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The Change of Patient Profile, Attitudes and Satisfaction in University Dental Clinic after Onset of Economic Crisis in Greece

SUMMARY

Background/Aim: *The aim of the study was to evaluate and compare patient profile, attitude and satisfaction of patients visiting a university periodontal clinic before and during the financial crisis in Greece.* ***Material and Methods:*** *In this cross-sectional study, adult consecutive patients that visited the undergraduate Periodontology clinic of the Aristotle University of Thessaloniki from October 2014 to July 2015 were invited to participate anonymously. The only exclusion criterion that was set was the age: all individuals had to be ≥18 years old. The questionnaire utilized in this study included six parts of questions: 1) demographic characteristics; 2) environmental and behavioral characteristics; 3) diagnosis of periodontal disease; 4) medical history; 5) difficulties-satisfaction-proposals about periodontal treatment; and 6) history of periodontal therapy. One hundred and fifty individuals, mean aged of 51.6±12.3 years were interviewed concerning their demographic and behavioral characteristics. Satisfaction level, reasons for selecting the university dental clinic and oral hygiene habits were also recorded.* ***Results:*** *The profile of the patient attending the university periodontal clinic was a female (54.0%), 51-year-old on average, of high education (76.0%), good oral hygiene habits (brushing ≥2 times/day: 49.3%, use of additional oral health care: 66.0%), heavy smoker (>15 cigarettes/day: 51.9%) and chronic periodontal disease (96.7%). Economic difficulties led the participants to seek periodontal treatment in the university clinic (30.7%), but the vast majority of them were highly satisfied (81.3%), confident (82.0%) and informed (51.3%) about the treatment. Before the financial collapse in Greece, the profile of the patients in the clinic was characterized by low socioeconomic status with poor oral hygiene, none or basic education and unemployed (no income) and retired individuals. Heavy smoking, diagnosis of chronic periodontal disease and satisfaction were also reported prior to the financial crisis.* ***Conclusions:*** *The demographic characteristics of those who seek treatment in a university setting have changed dramatically and younger, more highly educated and employed individuals attend the undergraduate Periodontology clinic of the Aristotle University of Thessaloniki, Greece compared with those who attended the university dental clinic prior to the financial crisis.*

Key words: Economic Recession, Patient Satisfaction, Attitude, Periodontal Disease, Student Health Services

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Introduction

In Greece, economic crisis and the implementation of austerity led to significant reductions in disposable income and increased unemployment with negative effects on patients' access to healthcare services1. The question that arises is in what degree is oral health care affected by the socio-economic crisis that has arisen in Greece. Assessment of patient profile prior to and during the financial crisis in Greece may provide valuable information.

In a retrospective study, demographic characteristics, periodontal and medical history of 427 patients were reported from data collected in a private periodontal

practice in Greece in 2014. The profile of this cohort was females (56.7%), non-smokers (60%) with a mean age of 48.3 years and a diagnosis of severe periodontal disease (82.4%)[2]. In a study from the Emergency Clinic of Athens Dental School in Greece, data were analyzed from 553 patients who visited the dental school seeking emergency dental care[3]. A predominance of female subjects (53.5%) among the dental emergency patients was reported, while patients between 31 and 50 years were significantly more than any other age group. The occupational status of the patients varied significantly with unemployment being the most reported status, while individuals working in the public sector and those who were self-employed represented significantly lower proportions when compared to those working in the private sector[3]. The general profile of an examined cohort at the Aristotle University of Thessaloniki, Greece included 53.5% females, 41.3% smokers and 7.7% diabetics. The mean age of the included individuals was 50.5 years and 56.4% was in need of non-surgical or surgical periodontal therapy as it was determined by the community periodontal index of treatment needs (CPITN)[4].

Oral hygiene is effective in preventing caries and periodontal disease and oral health may be maintained when tooth brushing is performed twice a day[5]. From a total of 100 Greek adult patients between 18 to 25 years of age who answered a questionnaire of 23 items, 85% reported brushing at least twice a day, while 56% declined the use of dental mouthrinse[6]. Approximately three quarters of the examined population visited a dental office at least once a year and prevention was the primary reason of dental visit (69%)[6]. The frequency of dental visits in Europe has been reported to be 2 times per year on average, and for Greece, 2.7 visits annually have been recorded[7]. The mean reason of dental visits for Europeans is dental check-up or debridement, while 42% of Greeks attend a dental practice for prevention according to the European Committee with women and young adults showing higher frequency than men and older adults, respectively[7].

Although the profile of patients attending public entities and private practices in Greece as well as behavioral characteristics have been reported in the literature, patient satisfaction has been explored very limited. In addition, the effect of national economic collapse in Greece on patients' characteristics has not been compared adequately in Dentistry. Therefore, the purpose of this study was to evaluate and compare patient profile, attitude and satisfaction of patients visiting a university periodontal clinic before and during the financial crisis in Greece.

Material and Methods

This study was conducted to assess the profile, attitude and satisfaction of individuals with periodontal problems that visited the undergraduate clinic of the Aristotle University of Thessaloniki, Greece. All adults that visited the undergraduate periodontal clinic from October 2014 to July 2015 were invited to participate in this study anonymously. The only exclusion criterion that was set was the age: all individuals had to be ≥18 years old. All participants were informed about the purpose of the study, their participation was voluntary, and it was explained that their participation will not influence the provided treatment. Signed consent forms were obtained from all participants. The protocol of the study was approved by the Ethical committee of the Aristotle University of Thessaloniki, School of Dentistry.

During the last session of periodontal treatment, the participants were asked to answer several questions that evaluated their attitude and satisfaction regarding the provided treatment. The interviews were carried out by one of the investigators without the presence of the dental student in order to keep anonymous answers and have an unbiased result.

The questionnaire utilized in this study included six parts of questions: 1) demographic characteristics (age, gender, occupation, family status, education level, area of residency, smoking history, alcohol consumption); 2) environmental and behavioral characteristics (brushing frequency, additional oral health care, types of additional care, previous dental visit); 3) diagnosis of periodontal disease; 4) medical history (hypertension, hypotension, diabetes mellitus type 2, hyperthyroidism, hypothyroidism, osteoporosis, psychological disorders, bleeding problems and cancer); 5) difficulties-satisfaction-proposals about periodontal treatment; and 6) history of periodontal therapy. Patients' satisfaction was determined based on the answers to three questions: 1) satisfaction (little, quite, very), information provided (not at all, little, quite, very) and confidence (not at all, maybe/not sure, sure). Findings at the clinical and radiographic examination suggested the diagnosis of periodontal disease which was made by the assigned dental student and the supervising faculty member.

After the end of the interviews, the anonymous questionnaires were collected and the data were analyzed using a statistical software (SPSS v.19.0, IBM, Armonk, NY, USA). Descriptive statistics such as mean values and standard deviations were conducted for continuous variables. Total counts and percentages were calculated for categorical variables. Associations between categorical variables were examined using the chi-square test. The significance level was set to 0.05.

Results

One hundred sixty-five adult periodontal patients aged between 18 and 85 years visited the undergraduate

periodontal clinic of the School of Dentistry for periodontal therapy. Fifteen of them (9.1%) were refused to participate due to limited available time or for personal reasons. The final sample of the study consisted of 150 individuals, mean aged of 51.6±12.3 years (age range from 18 to 85), 46% of them were males, while 54% were females. When asked about their occupation, 37.3% were employed, 33.3% unemployed and 29.3% retired (Figure 1a). Regarding their educational level, 51.3% had received secondary education, 24.7% higher and only 16.7% elementary education (Figure 1b). The vast majority of the participants resided in urban areas (83.3%) and were married (66%). Fifty-two percent of the the population were smokers and 51.9% of them used to smoker more than 15 cigarettes per day. With respect to the alcohol consumption, 26% of the sample population reported regular alcohol consumption. Self-reported medical history was significant for at least one condition in the 59.3% of the participants with most frequent medical conditions being hypertension (55.7%), diabetes mellitus type 2 (23%) and cancer (18%).

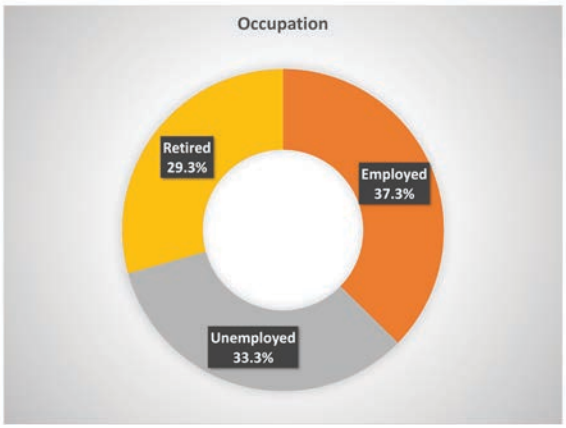

Figure 1a. Characteristics of included population in regards to occupational status

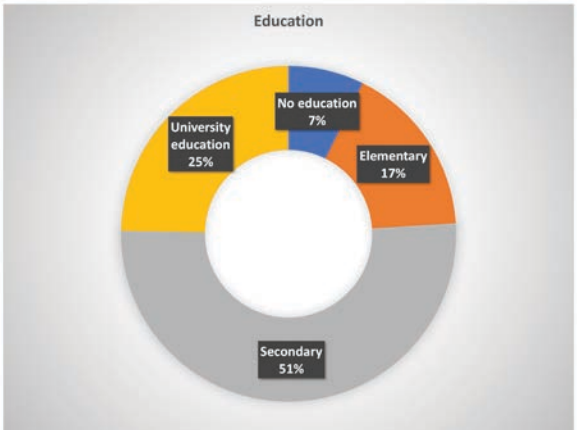

Figure 1b. Characteristics of included population in regards to educational status.

A portion of the population has been brushing their teeth more than twice a day, whereas 42% twice a day. The majority of the male patients (68.1%) reported brushing once a day or less, whereas 64.2% of the female individuals at least twice a day (Figure 2a, p=0.001). Sixty-six percent of the patients reported that they had additional oral hygiene habits, such as the use of interdental brush (47.5%), floss (16.1%), mouthwash (8.1%), or combination of them (28.3%). Female subjects (77.8%) were more likely to use additional dental care habits compared to male participants (Figure 2b, 52.2%, p=0.001). With respect to the educational level, significant differences were observed in regards to the oral hygiene habits (Figure 3a). Individuals with no education reported only in 27.3% use of additional oral hygiene aids compared to participants with elementary (60%), secondary (71.4%) and university (70.3%) education (Figure 3b, p=0.028). Dental pain was the most frequent reason for a dental visit, while only 6% reported that they had a dental visit more than once a year. Severe periodontitis was the most common diagnosed disease (36.7%), whereas only 0.7% were diagnosed with aggressive periodontitis. Significant difference in the diagnosis was detected between retired, employed and unemployed. More than 50% of the retired participants (52.3%) were diagnosed with severe periodontal disease in comparison with the unemployed (36%) and the employed (25%) subjects (p=0.023). Additionally, statistically significant differences were identified regarding the family status (p<0.001), gender (p=0.05) and age (p<0.001). Particularly, single participants were mainly diagnosed with mild/early periodontal disease (50%) compared to married (29.3%), widower (33.3%) and divorced (11.1%) individuals. As far as the gender is concerned, male patients were more prone to be diagnosed with severe periodontal disease (46.4%) compared to females (28.4%). Neither the level of education (p=0.11), nor the residential area (p=0.26) were related significantly with the severity of the disease.

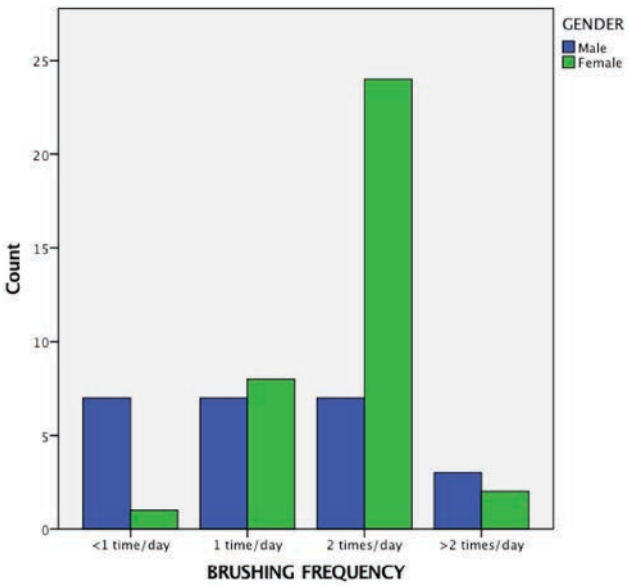

Figure 2a. Clustered columned graph presenting the frequency of brushing between male and female subjects.

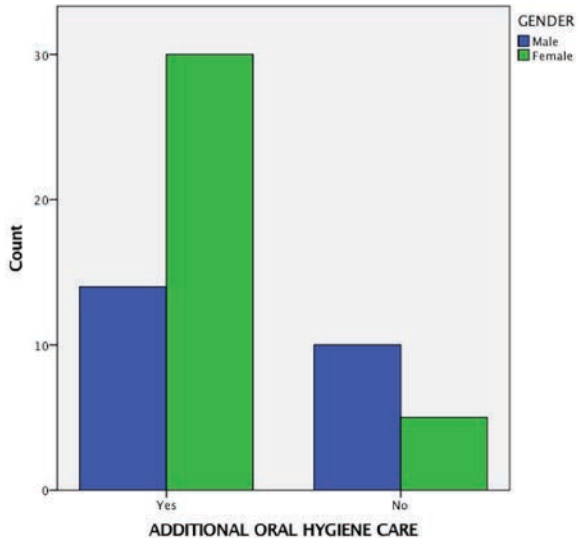

Figure 2b. Clustered columned graph presenting the use of additional oral hygiene care between male and female subjects.

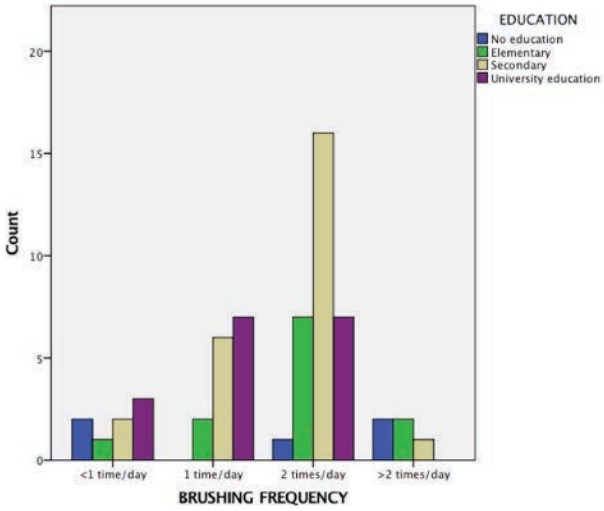

Figure 3a. Clustered columned graph presenting the frequency of brushing in reference to education.

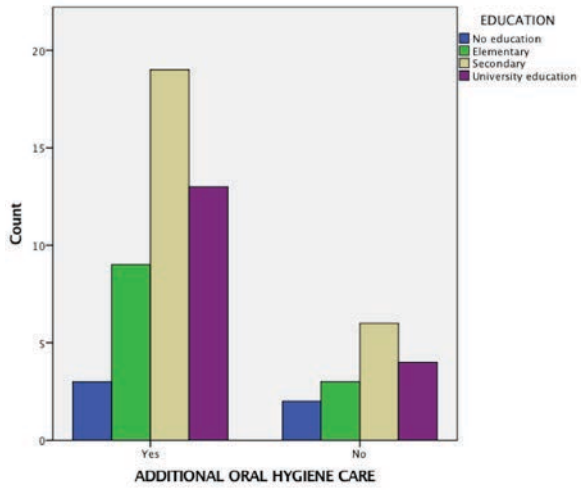

Figure 3b. Clustered columned graph presenting the use of additional oral hygiene care in reference to education.

When asked about the reason of choosing dental school, the 30.7% claimed economic crunch, 22.7% had friends who visited the periodontal clinic in the past and 12.7% knew a student. In this section of the questionnaire multiple answers were accepted. The satisfaction ratio of the services and the attendant student proved to be extremely high (81.3%), whereas only 2.7% showed little satisfaction. High satisfaction was determined when on a scale from 1 to 3 patients selected 3, while little was considered in case they answered 1. Some patients had some proposals for changes (42%) concerning the working hours (30.2%), the organization of the clinic (11.1%), the location of the clinic (6.3%), as well as the dental instruments been used (9.5%). Approximately 50% of the patients felt very informed about the etiology of their oral disease and 38.7% adequately informed. A considerable percentage (82%) of the patients felt confident about their treatment outcome, whereas only 16.7% felt doubtful about its success. Statistically significant more female participants (87.7%) reported confidence in the success of the treatment compared to males (75.4%, p=0.026). The treatment plan of 60 patients included tooth extractions with an average of 2.65±2.14 teeth per individual. The number of extractions ranged from 1 to 12. As for those planned extractions, the 48.8% of the patients did not show significant concern about their teeth loss but 18.6% felt very bad about losing a tooth.

The last part of the questionnaire explored the history of periodontal therapy. In particular, 59.7% of the patients had received periodontal therapy in the past, such as scaling and root planing (57.3%) and prophylaxis (42.7%). Regarding the provider of the therapy, 67.4% of the participants was treated by a general dentist, 21.3% had received therapy from an undergraduate student and only 11.2% was treated by a periodontist. When asked about the reason for stopping the therapy, data indicates that 28.1% of the sample thought that the therapy was over after the initial treatment, 21.4% admitted negligence to continue their therapy and 14.6% claimed quitting due to financial reasons.

Discussion

In late 2009, the national economy in Greece started to collapse after a long period of prosperity. The present study aimed to evaluate the profile, the attitude and the satisfaction of individuals with periodontal problems attended a pre-doctoral periodontal clinic in Greece during financial crisis and compare it with data before the economic collapse[8]. The present study aims to add new knowledge in regards to the change of patient profile and attitudes through a period of time before and after the economic crisis in Greece.

Table 1. Examined characteristic of the included population as well as the population analyzed prior to the financial crisis

Characteristic	Present study	Previous study8
Gender		
Male (%)	69 (46.0)	63 (42.0)
Female (%)	81 (54.0)	87 (58.0)
Occupation		
Employed (%)	56 (37.3)	59 (39.3)
Unemployed (%)	50 (33.3)	59 (39.3)
Retired (%)	44 (29.3)	32 (21.3)
Education		
No education (%)	11 (7.3)	5 (3.3)
Elementary (%)	25 (16.7)	56 (37.3)
Secondary (%)	77 (51.3)	67 (34.6)
University education (%)	37 (24.7)	22 (14.6)
Residence		
Urban (%)	125 (83.3)	123 (82.0)
Rural (%)	25 (16.7)	27 (18.0)
Smoking		
Yes (%)	78 (52.0)	63 (42.0)
No (%)	72 (48.0)	87 (58.0)
Alcohol		
Yes (%)	39 (26.0)	32 (21.3)
No (%)	111 (74.0)	118 (78.8)
Brushing frequency		
<1 time/day (%)	25 (16.7)	50 (33.3)
1 time/day (%)	51 (34.0)	63 (42.0)
2 times/day (%)	63 (42.0)	35 (23.3)
>2 times/day (%)	11 (7.3)	2 (1.3)
Additional care		
Yes (%)	99 (66.0)	21 (14.0)
No (%)	51 (34.0)	129 (86.0)
Previous dental visit		
In pain (%)	83 (55.3)	98 (65.3)
<1 time/year (%)	28 (18.7)	5 (3.3)
1 time/year (%)	30 (20.0)	33 (22.0)
>1 time/year (%)	9 (6.0)	14 (9.3)
Satisfaction		
Little (%)	4 (2.7)	15 (10.0)
Quite (%)	24 (16.0)	80 (53.3)
Very (%)	122 (81.3)	55 (36.7)
Proposal for changes		
No (%)	87 (58.0)	33 (22.0)
Yes (%)	63 (42.0)	117 (78.0)
Information provided		
Not at all (%)	5 (3.3)	1 (0.7)
Little (%)	10 (6.7)	14 (9.3)
Quite (%)	58 (38.7)	85 (56.7)
Very (%)	77 (51.3)	50 (33.3)
Confidence		
Not at all (%)	2 (1.3)	1 (0.7)
Maybe/ not sure (%)	25 (16.7)	25 (16.7)
Sure (%)	123 (82.0)	124 (82.7)

A similar study was conducted in the undergraduate periodontal clinic at the Aristotle University of Thessaloniki in 2010, when the signs of the financial depression were not evident[8]. Examined characteristic of the included population as well as the population analyzed prior to the financial crisis by Giannelis et al.[8] are presented in Table 1. According to that study, the majority of the population of the clinic was females with an average of 55 years of age, low socioeconomic background, poor oral hygiene and smoking habits. Five years later, in the present study, the age of the periodontal patients of the university clinic has been reduced to 51.6 years, while an increase in the number of males and smokers was detected. Oral hygiene has been improved showing that almost half of the sample population brushes at least twice a day and two thirds uses additional oral hygiene aids in a daily basis. In a similar study of 200 adult dental patients who visited the periodontal clinic of the University of Athens School of Dentistry for dental treatment, similar number of female patients (53.5%) participated in the study[9]. The population seeking periodontal treatment was consisted by employed people (37.3%) with secondary education (51.3%) and university education (24.7%). Females (77.8%) and individuals with secondary (71.4%) and university education (70.3%) presented to be statistically significantly more likely to use additional oral hygiene habits compared to males and individuals with no education. Oral hygiene is a critical factor for oral health and quality of life[10]. Female gender, high level of education and non-smoking status have been associated with satisfactory oral hygiene habits[11].

The level of education and the occupation of the patients of the university dental clinic have changed dramatically during the last 5 years. In the previous study, retired people and housewives were primarily patients of the periodontal clinic and 41.3% of the individuals had received none or only basic education[8]. The results could be attributed to the financial crisis that led employed people and individuals with higher education that are currently unemployed to seek periodontal treatment in clinics with low treatment cost. It is generally reported that subjects with low socioeconomic status are more prone to develop periodontal disease compared to individuals with high status[12]. According to our findings, retired individuals were statistically significantly more likely to be diagnosed with severe periodontal disease compared to employed and unemployed participants. In agreement with this finding, Chatzopoulos and Tsalikis found that older patients have increased periodontal treatment needs and males were more prone to have complex treatment needs than females[13]. On the other hand, an insignificant association between education level and periodontal disease was found.

Smoking has been found to play a pivotal role in the onset, progression and treatment outcome of periodontal disease. Cross-sectional and case-control studies have reported that smoking is significantly associated with an impaired periodontal health status, and cohort studies have demonstrated that there is an increase periodontal destruction rate in smokers compared to non-smokers[14].

A meta-analysis of six clinical studies concluded that smokers have an increased risk for severe periodontal disease with odds ratio of 2.82[15]. According to this study, 52% of the sample was smokers, 19.5% of them was characterized as heavy smokers (>20 cig/day), while 51.9% smokes at least half a pack of 20 cigarettes. Smoking history and severity of periodontal disease were not significantly associated in the present study (p=0.5), while a previous study from our group demonstrated that smokers were more likely to have periodontal pockets of at least 6 mm than non-smokers in an older population in Greece[13]. Confounding factors including age may have attributed to this finding.

The primary reason of seeking dental treatment at the university clinics was the limited financial resources. Similarly, other studies have reported that low cost was the most critical factor that led individuals to dental school clinics.[16,17] Twenty-four percent of the sample was motivated by multiple reasons including economic reasons, a relative or friend and a familiar student. The patients also proposed changes including working hours, organization of the clinic, clinic location and instruments/ units. Forty-two percent of the sample found that changes are needed in the future, while the vast majority of them (82%) were confident about the success of the treatment and 81.3% were completely satisfied with the quality of the services. Similar levels of satisfaction and confidence have been reported in the literature[8,18-20]. Communication with the dentist played a key role in overall patients' satisfaction in a dental school setting in Japan[21].

With respect to the history of periodontal therapy, 60% of the sample population reported previous periodontal therapy, 57.3% of them reported having scaling and root planing by a general dentist (67.4%), undergraduate student (21.3%) or periodontist (11.2%). The high percentage of individuals with history of periodontal therapy was expected due to the high frequency of periodontal disease diagnosis which is also related to the high prevalence of smoking (52%) and other risks factors of periodontal disease such as diabetes mellitus (23%). Previous research has also shown that diabetics, overweight or obese, smokers and older subjects are significantly associated with higher periodontal treatment needs than non-diabetics, individuals with normal weight (body mass index 18.5-25 kg/m^2), non-smokers and younger patients, respectively[4]. The proposed treatment plan included extractions in 60 patients with a mean value of 2.65±2.14 teeth per patient (range from 1 to 12 teeth). Almost half of the population (48.4%) was not concerned about the proposed extractions, while only 18.6% were very frustrated. In contrast, a study in the United Kingdom reported that 45% of the study participants were unprepared to accept tooth loss and in another study, Bergendal et al. acknowledged that total tooth teeth loss is a serious life event[22,23].

The results of the present study are limited to self-reported data and they should be interpreted with caution. Another limitation of the study is that the study participants were in active periodontal treatment and were willing to participate in the survey. Therefore, the sample may primarily consist of satisfied individuals that decided to continue their treatment in the undergraduate periodontal clinic. There may be a difference in the satisfaction level for patients that discontinued the treatment. Finally, the total number of the participants could be considered limitation of the study. However, it represents the average size of the population that receives periodontal treatment in the pre-doctoral Periodontology clinic of the Aristotle University of Thessaloniki.

Conclusions

Within the limitations of this cross-sectional study, the economic collapse in Greece after a long period of prosperity has affected patient profile and attitude. The demographic characteristics of those who seek treatment in a university setting have changed dramatically and younger, more highly educated and employed individuals with higher socioeconomic status and good oral hygiene habits attend the undergraduate Periodontology clinic of the Aristotle University of Thessaloniki, Greece compared with those who attended the university dental clinic prior to the financial crisis.

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