Gingival Recession and Dentine Hypersensitivity in Periodontal Patients: is It Affecting Their Oral Health Related Quality of Life?

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Abstract

Gingival recession (GR) and dentine hypersensitivity (DH) seen in patients have shown to affect quality of life. To date there is little reference on how both conditions affecting the patients. The objectives of this study were to determine the prevalence of DH in teeth with GR and the impact of GR and DH on oral health related quality of life (OHrQoL). Convenient samplings of 31 periodontal patients with 146 teeth presenting GR buccally were selected for the study. The teeth were tested for DH. Patients were then subjected to Modified Oral Health Impact Profile (OHIP-14) questionnaires. The data was analysed with SPSS20.

Results showed that 52.7% of teeth with GR were respond positive and 47.3% negative to for DH test. 69.5% of patients perceived that they sometimes experienced pain in the gum while 69.2% also sometimes experienced sensitivity to the teeth. However only 26.9% felt that DH was due to GR while equal percentage of patients never thought so.

Patients with GR showed symptoms of DH and that would affect their OHRQoL, in some aspects. Thus it is wise to anticipate problems and provide preventive treatment option for patients for quality health care service delivery

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Introduction

Gingival recession (GR) is an intriguing and complex phenomenon and often become a source of anxiety to patients and perplexity to those treating them. GR is measured as the distance from marginal gingiva to cemento-enamel junction (CEJ)[1]. It is a common condition and its extent and the prevalence increase with age. Many factors including trauma and periodontal disease have a role in its aetiology[2,3,4]. GR should be thoroughly assessed and evaluated in order to offer the most suitable management for the patients[5,6].

Dentine hypersensitivity (DH) is defined as short or transient sharp pain of a rapid onset that arises from exposed dentin. It usually occurs in response to stimuli typically thermal, evaporative, tactile, osmotic, or chemical and cannot be ascribed to any other dental defects or pathology[7,8]. The pain experience varies for different individuals as a result of factors, such as age, gender, situation and context, previous experiences, present expectations, and a host of other psychological and physiological conditions which are difficult to characterize. DH is a chronic condition with acute exacerbations. Acute pain often causes anxiety, while chronic pain is more likely to lead to depression. The pain of hypersensitivity may lead to the expression of both[9].

Oral health-related quality of life (OHrQoL) is a part of health-related quality of life that focuses on oral health and orofacial concerns. It describes the way in which oral health affects a person's ability to function, psychological status, social factors and pain or discomfort[10]. Therefore, the OHrQoL attempts to represent the subjective side of oral health. Not surprisingly, as with health-related quality of life, the term OHrQoL has no strict definition[11]. However, it is generally agreed that it is also a multidimensional concept. One example of a simple definition is the one provided by the U.S. Surgeon General's report on oral health, which defines OHrQoL as "a

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multidimensional construct that reflects (among other things) people's comfort when eating, sleeping, and engaging in social interaction; their self-esteem; and their satisfaction with respect to their oral health"[12].

World Health Organization (WHO) described OHrQoL as an International Classification of Functioning, Disability and Health which suggests that health conditions and contextual factors in the form of personal and environmental variables interact to influence three distinct components of health: body structure and functioning, activities and participation, each of which can be measured negatively or positively. These components of health are quantified according to a generic scale as follows: very often, quite often, sometimes, seldom and never. The approaches are not mutually exclusive. Each approach has its strengths and weaknesses and may be suitable for different circumstances. Investigations in HRQL have led to instruments suitable for detecting minimally important effects in clinical trials, for measuring the health of populations, and for providing information for policy decisions[13,14,15].

Patients are often anxious about GR for one or several reasons, including fear of losing the tooth, DH, unsightly appearance of the exposed root (which may be stained, abraded, or carious) and connotations with ageing. Unless advancing periodontal disease is part of the underlying cause of GR, patients can usually be reassured that loss of the involved tooth is unlikely. As certain patients observe GR developing over the years, their belief that this is part of their ageing process is understandable, but whether their assumption is necessarily valid may be debatable, given the likely cumulative effect of several factors on GR such as use of hard toothbrush[16]. Because of the possible interplay between different factors, it is difficult to predict at a given site whether further changes in GR dimensions may occur.

Bekes et al. 2017 reported that five most reported problems of DH affecting OHrQoL were functional limitation, pain, and psychological discomfort, physical, psychological and social disability. The prevalence of these items decreases with treatment on the DH[17].

Thus, we hypothesised that DH in patients with GR recession might have affective impacts on their everyday life. The objectives of this study were to determine the prevalence of DH in teeth with GR and the impact of GR and DH on oral health related quality of life (OHrQoL).

Materials and methods

A convenience sampling method of 26 subjects aged 25–64 years were recruited in this study. The subjects were selected from the folders of patients who came for periodontal treatment at the Faculty of Dentistry UiTM clinic. Inclusion Criteria included patients with basic periodontal examination with (BPE*) and GR on the buccal of teeth. Exclusion Criteria involved subjects with impacted teeth, teeth treated for hypersensitivity, retained roots, grossly broken-down teeth, teeth which were too inaccessible to examine satisfactorily, teeth in which the cemento-enamel junction (CEJ) was indeterminable on clinical examination, gingival hyperplasia, patients on medication that induced gingival hyperplasia, teeth with cervical erosion, abfraction, and abrasion cavity.
Patient's selection was based on periodontal charting with 130 teeth with gingival recession. Ethical approval was obtained from the Universiti Teknologi Research ethics committee (600-RMI (511/6/01). Appointment was given to the selected patients to evaluate DH with GR. Modified Oral Health Impact Profile (OHIP) questionnaires were given and collected from these patients[18]. DH was diagnosed by using air blast test for every tooth of the patient that has GR[19]. Measurement of GR was recorded according to Miller 1985[20]. Sharp dental explorer number 9 was used to evaluate the DH. The explorer was run over the sensitive area of a tooth and patient was asked to grade the pain response on a numeric severity scale of 0-3 [21]. An air blast from a three in one air / water syringe has been used as a means of combining thermal and evaporative stimulation of sensitive dentine [22, 23] The patient's response to cold air sensitivity was assessed using a dental air syringe applied 1 cm away from and perpendicular to the root surface and a simple positive/negative response to the stimulus was recorded. Neighbouring teeth were isolated during testing using the operator's fingers. Modified Oral Health Impact Profile (OHIP-14) questionnaires consisted of 10 on physical questions, 10 on psychological questions and 8 social questions[18].

Data were collected by measuring the

number of teeth with GR and teeth with DH. Patients with DH and GR were given the questionnaires in order to assess their OHrQoL. Results were further statistically analysed by using SPSS version 20, cross tabulation, frequency table were applied, and Significance level was set at 0.05.

Results

The impact of OHrQoL on GR and DH was analysed with individuals experiencing some negative impact factors across broad range of physical and psychological aspects. A total of 146 teeth with GR, 52.7 %(n=77) has DH (figure 1).

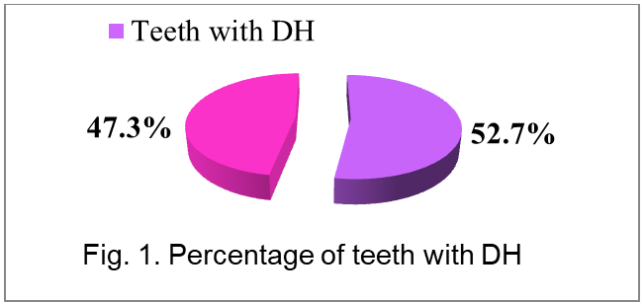

Fig. 1. Percentage of teeth with DH

Figure 1. A total 146 teeth with GR, 52.7 %(n=77) has DH.

Physical aspects	DH		GR	
	Percentage (%)	P value	Percentage (%)	P value
Difficulty in chewing food	Y : 71 N : 29	0.004	Y : 55 N : 45	0.590
Performance disturbed	Y : 45 N : 55	0.590	Y : 55 N : 45	0.590
Low motivation	Y : 39 N : 61	0.209	Y : 48 N : 52	0.857
Difficulty in tooth brushing	Y : 74 N : 26	0.007	Y : 71 N : 29	0.048
Avoid certain food	Y : 74 N : 26	0.002	Y : 71 N : 29	0.048

Table 1. Physical impacts on DH and GR.

The impact of OHrQoL of the patients was considerable with substantial physical, psychological, and social influences. Many individuals perceived their oral health conditions as detracting from their physical state (i.e. positive impact and negative impact), experienced difficulty in chewing food only occur in DH patients ($p<0.004$) with no significant impact in patients with GR, difficulty in brushing teeth in both DH ($p<0.007$) and GR ($p<0.048$) and avoiding certain food in both DH ($p<0.02$) and GR ($p<0.04$). *(Table 1, Fig.2)*

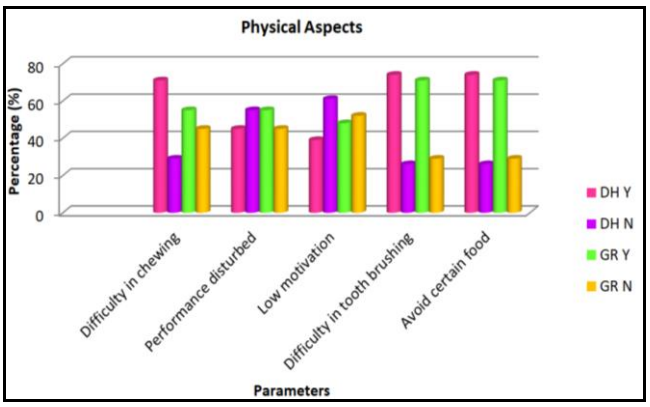

Figure 2. DH and GR on Physical impacts.

Psychological influences across certain aspects, patients were shown to be worried having DH ($p<0.01$) and GR ($p<0.001$). (Table 2, Fig. 3)

Psychological aspects	DH		GR	
	Percentage (%)	P value	Percentage (%)	P value
Stress	Y : 61 N : 39	0.369	Y : 61 N : 39	0.209
Less confident	Y : 61 N : 39	0.369	Y : 58 N : 42	0.209
Worried	Y : 81 N : 29	0.001	Y : 84 N : 16	0.000
Sad	Y : 61 N : 29	0.209	Y : 58 N : 42	0.369
Avoid smile	Y : 39 N : 61	0.209	Y : 42 N : 58	0.369

Table 2. DH and GR on Psychological impacts on.

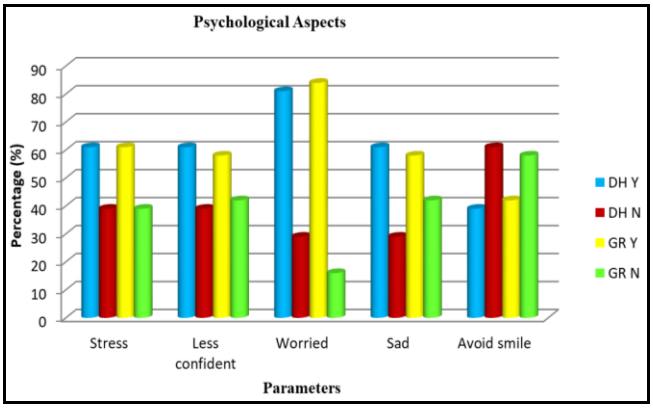

Figure 3. Psychological impacts on DH and GR.

The social aspects however were not affected with the presence of DH and GR. (Table 3, Fig. 4.)

Social aspects	DH		GR	
	Percentage (%)	P value	Percentage (%)	P value
Unable to carry out daily activities	Y : 48	0.857	Y : 38	0.209
	N : 52		N : 61	
High money expenditure	Y : 45	0.590	Y : 42	0.369
	N : 55		N : 58	

Table 3. DH and GR on Social impacts.

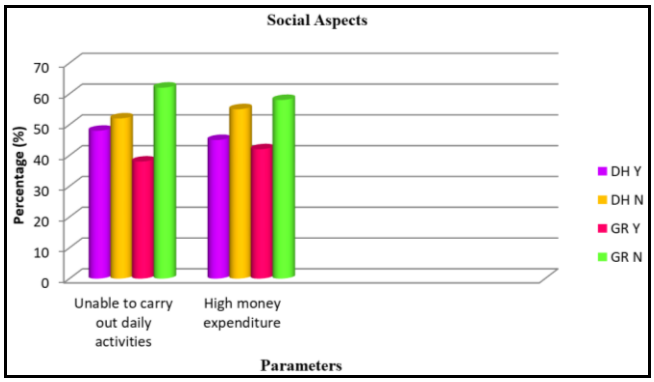

Figure 4. DH and GR Social impacts.

Discussion

Prevalence of dentin hypersensitivity in relation to the gingival recession was evaluated, the percentage of teeth having DH in this study was 52.7% (n=77) which was lower than 91% (n=708) that reported by Rees[24] and Rees & Addy[25] ,where the sensitive teeth examined was associated with buccal GR. Chabanski et al. [26] also reported that the prevalence of DH in the population attending a specialist periodontal clinic was very high (84%) , there was no difference in the distribution between males and females, however DH was not regarded as severe complaint by most patients who generally did not ask for treatment. The pain reported was of low grade, slight and occasional. Few patients used tooth paste contain desensitizing agent, the patients generally did not seek professional treatment[27]. Recent study carried out by Mahajan et al. revealed that the prevalence of DH was 64.2%. First premolar was the most commonly affected tooth. The risk factor which exaggerates DH response related to periodontal diseases includes poor oral hygiene and clinical attachment loss (gingival recession). The predominant risk factors appear to be horizontal tooth brushing and acidic beverage intakes such as juices and soft drinks[28].

The prevalence in our study population was (52.7%),this low could be due to number of sample in our study, whoever many factors can cause gingival recession and dentin hypersensitivity such as periodontal disease, periodontal treatment, over- vigorous tooth brushing and other iatrogenic factors.[29,30,31]

Understanding the consequences of oral ill health from the patient's perspective has emerged as an important research area. Studies addressing dental satisfaction, knowledge, attitude and behaviors more likely to use non validated measures[32]. This has resulted in an increase in the use of patient-centered oral health status measures, predominately seeking to measure the impact of oral health on quality of life. These measures have been used particularly in the fields of cariology, oral rehabilitation, and to some extent in oral surgery and oral medicine, although less so in periodontology[33,34,35]. For their more widespread use in periodontology, it is important that they demonstrate appropriate validity and sensitivity to treatment. Oral health status was frequently perceived as impacting on life quality because of the symptoms and physical affects it produced. This study assessed whether DH associated with GR can affect patient's OHRQoL or not. Questionnaire studies have inherent problems. When completing a questionnaire, a patient may not always understand what is required, and it may not be practical to ask for clarification. In this present study, patients were given the questionnaire, together with an explanation for every question for completion before the teeth with buccal recession examined for dentine hypersensitivity. The questionnaires are divided into three aspects, physical, psychological and social aspects.

Our study showed that patients experienced difficulty in chewing food in DH patients ($p<0.004$) with no significant impact in patients with GR. Besides that, patients also experienced difficulty in brushing teeth in both DH ($p<0.007$) and GR ($p<0.048$). Patients claimed that they need to avoid certain food in both DH ($p<0.02$) and GR ($p<0.04$). Al-Wahadni & Linden also reported that infrequent tooth brushing were one of the factors having a strong association with DH. Patients were shown to be worried having DH ($p<0.01$) and GR ($p<0.001$) [36]. This coincides with a study done by Needleman et al. when 15% (n=30) had claimed the problems worried them[37].

Gillam concluded that DH has a number of outstanding issues to be resolved[37]. The literature search provided only limited data on specific papers relating to the clinical diagnosis of

DHS by dental professionals. Evidence from these published studies would therefore indicate that clinicians are not routinely examining their patients for DH or eliminating other possible causes of dental pain (differential diagnosis) prior to subsequent management and may rely on their patients' self-reporting of the problem. Furthermore, the findings of the Canadian Consensus Document (2003) would also suggest that clinicians are not confident of successfully treating DH.

The social aspects were not affected with the presence of DH and GR in our study. However Needleman et al. reported otherwise with 32% (n=66) effecting their finances and 16% (n=33) felt that their oral health was distracting them from smiling/laughing. Periodontal treatment is free for our patients because it's done by students [38]. Recent study by Idon et al in revealed that DH had a significant impact of patients suffering and treatment resulted in significant improvement in the OHRQoL.[39]

Conclusions

Patients with GR showed symptoms of DH and sometimes perceived pain in the gums and sensitivity to teeth. GR and DH might affect patient's quality of life physically and psychologically, the impact of which socially may not be significance due to the free treatment provided. It is wise to anticipate problems in patients with GR and provide preventive treatment, to improve their oral health related quality of life.

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Declaration of Interest

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