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Relationship between dental impacts on daily living, satisfaction with the dentition and personality profiles among a Palestinian population

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Abstract

Introduction : The aim of this study was to investigate the relationship between dental impacts on patients' daily living, satisfaction with the dentition and personality profiles.
Materials and methods : Fifty-two patients (22 males and 30 females; mean age 22.7 ± 5.5 years) were recruited for this study. A "Dental Impact on Daily Living" (DIDL) questionnaire was used to assess patients' satisfaction with their dentition and impacts on daily living. The NEO Five Factor inventory (NEO-FFI) was used to assess personality profiles.
Results : The dentition had measurable impacts on daily living as well as satisfaction with appearance, pain levels, oral comfort, general performance, and eating capability ($p < 0.001$). Older patients were more totally satisfied ($p = 0.014$), more satisfied with appearance ($p = 0.034$), and less satisfied with general performance ($p = 0.024$). Older patients had higher Conscientiousness scores ($p = 0.001$) and lower Openness scores (0.018). Females were more satisfied with eating ($p < 0.001$). Significant correlations were established between neuroticism and total DIDL scores ($p = 0.006$). Extraversion had significant correlations with total satisfaction ($p < 0.001$) as well as satisfaction with appearance ($p=0.047$) and oral comfort ($p=0.008$). Significant correlations were also established between openness and satisfaction with general performance ($p < 0.001$), between Agreeableness and satisfaction with eating ($p=0.001$), and between Conscientiousness and total satisfaction ($p = 0.001$), satisfaction with pain ($p=0.004$), and satisfaction with oral comfort ($p=0.043$).
Conclusions : The status of the oral cavity might impact on patients' daily living and satisfaction with the dentition. Patients' satisfaction with their dentition has definitive impacts on daily living and dental perceptions. Personality profiles (neuroticism; extraversion; openness; Agreeableness and conscientiousness) may influence dental perceptions; play a significant role in shaping satisfaction with dentition, and help with prediction of dental impacts on daily living. Patient satisfaction and psychological profiles should be considered when formulating a treatment plan in order to achieve patient acceptance of the offered treatment.

Keywords :
DIDL, NEO-FFI, dental impact on daily living, oral health, psychology

Résumé

Relation entre l'impact dentaire sur la vie quotidienne, la satisfaction de la dentition et la personnalité parmi une population palestinienne

Introduction : Le but de cette étude était d'étudier la relation entre l'impact dentaire sur la vie quotidienne, la satisfaction des patients vis-à-vis de leur dentition et leur type de personnalité.
Matériel et méthodes : Cinquante-deux patients (22 hommes et 30 femmes ; âge moyen 22,7 ± 5,5 ans) ont été recrutés pour cette étude. Un questionnaire "Impact dentaire sur la vie quotidienne" a été utilisé pour évaluer la satisfaction des patients vis-à-vis de leur dentition et les impacts de celle-ci sur

Mots-clés :
Impact dentaire, vie quotidienne, NEO-FFI, santé dentaire, psychologie

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leur vie quotidienne. L'inventaire des cinq grands facteurs (NEO-FFI) a été utilisé pour évaluer les profils de personnalité.

Résultats : La dentition a un impact mesurable sur la vie quotidienne telle que l'apparence, les niveaux de douleur, le confort oral, la performance générale et la capacité d'alimentation ($p < 0,001$). Les patients plus âgés étaient plus globalement satisfaits ($p = 0,014$), plus satisfaits de l'apparence ($p = 0,034$), et moins satisfaits de la performance générale ($p = 0,024$). Les patients plus âgés avaient des scores plus élevés à l'item "conscience" ($p = 0,001$) et plus faibles à l'item "ouverture" (0,018). Les femmes étaient plus satisfaites sur leur capacité à manger ($p < 0,001$). Des corrélations significatives ont été établies entre le névrosisme et le score total de DIDL ($p = 0,006$). L'extraversion avait des corrélations significatives avec la satisfaction globale ($p < 0,001$) de même que la satisfaction de l'apparence ($p = 0,047$) avec le confort bucco-dentaire ($p = 0,008$). Des corrélations significatives ont également été établies entre l'ouverture et la satisfaction de la performance générale ($p < 0,001$) entre l'agréabilité et la satisfaction de manger ($p = 0,001$) et entre la conscience et la satisfaction globale ($p = 0,001$), satisfaits vis-à-vis de la douleur ($p = 0,004$) et de satisfaction du confort bucco-dentaire ($p = 0,043$).

Conclusions : L'état de la cavité buccale pourrait avoir une incidence sur la satisfaction vis-à-vis de la dentition et sur la vie quotidienne des patients. La satisfaction des patients vis-à-vis de leur dentition a des répercussions définitives sur la perception de la vie quotidienne et dentaire. Les profils de personnalité (névrosisme, extraversion, ouverture ; agréabilité et conscience) peuvent influencer la perception dentaire, jouer un rôle important dans la perception de satisfaction vis-à-vis de sa dentition et aider à la prévision des impacts dentaires sur la vie quotidienne. La satisfaction des patients et les profils psychologiques doivent être pris en compte lors de la mise en place d'un plan de traitement afin de faire accepter au mieux aux patients le traitement proposé.

Introduction

Dental care providers aim at helping patients to achieve an acceptable level of satisfaction with their oral cavity and dentition.

Although oral conditions are considered rarely life threatening, they have profound effects on social functioning and behaviors, such as school attendance, ability to work, and carrying out parental or household duties (1). Recently, the need to consider dental impacts on daily living has been increasingly recognized and many studies have highlighted the psychosocial impact of oral conditions. However, more attention is required to investigate the psycho-social impact of oral conditions and their effects on general health status.

Dento facial conditions affect patients' appearance, performance and function; and shape patients' satisfaction with their dentition (2). Dental disease may influence the capacity to enjoy the life, live comfortably, experience relationships, be successful in employment, and to possess a positive self-image (3).

Consequently, dental care providers should be aware of the dental needs of patients and how patients feel about their teeth, and the impact this has on their daily living. Therefore, the clinical status and psychological dimensions should be assessed whenever dental needs are assessed (2).

The psychogenic tolerance of the patients might affect the way they perceive their dentition and dental status regardless their dental condition or the quality of care they receive (4). Dental care providers should be aware of the potential effects of this on the treatment outcomes.

Measures used to detect impacts of oral health on daily living are important for the identification of oral disease impacts on social functioning and behaviors, the evaluation of treatment needs, and the assessment of clinical decisions; oral health services, as well as plans and programs directed to improve oral health (5-17).

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In USA, dental problems were found to affect patients' self image and social life including relationships and school and work attendance (1, 3). Compromised clinical dental status negatively affects people daily living in UK and Brazil (2). Tooth loss was found to disable and handicap complete denture wearers in UK (5).
In Canada, better oral health related quality of life was associated with implant supported dentures when compared to conventional dentures (7). Oral health related quality of life was found to be most impaired in complete denture wearers and least impaired in fully dentate German subjects (9). Oral problems such as missing teeth, dry mouth and limitations in chewing ability were found to negatively affect the well-being and life satisfaction of medically compromised elderly Canadians (13). A study in Nigeria revealed that participants recognized that oral health impacted their eating or enjoyment of food, sleep or ability to relax, and smiling or laughing (17).
They also reported that oral health affected their daily activities, social activities, and talking to people.
Psychological factors have a profound role in shaping patient satisfaction and compliance with dental status and treatment (18). The assessment of personality characteristics might be useful in predicting patient behavior and may have an effect on the provision of therapy (19).
Patients' satisfaction with their oral status is associated with the existence of certain personality traits such as: compliance, meticulousness, accommodating, quietness, self-respect, self-confidence, extraversion, openness, anxiety, kindliness, conscientiousness, openness, agreeableness and neuroticism (20-27). AL-OMIRI et al. (24) and AL-OMIRI and ABU ALHAIJA (21) concluded that certain personality profiles (such as extraversion and neuroticism) had influential effects on patients' perception of their dento facial appearance.
The literature contains many studies that explored the unique and vague relationship between psychological profiles and satisfaction with the dental status in many fields of dentistry. Unfortunately, the literature lacks valid studies of the relationship between dental impacts on patients' daily living, satisfaction with the dentition and personality profiles.
Further evaluation and careful scientific based evidence are required to explore whether the assessment of certain psychological traits of patients can predict the impacts of their dentition on their daily living and satisfaction with their dentition.
This study investigates the relationships between patient satisfaction with dentition, dental impacts on daily living and psychological traits using valid and reliable socio-dental and psychological measures.

I. Materials and methods

Fifty-two consecutive patients who sought routine dental care at the Dental Teaching Clinics of AL-Quds University in Jerusalem were recruited into this study (22 men (42.3%) and 30 women (57.7%)). Participants' age ranged between 18 and 46 years old (mean age: 22.7 years, SD: 5.5 years).
Recruited patients had to be 17 years of age or older for inclusion in the study with no medical disease (including mental problems and psychological disorders) that might affect their ability to understand and/or to score the questionnaires. Excluding third molars, patients should have no missing teeth.
An invitation to participate in the study was extended to the patients. Each participant was given a brief explanation of the study and an informed consent was obtained from each subject before being recruited into the study.
All clinical procedures were approved by the Deanship of Research, AL-Quds University.
One investigator conducted all clinical examinations in the Oral Diagnosis Clinic where each patient was assessed thoroughly to record the

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position and number of teeth. The assessment also included patient dental and medical histories, complaints, and personal information regarding name, age, gender, education, occupation, address and marital status. Intra examiner reliability was performed on five duplicate clinical examinations using Kappa statistics. Kappa was 1.00 indicating substantial agreement.

Dental Impact on Daily Living Questionnaire (DIDL)

Assessment of patients' satisfaction with their dentition was carried out using the Dental Impact on Daily Living Questionnaire (DIDL) and its scale (2, 24).

This questionnaire was validated for Jordanian population in previous studies and was found to be valid and reliable (20-23, 26).

The DIDL consists of 36 items grouped into 5 dimensions: comfort, appearance, pain, performance, and eating restriction; and impacts for each dimension are scored using the scale.

It measures the impact and proportional importance of each dimension (weight of the dimension) to the patient. A weight for each dimension is calculated on an individual basis by dividing the summed responses of that dimension by the total possible scale score. To construct an overall score, scores within each dimension are first calculated by multiplying the summed dimension responses by the dimension weight. Weighted dimension scores are then summed to give a DIDL score. Total score of the DIDL ranged from -1 to +1 in all sample individuals. Patients responded to each item by selecting one of three response categories in the form of a Likert response format that includes agree, disagree or neutral.

The DIDL was chosen in this study because it is an efficient tool to use by the patients and clinicians, and can be completed within a relatively short time period. The items of this tool were simple and could be easily understood and scored. The literature confirms that the test is reliable, accurate, reproducible and suitable to use in studies that investigate the relationship between personality profiles ; satisfaction with the dentition; dental impacts on daily living and oral health-related quality of life (2, 20-24, 26).

Using the DIDL measure could provide a more satisfactory answer into the effects of teeth on daily living and satisfaction with the oral cavity than OHIP and OHQoL-UK (26).

Also, this instrument is more sensitive to the effect of variations in psychological profiles and has strong correlations to the OHIP and OHQoL-Uk and thus capable of measuring the same dimensions that are measured by these instruments (26).

NEO Five Factor inventory (NEO-FFI)

Each participant completed the NEO-FFI test to assess their personality profiles. The test consists of 60 questions and analyzes the five major personality dimensions: neuroticism, extraversion, openness, agreeableness and conscientiousness. This test is a comprehensive method to measure personality (28). In addition, it has good reliability and validity (29, 30).

The NEO-FFI test was used in this study because it measures five dimensions of personality; it is simple and can be completed in a short time; it is valid, reliable, and easy to use statistically (24, 29, 30). This questionnaire was validated for Jordanian population in previous studies and was found valid and reliable (2, 20, 21).

The DIDL and NEO-FFI questionnaires were administered to the patients, and the process of completing the questionnaires was supervised by the investigator. Each patient was provided with a full explanation of the dimensions as well as the methods of scoring each questionnaire.

Statistical analysis

The data were analyzed using the SPSS software (Statistical Package for the Social

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Sciences, version 16.0, SPSS Inc., Chicago, IL, USA). The association between the variables was analyzed using the Pearson correlation test and t-test. For all statistical analyses, the significance level was set at $P \leq 0.05$.

II. Results

Levels of patients' education ranged from secondary to postgraduate education. Twenty patients (38.5%) received secondary education (up to level A), 17 patients (32.7%) received college education (up to 2 years after level A), 12 patients (23.1%) received university education, and 3 patients (5.8%) received a higher postgraduate education.

Total satisfaction scores of the DIDL questionnaire showed that 19.2% of patients were dissatisfied with their teeth and scored below 0, 69.3% were relatively satisfied and scored between 0 and 0.69, and 12.5% were totally satisfied with their teeth. The highest total satisfaction score was +0.84 while the lowest total satisfaction score was -0.63 (mean: 0.3; SD: 0.37). Satisfaction with each dimension of the DIDL questionnaire among the study sample is shown in Table I.

The neuroticism scores ranged from 10 to 35 (average=23.4, SD=5.7), while extraversion scores ranged from 9 to 38 (average=27.9, SD=6.4), openness scores ranged from 10 to 31 (average=23, SD=4.8), agreeableness scores ranged from 16 to 33 (average=25.4, SD=4.2), and conscientiousness scores ranged from 12 to 46 (average=32, SD=6.7). Table II shows the distribution of personality domains among the subjects.

Correlations

Age, gender, and education levels of subjects were correlated with the scores of the DIDL and NEO-FFI questionnaires (Table III).

No statistically significant relationships between gender and NEO-FFI and DIDL scores were detected except a significant relationship between gender and satisfaction with eating (eating dimension of DIDL questionnaire)

Table I : Scores of individual satisfaction dimensions (DIDL dimensions) in the study sample (n = 52)

Dimension	Dissatisfied	Relatively satisfied	Satisfied
Appearance	18 (34.6%)	8 (15.4%)	26 (50%)
Pain	38 (73.1%)	8 (15.4%)	6 (11.5%)
Oral comfort	36 (69.2%)	2 (3.8%)	14 (26.9%)
General performance	30 (57.7%)	0 (0%)	22(42.3%)
Eating and chewing	10 (19.2%)	4 (7.7%)	38 (73.1%)

Table II : Scores of personality domains in the study sample (n = 52)

Personality domain	Low score	Average score	High score
Neuroticism	4(7.7%)	22 (42.3%)	26 (50%)
Extraversion	10 (19.2%)	26 (50%)	16 (30.8%)
Openness	28 (53.8%)	22 (42.3%)	2 (3.8%)
Agreeableness	44 (84.6%)	8 (15.4%)	0 (0%)
Conscientiousness	24 (46.2%)	22 (42.3%)	6 (11.5%)

Table III : Correlations between DIDL and NEO-FFI scores and age, gender and education

	Age	Gender	Education
DIDL Scores			
1. Total satisfaction			
R=	0.340		
P(2-tailed t-test)=	0.014*		
2. Appearance			
R=	0.295	NS	NS
P(2-tailed t-test)=	0.034*		
3. General Performance			
R=	-0.313	NS	NS
(2-tailed t-test)=	0.024*		
4. Eating			
R=	NS	0.580	NS
P(2-tailed t-test)=		0.000*	
5. other DIDL dimensions			
R=	NS	NS	NS
P(2-tailed t-test)=			
NEO-FFI scores			
1. Openness			
R=	-0.328	NS	NS
P(2-tailed t-test)=	0.018*		
2. Conscientiousness			
R=	0.446	NS	NS
P(2-tailed t-test)=	0.001*		
3. Other personality dimensions			
R=	NS	NS	NS
P(2-tailed t-test)=			

R = Pearson's correlation coefficient, * = Significant relation, NS = Not significant relation

(p=0.000). On the other hand, age was found to have significant positive relations with total satisfaction scores and satisfaction with eating (p=0.014 and 0.034 respectively), and significant negative relationship with performance (p=0.024). Also, age was found to have significant positive correlation with conscientiousness scores (p=0.001) and negative correlation with openness personality dimension scores (p = 0.018). Different levels of education were comparable in their scores of the aforementioned questionnaires (p > 0.05).

Table IV shows the correlations between NEO-FFI scores and DIDL scores among the study population. Neuroticism was negatively correlated to total satisfaction scores (p=0.006), the higher the neuroticism scores the less the total satisfaction. Also, extraversion was positively correlated to total satisfaction and satisfaction with appearance (P=0.000 and 0.047 respectively), while negatively correlated to oral comfort scores.

Higher extraversion scores were associated with higher total satisfaction and satisfaction with appearance and lower satisfaction with oral comfort. Moreover, openness was positively correlated to satisfaction with general performance (p=0.039), the higher the openness scores the higher the satisfaction with general performance. In addition, agreeableness was positively correlated to satisfaction

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Table IV : Correlations between NEO-FFI and DIDL scores among the study population

	Neuroticism	Extraversion	Openness	Agreeableness	Conscientiousness
DIDL Scores					
1. Total satisfaction					
R=	-0.374	0.474	NS	NS	0.440
P(2-tailed t-test)=	0.006*	0.000*			0.001*
2. Appearance					
R=	NS	0.276	NS	NS	NS
P(2-tailed t-test)=		0.047*			
3. Pain					
R=	NS	NS	NS	NS	-0.389
P(2-tailed t-test)=					0.004
4. Oral comfort					
R=	NS	-0.363	NS	NS	-0.281
P(2-tailed t-test)=		0.000*			0.043
5. General performance					
R=	NS	NS	0.481	NS	NS
P(2-tailed t-test)=			0.000*		
6. Eating					
R=	NS	NS	NS	0.458	NS
P(2-tailed t-test)=				0.001	

R = Pearson's correlation coefficient, * = Significant relation, NS = Not significant relation

with eating (0.001); the higher the agreeableness scores the higher the satisfaction with eating capacities. Finally, conscientiousness was positively correlated to total satisfaction (0.001), and negatively correlated to satisfaction with pain and oral comfort (p=0.004 and 0.043 respectively); the higher the conscientiousness scores the higher the total satisfaction and the lower the satisfaction with pain and oral comfort.

III. Discussion

The DIDL is a socio-dental instrument used in this study because unlike other socio-dental indicators, it assesses the dental impact on daily living, the relative importance that respondents attribute to each dimension, and oral status. Additionally, as impacts seldom occur separately, a single impact score is given to assess total oral impact. Since there are important links between quality of life and clinical oral status, the significant impacts should be used to assess needs. Instruments such as the OHIP and oral health related quality of life questionnaires do not weight dimension scores and then combine the weighted scores into a single score, as does the DIDL. Using the DIDL measure could provide a more satisfactory answer into the effects of teeth on daily living and satisfaction with the oral cavity than OHIP and OHQoL-UK (26). Also, this instrument is more sensitive to the effect of variations in psychological profiles and has strong correlations to the OHIP and OHQoL-UK and thus capable of measuring the same dimensions that are measured by these instruments. The DIDL allows a respondent to indicate whether a problem is entirely internal

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or if it has interpersonal or social impacts.
The DIDL was used in this study because it is considered valid, reliable, accurate, reproducible and suitable to use in studies that investigate the relationship between personality profiles; satisfaction with the dentition; dental impacts on daily living and oral health-related quality of life (2, 20-24, 26).

Females were more satisfied with eating than males. This could be explained by that appearance and other aspects of dental status are more important for females than eating.
Furthermore, seeking best appearance and performance by females might lead to a dental status that usually functions well on eating leaving eating a less concern for females.
Another finding revealed that older patients had lower openness and conscientiousness scores. This can be explained by older patients being more stable psychologically and lead a different social life than younger patients.
Also, older patients were more totally satisfied with their dentition and eating but less satisfied with their general performance. This might be explained by older patients having less critical oral demands and different social life styles, are less concerned with respect to their dental appearance; oral comfort; pain tolerance and function, and more tolerant to changes in their dental status in this regard, while less tolerant to the impacts of dental status on their performance; social life and connection to people. Therefore, oral status generally impacts younger patients more than older ones. Also, having scored lower on openness can explain why older patients were less satisfied with general performance.

Significant relationships were established between NEO-FFI and DIDL scores. Patients who scored higher on neuroticism were less totally satisfied. Also, the higher the extraversion scores, the higher the total satisfaction and the satisfaction with appearance and the lower the satisfaction with oral comfort. Moreover, the higher the openness scores the higher the satisfaction with general performance, and the higher the agreeableness scores the higher the satisfaction with eating capacities. In addition, patients who had higher conscientiousness scores were more totally satisfied but less satisfied with pain tolerance and oral comfort. This agreed with previous studies that could establish relationships between satisfaction with the dentition and personality using the DIDL instrument and other instruments (20-22, 24-26).
The above relations between personality profiles and satisfaction might be explained on the bases that more agreeable and open patients are more tolerant to oral related concerns and thus they feel better about their dentition. Also, patients with higher neuroticism are more self-conscious and aware of their medical health including any problems with their oral cavity and thus will show inferior quality of life and less satisfaction with their dentition. In addition, more extraverted patients are more concerned with their oral comfort as this could interfere their extraverted way of living and connection with others. Moreover, more conscious patients are more demanding and exact, therefore might be less tolerant to pain and compromises in oral comfort.

The linear regression analysis demonstrated that personality profiles were able to predict satisfaction with the dentition and the dental impacts on daily living. This agrees with previous studies that demonstrated a role for personality traits in prediction of patient satisfaction with their dentition and dental treatment in other situations and treatments (20-22, 24, 26). Psychological factors were found to have a profound role in shaping patients' satisfaction with dental status and treatment (18).
From the above discussion, it is clearly evident that psychological aspects might play a vital

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role in dental impacts on daily living and patients' satisfaction with their dentition.

Personality profiles might be used to explain the levels of patient satisfaction present among the study population as well as to predict satisfactory outcomes before commencing dental treatment, which might save time and cost if the prediction is unfavorable (20-22, 24, 26).

It is also evident that using valid, reliable and comprehensive tests is of utmost importance to study the relationship between psychological profiles and satisfaction. The DIDL test used in this study provided a satisfactory answer for such an issue.

Results from this study are the first examination of the relationships between dental impacts on daily living, satisfaction with the dentition and psychological profiles among a Palestinian population. The measured relations between personality and dental impacts and satisfaction are slightly different from those measured in different studies among other populations. This could be due to cultural and social factors as well as living in politically unstable region.

Cultural, social, economic or religious factors in different populations might affect the relationships between dental impacts on daily living, satisfaction with the dentition and psychological profiles. Further studies are required to identify the potential effects of such factors in this regard. Also, further investigations are required on larger samples especially to evaluate the effects of other factors such as treatment costs in a private versus university settings as well as effects of being treated by dental students, general practitioners or experienced specialist and clinicians.

Conclusions

The status of oral cavity might impact on patients' daily living and satisfaction with the dentition. Patients' satisfaction with their dentitions has definitive impacts on daily living and dental perceptions. Personality profiles (neuroticism; extraversion; openness; agreeableness and conscientiousness) may influence dental perceptions; play a significant role in shaping satisfaction with dentition, and help with prediction of dental impacts on daily living. Clinicians should consider this in order to provide suitable treatment for their patients to improve oral health and avoid any negative effects their dentitions might have on daily living. They must also prepare their patients socio-psychologically to accept the offered management for their dentition.

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