

Title Page

Quality of life and other psychological factors in patients with tooth wear.

Dr Harpoonam Kalsi. Guy's Hospital, Tower Wing, Great Maze Pond. London. SE1 9RT.

Dr Assad Khan. Royal National ENT and Eastman Dental Hospitals. 47-49 Huntley Street.
London. WC1E 6DG.

Dr Deborah Bomfim. Royal National ENT and Eastman Dental Hospitals. 47-49 Huntley Street.
London. WC1E 6DG.

Prof Georgios Tsakos. Research Department of Epidemiology and Public Health, UCL. 1-19
Torrington Place. London, WC1E 6BT.

Prof Ailbhe V McDonald. Royal National ENT and Eastman Dental Hospitals. 47-49 Huntley
Street. London. WC1E 6DG.

Dr Jose M Rodriguez. Guy's Hospital, Tower Wing, Great Maze Pond. London. SE1 9RT.

Poonam.kalsi@gstt.nhs.uk

Assad999@gmail.com

Deborah.bomfim@nhs.net

G.tsakos@ucl.ac.uk

A.mcdonald@ucl.ac.uk

Jose.rodriquez@gstt.nhs.uk

Short title: Quality of life in patients with tooth wear.

Keywords: Tooth Wear, Quality of Life, Psycho-social factors, erosion, Patient related outcome measures.

Corresponding author:

Jose M Rodriguez, DDS, MSc, MFDS, MPros, MRD, FDS, PhD.

Consultant in Restorative Dentistry – Honorary Senior Clinical Lecturer.

Guy's Hospital, Tower Wing, Great Maze Pond. London. SE1 9RT.

Jose.rodriquez@gstt.nhs.uk

02081884829

In brief:

- Quality of life in patients with tooth wear is affected by other psychosocial factors.
- Subjects with higher levels of Neuroticism showed decreased quality of life independent of tooth wear severity.
- Subjects with lower levels of general psychological wellbeing showed decreased quality of life independent of tooth wear severity.

Abstract

Aim: To investigate the relationship between generic and condition specific (CS) quality of life (QoL), general psychological wellbeing and personality in patients with tooth wear. **Materials and Methods:** Ethical approval was granted (REC:10/H0709/21). Patients 18-70 years with tooth wear completed the Oral Impacts on Daily Performances (OIDP) quality of life questionnaire, the NEO-FFI Personality questionnaire, and the General Health Questionnaire-12 (GHQ). Tooth wear was measured with the Basic Erosive Wear Examination (BEWE). **Results:** 102 subjects were recruited. Increased BEWE scores were correlated with older age, and worse generic, and CS related QoL. Increased Neuroticism was correlated to increased generic and CS-OIDP scores; generic and CS eating scores; CS smiling score and CS carrying out major work scores. Increased GHQ scores were positively correlated with increased generic and CS-OIDP scores; generic and CS-eating scores; CS-speaking scores; generic and CS-cleaning scores; generic relaxing scores, generic and CS-smiling scores and generic emotional state score ($p < 0.05$). Multivariable linear regression analyses showed that increased Neuroticism and decreased GHQ both had an independent effect on generic and CS-OIDP scores when adjusted for tooth wear severity ($p < 0.05$). Conclusion: Quality of life perception is complex, and was not only affected by worsening levels of tooth wear.

Introduction

Tooth wear is the non-carious loss of tooth tissue and may be classified as erosion, attrition and abrasion. A degree of tooth wear may be considered as normal and related to the ageing process⁽¹⁾, however if the rate of progression is such that it does not correlate with the age of the individual, it may negatively influence the long term prognosis of teeth and may be considered pathological⁽²⁾.

A systematic review of the prevalence of tooth wear in adults by Van't Spijker *et al*⁽³⁾ revealed increasing levels of tooth wear with age, from 3% at age 20 to 17% at age 70 reflecting the cumulative nature of this process. The findings from the 2009 UK Adult Dental Health Survey showed the prevalence of tooth wear increased at the subject level from 66% in 1998 to 76% in 2009, which is a significant proportion of the adult population. Unsurprisingly, its management is becoming of widespread concern in primary, secondary and tertiary care as people are living longer and healthier lives.

In patients with tooth wear, factors such as poor appearance and inadequate function have been shown to contribute to dissatisfaction with their dentition and may motivate patients to seek dental treatment⁽⁴⁾. In addition to the physical effects of tooth wear, there may also be an associated negative impact on quality of life⁽⁵⁾. Previous studies have been undertaken which demonstrate this⁽⁵⁾, however no clear links between increasing severity of tooth wear and decreased quality of life have been identified. This would suggest that other psycho-social factors such as general psychological well-being and personality traits may have an influence on how patients perceive the effect of tooth wear on their quality of life⁽⁶⁾. The effect of these factors may help to explain why different patients presenting with similar levels of tooth wear, may report markedly differing effects upon their daily quality of life. The aim of this study was to investigate the effects of personality and general psychological well-being on quality of life on patients with various levels of tooth wear.

Materials and Methods

Ethical approval for the study was granted by the Outer West London Research Ethics Committee (10/H0709/21). Consecutive patients with tooth wear referred for advice on its management to the Eastman Dental Hospital in London were invited to participate. The inclusion criteria were: fit and healthy subjects aged 18 and over with at least 20 teeth in their mouth with tooth wear as indicated by at least one surface with dentine exposure. All patients attending new patient clinics with pathological tooth wear were invited to participate. Patients meeting these criteria were given an information leaflet at the time of the appointment and were asked to sign a consent form.

Subjects had all the assessments done immediately after their new patient consultation in a separate room with the help of one of the researchers. Tooth wear was measured from each subject using the basic erosive wear examination (BEWE) which is a partial scoring system that records the most severely surface in a sextant. There are four levels of scoring described: 0 – no surface loss, 1 – initial loss of enamel surface texture, 2 – distinct defect hard tissue loss up to 50% of the surface area and 3 – hard tissue loss of greater than 50% of the surface area. The scores for each of the six sextants are added to give a cumulative BEWE score with a maximum score of 18(7). The examination was carried out under good light with teeth surfaces gently dried and with the aid of a UNC-15 probe. All clinical examinations were carried out by one of the lead researchers (HJK or MAK) who had been trained and calibrated prior to the start of the study to ensure intra and inter-operator repeatability. The standard of care for patients refusing to take part of the study was not affected by their refusal.

After the clinical examination, subjects were asked to complete the following the NEO-FFI personality questionnaire(8), the GHQ-12 psychological well-being questionnaire(9), and the Oral Impacts on Daily Performance (OIDP) quality of life questionnaire(10). The NEO-FFI and GHQ-12 are self-administered tools, whereby the OIDP was completed with the aid of one of the lead researchers. Only English speaking subjects were invited to participate.

The 'GHQ' scale was used to analyse this data. Each of the 12 items on the questionnaire consisted of a question asking whether the respondent had recently experienced that particular

symptom or behavior, using the following scale (the score is shown in parentheses): 'less than usual' (score = 0), 'no more than usual' (score = 0), 'rather more than usual' (score = 1) or 'much more than usual' (score = 1). The total score was then calculated by summing the scores for each item to give a maximum score of 12. A higher GHQ score suggests decreased general psychological well-being, whereas a lower GHQ score suggests a lesser impact on general psychological well-being.

The Oral Impacts on Daily Performance (OIDP) quality of life questionnaire assessed the impact of oral conditions on 11 daily tasks. The tasks are shown on Table 1:

The OIDP assesses the frequency that each of these impacts have had over the last 6 months, ranging from never (score 0) to every day or nearly every day (score 5). It also measured the severity of each of these impacts from no effect (score 0) to a very severe effect (score 5). It is possible then to obtain a performance score for each of the 11 impacts and this is obtained by multiplying the frequency score by the severity score for each daily performance; this score ranges from 0 to 25

When subjects reported an impact for any of the activities from the OIDP questionnaire, data for frequency were input based on the response. Possible frequency options for impacts were: every day or nearly every day, 3-4 times per week, 1-2 times per week, 1-2 times per month, less than once or could not say. Similar coding was used for frequency scoring where subjects reported impacts for 'only part of the period' (more than 3 months, more than 2 and up to 3 months, more than 1 month and up to 2 months, more than 5 days and up to one month, 5 days or less or could not say). The severity of the impacts were recorded in a similar fashion for the different categories (no effect, very minor effect, fairly minor effect, moderate effect, fairly severe effect, very severe effect or could not say). A score of zero was recorded where no impacts were reported. As part of the OIDP, subjects were asked if any of the impacts were directly attributed to tooth wear and if any of these impacts were attributed directly to tooth wear, then a condition specific performance score was also calculated. If an impact was reported for any of the performances, the overall performance score was calculated by multiplying the corresponding frequency and severity scores for that performance. The overall generic OIDP score was calculated by adding the 11 performance scores, multiplying this total by 100 and dividing by 275. A condition specific OIDP score was also calculated by totaling the scores of

the performances identified as being affected by the oral conditions 'sensitivity', 'shape and size of teeth' and 'tooth wear'. This value was again multiplied by 100 and the result divided by 275.

Pilot data was used to calculate a sample size. On the basis of a 2 sample t-test, to be able to detect a difference in mean OIDP score of 10 and assuming a standard deviation of 18, a total of 102 subjects would have an 80% power to detect statistically significant differences to a level of 5%. Statistical analyses were carried out using Statistical Package for Social Sciences version 20 software. Parametric tests were used on normally distributed data whereas non-parametric tests were used on non-normally distributed data. Statistical significance was inferred where $p < 0.05$. Multivariable linear regression analyses were performed to determine the effect of personality and general psychological well-being scores on quality of life with respect to BEWE scores. Analyses were performed with OIDP and condition specific OIDP scores as the dependent variables. The five individual personality scores, the GHQ score, and BEWE score were used as independent variables. A significant effect of tooth wear severity on Quality of Life, after adjusting for the various personality domains or GHQ scores, was inferred where $p < 0.05$

Inter and intra-operator repeatability of BEWE scores were calculated using Kappa measures and these were good (0.78 and 0.93 respectively).

Results

One hundred and thirteen subjects were originally approached to participate in the study. Eleven individuals declined, leaving 102 participants recruited into the study. 102 subjects with a mean and (Standard Deviation [SD]) age of 45.1 (13.5) were recruited into the study (53 males and 49 females). Overall, median and (Inter-Quartile range [IQR]) BEWE scores were 12 (11-14). No differences in median BEWE scores were detected between males and females ($p=0.389$). The patients had moderate to high levels of tooth wear. There was no missing data for any of the questionnaires.

Quality of life:

Table 2 shows the generic and condition specific prevalence of oral impacts among subjects. A higher OIDP score suggests decreased quality of life, whereas a lower ODIP score suggests a lesser impact on quality of life. As part of completing the quality of life questionnaire, subjects were asked about the main concern regarding their mouth with 49 subjects (48%) reporting tooth wear as their main concern, followed by appearance or pain. Overall median and (IQR) Generic OIDP scores were 6.2 (3.0 – 15.2), ranging from 0 - 63.6, whereas median and (IQR) Condition specific (CS) scores were 4.4 (0 – 9.1), ranging from 0 – 49. No differences in median generic OIDP and CS-OIDP scores were detected between males and females ($p<0.05$). Spearman's rank correlation coefficient showed positive correlations between age and generic OIDP score, indicating that with increasing age, subjects reported decreasing quality of life ($p = 0.030$) and this effect was unrelated to tooth wear severity.

General psychological well-being:

Median and (IQR) GHQ scores were 1 (0-5), ranging from 0-12. A higher GHQ score suggests decreased general psychological well-being, whereas a lower GHQ score suggests a lesser impact on general psychological well-being. No correlations were observed between GHQ scores and age and no differences in GHQ scores were observed between males and females ($p>0.05$). Spearman rank correlation coefficients showed positive correlations between generic and condition specific OIDP scores and GHQ scores ($p = 0.000$) indicating that as quality of life

(generic and condition specific) decreased, subjects reported a decrease in general psychological well-being.

Personality:

Table 3 shows the overall mean and standard deviation personality scores for males and females for the 5 domains. Higher scores in each of the domains indicate a higher trait of that domain. There were no significant differences in Neuroticism, Extraversion, and Conscientiousness between males and females ($p < 0.05$). Mann-Whitney U tests showed statistically significant differences between males and females for the domains of Openness ($p = 0.003$) and Agreeableness ($p = 0.000$), indicating that females showed higher Openness and Agreeableness scores. Spearman rank correlation coefficient was used to detect associations between the five personality domains, OIDP scores (generic and condition specific), and performance scores (generic and condition specific). Positive correlations were noted between increasing Neuroticism scores and generic OIDP score, and generic eating score, indicating that subjects with higher Neuroticism scores reported decreased quality of life affecting their eating scores, and these were unrelated to tooth wear ($p < 0.05$). Positive correlations were also noted in subjects with higher Neuroticism scores and overall CS-OIDP scores, CS-relaxing scores, CS-smiling scores, and CS-carrying out major work scores, indicating that subjects with higher Neuroticism scores reported decreased quality of life in these domains and that this effect was directly attributed to their tooth wear ($p < 0.05$). Positive correlations were also observed on subjects with higher Openness scores and generic emotional state, and generic ability to enjoy the contact with others score ($p < 0.05$), indicating that subjects with higher openness scores reported decreased quality of life in these domains and these were unrelated to tooth wear ($p < 0.05$).

Tooth wear severity and quality of life

Positive correlations were observed between increasing BEWE scores and generic and CS-OIDP scores ($p = 0.017$ and 0.031 respectively) indicating that as tooth wear severity increased, generic and condition specific quality of life decreased. Positive correlations were also observed between increasing BEWE scores and generic and CS emotional state scores and generic and CS eating scores ($p < 0.05$); indicating that as tooth wear severity increased so did its impact upon eating ($p < 0.05$).

Tooth wear severity, quality of life, personality and general psychological well being

Table 4 shows the p values for the multivariable regression analyses assessing quality of life and personality domain (Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness), when adjusted for BEWE score (* indicates statistical significance ($p < 0.05$))

Multivariable regression analyses for personality showed that Neuroticism score had a statistically significant effect on quality of life when adjusted for tooth wear severity. As the N score increased by one unit, the generic OIDP score increased on average by 0.46 units (CI 0.0165 – 0.755) and the CS-OIDP score increased on average by 0.239 units (CI 0.021 – 0.447) ($p = 0.003$ and 0.032 respectively). None of the other personality domains had an effect on quality of life on the regression analyses.

Regression analyses for general psychological well-being showed that GHQ scores had a significant effect on quality of life, when adjusted for tooth wear severity. As the GHQ score increased by one unit, the CS-OIDP score increased on average by 1.3 units (CI 0.824 – 1.827) ($p = 0.000$). These results showed that personality (Neuroticism domain) and general psychological well-being both had an independent effect on quality of life, independent of tooth wear severity.

Discussion

This cross-sectional study confirmed there is a complex relationship between quality of life, personality, and general psychological wellbeing in subjects with tooth wear. The findings suggest that quality of life perception is not a unidirectional process and that other psychosocial factors have an effect on quality of life which is independent of tooth wear severity. As dental professionals, when faced with a patient complaining of problems associated with a worn dentition, we may presume that once the dental issues have been managed they will be satisfied and able to continue with their everyday life. However our study showed us that patients with tooth wear may be affected by other factors which are outside of the remit of dentists and these factors have an influence on how a patient responds to their condition and its management.

The effect of general psychological well-being on subjects' perception of quality of life has not previously been investigated in patients with tooth wear. The GHQ alone has been used in a study which investigated benefits to psychological well-being from treatment with implant supported mandibular complete dentures showing statistically significant improvements in GHQ scores following completion of treatment (11) and similar findings were also shown in other studies (12). Within medicine, studies have been undertaken which explore the inter relationship between quality of life and general psychological well-being;(13) investigated the effect of pemphigus vulgaris on quality of life pre and post treatment using the Dermatology Life Quality Index, as well as evaluating psychological well-being using the GHQ. The authors reported a positive correlation between quality of life scores and general psychological well-being scores indicating that quality of life was influenced by psychological comorbidities in a similar way to our study. We may infer that regardless of the nature of the disease, an individual's perception of quality of life may be affected by their general psychological state.

Our results found that increasing severity of tooth wear had a detrimental effect on generic and condition specific quality of life, emotional state and ability to eat similar to findings by(14). Our study observed positive correlations between OIDP scores (both

generic and condition specific) and GHQ scores indicating that lower oral health related quality of life was associated with worse general psychological well-being, even after adjusting for the severity of the tooth wear. These findings suggest that subject's perception of quality of life is not only reliant on the specific condition being studied, in this case tooth wear. In this cohort of patients with tooth wear, it seems that general psychological well-being also had an effect on quality of life. There are a number of questions within the GHQ-12 which relate to the inability to carry out normal functions, for example: 'have you recently felt that you are playing a useful part in things?'; 'have you recently been able to enjoy your normal day-to-day activities?' and 'have you recently been able to concentrate on whatever you're doing?' This may explain why the general psychological well-being and quality of life scores appear to be related to one another. However, the current study design is not suitable for inferring causal relationships and we can only suggest that the factors may be inter-related.

Positive correlations were also observed between GHQ scores and a number of condition specific OIDP individual performance scores including: eating, speaking, cleaning and smiling. The condition specific scores relate to those subjects who attribute the impact upon their quality of life to tooth wear. Eating (due to reduced function), cleaning (due to hypersensitivity caused by exposed dentine) and smiling (appearance), are performances that we may expect to have been more associated with reduced general psychological well-being, as they may impact upon subjects general confidence and outlook on life. However the impact upon some performances such as speaking, are harder to explain and may be related to a decrease in self-confidence due to the awareness of worn teeth and the increased emphasis patients may place on their condition which may adversely affect their quality of life. As shown in this study, these factors do have a detrimental effect on quality of life.

The effect of personality on individuals' perceived quality of life has been widely researched within the fields of psychiatry and psychology and indeed within dentistry this appears to be a growing area of research. It is not surprising that most significant findings are in relation to subjects with higher Neuroticism scores as these subjects tend

to experience greater negative effects than others and are therefore more likely to be affected by small changes, which to them may seem catastrophic (15). Positive correlations were observed between higher neuroticism values and both generic and condition specific difficulty with eating scores. (16) investigated neuroticism as a possible risk factor for eating disorders and the authors reported increased neuroticism scores to be a major determinant factor in development of eating disorders. Unsurprisingly, a statistically significant positive correlation was discovered between neuroticism and the ability to relax. Those individuals with higher neuroticism scores find it harder to relax and this in turn have a negative effect on their quality of life. Referring back to McCrae and Costa Jr., neurotic individuals are more stressed and have difficulty in coping with stressful situations (15). A statistically significant positive correlation was observed between increasing neuroticism scores and increasing embarrassment with showing teeth and smiling, specifically related to tooth wear. Subjects who had higher neuroticism scores are more embarrassed to smile and show their teeth. Tooth wear can lead to pronounced aesthetic changes leaving an individual with discoloured and smaller teeth. High scorers of neuroticism will perceive this to be detrimental to their quality of life and in this case can attribute the cause directly to the tooth wear. Within the Openness domain statistically significant positive correlations were identified with emotional state and ability to enjoy the contact of others. We have already stated that Openness relates to interpersonal relationships and emotions and it is therefore unsurprising that these performances produce significant findings. Subjects report that they have difficulty enjoying the contact of others but they do not relate it to their tooth wear directly. As previously mentioned, these subjects may relate their difficulties to other life happenings that may be playing a more significant role than their tooth wear. Open subjects enjoy being around other people and if this is affected their emotional state is likely to be detrimentally affected.

Conclusions:

In this cohort of patients with tooth wear reduced levels of general psychological well-being and increased Neuroticism scores both had an independent effect the quality of life independent of tooth wear severity. These findings may help explain why different

individuals with the same levels of tooth wear experience differing impacts upon their quality of life. These findings suggest that treatment of pathological tooth wear may not be straightforward as there are factors which are outside of the dental professional remit.

Declaration of Interests

The authors declare no potential conflicts of interest with respect to the authorship and/or publication of this article.

Acknowledgements

The author's would like to acknowledge Dr Aviva Petrie for her kind assistance with the statistical analyses.

References

1. Berry DC, Poole DFG. Masticatory function and oral rehabilitation. *Journal of Oral Rehabilitation*. 1974;1:191-205.
2. Smith BGN, Knight JK. An index for measuring the wear of teeth. *British Dental Journal*. 1984;156:435-8.
3. Van't Spijker A, Rodriguez JM, Kreulen CM, Bronkhorst EM, Bartlett DW, Creugers NH. Prevalence of tooth wear in adults. *IntJProsthodont*. 2009;22:35-42.
4. Hemmings KW, Howlett JA, Woodley NJ, Griffiths BM. Partial dentures for patients with advanced tooth wear. *Dent Update*. 1995;22(2):52-9.
5. Al-Omiri MK, Lamey PJ, Clifford T. Impact of tooth wear on daily living. *IntJProsthodont*. 2006;19:601-5.
6. Rodriguez JM, Kalsi HJ, Khan MA, Bomfim DI, Tsakos G, McDonald A. Personality, wellbeing, and quality of life in patients with tooth wear. In: Lancet. T, editor. *Spring Meeting for Clinician Scientists in Training2013*.
7. Bartlett D, Ganss C, Lussi A. Basic Erosive Wear Examination (BEWE): a new scoring system for scientific and clinical needs. *ClinOral Investig*. 2008;12 Suppl 1:S65-S8.
8. Costa PT, McCrae RR. Personality Disorders and The Five-Factor Model of Personality. *Journal of Personality Disorders*. 1990;4:362-71.
9. Goldberg DP. *The detection of psychiatric illness by questionnaire*. Oxford University Press. 1972.
10. Adulyanon S, Vourapukjaru J, Sheiham A. Oral impacts affecting daily performance in a low dental disease Thai population. *Community Dent Oral Epidemiol*. 1996;24(6):385-9.
11. Fenlon MR, Palmer RM, Palmer P, Newton JT, Sherriff M. A prospective study of single stage surgery for implant supported overdentures. *ClinOral ImplantsRes*. 2002;13:365-70.
12. Kent G, Johns R. Effects of osseointegrated implants on psychological and social well-being: a comparison with replacement removable prostheses. *The International journal of oral & maxillofacial implants*. 1994;9:103-6.
13. Ghodsi SZ, Chams-Davatchi C, Daneshpazhooh M, Valikhani M, Esmaili N. Quality of life and psychological status of patients with pemphigus vulgaris using Dermatology Life Quality Index and General Health Questionnaires. *The Journal of dermatology*. 2012;39:141-4.
14. Abu Hantash RO, Al-Omiri MK, Al-Wahadni AM. Psychological impact on implant patients' oral health-related quality of life. *Clinical Oral Implants Research*. 2006;17:116-23.
15. Costa Jr PT, McCrae RR. Neo personality inventory—revised (neo-pi-r) and neo five-factor inventory (neo-ffi) professional manual. Odessa, FL: Psychological Assessment Resources. 1992.
16. Krabbendam L, Janssen I, Bak M, Bijl RV, de Graaf R, van Os J. Neuroticism and low self-esteem as risk factors for psychosis. *Social Psychiatry and Psychiatric Epidemiology*. 2002;37:1-6.

Table 1

Daily tasks evaluated with the Oral Impacts on Daily Performances (OIDP) quality of life questionnaire.

Eating.
Speaking.
Cleaning teeth.
Doing light physical activities.
Going out.
Sleeping.
Relaxing.
Smiling, laughing and showing teeth without embarrassment.
Maintaining usual emotional state.
Carrying out major work.
Enjoying the contact of other people.

Table 2
Prevalence of oral impacts among subjects (generic and condition specific).

Performances	No. of subjects affected by each generic performance – (%)	No. of subjects affected by each condition specific performance – (%)	Generic OIDP performance score median (IQR) {min-max}	CS-OIDP performance score median (IQR) {min-max}
Eating	54 (52.9%)	36 (35.3%)	4 (0-12) {0-25}	0 (0-9) {0-25}
Speaking	10 (9.8%)	3 (2.9%)	0 (0-0) {0-25}	0 (0-0) {0-25}
Cleaning teeth	33 (32.4%)	27 (26.5%)	0 (0-7.5) {0-25}	0 (0-3.5) {0-25}
Doing light physical activities	0 (0%)	0 (0%)	0 (0-0) {0-0}	0 (0-0) {0-0}
Going out	0 (0%)	0 (0%)	0 (0-0) {0-20}	0 (0-0) {0-20}
Sleeping	21 (20.6)	17 (16.7%)	0 (0-0) {0-20}	0 (0-0) {0-20}
Relaxing	20 (19.6%)	10 (9.8%)	0 (0-0) {0-25}	0 (0-0) {0-25}
Smiling	47 (46.1%)	38 (37.2%)	0 (0-15) {0-25}	0 (0-14.25) {0-25}
Emotional state	21 (20.6%)	11 (10.8%)	0 (0-0) {0-25}	0 (0-0) {0-25}
Carrying out major work	5 (2.5%)	3 (2.9%)	0 (0-0) {0-25}	0 (0-0) {0-25}
Enjoying contact of other people	13 (12.7%)	7 (6.9%)	0 (0-0) {0-25}	0 (0-0) {0-25}

Table 3

Overall mean and (standard deviation scores for males and females and p values for difference in domain scores between males and females for the five domains of personality (* indicates statistical significance ($p < 0.05$))

	N	E	O	A	C
Overall Mean and (SD)	21.71 (8.46)	28.59 (6.34)	30.74 (6.44)	31.25 (5.56)	31.89 (6.82)
Overall Mean and (SD) (males)	21.29 (6.88)	27.88 (6.80)	28.92 (6.45)	29.23 (4.94)	31.38 (7.37)
Overall Mean and (SD) (females)	22.06 (9.98)	29.57 (5.34)	32.57 (5.96)	33.53 (5.31)	32.41 (6.30)
p values (Males vs. Females)	0.707	0.151	0.003*	0.000*	0.506

Table 4

P values for Multivariable regression analyses assessing quality of life (generic and condition specific) whilst accounting for tooth wear (BEWE score) and personality domain (N/E/O/A/C) (* indicates statistical significance (p<0.05))

Domain	Generic OIDP (p values)	Condition specific OIDP (p values)
Neuroticism	0.003*	0.032*
Extraversion	0.516	0.252
Openness	0.544	0.760
Agreeableness	0.954	0.695
Conscientiousness	0.789	0.114