0.001
	Yes	162	274.41	44,454.00			
Total Dimensional Obsessive-Compulsive Scale-Responsibility Score	No	193	97.23	18,766.00	45	-16.296	<0.001
	Yes	162	274.22	44,424.00			
Personal History of Psychological Disorder							
Total Beck Anxiety Inventory Score	No	242	121.54	29,413.00	10	-15.178	<0.001
	Yes	113	298.91	33,777.00			
Total Dimensional Obsessive-Compulsive Scale-Contamination Score	No	242	121.56	29,417.50	14.5	-15.212	<0.001
	Yes	113	298.87	33,772.50			
Total Dimensional Obsessive-Compulsive Scale-Responsibility Score	No	242	121.52	29,407.00	4	-15.28	<0.001
	Yes	113	298.96	33,783.00			
Family History of OCD							
Total Beck Anxiety Inventory Score	No	267	134.01	35,781.50	3.5	-14.076	<0.001
	Yes	88	311.46	27,408.50			
Total Dimensional Obsessive-Compulsive Scale-Contamination Score	No	267	134.13	35,814.00	36	-14.072	<0.001
	Yes	88	311.09	27,376.00			
Total Dimensional Obsessive-Compulsive Scale-Responsibility Score	No	267	134.65	35,952.00	174	-13.958	<0.001
	Yes	88	309.52	27,238.00			

Table 5: Relationship of Beck anxiety inventory and dimensional obsessive-compulsive scale (contamination and responsibility) with a gender, living with a senior family member, personal history of psychological disorder, and family history of OCD in dental practitioners

Variable	Group	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Z	P-value
Gender							
Total Beck Anxiety Inventory Score	Male	241	121.04	29,171.00	10	-17.863	<0.001
	Female	191	336.95	64,357.00			
Total Dimensional Obsessive-Compulsive Scale - Contamination	Male	241	121.09	29,182.00	21	-18.016	<0.001
	Female	191	336.89	64,346.00			
Total Dimensional Obsessive-Compulsive Scale - Responsibility	Male	241	121.29	29,231.00	70	-17.877	<0.001
	Female	191	336.63	64,297.00			
Living with a Senior Family Member							
Total Beck Anxiety Inventory Score	No	207	104.37	21,605.00	77	-17.916	<0.001
	Yes	225	319.66	71,923.00			
Total Dimensional Obsessive-Compulsive Scale - Contamination	No	207	104.53	21,638.00	110	-18.053	<0.001
	Yes	225	319.51	71,890.00			
Total Dimensional Obsessive-Compulsive Scale - Responsibility	No	207	104.09	21,547.00	19	-18.022	<0.001
	Yes	225	319.92	71,981.00			
Personal History of Psychological Disorders							
Total Beck Anxiety Inventory Score	No	292	146.54	42,790.50	12.5	-16.831	<0.001
	Yes	140	362.41	50,737.50			
Total Dimensional Obsessive-Compulsive Scale - Contamination	No	292	147.87	43,178.00	400	-16.661	<0.001
	Yes	140	359.64	50,350.00			
Total Dimensional Obsessive-Compulsive Scale - Responsibility	No	292	147.52	43,075.50	297.5	-16.652	<0.001
	Yes	140	360.38	50,452.50			
Family History of OCD							
Total Beck Anxiety Inventory Score	No	330	165.6	54,647.50	32.5	-15.252	<0.001
	Yes	102	381.18	38,880.50			
Total Dimensional Obsessive-Compulsive Scale - Contamination	No	330	169.82	56,041.00	1,426	-14.113	<0.001
	Yes	102	367.52	37,487.00			
Total Dimensional Obsessive-Compulsive Scale - Responsibility	No	330	166.33	54,888.00	273	-15.085	<0.001
	Yes	102	378.82	38,640.00			

The findings demonstrate that gender, living conditions, and personal and family psychological history play an important role in influencing anxiety and OCD-related issues in dental practitioners and dental supportive staff.

3.6 Regression Model

The ANOVA results of the regression models indicate that gender, OCD family history, history of personal psychological disorders, and living with the family members predict significantly higher anxiety

(BAI) and obsessive-compulsive disorder symptoms (DOCS-C and DOCS-R) in dental professionals and dental supportive staff.

For dental practitioners, the regression model for the overall BAI score was significant ($p < 0.001$), showing higher variance in anxiety scores. Similarly, the DOCS-C ($p < 0.001$) and DOCS-R ($p < 0.001$) models were significant, showing that the predictor variables significantly predict Responsibility- and Contamination-related obsessive-compulsive symptoms (Table 6).

Table 6: Regression models of Beck anxiety inventory and dimensional obsessive-compulsive score (contamination and responsibility) in dental practitioners

	R	Sum of Squares	df	Mean Square	F	P-value
Total BAI Score	Regression	56300.2	4	14075	350.7 12	<0.001
	Residual	14046.5	350	40.133		
	Total	70346.7	354			
Total DOCS-Contamination	Regression	7270.14	4	1817.53	277.0 64	<0.001
	Residual	2295.99	350	6.56		
	Total	9566.13	354			
Total DOCS-Responsibility	Regression	5373.3	4	1343.33	221.1 02	<0.001
	Residual	2126.46	350	6.076		
	Total	7499.76	354			

For dental supportive staff, the regression model for overall BAI scores was also significant ($p < 0.001$), showing a high correlation between predictors and anxiety levels. DOCS-C ($p < 0.001$) and DOCS-R ($p < 0.001$) were also equally significant, showing that gender, family history of OCD, personal psychological history, and living situation have substantial effects on Contamination- and Responsibility-related OCD symptoms in this group as well (Table 7).

The findings confirm that demographic and psychological factors are strong predictors of dental supportive staff and dental practitioners' OCD symptoms and anxiety.

4. Discussion

This study aims to assess the prevalence of obsessive-compulsive disorder (OCD) symptoms

among dental healthcare workers in Jordan. The research found a strong positive correlation between emotional disturbance and OCD symptoms in dental professionals. Kurhan et al. (13) found that heightened anxiety levels during the COVID-19 outbreak were strongly associated with increased obsessive-compulsive symptoms, particularly contamination-related obsessions in healthcare professionals. Due to their direct exposure to infection risks, they were more prone to experiencing contamination-related anxiety, leading to an exacerbation of OCD symptoms. Dental supportive staff showed significantly higher contamination-related obsessions compared to dentists, likely due to their prolonged direct contact with clinical sterilization processes. Conversely, dentists displayed a higher prevalence of obsessive thoughts related to responsibility and harming themselves or others. Kurhan

et al. (13) suggested that females were more prone to developing severe OCD symptoms and anxiety, aligning with the findings of our study, where female dental professionals showed significantly higher levels of both anxiety and OCD symptoms than their male counterparts. Our study did not find a statistically significant difference in overall anxiety levels between

dentists and dental supportive staff, suggesting that both groups experienced similar levels of emotional distress due to obsessive thoughts. However, Kurhan et al. (13) found that healthcare professionals were at a higher risk of developing anxiety symptoms than non-healthcare professionals.

Table 7: Regression models of Beck anxiety inventory and dimensional obsessive-compulsive scale (contamination and responsibility) in dental supportive staff

	R	Sum of Squares	df	Mean Square	F	P-value
Total BAI Score	Regression	94395.2	4	23598.8	371.09	<0.001
	Residual	22257.6	350	63.59		
	Total	116652.8	354			
Total DOCS - Contamination	Regression	7417.62	4	1854.40	276.42	<0.001
	Residual	2347.96	350	6.708		
	Total	9765.59	354			
Total DOCS - Responsibility	Regression	6402.39	4	1600.59	255.59	<0.001
	Residual	2191.78	350	6.26		
	Total	8594.18	354			

The findings of the present study support the study of Gellen et al. (15), where increased anxiety and symptoms of OCD were seen in healthcare workers compared with non-healthcare workers. Our research also highlighted the increased correlation between emotional disturbance and OCD symptoms in dentists. However, contamination obsessions were more prevalent among dental assistants, hygienists, and technicians due to the direct risk of exposure to infection. Dentists themselves demonstrated increased responsibility obsessions, perhaps due to patient safety and stress while making clinical decisions. Consistent with Gellen et al. (15), significantly increased anxiety and OCD symptoms were seen to be present in women and those with a personal or family history of psychiatric disorder showed higher vulnerabilities to psychological distress during the pandemic.

Furthermore, Gellen et al. (15) showed that healthcare workers experienced more severe depression and were more aware of COVID-19 protective practices than non-HCWs. Although our study did not evaluate

depression directly, the reasonable agreement between BAI and DOCS scores may indicate that dental professionals underwent severe emotional distress. Moreover, the high prevalence rates of contamination-related OCD symptoms among dental supporting staff suggest that high concern about infection control is likely to be translated into excessive cleaning strategies (15). Rickelt et al. (16) advocated the considerable effect of anxiety in the clinical concept of OCD, since severe emotional disturbance is associated with chronicity, weakened quality of life, and functional impairment and is also related to extreme symptoms of obsessions and compulsions cross-sectionally.

The literature on the neurobiology of obsessive-compulsive disorders reported that anxiety-induced behaviours of individuals linked with brain structures contributed significantly in the early stages of OCD, whereas exaggerating habits of repetition were examined in chronic OCD (17,18). Moreover, it is interesting to note that obsession and compulsion related to contamination were higher among dental assistants,

dental hygienists, and dental technicians in comparison to dentists. Consequently, obsessive thoughts (about causes hurting others and their selves) were higher in dentists than in their supporting dentistry team (dental assistants, dental hygienists, and dental technicians). We found no statistically significant difference between the levels of emotional disturbance between the two groups, indicating that both dentists and their supporting dentistry team experienced the same level of anxiety due to obsessive thoughts. It is observed in previous studies that healthcare workers have experienced extreme emotional disturbance due to high levels of anxiety. A survey by the British Medical Association reported that 45% of doctors in the UK experienced anxiety, depression, burnout, stress, and other associated mental-health illnesses and that Covid-19 pandemic has made their mental health worse. Another study compared the classification of health workers based on their occupation and advocated that the occurrence of OCD symptoms was found more in doctors and nurses as compared to other healthcare workers (19).

Our findings align with those of Matthews et al. (20), stating that the cluster of core obsessive-compulsive symptoms accounted for over 90% of the variance across the classical symptom factors. Similarly, our research established that responsibility-based obsessions were the most common OCD symptom dimensions among dental practitioners and that contamination symptoms were most common among dental assistants, hygienists, and technicians. This suggests that, unlike classical OCD symptom dimension definitions, a common obsessional factor may be responsible for the expression of OCD symptoms in the at-risk population, e.g. dental healthcare workers who are daily exposed to the risk of infection.

Additionally, Matthews et al. (20) indicated that this core OCS construct was highly genetic. Our results align with genetic susceptibility to OCD, since we identified high OCD symptoms with a family or personal history of psychiatric disorder. This is likely due to that a heritable vulnerability could be involved in the development of OCD symptoms, especially in high-stress settings, like dental practice. The investigation of OCD symptoms by Matthews et al. (20) and in our present study highlights the importance of targeted screening and intervention. The probability of etiology of OCD is higher for first-degree relatives of affected persons; i.e., offspring and siblings (21). Further, we

found a higher occurrence of OCD symptoms in females as compared to males. It is generally observed that psychological disorders are commonly found in women, and the same is valid for obsessive-compulsive disorder. The results of this study concerning gender-based differences were in line with previous research. Asghar et al. (3) reported the significant role of gender in assessing the psychology and personality of persons. Their findings reported a higher prevalence of OCD symptoms in women, likely because of the low level of education or due to the pressure of the society. Obsessive-compulsive disorder normally begins in the adolescence phase of life, but it can take time to be diagnosed. Women can experience OCD generally in the post-and peripartum periods. Research conducted reported that more than 1/3 of individuals suffered from severe symptoms of anxiety and depression and the majority of them were females. Therefore, this finding indicated that females are more exposed to psychological illness as compared to males, which may be attributed to their biological vulnerability and to their augmented responsibility of care and cleaning.

This study has some limitations, as it is based on an online survey, and no head-to-head diagnostic discussion was carried out with the respondents. So, it couldn't examine at what level their performance was affected. Further, this study included only two dimensions of DOCS (contamination and responsibility/ control). Thus, the results may not be generalized. Therefore, in the future, researchers can use a structured research design with diagnostic interviews to provide comprehensive insights related to OCD symptoms and anxiety levels.

5. Conclusions

This study investigated the prevalence of OCD symptoms and their relationship with emotional disturbance among Jordanian dental professionals and dental supporting staff. A strong positive correlation between emotional disturbance (anxiety) and OCD symptoms was found. Furthermore, the prevalence of contamination-related obsessive-compulsive symptoms was significantly higher in dental supporting staff; i.e., dental assistants, dental hygienists, and dental technicians, compared to dentists (general practitioners and specialists). Additionally, responsibility-related obsession was observed to be more prevalent in dentists. However, no statistically significant difference in the overall level of anxiety was found between dentists and

dental supporting staff. Additionally, it was revealed that women and those with family or personal history of psychiatric disorders were most susceptible to increased OCD symptoms and anxiety. The government and healthcare centers have an important role to play in ensuring the mental well-being of healthcare workers, because poor mental health can affect their quality of life as well as their work performance.

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Conflict of Interests

The authors have no conflict of interests to declare.

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