How to Cite:
Mantri, S. P., Asawa, K., & Kokate, S. (2022). Validation of Hindi version of oral health impact profile-17, a gauge of oral health related quality of life of endodontic patients. *International Journal of Health Sciences*, *6*(S3), 4950–4959. https://doi.org/10.53730/ijhs.v6nS3.6997

Validation of Hindi version of oral health impact profile-17, a gauge of oral health related quality of life of endodontic patients

Dr. Shivkumar P. Mantri
Scholar, Pacific University, Udaipur
Corresponding author email: shiv_mantri@yahoo.co.in

Dr. Kailash Asawa
Professor and Head, Community Dentistry, Pacific Dental College, Udaipur
Email: kailashasawaudr@yahoo.com

Dr. Sharad Kokate
Professor and Ex Dean, YMT dental College, Navi Mumbai.
Email: drkokate@hotmail.com

***Abstract*---**Oral health is a vital part of health, and promotes the overall health-related Quality of Life. It is essential to account for the disturbances in physical, psychological, and social functioning caused by oral conditions. The OHIP-17 is a self-filled English questionnaire that focuses on seven dimensions of impact on Oral Health Related Quality of Life (OHQoL). The present study aims to corroborate a Hindi version of OHIP-17 to evaluate the OHQoL of endodontic patients. The OHIP-17 (English version) was translated in Hindi for linguistic and cultural adaptation by using the back translation technique to maintain cross-cultural equivalence. It was validated qualitatively for face and content validity in a pilot study on 20 participants.The comprehensiveness of the instrument was tested by asking about difficulties in understanding items or frequencies, in order to optimize the face and content validity. Reliability was assessed using test-retest reliability on 112 adult patients. Total score of the was calculated by summing up the responses for the 17 items. The data were subjected to statistical analysis. The overall value of Cronbach's alpha coefficient was estimated to be 0.9258, indicating good internal consistency. There was no significant difference in original English and translated Hindi version of OHIP-17 (p=0.8258). Pearson correlation coefficient test results showed very strong positive correlation (0.9707). The translated Hindi version of the OHIP-17 is a valid and reliable

instrument to measure the OHrQoL of Hindi speaking endodontic patients.

***Keywords*---**endodontics, Hindi, OHIP-17, oral health related quality of life.

Introduction

Oral health is an integral part of health, and contributes to the overall health-related QoL.[1] Oral Health related Quality of Life (OHrQoL) is defined as "the impact of oral disease and disorders on aspects of everyday life that a patient or person values, that are of sufficient magnitude, in terms of frequency, severity or duration to affect their experience and perception of their life overall".[2] It is essential to account for the disturbances in physical, psychological, and social functioning caused by oral conditions. [3] Clinical indicators were falling short to tap this new dimension of health so researchers developed a new tool i.e Health Related Quality of Life measures that has gained momentum in the last two decades; and OHRQoL form its extension in the oral health care arena. However most of these measures are for the adult population[4].

There has been a paradigm shift in health care to assess treatment needs and treatment outcomes from the perspective of the patient rather than rely on the perspective of clinicians alone. Pain and discomfort arising from endodontic diseases have long been considered in diagnosis and treatment planning[4-8]. However, arguably, it is the impact and consequence of these symptoms on the quality of life (QoL) or daily living that are important in providing understanding of the burden of the diseases and ultimately in determining the benefit of care to the lives of patients[9-12]. Quality of life instruments are valuable because they measure the population's perception of the impact of oral disorders on well-being[13-19]. A number of oral health-related QoL instruments has been developed due to growing appreciation of the importance of QoL. These instruments have been used to assess the impact of various oral conditions and treatments, such as advanced periodontal disease, tooth loss, and dental implants [20-25].

The dimensions captured by the quality of life instruments are also related to endodontic disease. The use of these instruments could probably reveal how endodontic disease and treatment are envisioned from the patient's perspective.
One such instrument used to assess quality of life in relation to oral disorders is the Oral Health Impact Profile (OHIP), developed by Slade and Spencer. [26] It measures self-reported dysfunction, discomfort, and disability; these impacts are intended to complement traditional oral epidemiological indicators of clinical disease. [27] Dugas narrowed the original OHIP and included 17 questions. OHIP-17 was adapted by limiting the original instrument's 49 items to those that reflect elements that can be related to endodontic disease.[28] The resulting 17 questions were chosen to evenly capture the seven conceptually formulated dimensions, or subscales of oral health. They were hierarchized to capture outcomes that have increasingly disruptive impacts on people's lives[29].

OHIP-17 was originally developed in English. Therefore, when used in a non-English-speaking population that is culturally different, it should be translated and validated to ensure its proper use[30]. Hence, the present study aims to corroborate a Hindi version of OHIP-17 to evaluate the oral health related quality of life. This version would be useful to assess the QoL of endodontic patients who understand Hindi language.

Materials and Methods

The institutional ethics committee clearance was obtained. Patients informed consents were acquired. The OHIP-17 is a self-filled questionnaire. Participants were asked to respond according to frequency of impact on a 5-point Likert scale coded never (score 0), hardly ever (score 1), occasionally (score 2), fairly often (score 3), and very often (score 4). The evaluation process was conducted first by performing the translation to Hindi, followed by face and content validity, and finally, the reliability testing.

Translation

The OHIP-17 was linguistically and culturally adapted by using the back translation technique in order to maintain cross-cultural equivalence. In this procedure, translations were independently made by two bilingual individuals, who then discussed and produced a consensus Hindi version which was translated back into English by a bilingual professor who had never seen the original version. These three copies (original English, Hindi, and back translated English) were assessed by one endodontist and one public health dentist. The contraindications and inconsistencies between the back-translated (OHIP-17 Hindi) and the original version were compared and corrected, and making sure that the translation was conceptually equivalent to the original version.

Validity

Appraisal of face validity of prepared Hindi OHIP-17 was done to check the clarity of understanding, logic and reflection of oral health and disease patterns in all questionnaire components. It was qualitatively assessed in the pilot study in which the index was administered to a convenience sample (n = 20) obtained from patients who came for an oral check-up. Participants were clinically examined and completed the pilot OHIP-17 Hindi. The comprehensiveness of the instrument was tested by asking about difficulties in understanding items or frequencies, in order to optimize the face and content validity. The suggestions obtained from the pilot testing were discussed with the experts that were involved in translation process which was considered to bring slight changes in the wording of some questions. On re-administration of the questionnaire after corrections, all patients agreed that the questionnaire was much more simple and understandable. Properly translated and adapted questionnaire was assessed by two endodontists and was found to be satisfactory.

Reliability

Reliability was assessed using test-retest reliability (intra-class correlation coefficient). One hundred and twelve individuals, who fulfilled the inclusion and exclusion criteria, were provided with a self-administered Hindi version of OHIP-17. The inclusion criteria were participant who could understand Hindi and English language and who were above the age of 18 years. The exclusion criteria were individuals who were unwilling to take part in the study. The same participants were also given the English OHIP-17 questionnaire. Participants were told to choose one option from the mentioned responses that immediately came into mind and that aptly represented their oral health. The same questionnaire was re-administered at 3 week interval, to evaluate the test–retest reliability of the OHIP-17. Using the additive method, the total score of the OHIP-17 was calculated by summing up the responses for the 17 items. The values of OHIP score ranged from 0 to 68, with higher scores indicating lower OHRQoL.

Statistical analysis

The psychometric properties of OHIP-17 were tested via reliability and validity tests. Level of significance was set at $P \leq 0.05$ (95% confidence interval). Unpaired t-test was used to check the difference in the translated questionnaire as compared to original questionnaire. Further, Cronbach's α was used to determine the internal consistency of the questionnaire. Correlation between both instruments was assessed using Pearson correlation coefficient. $P < 0.05$ was considered statistically significant.

Results

The mean age of the study population was 36 years. Out of 112 individuals, 58 were male and 54 were female. All the individuals were literate, had at least a high school education and had knowledge of both English and Hindi. Participant selection was based upon their ability to understand the questionnaire well and respond appropriately. On clinical examination, participants mostly showed a good state of oral health. The comparison between the original OHIP-17 and the back translated English version did not reveal conceptual content differences. The high perspicuity was verified in the pilot study with no missing items of the self-answered questionnaire. In main study, no items were missing per person and none misunderstanding items were reported. The investigator had made sure that the respondents understood the questions. The simple format of the self-administered questionnaire with a frequency Likert-type scale of self-reported oral impacts was considered sufficient to verify its face validity. The content validity was also considered satisfactory since OHIP-17 Hindi, enquires into a broad spectrum of physical, psychological and social dimensions and these dimensions emerge from a sound theoretical base.

Table 1
Cronbach's alpha with item detail: Item-test correlations and Item-rest correlations

Component	Item	Item-test correlations	Item-rest correlations	Alpha
Functional limitation	1 Trouble Pronunciation.	0.4724	0.3892	0.9284
	2 Taste worsened	0.8258	0.7960	0.9173
Physical pain	3 Painful aching	0.8033	0.7662	0.9177
	4 Uncomfortable to eat	0.6680	0.6109	0.9220
	5 Alter temperature of foods	0.3604	0.2764	0.9306
Psychological discomfort	6 Tense	0.7663	0.7223	0.9189
	7 Self-conscious	0.8802	0.8568	0.9152
Physical disability	8 Diet unsatisfactory	0.8856	0.8545	0.9147
	9 Interrupt meals	0.7511	0.7109	0.9194
Psychological disability	10 Difficult to relax	0.3345	0.2748	0.9285
	11 Difficult to fall asleep	0.2545	0.1929	0.9315
	12 Awakened	0.4219	0.3604	0.9272
	13 feeling embarrassed	0.5255	0.4663	0.9251
Social disability	14 Irritable	0.7956	0.7617	0.9182
	15 Difficulty doing usual job	0.9335	0.9195	0.9132
Handicap	16 Felt life less satisfying	0.8048	0.7759	0.9184
	17 Totally unable to function	0.9502	0.9420	0.9147
Test scale				0.9258

The translated Hindi version of OHIP-17 revealed good internal reliability with a value of item-wise Cronbach's alpha ranging from 0.91 to 0.93. The overall value of Cronbach's alpha (α) coefficient was estimated to be 0.9258, indicating good internal consistency [Table1]. The exclusion of one of the 17 items from the list resulted in lower alpha value supporting the hypothesis that all 17 items should be included.

Table 2
Comparison of English and Hindi version of OHIP-17 by unpaired t test.

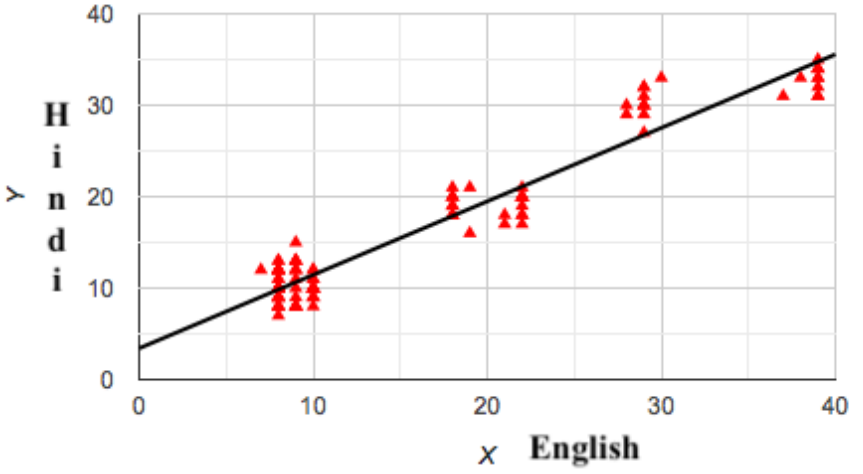
Group	n	mean	SD	SEM	t	df	p
English	112	16.26	8.51	0.80	0.2203	222	0.8258
Hindi	112	15.98	10.22	0.97			

Table 3
Correlating English and translated Hindi version of Oral Health Impact Profile-17 by Pearson correlation coefficient

Statistical test	English	Hindi
Pearson correlation coefficient (r)	1	0.9707*
P-value	0.000	
Sample size (n)	112	

*Very strong positive correlation

Comparative results of an entire questionnaire of original English OHIP-17 and translated Hindi version of OHIP-17 showed no significant difference in an unpaired *t*-test (0.8258) [Table 2]. Pearson correlation coefficient test results showed very strong positive correlation (0.9707)



Graph 1. Correlation between English and Hindi version of OHIP-17.

Discussion

Several approaches may be used to assess the impact of treatment on quality of life, including both generic health-related quality of life (HRQoL) and OHRQoL assessments[31-35]. Determining impact of endodontic treatment on HRQoL has a certain appeal in that effects can be compared with those of other dental and medical interventions, and potentially inform health economic analyses. However, there are concerns that it may be challenging to assess the often subtle and specific change to QoL that arise from dental/endodontic interventions from HRQoL assessments and thus the more widespread use of OHRQoL measures. The Oral Health Impact Profile (OHIP) is the most commonly employed, which is a well-established standardized measure that has been adapted for use in several languages and numerous countries.

Cross-cultural adaptation procedures are a critical component of the validation process of an instrument that has been developed among other target population. The dimensions covered by the questionnaire are critical psychometric criteria for measuring health status [37] Quality of life indicators are designed to measure health from a holistic conception which is increasingly recognized as including psychological and sociological aspects that only can be expressed by subjective feelings. An array of measures had been used in measuring the OHRQoL, and this in part reflects that there is no one set gold standard measure[38]. Maintaining the validity and reliability of a questionnaire is an important part of translation process. For any instrument to be effective, its reliability should be very high. The reliability for these instruments is generally measured in terms of Cronbach's

alpha. According to Nunnally and Bernstein[40], the standard criteria for reliability should have a minimum value of Cronbach's alpha as 0.7.

In this case, we obtained a high Cronbach's alpha value of 0.925. The value of Cronbach's alpha did not rise more than 0.94 even when any of the 17 items was deleted from the instrument. This signifies that the consistency of the questions in the instrument had good uniformity. The corrected item-total correlation coefficients had a range from 0.9132 to 0.9315 which indicated a very satisfactory homogeneity and justified the inclusion of the items in the scale. Scale reliability coefficient range of the test-retest reliability for the 17 items in our study was 0.631-0.989. At least 80% correlation is needed for a translated instrument to be a valid version of the original instrument. In the existent study, a strong positive correlation (Pearson correlation = 0.9707 i.e. 97%) was found between the original English version of OHIP-17 and translated Hindi version of OHIP-17. The comparison between the original version of OHIP-17 and the back-translated version showed no differences in content and concepts[41].

In the present study, results of unpaired *t*-test (p=0.8258) and a strong positive correlation between the original and translated questionnaire showed the validity of translated Hindi version OHIP-17. It a concise, valid, and reliable tool for assessing the oral health-related quality of life of endodontic patients who speak Hindi. The OHIP-17 includes one additional item in 'physical pain' and two more questions in 'psychological discomfort' domain of the questionnaire, as compared to OHIP-14. OHIP-14 has been translated and validated in Hindi by various authors. [42-44] Many patients in need of endodontic treatment report alteration of temperature of food, difficulty to fall asleep or awakened from sleep. These items are not included in OHIP-14. This might affect the efficacy of OHIP-14 to assess the impact on quality of life of individuals seeking endodontic treatment.

OHIP-17 questionnaire is a cost-effective instrument for research because of the limited, definitive questions and the self-rating character. It helps to identify patients with low degree quality of life and reason which predisposes such conditions. This will make it easier for oral health policymakers to adapt and plan health-care services in order to improve people's oral health-related quality of life[45]. Future studies should provide information regarding test–retest stability and the ability of the tool to discriminate between groups with different levels of oral health assessed by traditional clinical measures. The responsiveness of the questionnaire could be studied through administration as part of a randomised controlled trial. Despite of the increasing number of rigorous studies focusing on quality of life, we still know relatively little about how oral conditions affect people's feelings of wellbeing. There is a need to carry out longitudinal studies to increase the degree of evidence and assess the sensitivity of the OHIP-17 Hindi version to detect changes in OHRQoL[46-50]. Future efforts should be directed towards exploring the ultimate modulating factors or traits that cause participants to experience dental treatment needs, complaints, or frequent oral impacts despite having good oral health and a high degree of satisfaction.

Conclusion

The translated Hindi version of the OHIP-17 questionnaire has an acceptable validity and reliability and is a suitable instrument to measure the OHRQoL in the adult population requiring endodontic treatment.

References

1. Gift HC, Atchison KA. Oral health, health, and health-related quality of life. Med Care 1995;33(Suppl 11),:NS57-77
2. Locker D, Allen F. What do measures of 'oral health-related quality of life' measure? *Community Dentistry and Oral Epidemiology.* 2007;35:401–411. doi: 10.1111/j.1600-0528.2007.00418.x.
3. Locker D, Slade G. Association between clinical and subjective indicators of oral health status in an older adult population. Gerodontology 1994;11:108 – 14.
4. Slade GD, Spencer AJ. Social impact of oral conditions among older adults. Aust Dent J 1994;39:358–64.
5. Allen PF, McMillan AS, Walshaw D, Locker D. A comparison of the validity of generic- and disease-specific measures in the assessment of oral health-related quality of life. Community Dent Oral Epidemiol 1999;27:344–52.
6. Slade GD, Spencer AJ. Development and evaluation of the Oral Health Impact Profile. Community Dent Health 1994;11:3–11.
7. Slade GD, Strauss RP, Atchison KA, Kressin NR, Locker D, Reisine ST. Conference summary: assessing oral health outcomes—measuring health status and quality of life. Community Dent Health 1998;15:3–7.
8. Dugas NN, Lawrence HP, Teplitsky P, Friedman S. Quality of life and satisfaction outcomes of endodontic treatment. *J Endod* 2002; 28: 819-827.
9. Brislin RW. Back-translation for cross-cultural research. J Cross Cult Psychol 1970;1:185-216.
10. Steel JG, Sanders AE, Slade GD, et al. How do age and tooth loss affect oral health impacts and quality of life? A study comparing 2 national samples. Community Dent Oral Epidemiol 2004;32:107-14.
11. Nunnally JC, Bernstein I. Psychometric Theory. 2nd ed. New York, USA: McGraw-Hill; 1994.
12. Batra M, Aggarwal VP, Shah AF, Gupta M. Validation of Hindi version of oral health impact profile-14 for adults. J Indian Assoc Public Health Dent 2015;13:469-74.
13. Verma S, Sharma H. Translation and validation of hindi version of oral health impact profile-14, a measure of oral health-related quality of life of geriatrics. Indian J Dent Res 2019;30:180-4.
14. Deshpande NC, Nawathe AA. Translation and validation of Hindi version of Oral Health Impact Profile-14. J Indian Soc Periodontol 2015;19:208-10.
15. Bennadi D, Reddy CV. Oral health related quality of life. J Int Soc Prev Community Dent. 2013;3(1):1-6.
16. Skaret E, Astrom AN, Haugejorden O. Oral Health Related Quality of Life (OHRQoL) review of existing instruments and suggestions for use in oral

health outcome research in Europe. European Global Oral Health Indicators Development Project. Paris: Quintessence International. 2004:99-110.
17. Atchison KA, Dolan TA. Development of the geriatric oral health assessment index. Journal of dental education. 1990;54(11):680-87.
18. Strauss RP, Hunt RJ. Understanding the value of teeth to older adults: Influences on the quality of life. J Am Dent Assoc. 1993;124(1):105-10.
19. Locker D, Miller Y. Evaluation of subjective oral health status indicators. Journal of Public Health Dentistry. 1994;54(3):167-76.
20. Slade GD, Spencer AJ. Development and evaluation of the oral health impact profile. Community Dental Health. 1994;11(1):03-11.
21. Slade GD. Derivation and validation of a short-form oral health impact profile. Community Dent Oral Epidemiol. 1997;25(4):284-90.
22. Allen F, Locker D. A modified short version of the oral health impact profile for assessing health-related quality of life in edentulous adults. Int J Prosthodont. 2002;15(5):446-50
23. Leao A, Sheiham A. Relation between clinical dental status and subjective impacts on daily living. J Dent Res. 1995;74(7):1408-13.
24. 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):385-89.
25. Cornell JE, Saunders MJ, Paunovich ED, Frisch MB. (1997). Oral Health Quality of Life Inventory (OH-QoL). In G. Slade (ed.), Assessing Oral Health outcomes: Measuring Health Status and Quality of Life (pp. 135-149). Chapel Hill, NC: University of North Carolina Press.
26. McGrath C, Bedi R. An evaluation of a new measure of oral health related quality of life-OHQoL-UK (W)©. Community dent Health. 2001;18(3):138-43.
27. Burke FJ, Busby M, McHugh S, Mullins A, Matthews R. A pilot study of patients' views of an oral health scoring system. Primary Dental Care. 2004;11(2):37-39.
28. Jokovic A, Locker D, Stephens M, Kenny D, Tompson B, Guyatt G. Validity and reliability of a questionnaire for measuring child oral-health-related quality of life. J Dent Res. 2002;81(7):459-63.
29. Locker D, Jokovic A, Stephens M, Kenny D, Tompson B, Guyatt G. Family impact of child oral and oro-facial conditions. Community Dent Oral Epidemiol. 2002;30(6):438-48.
30. Jokovic A, Locker D, Stephens M, Kenny D, Tompson B, Guyatt G. Measuring parental perceptions of child oral health-related quality of life. J Public Health Dent. 2003;63(2):67-72.
31. Jokovic A, Locker D, Tompson B, Guyatt G. Questionnaire for measuring oral health-related quality of life in eight-to ten-year-old children. Pediatric Dentistry. 2004;26(6):512-18.
32. Filstrup SL, Briskie D, Da Fonseca M, Lawrence L, Wandera A, Inglehart MR. Early childhood caries and quality of life: Child and parent perspectives. Pediatr Dent. 2003;25(5):431-40.
33. Gherunpong S, Tsakos G, Sheiham A. Developing and evaluating an oral healthrelated quality of life index for children; the CHILD-OIDP. Community Dent Health. 2004;21(2):161-69.
34. Pahel BT, Rozier RG, Slade GD. Parental perceptions of children's oral health: The Early Childhood Oral Health Impact Scale (ECOHIS). Health and Quality of Life Outcomes. 2007;5(1):6.

35. Broder HL, McGrath C, Cisneros GJ. Questionnaire development: Face validity and item impact testing of the Child Oral Health Impact Profile. Community Dent Oral Epidemiol. 2007;35:08-19.
36. Huntington NL, Spetter D, Jones JA, Rich SE, Garcia RI, Spiro III A. Development and validation of a measure of pediatric oral health-related quality of life: The POQL. Journal of Public Health Dentistry. 2011;71(3):185-93.
37. Tsakos G, Blair YI, Yusuf H, Wright W, Watt RG, Macpherson LM. Developing a new self-reported scale of oral health outcomes for 5-year-old children (SOHO-5). Health and quality of life outcomes. 2012;10(1):62.
38. Zaror C, Pardo Y, Espinoza-Espinoza G, Pont À, Muñoz-Millán P, MartínezZapata MJ, et al. Assessing oral health-related quality of life in children and adolescents: A systematic review and standardised comparison of available instruments. Clinical Oral Investigations. 2019;23(1):65-79.
39. Gilchrist F, Rodd H, Deery C, Marshman Z. Assessment of the quality of measures of child oral health-related quality of life. BMC Oral Health. 2014;14(1):40. Locker, D. and Allen, P.F. (2007) What do measures of "oral health-related quality of life" measure? Community Dentistry Oral Epidemiology, 35, 401-411.
40. Brondani, M.A. and MacEntee, M.I. (2007) The concept of validity in sociodental indicators and oral health-related quality-of-life measures. Community Dentistry Oral Epidemiology, 35, 472-478.
41. Locker, D. (1988) Measuring oral health: A conceptual framework. Community Dentistry Oral Epidemiology, 5, 3-18.
42. Slade, G.D. and Spencer, A.J. (1994) Development and evaluation of the oral health impact profile. Community Dental Health, 11, 3-11.
43. John, M.T., Patrick, D.L. and Slade, G.D. (2002) The German version of the oral health impact profile— Translation and psychometric properties. European Journal of Oral Sciences, 110, 425-433.
44. Larsson, P., List, T., Lundstrom, I., Marcusson, A. and Ohrbach, R. (2004) Reliability and validity of a Swedish version of the oral health impact profile (OHIP-S). Acta Odontologica Scandinavia, 62, 147-152.
45. Pires, C.P., Ferraz, M.B. and de Abreu, M.H. (2006) Translation into Brazilian Portuguese, cultural adaptation and validation of the oral health impact profile (OHIP-49). Brazilian Oral Research, 20, 263-268.
46. van der Meulen, M.J., John, M.T., Naeije, M. and Lobbezoo, F. (2008) The Dutch version of the oral health impact profile (OHIP-NL): Translation, reliability and construct validity. BMC Oral Health, 8, 11.
47. Wong, M.C., Lo, E.C. and McMillan, A.S. (2002) Validation of a Chinese version of the oral health impact profile (OHIP). Community Dentistry Oral Epidemiology, 30, 423-430.
48. Slade, G.D. (1997) Derivation and validation of a shortform oral health impact profile. Community Dentistry Oral Epidemiology, 25, 284-290.
49. Ravaghi, V., Farrahi-Avval, N., Locker, D. and Underwood, M. (2010) Validation of the Persian short version of the oral health impact profile (OHIP-14). Oral Health & Preventive Dentistry, 8, 229-235.
50. Fernandes, M.J., Ruta, D.A., Ogden, G.R., Pitts, N.B. and Ogston, S.A. (2006) Assessing oral health-related quality of life in general dental practice in Scotland: Validation of the OHIP-14. Community Dentistry Oral Epidemiology, 34, 53-62.