



Psychological Status in the Special Oral Care Patient

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Abstract

A Centre for Special Oral Care is a facility set up for patients unable to be treated in a general dentistry clinic. In a multidisciplinary environment patients are treated with, for example, congenital anomalies, denture problems, dental fear, temporomandibular dysfunction and medically related dental problems. A group of these patients often show complaints that cannot be attributed completely to a dental problem. In these patients psychological factors may play a crucial role. If patients with dental complaints influenced by psychological factors can be identified, probably numerous repeated, unnecessary, and unsuccessful dental treatments can be prevented. Nevertheless, it is not clear beforehand to which extent psychological factors should be considered. The aim of this study is to get more insight in general health status and psychological status of the Special Oral Care patient. In total 828 patients filled out questionnaires measuring health status. Patients with congenital anomalies show the least problems, but other patient groups are difficult to distinguish. There is major heterogeneity in all groups. This means that a dental diagnosis is not predictive for the role of psychological factors in the dental complaints. Therefore, a detailed evaluation of different aspects of patients' health and psychological status is warranted to make dental treatment in the Special Oral Care patient more efficient and successful.

Keywords

Clinical research; Questionnaires; Dental fear; Patient satisfaction; Complete denture; Psychological factors; Health status

Background

A Centre for Special Oral Care is a Dutch facility set up for the treatment of patients unable to be treated in a general dentistry clinic. In a multidisciplinary environment patients are treated with, for example, congenital anomalies (hypodontia, clefts), oncologic deformities, mental and physical disability, denture problems, dental fear, and temporomandibular dysfunction. The treatment is multidisciplinary by the involvement of dentists, oro-maxillofacial surgeons, orthodontists, physiotherapists and psychologists.

A group of patients referred to a Centre for Special Oral Care often shows complaints that cannot be attributed to a dental problem solely. Frequently, these complaints concern non-determined pain, or complaints that are not in proportion to the dental cause or dysfunction. Patients seem to be unsusceptible to dental therapy,

specifically when there has been a long history of treatment in a general dental practice before the patient is finally referred to a Centre for Special Oral Care.

Within the dental practice, complaints or treatment can be influenced by psychological factors in several ways.

For example, temporomandibular dysfunction (TMD) and orofacial pain can be caused by stress-related muscle hyperactivity and oral habits [1]. Furthermore, somatization and catastrophizing behavior can be originating factors in the patients' complaints. The emotional meaning affiliated with functions of the mouth and jaw (for example: eating, talking, kissing) makes these sites in risk for an excessive focus by the patient. This can result in high frequent consultation in combination with a depressed mood [2,3]. On the other hand, dental fear can cause the patient to avoid dental treatment. The acceptance of dental alterations, such as prosthetic devices can be strongly influenced by psychological factors [4,5]. In spite of clinical perfection of their dentures or the use of implants there is a group of patients that remain to be unable to adapt to their dentures [6,7]. Often this is referred to as "denture or prosthesis incompatibility" [8-11].

Patients with denture incompatibility, dental fear, and patients with (non-dental- determined) pain as seen in a Centre for Special Oral Care are suspect for psychological dysfunctioning based on their complaints at intake. Nevertheless, it is not clear beforehand to which extent psychological factors play a role. In addition, it is known that predicting denture success is extremely complex [12].

Already in the 1980's, it has been described that no significant association between denture quality and denture success or denture complaints can be found [13,14]. Rather than the denture quality, psychosocial variables such as pretreatment expectations and satisfaction with the dental care received, show a stronger relationship to a successful outcome of denture therapy [5,15,16]. For instance, it is known that patients who complain more about their dentures score higher on neuroticism [17-20]. In addition, somatization has to be taken into account in dentistry in general and in denture satisfaction specifically. Somatization refers to reported physical symptoms that cannot be sufficiently explained by organic pathology. It has been suggested as an explanation for increased symptoms reported in dental practices [21,22].

Besides dental prosthesis incompatibility, temporomandibular dysfunction and pain, parafunctions such as bruxism, dental fear, severe gagging, and burning mouth syndrome are complaints in dentistry that may be related to somatoform or psychological disorders [9,11].

Overall, self-perceived physical health status as well as psychosocial functioning must be included if we assess the patients' expressed needs [4]. Different theories define health status as an overall concept covering physiological functioning, symptoms, functional impairment, quality of life and social functioning as main domains [23]. These main domains were shown to be subdivided into many different sub-domains [24]. If patients with dental complaints influenced by psychological factors can be recognized in an early stage, preferably at first assessment, probably numerous repeated, unnecessary, and unsuccessful dental treatments can be prevented [2,21].

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Received: March 01, 2016 Accepted: June 07, 2016 Published: June 14, 2016

Recognition of psychological problems influencing dental complaints and treatment can only be achieved by more insight in the psychological status of the 'difficult to treat' patients. The aim of this study is to assess general health status and the psychological status of the patient referred to the Centre for Special Oral Care.

Methods Design

The design of this study is a cross-sectional questionnaire assessment of patients referred to the Centre for Special Oral Care at the Radboud University Medical Centre Nijmegen. The study protocol was submitted to the Medical Ethical Review Board of the Radboudumc, which indicated that ethical review is not required (reference number: 2014/099).

Study population

All adult (18 years or older) patients referred to the Centre for Special Oral Care in Nijmegen are included in the study. Exclusion criteria are referral for head-and neck oncology and mental disability. It is expected that results on oncology patients will not be comparable to the other patient groups due to the major impact of cancer on the physical and psychological well-being of affected individuals. Children and mentally disabled patients will not be able to fill out the questionnaire on their own and need adapted questionnaires. From the period of April 2012 to October 2014, a total of 828 subjects participated. All included patients can be divided into five main groups based on their dental problem. 1) Congenital anomaly (CA); 2) denture problems (DP); 3) temporomandibular dysfunction (TMD); 4) dental fear (DF); 5) to general medical problems related dental problems (MRDP)

Data collection

Patients contact information was collected at their registration at the Centre for Special Oral Care. The patient received a letter on the purpose of the questionnaires and the self-administered questionnaires. Initially patients filled out the questionnaire on paper and were asked to return it by mail. Later on during the investigation patients were also able to fill it out using internet if they provided their e-mail address using the web-based software RadQuest[®]

Questionnaire

The questionnaire starts with a short explanation of the aim of the questionnaires followed by questions on socio- demographic variables (sex, age, marital status, education and work status). In addition, the following instruments measuring health status and/or psychological status are included.

Rand-36

The Rand-36 is a 36-item questionnaire with standardized response choices, divided into eight subscales: physical functioning (PF), role limitations due to physical health problems (RP), bodily pain (BP), general health perceptions (GH), vitality (VT), social functioning (SF), role limitation due to emotional problems (RE) and, general mental health (MH). The questionnaire uses a 4-week time frame. All raw scale scores are converted linearly to a scale from 0 to 100 with high scores indicating high levels of functioning [25-27]. Two composite scores are available and used in this article. The physical health composite is reflected primarily by PF, RP and BP; the mental health composite is reflected by RE and MH. Physical health composite T-scores of 42 or lower suggest an influence of physical problems on daily life. Scores higher than 53 indicate less likelihood

of physical problems impeding daily functioning. Mental health composite T-scores of 38 or lower suggest that mental problems are of influence on daily functioning, scores above 53 suggest the contrary.

Checklist individual strength (CIS-20R)

The subjective fatigue subscale of the CIS-20R is an 8-item questionnaire designed to measure fatigue [28]. High scores indicate a high level of fatigue. A score of more than 27 is considered as abnormal fatigue. A score more than 37 is considered to indicate severe fatigue.

Hospital anxiety and depression scale (HADS)

The HADS is a 14-item self-report screening scale, developed to indicate the presence of anxiety and depressive mood in the medical out-patient clinic. It is build up out of two 7-item scales representing anxiety and depression with both a score range of 0-21. The higher the score, the more anxious or depressed the subject is [29,30]. The cut-off score is set at eight or higher for each item (anxiety/depression) [31] and at twelve or higher for the total score.

Illness cognitions questionnaire (ICQ)

The ICQ is an 18-item questionnaire consisting of 3 subscales measuring helplessness, acceptance, and perceived benefits [32]. For this study only helplessness and acceptance were used. The wording of the items was slightly modified to dental problems. Normative data are available of patients with chronic illnesses and chronic pain.

Data analysis

Analysis is carried out using SPSS for Windows version 20 (IBM). A 1% significance level is chosen to avoid type II error due to multiple testing. Socio-demographic characteristics (sex, age, marital status, education and work status) are compared using descriptive in SPSS. Comparison between groups is done using Kruskal-Wallis and ANOVA tests.

Results

Participation and study population characteristics

In total we received 828 questionnaires from patients referred to the Centre for Special Oral Care. The response rate is 78%. Patients younger than 18 years who filled out the questionnaire or too many missing values lead to exclusion of 108 patients. Therefore, 720 questionnaires are available for statistical analysis. Almost two thirds of the subjects are female. The denture problems group (DP) is the oldest on average. Most subjects are married and have a paid job. The subjects with medical related dental problems (MRDP) show a high rate of employment disability. Further information on socio-demographic results among each group can be found in [Table 1](#).

Health and psychological status of the Centre for Special Oral Care patient

Physical and mental problems have no influence on daily life in about 25% of the study population. Physical problems of influence in daily life are experienced in 41% of the population, and 33 % for mental problems. Approximately 23% of the study population experiences abnormal fatigue whilst about 30% reports to suffer from severe fatigue. One quarter of the population reports to feel depressed, 32% reports to feel anxious.

The mean score on helplessness is 11.3 (SD=5,1) and 13.3 (SD=5,3) on acceptance of dental problems.

Table 1: Socio-demographic status of different patient groups.

		Patient group				
		Congenital anomalies (CA)	Denture problems (DP)	Temporo mandibular dysfunction (TMD)	Dental fear (DF)	Medical related problems (MRDP)
Gender (n)(%)	male	26(46%)	67(40%)	79(24%)	61(47%)	16(47%)
	female	31(54%)	99(60%)	252(76%)	68(53%)	18(53%)
Age (yrs)(SD)		40.7(14.1)	60.5(10.9)	45.5(15.8)	42.4(14.0)	53.6(14.5)
Marital status (n)(%)	Single	16(28%)	26(15%)	88(27%)	45(36%)	9(26%)
	Married	37(65%)	91(54%)	211(64%)	64(51%)	20(59%)
	Divorced	3(5%)	23(14%)	24(7%)	13(10%)	4(12%)
	Widowed	1(2%)	29(17%)	6(2%)	4(3%)	3(1%)
Educational level (n)(%)	Low	7(14%)	68(44%)	56(18%)	36(30%)	10(31%)
	Middle	24(46%)	65(42%)	127(40%)	59(49%)	12(38%)
	High	21(40%)	23(14%)	135(42%)	25(21%)	10(31%)
Employment status(n)(%)	Paid job	40(70%)	45(27%)	166(51%)	59(47%)	5(15%)
	Unemployed	11(19%)	90(54%)	119(37%)	37(29%)	12(36%)
	Disability	6(11%)	30(18%)	38(12%)	30(24%)	16(49%)

Figure 1 shows the results of the patient groups on different measures. For the RAND, the red section represents the percentage of people experiencing physical and mental problems influencing daily functioning. The green sections represent the patients experiencing no influence of physical or mental problems on daily functioning. The orange sections show the patients scoring in between. Considering fatigue, the patients experiencing no fatigue are shown in green. The orange section represents the patients feeling abnormal fatigue whilst the red sections represent the patients reporting severe fatigue. In the HADS bars, the anxious and depressed patients are shown in red.

Health and psychological status in different patient groups

The five patient groups are compared on each questionnaire. The congenital anomalies patient group experiences the least problems overall. In this group, physical problems are influencing daily life significantly less than all other groups ($p \leq 0,004$) This group also experiences the least influence of mental problems on daily functioning. The patient group with congenital anomalies is the least depressed ($p \leq 0,049$) but doesn't differ significantly from all groups considering anxiety. The difference between congenital anomalies, the denture problems and TMD group are $p=0,056$ and $p=0,053$ respectively. The congenital anomalies group feels significantly less tired (CIS-20R) than the medical related problems group ($p \leq 0,001$). The TMD group is also more tired than the congenital anomalies group ($p \leq 0,002$) but does not differ significantly from other groups.

The medical related dental problems group shows most problems. Physical and mental problems are of influence on daily life in this group more than all other groups, significantly for physical problems ($p \leq 0,004$). About three quarters of the subjects in this group report abnormal or severe fatigue. This is more than other groups but only differs significantly from the congenital anomalies group.

The medical related dental problems and dental fear groups feel most anxious and depressed. On the depression subscale, the medical related problems group mean scores are the highest; however some patients in the dental fear group show severe depression and present the highest possible score. The dental fear group experiences most anxiety. They differ significantly ($p \leq 0,000$) from every group except for the medical related problems group. Subsequently the dental fear

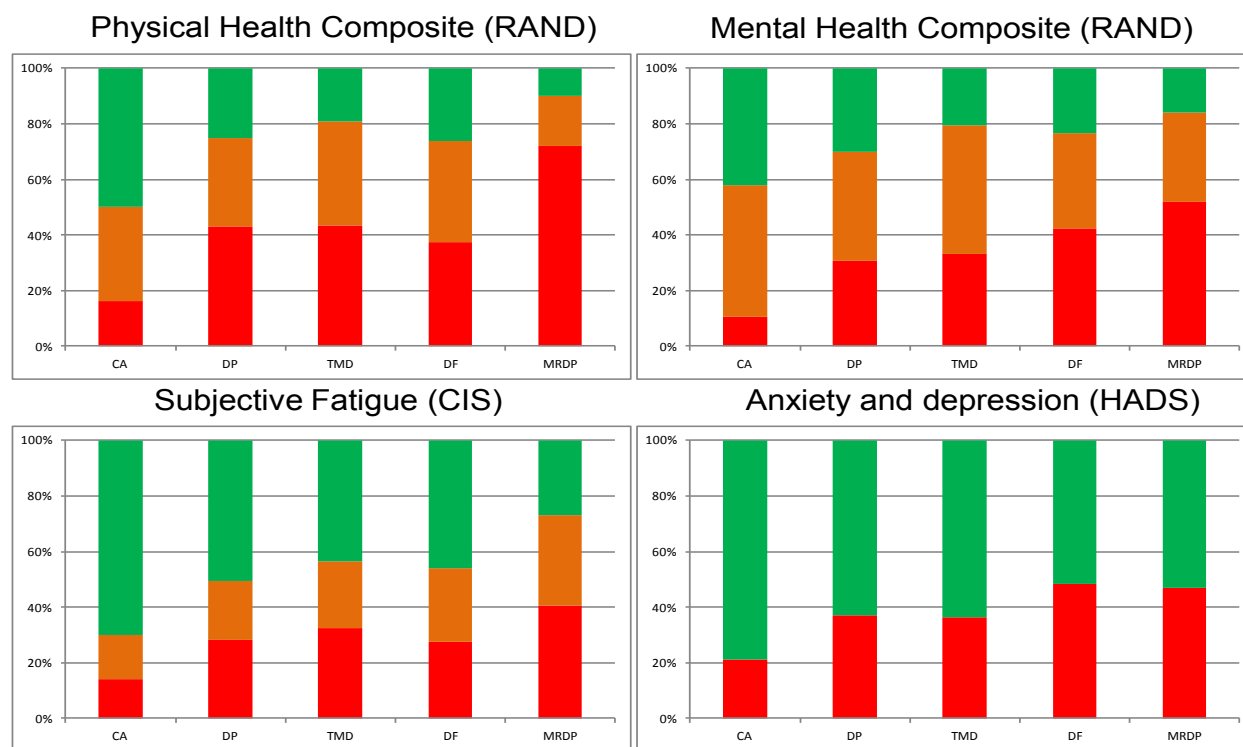
and medical related problems group score highest on the total HADS. The dental fear group differs significantly from all other groups except for the medical related problems group ($p \leq 0,005$).

When it comes to helplessness and acceptance the above tendency changes. The denture problems and dental fear group feel significantly more helpless than the TMD and congenital anomalies group ($p \leq 0,002$). The medical related problems group scores in between all groups. Remarkably, in the TMD and congenital anomalies group a lot of outliers can be found. Besides higher helplessness, the denture problems and dental fear groups have more difficulty accepting their dental problems than the other groups ($p \leq 0,002$). The patients with a congenital anomaly can accept their dental problems more than all other groups ($p \leq 0,001$) except for the medical related problems group. So, although the medical related problems group shows most problems overall, they don't feel that helpless and have less difficulty accepting those problems than most other groups. Figure 2 shows boxplots on most of above mentioned parameters.

Discussion

The Special Oral Care patient experiences problems in different areas of their health status and psychological status. About half of the study population reports to feel tired, thirty percent even reports severe fatigue. This is higher than literature reports on the general population of a Dutch city [33].

Our study group feels more anxious and depressed than a sample of the German population [34], however, depression scores only are comparable. Probably, the dental fear group raises the anxiety score. Remarkably, in studies on the HADS it was found that females are more anxious than males, but depression mean scores are similar between the sexes [34]. In our study, males are more depressed and anxious. A Dutch study compared 6 different patient groups; general population sorted in 3 groups according to age, general practice patients, general medical patients referred to the hospital presenting with unexplained medical symptoms and psychiatric out-patients [29]. Our study population is comparable to the general medical patient referred to the hospital. This means that the Special Oral Care patient appears to be more depressed and anxious than the general Dutch person. Anxiety and depression can have a negative effect on the adaptability of the patient to a prosthetic appliance. Anxiety and



Patient groups: CA: congenital anomalies, DP: denture problems, TMD:temporo-mandibular dysfunction, DF: dental fear, MRDP: medical related dental problems

Figure 1: Bar diagrams on different result measures.

depression can also reduce the susceptibility to a dental fear reduction process. Therefore, reduction of general anxiety and depression should be incorporated in the treatment plan. Possibly by just noticing it might be a complicating factor or by active intervention by a psychotherapist.

Compared to other patient groups the Special Oral Care patient reports less helplessness than patients with multiple sclerosis [32], chronic illness since childhood [35], or chronic fatigue and chronic pain [36]. Possibly, patients are more hopeful that there might be a solution for their dental problem compared to patients with above mentioned chronic problems. This might lead to much lower acceptance of their problem. From the above mentioned groups only the chronic fatigue group scores lower on acceptance. Figure 3 shows a graph on helplessness and acceptance in different patient groups. In the treatment of the Special Oral Care patient the expectations of the patient should be well discussed beforehand. Due to low helplessness scores and low acceptance scores one might expect that patients' expectation of dental treatment is high. Unfortunately in some cases, complaints will remain. A clear conversation on expectations at the beginning of treatment might reduce disappointment in a later stage of treatment.

Differences can be found between the separate patient groups. Some differences seem logical. In general the congenital anomalies group expresses the least physical and psychological problems. This patient group is referred to the Special Oral Care Clinic primarily because of their congenital anomaly needing extra expertise. This is in contrary to the other groups, where dental treatment has not been successful in general practice, followed by referral. The medical related

dental problems, denture problems and TMD group have most physical problems. The medical problems usually impede general physical problems. Furthermore, literature shows that RAND-36 scores of older respondents are significantly lower than those of younger respondents, women have lower scores than men [26,37,38]. Table 1 shows that the medical related dental problems and denture problems group are respectively almost 10 and 20 years older than the other groups. The TMD group has by far the highest percentage of females. This is in accordance with studies on temporomandibular dysfunction. The true explanation behind this gender difference remains to be identified [39].

The denture problems group feels most helpless and has problems accepting the problems with their denture. Marxkors and Muller describe 5 diagnostic criteria for possible psychological factors in dental prosthesis incompatibility [8]. These are: (1) clinical findings can't be brought into accord with the patients' condition (2) therapy with technical procedures are unsuccessful (3) complaints shift (4) the problems play an extremely important role in the patients' life (5) certain biographical events are in accordance with the onset of complaints.

Before the dentist normally assumes psychological factors are involved, usually some (or more) dental treatments have been carried out. From the results of this study it can be seen that the scores on the different parameters are very widespread. Each patient group shows heterogeneity when it comes to the measured parameters of psychological status and health status. The congenital anomalies group is an outlier in a positive manner but the other groups are difficult to distinguish. The results are widespread in each group. For

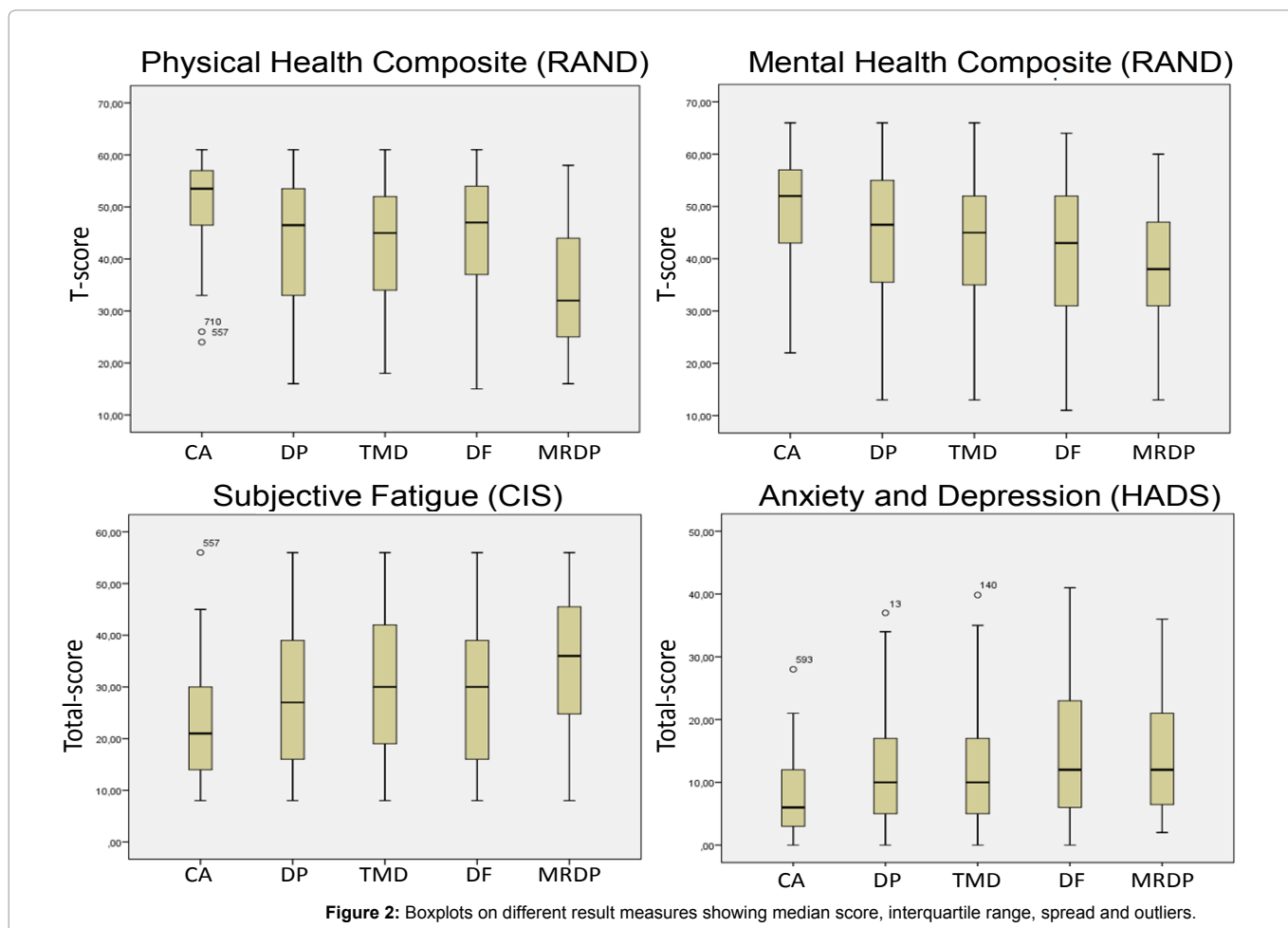


Figure 2: Boxplots on different result measures showing median score, interquartile range, spread and outliers.

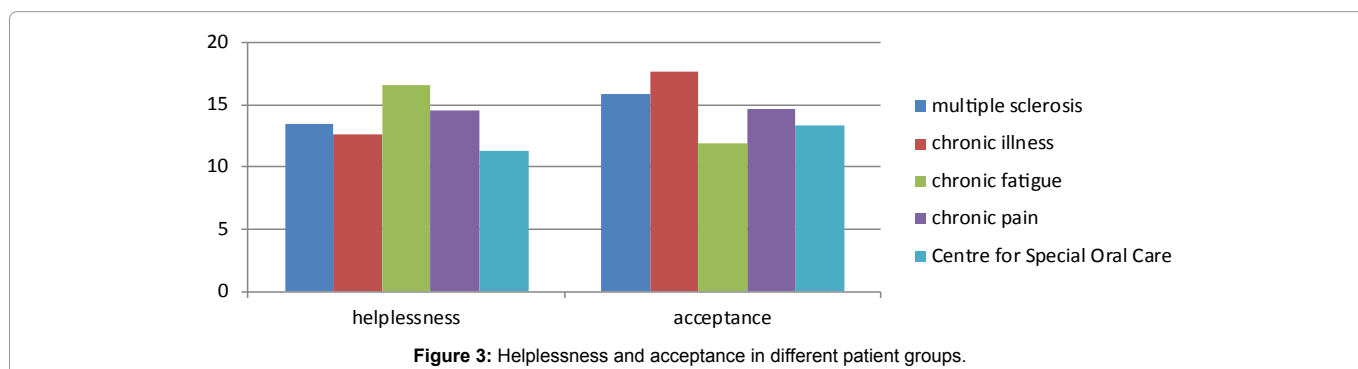


Figure 3: Helplessness and acceptance in different patient groups.

almost every questionnaire, each group has patients reporting the lowest and highest possible scores. Thus, every patient has a unique profile. This means that psychological problems can't be predicted on basis of the patients' diagnosis. Therefore, screening each patient on health status and psychological status is important for a patient-fitted treatment plan. Results from the screening will show if psychological problems might interfere with the dental treatment.

When observations suggest problems in areas of the patients' health status or psychological status, cooperation with a psychotherapist may be recommended [10,19,20]. Introducing these measures leads to a better patient-fitted treatment plan with a higher chance of success. Furthermore, this might avoid complying with unnecessary

requests to repeatedly fix supposedly ill-functioning prosthesis and therewith minimize more unsuccessful treatments [11].

Conclusions

Above results show that the Special Oral Care patient experiences problems in different areas of their health status and psychological status. The patient feels more tired, depressed and anxious than the average Dutch person. Furthermore, results on the studied groups are very heterogeneous. This means that the role of psychological problems in the patients' complaints or treatment can't be predicted on basis of the patients' diagnosis. Therefore, screening each patient on health status and psychological status is recommended. A detailed

evaluation of different aspects of patients' health status and needs could make dental treatment in the Special Oral Care patient more efficient and successful. This would benefit the patient as well as the dentist. For future purposes an instrument should be developed that provides a detailed picture of different aspects of a patient's health status possibly presented on a graphical Patient Profile Chart [40]. This information would benefit treatment and improve communication between dentist and patient.

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