

PREVALENCE OF DENTAL CARIES AMONG ADULT PATIENTS AT COMMUNE HEALTH CENTERS IN CENTRAL VIETNAM

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Abstract

Background: The burden of oral disease is an excessive issue of Vietnamese population while the availability and accessibility of oral health services are seriously constrained. The objective of the present study was to identify the prevalence of dental caries among adults presenting at commune health centers.

Method: Data were collected at three commune health centers in Thua Thien Hue Province, Vietnam. During the study period, patients older than 18 year old who presented to each selected commune health center for a general or oral health concern were received dental examinations by trained examiners.

A criterion set by the World Health Organization (1997) was used for caries diagnosis. **Results:** The final study sample comprised of 799 participants and the response rate was 96%. The study found a high caries experience and prevalence in which 92.2% of adults had caries experience with a mean DMFT of 6.40 ± 5.57 per person of which 2.98 ± 3.04 were decay teeth and 3.09 ± 4.33 missing teeth due to decay. Mean filled teeth were markedly low (0.33 ± 0.88). **Conclusions:** Our study strongly confirms the prevalent oral health diseases and the unmet dental needs presented substantially in adult patients presenting at primary care practice settings. There is a strong call for a program for prevention and control of caries in adults presenting at primary care level.

Key words: *Dental caries, Adults, Commune health center.*

BACKGROUND

Poor oral health has a profound effect on general health and quality of life and represents a substantial burden for health systems worldwide (Petersen P.E., 2005). The most common oral disease which hinders the achievement and maintenance of oral health is dental caries and this affects all age groups (Petersen P. E., 2004, Pitts N. et al., 2011). In the adult population, the situation is extremely severe as dental caries affects nearly 100% of the population in the majority of countries (Petersen P.E. et al., 2005). Epidemiological studies have reported declining level of caries in many industrialized countries over the past four decades (Bratthall D. et al., 1996, Marthaler T.M., 2004, Edelstein B.L.,

2006), and increased caries in certain developing countries (Marthaler T.M., 2004, Edelstein B.L., 2006). Most industrialized countries and some countries of Latin America have high DMFT values (≥ 14), whereas levels of dental caries experience are much lower in developing countries of Africa and Asia (Petersen P.E. et al., 2005, Namal N. et al., 2005). The burden of oral disease is an excessive and unnecessary issue of Vietnamese population as dental caries affect more than 80% adults with a mean decayed, missing, and filled teeth score of 4.98 ± 5.7 , with most as untreated decay (Spencer A.J. et al., 2011). In more details, the prevalence of dental caries increases in older age group, ranging from 75.2% to 89.7% in the 18-34 year old population

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and more than 45 years old, respectively. The correspondent means DMFT are 2.84 and 8.93 (Spencer A.J. et al., 2011). Community-wide approaches to support oral health and the role of professional services emphasized that control of oral disease depends mainly on the availability and accessibility of oral health systems with respect to primary oral health care and prevention (Martin A.B. et al., 2008, Petersen P.E., 2009). Primary health care settings in form of commune health centers (CHCs) in Vietnam, have taken the role of gate keeper, especially for special population groups with limited access to health care. Thus, they provide an ideal source of oral health care for communities in terms of prevention of oral diseases. This cross-sectional study is to identify the prevalence and severity of dental caries among the population presented at the commune health centers in one province in the Central of Vietnam.

METHODS

This was a cross-sectional study using quantitative approach. Three commune health centers (one in urban and two in rural) in Thua Thien Hue province were randomly selected with the probability proportional population size to represent 150 communities of the whole province. In each commune health center, participants were all eligible patients visiting for health care during the two-week period with eligibility criteria is patients of 18 years old or older and exclusion criteria is patients who are not capable of responding either for physical or mental reasons. In each day of data collection at commune health center, all adult patients were approached.

The criteria of the WHO (4th edition) were employed for diagnosis and coding. Only the crown was examined. The indices calculated were DMFT, caries prevalence and treatment needs. The criteria and recording instructions used for survey form followed those stated in manual "Oral Health Surveys –Basic Methods", 4th edition, WHO 1997.

Ethics approval were obtained from the School of Population Health Research Ethics Committee,

The University of Queensland and Hue University of Medicine and Pharmacy.

RESULTS

The study population consists of 799 patients who met the study eligibility criteria and received the dental examination. Table 1 represents socio-demographics of study population.

Table 1. Socio-demographic characteristics of study population

Variables	n	%
Age group, years (n=799)		
18-34	143	17.9
35-44	151	18.9
45-60	288	36.0
>60	217	27.2
Gender (n=799)		
Male	187	23.4
Female	612	76.6
Marital status (n=799)		
Single	64	8.0
Married	656	82.2
Divorce/Widowed	78	9.8
Residence (n=799)		
Urban	157	19.6
Rural	642	80.4
Education level (n=799)		
Illiterate	75	9.4
Primary School	231	28.9
Secondary School	238	29.8
High School	185	23.1
College University	70	8.8
Occupational status (n=799)		
Employee	95	11.9
Housewife	80	10.0
Independent workers	427	53.5
Unemployed	16	2.0
Elderly person	154	19.3
Others	27	3.4
Monthly Income (n= 747) (in thousand VND)		
<400	71	9.5
400 - 799	142	19.0
800 - 1,199	152	20.3
1,200 - 1,599	132	17.7
>1,600	250	33.5

Dental caries affected more than 90% adults with the mean DMFT of 6.40 per person (Table 2). The caries experience and prevalence as well as the severity in adults significantly statistically increased with increasing age (all $p < 0.001$), ranging from a low mean DMFT of 3.70 ± 3.64 in youngest age group to a high mean DMFT of

9.27 ± 6.84 in the oldest (Figure 2). Older adults had by far the highest DMFT scores of all age groups, largely because of the high number of missing teeth. Oldest adults aged more than 60 years old were considerably higher totals than younger adults and had higher scores for each component, exception for filling component (Table 2).

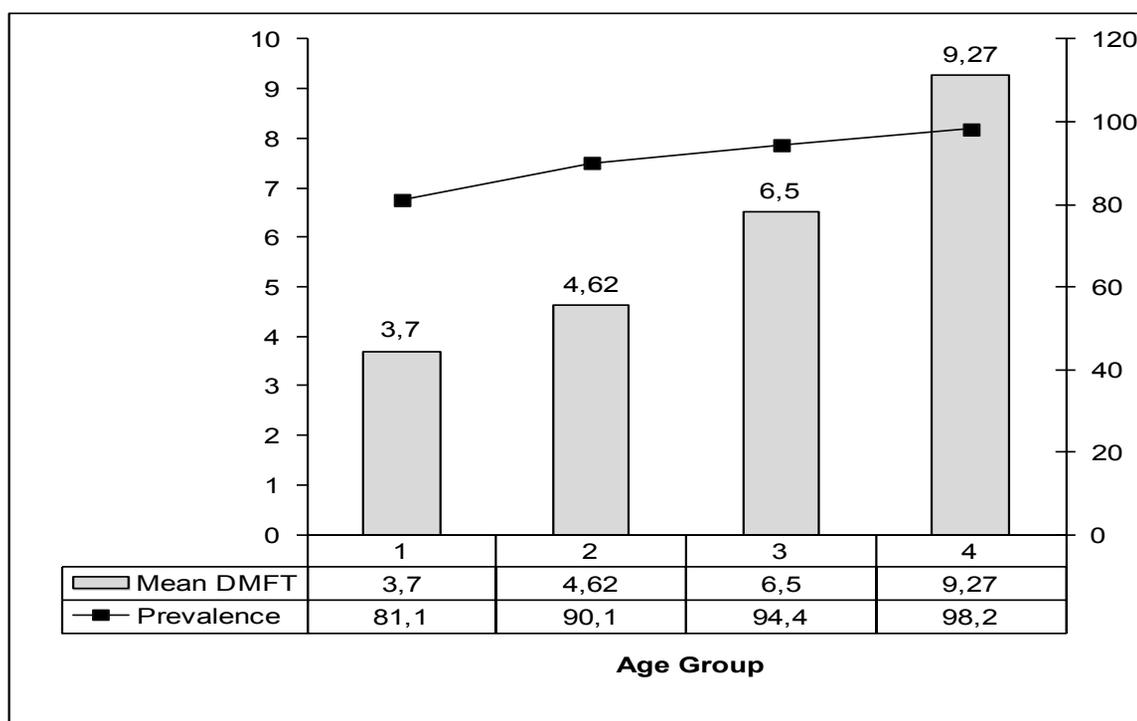


Figure 1. Dental caries prevalence of adults visiting CHCs in Thua Thien Hue province

Table 2. Distribution on DMFT of adults by age group

Variables	n	DMFT index Mean±SD	DT Mean±SD	MT Mean±SD	FT Mean±SD	Caries prevalence N (%)
Age group, years						
18-34	143	3.70±3.64 ^a	2.77±3.08	0.47±0.90 ^a	0.46 ±1.01 ^a	116(81.1) ^b
35-44	151	4.62±3.77	2.62±2.74	1.48±1.83	0.52±1.00	136(90.1)
45-60	288	6.50±5.05	2.98±3.04	3.14±3.54	0.39 ±1.01	272(94.4)
>60	217	9.27±6.84	3.36±3.20	5.88±5.97	0.03 ±0.19	213(98.2)
Total	799	6.40±5.57	2.98±3.04	3.09± 4.33	0.33±0.88	737(92.2)

Notes: DT = decayed teeth; MT = missing teeth; FT = filled teeth; DMFT = caries decayed, missing, and filled teeth index.

a. Column comparison, analysis of variance $p < 0.001$.

b. $\chi^2 p < 0.05$

Figure 2 summarizes the mean of DMFT components according to selected socio-demographic characteristics (gender, place of residence and monthly level income). In general, caries prevalence as well as its severity appeared less in male than female across all age group. This pattern was similar with regard to specific components of D, M, F. In each age group, urban residents had higher prevalence of caries experience in general as well as in each component of DMFT index than their

counterparts. The gap of difference increased with age; especially, there was a considerable difference between older adult living in urban and rural area (a mean DMFT of 11.42 and 8.98, respectively). With regards to DMFT component, the D-component dominated in the DMFT index in younger adults while the M-component dominated in older adults. The F-component occupied a very small proportion or even not appeared in adults aged over 60 years old in most age groups.

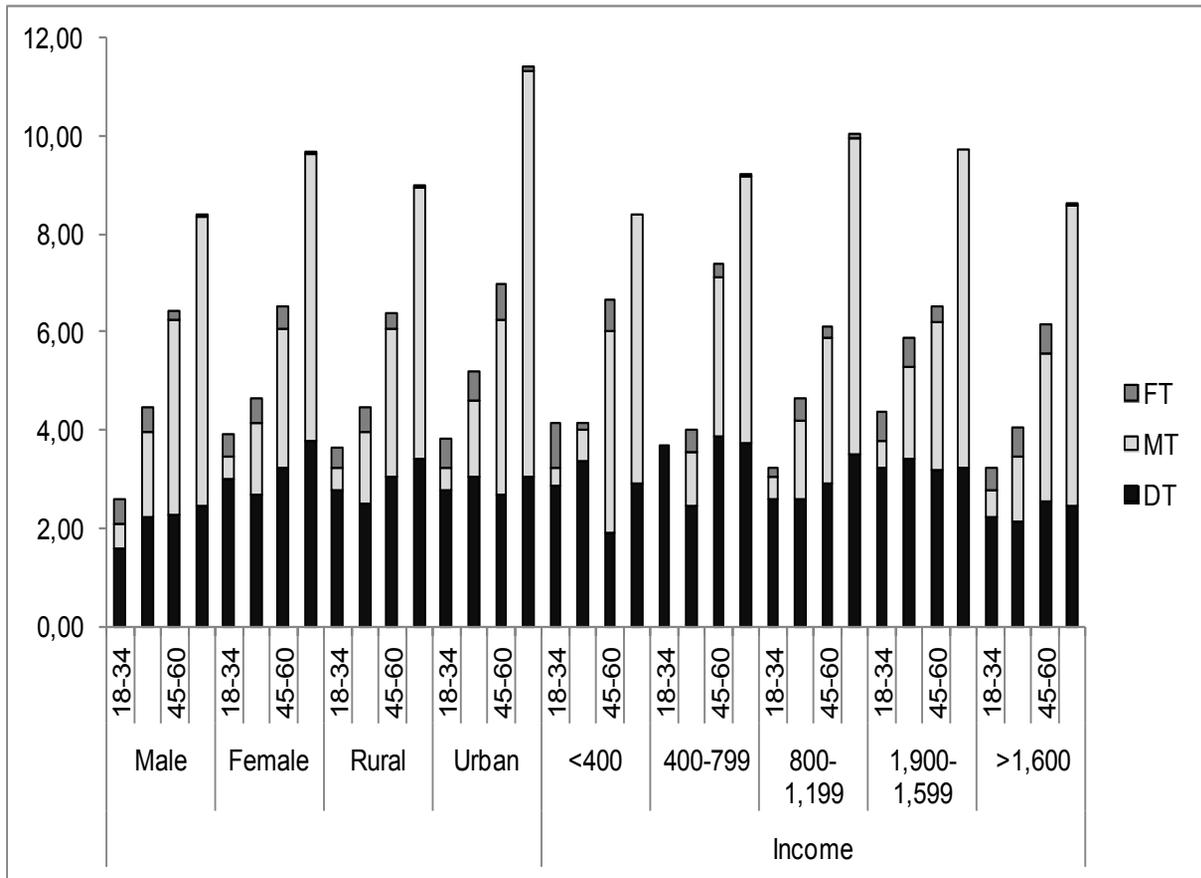


Figure 2. Dental health indicators (means) of adults based on gender, place of residence and monthly level income

DISCUSSION AND CONCLUSIONS

In Vietnam, there is scarce epidemiological data on oral health status of adults attending at commune health centers, the first level of service delivery in the health system in Vietnam. Although the present study is not based on representative sample of adults (as it uses convenient sampling) it does give an insight into the caries prevalence and treatment needs of special group of adults who presented at commune health centers. Caries

prevalence as well as the severity in adults aged 18 years old and over were high. 92.2% of adults had caries experience with a mean DMFT of 6.40 ± 5.57 per person of which 2.98 ± 3.04 were decayed teeth and 3.09 ± 4.33 missing due to decay. Caries experience and prevalence as well as the severity in adults were higher than those of the National Oral Health Survey in which about 81.3% of subjects had caries experience with a mean DMFT of 4.98 ± 5.7 . In comparison with

local oral health surveys, caries prevalence and severity in this study was a little higher compared to the survey in Thua Thien Hue Province in 2000 (Nguyen N.T.D et al., 2010), and on adults in general and adults visiting CHCs in Thuan An district, Thua Thien Hue province (Bui N.L and Nguyen T.Q.H, 2008). The correspondent data were 66.5% population affected with a mean DMFT of 2.24 and 85.0% patients suffered with a mean DMFT of 5.93, respectively.

In agreement with the findings in national survey (Spencer A.J. et al., 2011), the oral health status of the present adult population increased with increasing age in terms of caries prevalence and its severity. There were no statistically significant variations in the distribution of oral health conditions by gender; however the prevalence of oral health conditions varied significantly by patient age. Urban participants showed similarities of decayed teeth and missing teeth, but had more fillings than rural participants. One explanation might be the easier access for dental care in urban areas, leading to more interventions (more fillings and more extractions).

Our results suggest an alarming situation that reflects one of the neglected high disease rates and very little oral health care service provision. In the DMFT score for younger age groups, the D component, i.e. decayed teeth, was the largest and in adults aged over 45 years old, the D and M, i.e. decayed and missing, components constituted the main part of DMFT score. Thus F, the filled component, was the smallest across all age groups in all centers. This pattern has been seen in other Vietnamese and developing countries' epidemiological surveys of caries prevalence conducted in recent years (Khanh N., 2008, Marthaler T.M., 2004, Namal N. et al., 2005). This highlights the fact that prevalence of dental caries is high and provision for restorative/endodontic treatment is inadequate. The number of fillings and other kinds of treatment are too small compared to number of decayed teeth. It is well-established that early

diagnosis and appropriate treatment, including preventive and curative measures, can prevent dental diseases from reaching a stage where pain or other symptoms would force a person to seek professional dental care, and that this ultimately reduces the burden of disease in terms of cost as well as oral health. Thus, improving access to timely dental care as well as providing programs for prevention at a population level may assist in reducing dental caries rates. Incorporating such interventions into routine practice in primary care setting such as CHCs will help raise awareness of the issue and detect oral health issues at an early stage.

The study aimed at determining the oral health status of adults visiting CHC and partially the oral health care seeking behaviour. In comparison to the age-group distribution in the population, older subjects (aged over 45 years) were overrepresented in this sample. Age related analyses of the data, however, deal with this overrepresentation. With regards to residence, more subjects from rural areas were included than can be explained on the basis of their distribution in the population. In addition, the selection of the three CHCs was not random, but mainly based on their accessibility. In spite of this, we consider this drawback sufficiently compensated by the large sample size, and the high and comparable response rates in the sample subgroups. In terms of socioeconomic structure, the education level of the study sample corresponded with that of the population of Vietnam, while the distribution of income level was higher than governmental data in the Second National Oral Health Survey. In conclusion, the subjects in this sample may be considered as representative for the clinical population. As a result, age related outcomes at subject level do reflect the oral health status in the clinical population. However, outcomes at sample level were skewed by age and residence and should be interpreted with this in mind. The significant strengths of this study included a large sample size, which provided sample power to evaluate effect modification.

The high number, as well as the diversity, of the population who took part in our study reflects the high demand of utilization of CHC in the community. Studying the characteristics of such a population play an important role in planning health promotion programs that are targeted to the needs of populations.

In developing countries, random sampling is largely impossible because of the lack of census lists or valid population registers, so alternative procedures are needed to obtain representative samples. This study was limited by its inability to draw a random sample and time constraints that could only provide snapshots of the selected commune health centers. Despite the limitations, for those members of the study population who met the eligibility criteria for the study, the

data allow reasonable inferences to be drawn about the factors most significantly associated with the use of dental services in the study area. In addition, the subjects in the study were generally non-regular dental care users. More than half the sample had never visited a dental care provider and very few subjects had received any preventive dental care (data available but were not presented). Thus, the course of dental diseases observed among the study sample was considered to be minimally confounded by professional dental care.

This study strongly confirms the prevalent oral health diseases and the unmet dental needs presented substantially in adult patients presenting at primary care practice settings. There is a strong call for a program for prevention and control of caries in adults presenting at primary care level.

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