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Comparison between Self-Rated and Dentist-Rated Dental Care Need among University Students in China

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Abstract

Objective: The aims of this study were comparing the difference between the self-rated and dentist-rated dental care need among university students in China and evaluating the various factors associated with the difference.

Methods: A multistage random sample of 757 university students was examined with a cross-sectional study. And a special questionnaire was designed for the study, which including the self-rated dental care need, the dentist-rated dental care need and the associated information. The respondent students were asked to complete the self-rated dental care need part and the associated information part by themselves. The dentist-rated dental care need part was determined through dental examination by dentists. According to the damage and urgency that different dental diseases reflected on dental condition, we classified the dentist-rated dental care need into four degrees and recorded on the questionnaire. Chi-square was used to analyze the data. FoxPro6.0 and SPSS17.0 software were used for building the database and statistical analysis.

Results: The results showed that students in need of dental care but choosing "not need" accounted for 39.0%. Students choosing "need" but examined not in need accounted for 9.0%. Students in need of dental care and choosing "need" accounted for 30.1%. Students choosing "not need" and examined not in need accounted for 21.9%. The self-rated dental care need had statistical differences in gender, census register and major. While the dentist-rated dental care need did not have significant differences in these three aspects. The results also showed that 57.2% of the respondent students needed selective dental care, 11.1% of the students needed dental care as soon as possible, 0.8% of the students needed dental care urgently. Only 30.9% of the students do not need dental care.

Conclusion: Self-rated dental care need were significantly associated with gender, census register, major and a number of Chinese university students rated their dental care need inaccurately. The status of dental health among Chinese university students is not good. The lack of dental care services seems to account for a significant problem. We need to strengthen the dental education among university students. It is urgent to carry out early examination, prevention and treatment among the university students in China.

Keywords: Dental health survey; Dental care needs; University students; Self-rated; China

Introduction

Survey of the self-rated dental care need is a basic method for dental care studies. It is a simple direct way to study the perceptions of dental health which is considered valid, reliable and cost-effective [1]. And the accuracy of the self-rated dental care need can truly reflects the dental care ability of both the individuals and communities. Hongjun Yin, from the Long Island University thinks that self-rated method has already been widely used in health surveys as a single-item measurement of health-rated quality of life [2]. And it is a reliable and valid measure for assessing the subjective and objective health of individuals and communities [3]. There are few differences in the effects of variables associated with self-rated dental care need by different nationalities [4]. So self-rated dental care need is an important method to observe dental health status and attitudes

of either individuals or communities.

Self-rated dental care need has been extensively studied in university students, where a range of associated factors has been identified [5-9]. Now days, most research on self-rated dental care need is concentrating on the factors that affect the need and the survey of the need [2,6,10-18]. And these studies have found many factors associated with the outcome, such as gender, socioeconomic characteristics, age and education [19]. However, the significance of each factor stills remained to be confirmed. Meanwhile, there has been relatively less study on the comparison of self-rated and dentist-rated dental care need. The comparison of the self-rated and dentist-rated dental care need can truly reflect the dental health consciousness and the dental care need status of individuals and communities. It can also provide reference for the public health bureaus in policy making.

Table 1: Results of the self-rated dental care needs, stratified by age, gender, census register and major (2012, n=757).

Variables	Groups	Sample size	Self-rated dental care needs				χ^2	P 2-sided
			Need		Not need			
			N	%	N	%		
Age	≤19	228	77	33.8	151	66.2	4.332	0.115
	20	236	94	39.8	142	60.2		
	≥21	293	125	42.7	168	57.3		
Gender	Female	183	86	47	97	53	6.314	0.015
	Male	574	210	36.6	364	63.4		
Census register	Unban	397	139	35	258	65	5.862	0.017
	Rural	360	157	43.6	203	56.4		
Major	Arts	31	19	61.3	12	38.7	8.364	0.039
	Science	726	277	38.2	449	61.8		
Total		757	296	39.1	461	60.9		

The self-rated dental care need had statistical differences in gender, census register and major.

The number of students who chose "need" increased accordingly with the age.

Table 2: Results of the dentist-rated dental care needs, stratified by age, gender, census register and major (2012, n=757).

Variables	Groups	Sample size	Dentist-rated dental care needs				χ^2	P 2-sided
			Need		Not need			
			N	%	N	%		
Age	≤19	228	146	64	82	36	3.925	0.141
	20	236	169	71.6	67	28.4		
	≥21	293	208	71	85	29		
Gender	female	183	134	73.2	49	26.8	1.933	0.164
	male	574	389	67.8	185	32.2		
Census Register	unban	397	267	67.3	130	32.7	1.315	0.252
	rural	360	256	71.1	104	28.9		
Major	arts	31	25	80.6	6	19.4	4.246	0.236
	science	726	498	68.6	228	31.4		
Total		757	523	69.1	234	30.9		

The dentist-rated dental care need did not show significant differences in age, gender, census register and major.

The data from National Bureau of Statistics showed that, by the end of 2010, the number of university students would reach to 22.318 million in China [20]. So there would be a great number of university students in China.

The age of university students ranges between 17-24 years. This age group is considered less vulnerable to sicknesses. Meanwhile, they also considered themselves to be less likely to get sick [21]. So the public health bureaus often ignore this group of people [22]. And there was little study focused on this group of people's dental status and dental care need to which we must pay attention. The health study of this group of students is very necessary.

With the aim of researching and comparing the difference between self-rated and dentist-rated dental care need, improving the dental care awareness, promoting university dental care services among university students in China, we carried out the survey of the self-rated dental care need and dentist-rated need among university students in 2012 in China. In this study, we investigated both the census register and major, which two were seldom reported before.

Afterwards, we tried to discuss the association between the two factors with the results. We also designed a new classification for the dental care need to replace the "need" and "not need" classification, which is more detailed and comprehensive.

Methods and Materials

Study sample

This study was carried out in the city of Xi'an (population 8,467,837), the capital of Shaanxi province. There were 37 ordinary institutions of higher learning and 36 institutions that were run by the local people or other higher education organizations in Xi'an. Sample design consisted of 5 universities that were selected randomly from all the universities in Xi'an. They were Xi'an Jiaotong University (Comprehensive), Xi'an University of Technology (Science and Technology), The Fourth Military Medical University (Medical), Xi'an University of Architecture and Technology (Engineering) and Xi'an conservatory of music (Arts). The 757 respondent students were selected randomly from each department of every university whose age ranged from 17 to 26. And the student source

Table 3: Comparison between the self-rated dental care needs and dentist-rated needs by different degree (2012, n=757).

Dentist-rated dental care needs	Self-rated Dental care needs				Total n=757		χ^2	P 2-sided
	Need n=296		Not need n=461		sample	%		
	Sample	%	Sample	%				
The first degree	68	23	166	36	234	30.9	14.343	0
The second degree	181	61.1	252	54.7	433	57.2	3.732	0.053
1) Type 1	113	38.2	175	38	288	38.1	0.004	0.953
2) Type 2	45	15.2	57	12.4	102	13.5	1.246	0.264
3) Type 3	9	3	12	2.6	21	2.8	0.128	0.721
4) Type 4	61	20.6	69	15	130	17.2	4.032	0.045
5) Type 5	9	3	14	3	23	3	0	0.998
6) Type 6	13	4.4	2	4	15	2	14.54	0
The third degree	45	15.2	39	8.5	84	11.1	8.088	0.004
1) Type 1	19	6.4	13	2.8	32	4.2	5.767	0.016
2) Type 2	4	1.4	0	0	4	0.5	6.263	0.012
3) Type 3	7	2.4	1	0.2	8	1.1	7.954	0.005
4) Type 4	28	9.5	33	7.2	61	8.1	1.288	0.256
5) Type 5	5	1.7	3	0.7	8	1.1	1.859	0.173
6) Type 6	16	5.4	7	1.5	23	3	9.245	0.002
The fourth degree	2	0.7	4	0.9	6	0.8	0.085	0.771
1) Type 1	0	0	0	0	0	0	0	0
2) Type 2	1	0.3	2	0.4	3	0.4	0.042	0.837
3) Type 3	0	0	1	0.2	1	0.1	0.643	0.423
4) Type 4	1	0.3	1	0.2	2	0.3	0.1	0.752

*P<0.05.

The first degree: Dental condition is healthy. The respondent does not need specific dental care.

The second degree: Dental condition is not healthy. The respondent needs selective dental care, but does not need treatment urgently: 1) Moderate dental calculus; 2) Shallow caries do not develop; 3) Periodontal disease localizing in a small range, do not develop; 4) Need orthodontic treatment; 5) Need preventative treatment; 6) Need prosthodontics treatment.

The third degree: Dental condition is not healthy. The respondent needs dental care as soon as possible: 1) Severe caries; 2) Severe periodontal disease; 3) Chronic dental pulp disease or periapical disease; 4) Severe dental calculus; 5) Chronic oral infections; 6) One or more teeth need extraction.

The fourth degree: Dental condition is not healthy. The respondent needs dental care urgently: 1) Oral and maxillofacial trauma; 2) Acute dental pulp disease or periapical disease; 3) Acute oral infections; 4) Acute pericoronitis.

was nationwide. The respondent students were from 31 different provinces, municipalities and autonomous regions of China (there are 34 provincial administrative regions in China). The sample was designed to be representative of the university students all over China.

Design of the dentist-rated dental care need

According to the damage and urgency of different dental diseases, we divided dental care need into four degrees by different dental conditions [23-28]. The first degree was designed to represent healthy dental condition. And the second, third and fourth degrees were designed to include various oral diseases and pathomorphological changes.

The first degree: Dental condition is healthy. The respondent does not need specific dental care.

The second degree: Dental condition is not healthy. The respondent needs selective dental care, but does not need treatment urgently: 1) Moderate dental calculus; 2) Shallow caries do not develop; 3) Periodontal disease localizing in a small range, do not develop; 4) Need orthodontic treatment; 5) Need preventative

treatment; 6) Need prosthodontics treatment.

The third degree: Dental condition is not healthy. The respondent needs dental care as soon as possible: 1) Severe caries; 2) Severe periodontal disease; 3) Chronic dental pulp disease or periapical disease; 4) Severe dental calculus; 5) Chronic oral infections; 6) One or more teeth need extraction.

The fourth degree: Dental condition is not healthy. The respondent needs dental care urgently: 1) Oral and maxillofacial trauma; 2) Acute dental pulp disease or periapical disease; 3) Acute oral infections; 4) Acute pericoronitis.

Design of the self-rated dental care need

In this study, the self-rated dental care need was represented by the question: "Considering to your dental status, do you think you have dental care needs?" [29]. The response options were: "need" and "not need" [10].

Assessments and measurements

We conducted a cross-sectional analysis in a random sample of students who were selected from the 5 universities by cluster

Table 4: Comparison between the self-rated dental care needs and dentist-rated needs (2012, n=757).

Dentist-rated dental care	Self-rated dental care needs				Total N=757	
	Need n=296 (39.1%)		Not need n=461 (60.9%)		Sample	%
needs	Sample	%	Sample	%	Sample	%
Not need	68	9.00%	166	21.90%	234	30.9%
Need	228	30.10%	295	39.00%	523	69.1%
Total	296	39.10%	461	60.90%	757	100%

¹30.1% of the students in need of dental care and chose “need”.
²39.0% of the students in need of dental care but chose “not need”.
³9.0% of the students not in need but chose “need”.
⁴21.9% of the students not in need and chose “not need”.

sampling. The examining process was strictly based on the international dental survey method standards established by the WHO [30]. And field survey method was used [5]. Dental conditions of each student were examined by six dentists who were specialized in dentistry. Experienced dentists who were familiar with dental surveys conducted the training and standardization. All the dentists had passed the standard test survey. Inter and intra consistency check coincidence rate was higher than 95% [7]. Community periodontal index (CPI) probes, flat mirrors and wooden spatulas were used in the examinations. All the examinations were conducted under standard inspection light [31].

Statistical analyses

In order to make the numbers of each age group relatively equal, the age range was divided into three groups: 17-19, 20 and 21-26. University students in China could be divided into urban and rural by their census register, male and female by gender difference, science major and arts major by the major they chose before the college entrance examination [32].

The results of the self-rated dental care need and the dentist-rated dental care need were respectively represented by different variables (age, gender, census register, major) (Table 1 and 2). The results of the self-rated dental care need were compared with the results of the dentist-rated dental care need (Table 4).

Chi-square was used to assess the significance (P<0.05, two-sided) of the different groups within each outcome. The difference between the two responses (“need” and “not need”) of the self-rated dental care need was assessed between each degree (materials and methods 2.2) by using the chi-square test [33]. The software FoxPro 6.0 was used to build up the database. Afterwards, SPSS 17.0 (SN: 5068167, PN: 33132001) was used for statistical description and analysis.

Results

The sample of the respondent students totaled 757, including 574 males and 183 females. The age range was from 17 to 26, with mean age of 20.5±1.4 and the median age of 21. Students were from 31 different provinces, municipalities and autonomous regions of China (there are 34 provincial administrative region in China), including 397 (52.44%) from urban area and 360 (47.56%) from rural area. 31 students were majored in arts and the other 726 students were majored in science.

The self-rated dental care need had statistical differences in gender, census register and major. And the number of students who

chose “need” increased accordingly with the age (Table 1). While the dentist-rated dental care need did not show significant differences in these four aspects (Table 2).

The results of the dentist-rated dental care need showed that 433 students needed selective dental care, 84 students needed dental care as soon as possible, 6 students needed dental care urgently. Self-rated dental care need showed that 296 students chose “need” and 461 students chose “not need” (Table 3 and 4).

The comparison between self-rated and dentist-rated dental care need showed that 48.0% (39.0%+9.0%) of the students rated their dental care need inaccurately. 30.1% of the students in need of dental care and chose “need”; 39.0% of the students in need of dental care but chose “not need”; 9.0% of the students not in need but chose “need”; 21.9% of the students not in need and chose “not need” (Table 4).

We collected the dental clinical treatment experiences of the students at the same time. Among the 757 respondent students, 540 said that they had never had a dental clinic experience, accounting for 71.3% of all the respondent students. In the other 217 students who said that they had a dental clinic experience in the past, 160 of them had been to dental clinic in the last year.

Discussion

Associated factors (age, gender, census register, major)

Health is a state of complete physical, mental and social well-being and not merely the absence of disease and infirmity [34]. People have inherent instinct in pursuit of health. And in epidemiological health studies, Self-rated dental care need is frequently used, including national health surveys. It is also considered as a helpful general indicator of overall dental status [13,35-37]. Jylha M from the University of Tampere believes that the way to judge the health status of the students may vary according to gender, age groups, different social and cultural backgrounds [11]. In this study, we chose four variables, age, gender, census register and major, for research.

The study of 26,111 Hong Kong students conducted by Lee A from The Chinese University of Hong Kong showed that older students had higher prevalence rates of health-compromising behaviour than younger students [22]. At the same time, a study by Hee-Young Shin from Chonnam National University Medical School showed that the older students rated their self-rated health more negatively in both men and women [12]. Results of our survey showed that 33.8% of the 17-19 year age group students thought themselves in need of dental care. Meanwhile 39.8% of the 20 year age group students

thought that they needed dental care and 42.7% of the 21-26 year age group students thought themselves in need of dental care. The rate of choosing "need" increases proportionately with age, although it was not statistically significant in this study.

The research of Shintaro Wakaguri from Tohoku University Graduate School of Dentistry showed that there seemed to be gender differences in the association between the self-rated dental and socioeconomic status [10]. In our survey, 47.0% of the female students thought that they were in need of dental care. While only 36.6% of the male students thought they were in need of dental care. It indicated that female students were more likely than male students to rate their dental conditions poorly. The results corresponded to the research by Hee-Young Shin [12], their research results also showed that women were more likely than men to rate their SRH (self-rated health) as poor.

University students in China can be divided into urban and rural according to the student source which is in accordance with their census register [9]. In this study, the students from rural areas were more likely to think that they were in need of dental care than the students from urban areas, though these two groups were not statistically different in the dentist-rated dental care need.

According to their chosen major before entering university, the students could be divided into science major and arts major [38]. The study of Zhu Qing-Qing from the Children Hospital of Suzhou University showed that arts students scored higher in interpersonal sensitivity, depression and anxiety factors than science students. Their mental health score was also higher [39]. The results in our study showed that the arts students were more likely to think that they were in need of dental care than the science students. Despite the fact that they had no statistical difference in the dentist-rated dental care need.

Comparison between self-rated and dentist-rated dental care need among university students in china

In most developed countries and some developing countries, health care is regarded as one of the public services [17]. There is a growing recognition of the necessity for the strong role that the health services play in public health [18]. Nowadays health care reform in China is being intensified, and people are paying more and more attention to their health [40]. But above all, the demand for health care will be a starting point for the Chinese government to make health care reform [41]. This study could provide references for the public health bureaus in improving dental care services.

In this study, the results showed that 60.9% of the students thought that they had no need of dental care, but only 36.0% of which were proved really not need dental care after dental examination. The remaining 64% of them all had dental care need at different degrees, among which 54.7% of them needed selective dental care, 8.5% of them needed dental care as soon as possible, 0.9% of them needed dental care urgently. It showed that there were a large number of Chinese university students who could not rate their dental care need accurately. The lack of dental care consciousness might account for a significant problem.

There were 39.0% of the respondent students who had different degrees of dental care need but considered themselves to be not

in need of dental care. It showed that the university students had lack of dental knowledge and self-awareness to which we must pay attention [42]. Meanwhile, the results showed that only 30.9% of the respondent students did not need any specific dental care. The other 69.1% all had dental care needs to different degrees. It showed that dental diseases had become common among university students, and that it had a significant impact on them. There was an urgent need to strengthen the dental care services in universities [43]. The data from the National Bureau of Statistics showed that [20], by the end of 2010, the number of university student would reach to 22.318 million in China [20]. There will be a huge need for dental care services.

We suggest strengthening the dental care knowledge propaganda in university students in China. School is one of the most basic places to prevent dental diseases. Students would benefit for a lifetime if they formed good dental care habits at university [44]. We also suggest adding dental knowledge, lectures and pictures in university TV shows to make students understand more about dental knowledge. Moreover, we can distribute dental care manuals to university students to which they can refer at any time. At the same time, it is necessary to encourage the students applying the knowledge to daily life.

New design for dentist-rated dental care need and sample gender imbalance

In this research, we came up with a new design for dentist-rated dental care need, which was first introduced to the survey of university students. We have conducted many surveys using this design in the military of China [23-28]. Most soldiers in China are enrolled in the army after graduating from high school. Therefore, the age range and the status of oral cavity are similar to the university students. In the previous studies, this design for dental care needs was confirmed as reliable and practical.

Compared to the 45.7% given by the state council information office of the People's Republic of China [45], In this research, the female students accounted for 24.2% in all the respondent students. We think the difference came from the sample universities we chose. Because Xi'an University of Technology is Science and Technology, The Fourth Military Medical University belonged to the military, Xi'an University of Architecture and Technology is engineering. The students in these three universes are mostly male which led to the difference.

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