



Indian Journal of Public Health Research & Development

An International Journal

SCOPUS IJPHRD CITATION SCORE

Indian Journal of Public Health Research and Development
Scopus coverage years: from 2010 to 2017 Publisher:
R.K. Sharma, Institute of Medico-Legal Publications
ISSN:0976-0245E-ISSN: 0976-5506 Subject area: Medicine:
Public Health, Environmental and Occupational Health
CiteScore 2015- 0.02
SJR 2015- 0.105
SNIP 2015- 0.034



Website:

www.ijphrd.com

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Print-ISSN: 0976-0245-**Electronic-ISSN:** 0976-5506, **Frequency:** Quarterly
(Four issues per volume)

Indian Journal of Public Health Research & Development is a double blind peer reviewed international journal. It deals with all aspects of Public Health including Community Medicine, Public Health, Epidemiology, Occupational Health, Environmental Hazards, Clinical Research, and Public Health Laws and covers all medical specialties concerned with research and development for the masses. The journal strongly encourages reports of research carried out within Indian continent and South East Asia.

The journal has been assigned International Standards Serial Number (ISSN) and is indexed with Index Copernicus (Poland). It is also brought to notice that the journal is being covered by many international databases. The journal is covered by EBSCO (USA), Embase, EMCare & Scopus database. The journal is now part of DST, CSIR, and UGC consortia.

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Dr. R.K. Sharma
Institute of Medico-legal Publications
501, Manisha Building, 75-76, Nehru Place,
New Delhi-110019

Printed, published and owned by

Dr. R.K. Sharma
Institute of Medico-legal Publications
501, Manisha Building, 75-76, Nehru Place,
New Delhi-110019

Published at

Institute of Medico-legal Publications
501, Manisha Building, 75-76, Nehru Place,
New Delhi-110019



Indian Journal of Public Health Research & Development

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Dental Caries Based on DMF, SIC and PUFA Index for People Living in Ampelan and Ambulu Village, Bondowoso, Indonesia

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ABSTRACT

Oral hygiene needs to get emphasize because of giving big contribution on someone's health and influence on his quality of life either. Moreover, dental caries becomes the most common one. In line with this problem, DMF-T index and SIC index are needed to assess dental caries as well as PUFA index is for evaluating the clinical consequences of untreated dental caries. The aim of this study was to know whether or not dental caries on people living in Ambulu and Ampelan Village, Wringin Sub-District, Bondowoso District, East Java Province, Indonesia. The observational descriptive research design was applied and carried out 84 adults (from 663 respondents) at December 2017 in Ambulu and Ampelan Village, Wringin Sub-District, Bondowoso District, East Java Province, Indonesia. The variables were dental caries while the measurements used are DMF-T index, SIC index and PUFA index. The result of this study was explained descriptively by using table of frequency distribution and its diagram. It was found that there were 16.7% respondents were drop out from school and 38.1% respondents were belonging to unemployed. The mean score of DMF-T index was 7.64; SIC index shows 13.6 (categorized as the worst); PUFA index was 393, means that most of respondents have worse dental caries at least 5 teeth of each. In conclusion, it was found that dental caries of people living in Ambulu and Ampelan Village, Wringin Sub-District, Bondowoso District, East Java Province, Indonesia was categorized as severe based on DMF-T and SIC index, meanwhile PUFA index showed that most of respondents have five teeth decay.

Keywords: dental caries, DMF-T, SIC, PUFA index

INTRODUCTION

Dental caries, the gradual process of mineralized enamel and spreading to dentin including the dental pulp, belongs to the most common problem of oral hygiene. It causes of the invasion certain bacteria and the infected of pulp tissue as well as periapical tissue then it becomes painful.⁽¹⁾

According to Riskesdas (Riset Kesehatan Dasar) / Basic Health Research (2013), it is found that 25.9% of Indonesian people has had oral hygiene since 12 months. There are 31.1% of them who see the dentist while the

rest, 68.9% of them, has no treatment either to visit the dentist. Moreover, another data shows that there are only 8.1% of the people's capability to visit the dentist and it shows that people who lives in city has higher percentage than people who lives in village. Indonesian DMF-T index is 4.6 with the each details are D-T= 1.6; M-T=2.9; F-T=0.08; which means Indonesian people has 460 teeth decay for each 100 people. DMF-T index for people living in East Java Province reaches 5.5 with D-T= 1.6; M-T=3.8; F-T=0.08; and it means that there are 550 dental caries for each 100 people.⁽²⁾

Besides, there are many indexes used to measure oral hygiene, especially dental caries, yet the researcher uses three different indexes, they are DMF-T index, SIC index and PUFA index. DMF-T index (Decay Missing Filled-Teeth) is used as the key measure of dental caries. Meanwhile, SIC index (Significant Caries Index) refers to the mean DFM-T of the one third of the study group

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with the highest caries score as well as applying PUFA index (Pulpitis, Ulceration, Fistula, Abscess), an index of clinical consequences of untreated dental caries.

On the other hand, Ambulu and Ampelan village are two villages that has the farthest location from Wringin Sub-District, Bondowoso District, East Java Province, Indonesia. It is found that there are less people to be categorized as educated people (less than 80% of them were graduated from Elementary School and Junior High School). Moreover, their social-economy status also shows the low percentage (90% most of them are farmers). Thus, the researcher wants know whether or not the dental caries based on DMF index, SIC index, and PUFA index of people who live in Ambulu and Ampelan Village, Wringin Sub-District, Bondowoso District, East Java Province, Indonesia.

MATERIAL AND METHODS

This research applied observational descriptive research design in Ampelan and Ambulu village, Bondowoso District, East Java Province, Indonesia at December 2017. In this study, the population involved 663 adults (within the age of 25-35) who live in Ambulu and Ampelan Village, Wringin Sub-District, Bondowoso District, East Java Province, Indonesia. There were 84 respondents selected by using simple random sampling technique. The variables were dental caries and the measurements were DMF-T index, SIC index, and PUFA index. The categorical data was analyzed descriptively by using table of frequency distribution.

FINDINGS

Table 1: Distribution of Respondent Based on Their Last Education in Ambulu and Ampelan Village, Wringin Sub-District, Bondowoso District, East Java Province, Indonesia

No.	Last Education	Respondent	
		n	%
1.	Do not go to school	14	16.7
2.	Elementary School	26	31.0
3.	Junior High School	24	28.6
4.	Senior High School	15	17.9
5.	Bachelor Degree	5	6.0
Total		84	100%

The findings of this study of 84 respondents who belong to the people living in Ambulu and Ampelan Village, Wringin Sub-District, Bondowoso District, East Java Province, Indonesia was found the respondent contribution based on their last degree of education. Table 1 shows that the most respondents, 26 people (31.0%), only studied in elementary school. The next, the percentage of respondents who have the last study at junior high school were 28.6% (24 people). Meanwhile, there were 15 people (17.9%) who were graduated from senior high school and 5 people (6.0%) for bachelor degree as well. The last were people who do not go to school that shows the percentage of 16.7% or they were about 14 people. Moreover, another explanation dealing with respondent's job can be shown for Table 2 as follows.

Table 2: Distribution of Respondent Based on Their Job in Ambulu and Ampelan Village, Wringin Sub-District, Bondowoso District, East Java Province, Indonesia

No.	Type of Job	Respondent	
		n	%
1.	Civil Servant	5	6.0
2.	Employee	8	9.5
3.	Farmer	12	14.3
4.	Traders	27	32.1
5.	Unemployed	32	38.1
Total		84	100

Table 2 shows that the most respondents, there were 32 people (38.1%), were jobless while there were only 5 people (6.0%) as the civil servant. The percentage of employee shows 9.5% or about 8 respondents. The next, there were 12 respondents (14.3) who were farmers and 27 of them (32.1%) were traders. The next following table, (Table 3), belongs to the mean of DMF-T index of people living in Ambulu and Ampelan Village, Wringin Sub-District, Bondowoso District, East Java Province, Indonesia.

Table 3: The DMF-T mean score of Adults living in Ambulu and Ampelan Village, Wringin Sub-District, Bondowoso District, East Java Province, Indonesia

The DMF-T Mean Score	
Decay	4.14
Missing	3.30
Filled	0.20
Total	7.64

Table 3 explains that the mean score of D (decay) was 4.14, the mean score of M (missing) was 3.30 and the mean score of F (filled) was 0.20. The mean score of DMF-T index was 7.64 and according to WHO, it is categorized as severe. Furthermore, it can be said that most of people have dental caries, at least 8 teeth. SIC mean score can be seen as the following table (Table 4).

Table 4: The SIC mean score of Adults living in Ambulu and Ampelan Village, Wringin Sub-District, Bondowoso District, East Java Province, Indonesia

SIC (Significant Index Caries)	
Total amount of 1/3 Respondents	28
Total amount DMF-T score	380
SIC score	13.6

Table 4 shows that the total amount of a third of 84 respondents were 28 people and based on the highest DMF score, it was found that total DMF-T score of 28 people were 380 and SIC index showed 13.6 while PUFA was able to be seen as the next table below (Table 5).

Table 5: PUFA score of Adults living in Ambulu and Ampelan Village, Wringin Sub-District, Bondowoso District, East Java Province, Indonesia

PUFA Index	
Pulpitis (P)	365
Ulceration (U)	21
Fistula (F)	4
Abscess (A)	3
PUFA	393

DISSCUSSION

In this research, the last education of the most respondents are elementary school (Table 1). It means that people who are educated-able will have positive attitudes toward oral hygiene and take care of their healthy body, especially oral health. The education rate represents people's ability in obtaining and understanding the information. Education status can affect on people's opportunity to get the information, especially dealing with the preventing and handling the disease. The higher education of someone's, the easiest information he will get and he will have much knowledge as well. In contrast, someone who has low education so he will make himself is difficult to get information either to understand any knowledge he has gotten.⁽³⁾

Some researches show that the higher education will have the higher knowledge as well. Respondents

who have the higher education tend having much information rather than those who have the lower ones.⁽⁴⁾ In line with this relation between education and dental caries problem, Riskesdas (Riset Kesehatan Dasar) / Basic Health Research (2013) reported that the higher education of people will have the lower rate of oral hygiene problem.

The most respondents based on their job shows the majority of respondents were traders or street vendors (Table 2). Kind of job can be related to the social-economy status. Moreover, people's social-economy status could give contribution on their knowledge, lifestyle, and accessing the information either the health service. It can be said that someone who has low social-economy status will have worse rate of oral hygiene, so, he has big possibility in having dental caries. It happens because he has less attention of taking care of their oral hygiene. Besides, it also effects on having healthy food and lifestyle.⁽⁵⁾

Further information about DMF-T is explained as follows. D stands for decay, which means the total amount of decay teeth causes of dental caries, M (missing) belongs to missing teeth or supernumerary teeth and F (filled) refers to the filled teeth causes of dental caries. Looking at table 3, the dental caries score is 7.3 and categorized as very severe as WHO says so.⁽⁶⁾ This score is also higher than the national DMF-T score, it is 4.6. Thus, it can be said that most of respondents have more than 7 teeth decau. Riskesdas (Riset Kesehatan Dasar) / Basic Health Research (2013) reported that the respondents feel the uncomfortable of dental caries in about 4 days. In short, oral hygiene is so important because it will give negative impact while working or studying and reducing their productivity.⁽²⁾

SIC (Significant Index Caries) index is applied as the standard of epidemiology statistic measurement and it gives more emphasizes on someone who has the highest dental caries score. It also to cope with the disadvantage of DMF-T, which DMF-T index has the limitation to give the accurate result of the dental caries distribution of all the population, especially for people living in development countries. This problem can draw a conclusion that handling one of dental caries can solve the entire dental caries problem. Yet, this is not in line with the fact because there are still many dental caries found. It was stated in one of the researches that was conducted in Nevada. It showed that dental caries commonly happens to teenagers and SIC mean score is higher than DMF-T mean score every year (the survey

was conducted once a year). The researcher concluded that the use of two indexes (DMF-T and SIC) could help to analyze the correlation between oral hygiene problem accurately among the different population related to the identifying of preventing and handling the oral hygiene. ⁽⁷⁾ Table 4 shows that a third of respondents (84 people) were 28 respondents and the highest DMF-T score of them was 380 while the SIC index was 13.6.

PUFA index is the epidemiology measurement of the clinical consequences of untreated dental caries. It covers pulpal, ulceration, fistula, and abscess for temporary teeth and permanent ones. PUFA index assess the presence of oral condition resulting from untreated caries visually without using diagnostic tools except dental mirror.^{8,9} Table 5 describes that 84 respondents had 365 pulpitis teeth, 21 ulceration teeth, 4 fistula teeth and 3 abscess teeth. Total amount of PUFA score was 393, means that there were 393 untreated dental caries of people living in Ambulu and Ampelan Village, Wringin Sub-District, Bondowoso District, East Java Province, Indonesia. According to Azodo, et al. (2015), dealing with the oral hygiene of people who lives in village has the low rate of brushing their teeth twice a day or more (19.5%). The rest (74.7%) brush their teeth once a day. In addition, they also rarely visit the dentist (5.8%). In conclusion, people living in village has the low motivated and negative attitude toward oral hygiene or in other words, they are categorized as severe.⁽¹⁰⁾

CONCLUSION

This research has found that dental caries of people living in Ambulu and Ampelan Village, Wringin Sub-District, Bondowoso District, East Java Province, Indonesia based on DMF-T showed 7.61 (categorized as severe). Besides, based on SIC index was 13.6 (categorized as severe), meanwhile, PUFA index was 393, means that there were 393 untreated decay teeth resulting from caries.

Conflict of Interest Statement: The authors of this research declare that there is no conflict of interest related to this study.

Source of Funding: All funds used to support this research comes from the researchers themselves.

Ethical Clearance: The ethical clearance of this research taken from Ethics Committee of Institute of Health Science "Maluku Husada" Ambon, Indonesia; with number "RK. 02/KEPK/STIK/XII/2017".

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