



## Socio-Dental and Family Living Condition Approach for Planning Dental Care: A Cross-sectional Study among Indonesian Students

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### Abstract

**Objective:** To know the planning of dental care with a socio-dental approach. **Material and Methods:** Cross-sectional study has been conducted on Baubau Junior High School students, Southeast Sulawesi. The sample consisted of 209 subjects randomly selected. The social approach is known for filling out questionnaires with Family Development Index (FDI), Quality of life with OHRQoL-index using Child-OIDP (specific and generic). Family data were: family income, housing conditions (material used in the construction of the house and access to drinking water) and financial governmental support. Family income was classified into three groups. Severity status dental caries was assessed using the DMFT index. Participants were categorized into two groups: severe caries and not severe caries. Descriptive statistics were used to calculate the absolute and relative frequencies. **Results:** The most frequent FDI category was very severe (52.6%), while for category Child-OIDP > 1, has a value of FDI category very severe 53.1%. Normative need on FDI not severe was 71.4% with severe caries 33.3% and not severe caries 38.1%. The approach in socio-dental and family condition can be used in dental health services planning. The result of grouping of society based on index of FDI hence group of society with severe condition is equal to 83.3%. **Conclusion:** The living conditions of poor families in need of dental health care are normative higher and worse, and has a tendency to be more bad behavior.

**Keywords:** Quality of Life; Dental Caries; Family Characteristics.

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## Introduction

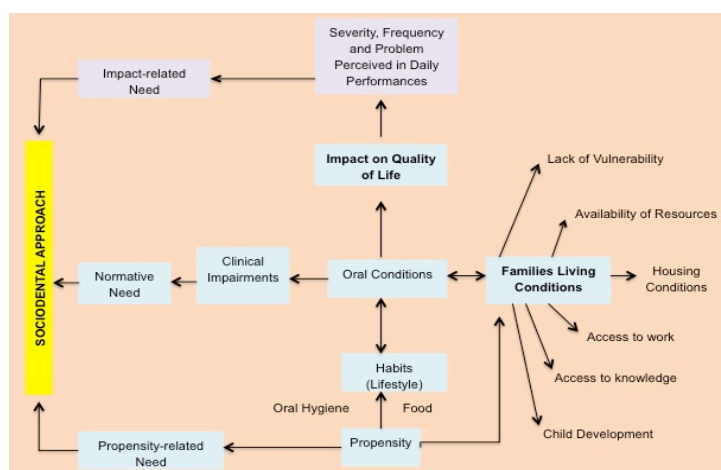
Health is defined as the complete physical, mental and social well-being and not merely the absence of disease or infirmity [1]. Based on these concepts, measuring health should not be confirmed only with clinical assessment, but also we have to consider mental and social aspects from the patient.

It's also the same for dental treatment, which we can't measure it by only clinical assessment, but also including physic, mental and social condition [2]. Health triangle is the concept, which can be accepted universally, and his relationship with Oral Health-Related Quality of Life (OHRQoL) [3]. OHRQoL has been used from the 15 years ago, and it can measure the impact of dental disease on physic, mental and social conditions by use questioner. OHRQoL concepts significantly talk about clinic condition from dental health, dental research, and study of dental [4,5].

In this day, OHRQoL for children use 4 indexes, they are Child Perception Questionnaire (CPQ11-14), the Michigan OHRQoL scale, the child version of oral impacts on daily performances (Child-OIDP), and the Child oral health impact profile (Child-OHIP). Child-OIDP first used in Thailand, then the validation has been done on children population in England, France, and Peru. The design of Child-OIDP is to know specific condition of oral, which can give impact on daily life, so that the impact, which caused by the oral condition, can be treated properly [6,7]. Family condition who lack money will influence someone life and make they lack from receiving dental treatment properly.

The assessment of oral health needs combining socio-dental approach with information of family living conditions has not been tested yet and may provide a better comprehensive approach of adolescent's oral health needs assessment [5]. The socio-dental approach combining OHRQoL with standard clinical measures comes closer to current concepts of health than the traditional standard approach [8].

A theoretical model of oral health needs assessment using the socio-dental approach and living conditions of the family related to the organization of oral health care was developed (Figure 1).



**Figure 1. Theoretical model for oral health needs combining the socio-dental approach and index of Family Living Conditions (FDI Index).**

Family living condition can be assessed by 6 indicators, they are lack of vulnerability, availability of resources, housing condition, access to work, access to school, and family socioeconomic like elderly in family, pregnant women or someone with special needs, work, family salary, school for children, and an adult who still going to school.

The socio-dental approach is a new method which uses for assessing oral health treatment need by integrated oral health impact on quality of life by oral health status and behavior tendency to follow the steps on oral health counseling. Using information about the family condition can contribute to arranging and distribute oral health treatment [7].

The aim of this research was to know the need for oral treatment plan by using socio-dental approach and family development index on students of a public junior high school in Baubau city, Indonesia.

## Material and Methods

### Study Area

This observational-analytic study with cross-sectional research design has been conducted in 9 junior high schools in Baubau city, Southeast Sulawesi, Indonesia. The sample was a 12-year-old pupil. Each school is taken each one class. The sample size was 209 participants.

### Data Collection

#### Socio-Demographic Characteristics

Family data were: family income, housing conditions (material used in the construction of the house and access to drinking water) and financial governmental support. Family income was classified into three groups.

#### Socio Dental Assessment

Sociodental approach comprises three levels of needs assessment: (1) normative need, professional judgment assessed by clinical measures; (2) impact-related need, assessed by integrating normative need with oral health-related quality of life (OHRQoL) and, (3) propensity-related need, assessed by integrating normative need with OHRQoL assessed by use Child-OIDP, the propensity for adopting oral health-related behaviours and evidence-based dentistry protocols.

The oral clinical examination was performed by 4 experienced dentists and professional level students, using oral diagnostic tools. Participants were categorized into two groups of normative care needs for dental caries according to dental caries severity, as follows: severe caries and not severe caries. Caries is assessed using the DMFT index and only "decomposition" becomes the assessment. All teeth are checked except for supernumerary teeth and deciduous teeth. Severe caries includes adolescents who require treatment of dental caries with pulp treatment (endodontic treatment and extensive restorative or tooth extraction). Adolescent caries is non - severe because they are in need of dental restorations or remineralization of white spot lesions or tooth sealants.

The severity scores were assessed by the respondents to choose the numbers 0-5 (nothing severe) to represent their impact on everyday life. The value method is to add all the frequency scores and the severity level then multiplied by 100 and divide by the maximum score. Oral health behavior assessed by used questionnaire with the questions frequency intake sugar each day, brush teeth frequency, using fluoride toothpaste, and schedule on visiting dentist. Then from this questionnaire, behavior propensity about dental treatment is divided into 3 that are the sample with a high propensity, moderate and low. Sample with frequency intake sugar each day  $\geq 3$ , brush teeth 2 or more in a day, always use fluoride toothpaste, is categorized as a sample with high propensity. Oral health treatment plan is based on sample propensity of treatment. Sample with a high propensity, the dentist can give them treatment right away, but on the sample with moderate and low propensity behavior can't give them treatment right now, but need to give them DHE first then the dentist can give them the most appropriate treatment which they need it the most.

Family living condition assessed by used Family Development Index (FDI), which consists of 6, dimensions, with 26 questions component and consist of a few questions indicators. Each indicator questions must be answered by "yes" or "no". Each "yes" answer will impact on the higher of FDI value. Sample will be classified into 3 group based on cutoff point 0-0.5 (very severe), 0.51-0.67 (severe) and more than 0.68 (not severe).

Distribution of Child-OIDP questionnaires and related trends were given to respondents, and then taken back the next day. Includes FDI questionnaires filled by individual. The oral examination was conducted at the school of origin of respondents.

### Data Analysis

The collected data was tabulated and grouped based on the oral health-related quality of life (OHRQoL), Child-OIDP index and social conditions of the participants, based on the need where participants were categorized into two groups of normative care needs for dental caries according to dental caries severity, as follows: severe caries and not severe caries. Data were analyzed using IBM SPSS Statistics for Windows Software, version 20 (IBM Corp., Armonk, NY, USA). Descriptive statistics were used to calculate the absolute and relative frequencies.

### Ethical Aspects

The survey was approved by the Dean of the Faculty of Dentistry, Hasanuddin University and the Ethics Committee of the Faculty of Dentistry, Hasanuddin University, as well as permission from the local government through the relevant Office of Services and the Head of Junior High School in Baubau District, Southeast Sulawesi.

### Results

Demography and social economy characteristic from the samples are presented in Table 1. More than half sample is a woman or about 127 samples. 96.7% of the head family is a man and 155 head of the family is going to school more than 12 years. Majority of the samples comes from a

family with lack of salary (55% with salary less than \$125). Majority of the house has the floor, which made of cement, the wall with the cement and uses roof by tin Roof each of it 48.8%, 73.2%, and 92.3%.

**Table 1. Distribution of subjects based on demography and socioeconomic characteristics.**

Variables	N	%
Gender Adolescents		
Male	82	39.2
Female	127	60.8
Gender Parents		
Man	202	96.7
Women	7	3.3
Education		
> 6 years	28	13.4
> 9 years	26	12.4
> 12 years	155	74.2
Family Income (\$)		
< 125	115	55.0
125-250	38	18.2
250-350	26	12.4
500	19	9.1
> 500	11	5.3
Floor		
Ceramic	24	11.5
Tegel	55	26.3
Cement	102	48.8
Bamboo	19	9.1
Others	7	3.3
Ground	2	1.0
Wall		
Cement	153	73.2
Wood	47	22.5
Bamboo	9	4.3
Roof		
Beton/Genteng	10	4.8
Seng	193	92.3
Asbestos	1	0.5
Sago Palm	4	1.9
Shingle	1	0.5

Table 2 shows the percentage of the value of FDI based on categories of severity, and the most frequent was very severe category (52.6%), while for category Child-OIDP >1, has a value of FDI category very severe 53.1%.

Regarding mean distribution of family condition according to FDI found that the mean of FDI very severe is 0.44, FDI severe 0.58, and FDI not severe is 0.74. Then, the mean of the entire group was 0.59 which means that they are on FDI severe.

**Table 2. Distribution of FDI categories and Child-OIDP.**

Variables	Categories	N	%
FDI Categories	Very Severe	110	52.6
	Severe	64	30.6
	Not Severe	35	16.8
Child-OIDP			
C-OIDP = >1	FDI Very Severe	76	53.1
	FDI Severe	42	29.4
	FDI Not Severe	25	17.5
c-OIDP = 0	FDI Very Severe	34	51.5

Based on Table 3, about location and gender distribution of head family based on FDI found that head of family gender distribution the most frequencies on group head of family was man (94.5%) on FDI very severe, also the group of head of a family was women (5.5%) on FDI very severe. Frequency caries samples on FDI not severe was 16.7% or about 35 samples, on FDI severe is 30.6% or about 64 samples, and on FDI very severe was 52.6% or about 110 samples. More than half samples or about 102 samples a tendency of behavior to oral treatment "moderate" is they got intake sugar less than 4-5 times a day or brushing their teeth less than twice a day. All of the samples said the often-used fluoride toothpaste, but not all of the samples said that they brush their teeth twice or more in a day. They also seldom go to the dentist. Majority of the samples said they only go to the dentist if only they got a toothache.

Based about FDI distribution with a level of propensity found that the most frequencies on group propensity medium, with the amount 47 (22.3%) on FDI very severe.

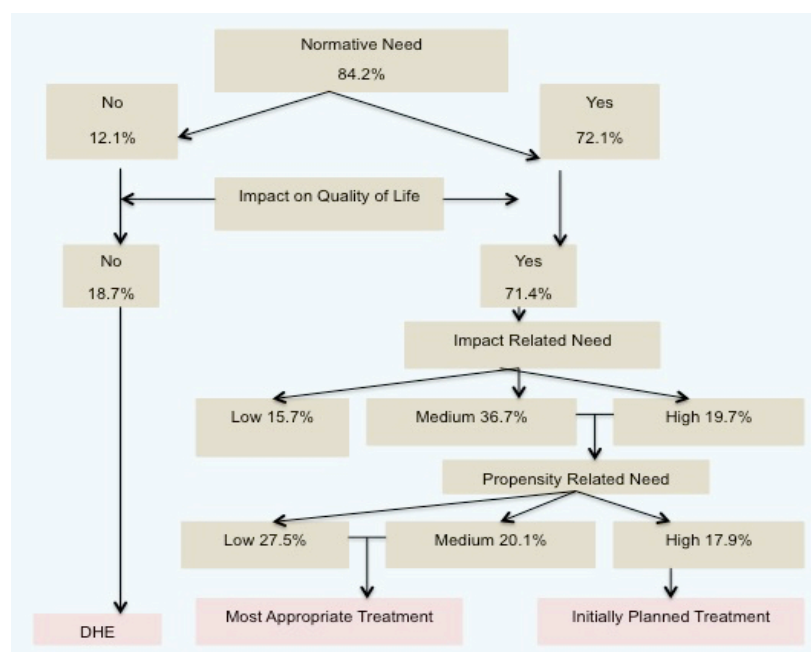
**Table 3. Distribution according to head of family and propensity.**

Variables	FDI Categories					
	Very Severe		Severe		Not Severe	
	N	%	N	%	N	%
Head of Family						
Man	104	94.5	63	98.4	35	100.0
Women	7	5.5	1	1.6	0	0.0
Total	110	52.7	64	30.6	35	16.7
Propensity						
High	12	11.0	7	11.0	2	4.3
Medium	25	22.3	8	12.9	4	10.4
Low	21	19.2	4	6.6	1	2.3

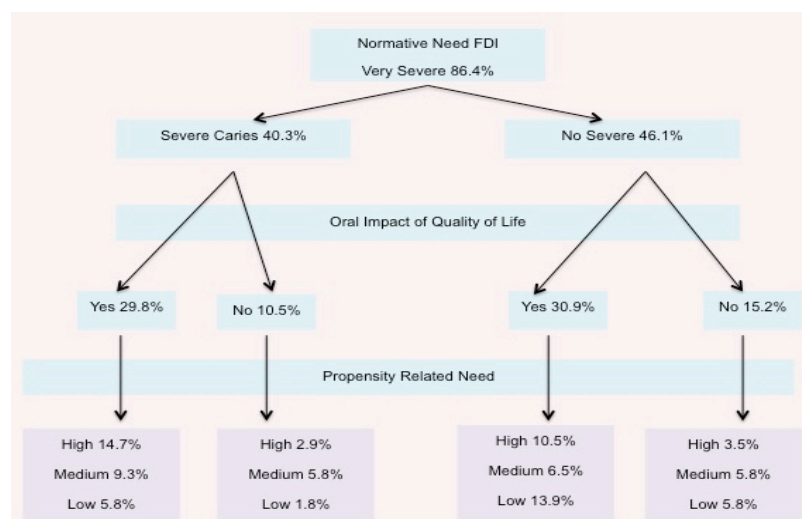
In Figure 2, shows the results of this Normative need of 84.2% and has an impact on the quality of life of 72.1%. Those who have an impact on the quality of life requires a high propensity of need related categories (19.7%), the category of medium (36.7%) and low (15.7%) categories. Propensity for category related need with low and medium category requires the "most appropriate treatment, while the propensity for high need" initially planned treatment".

Figures 3 shows Normative need on FDI very severe was 86.4% with 40.3% severe caries, and 43.5% not severe caries. Severe caries presentation who had the impact on daily life is 29.8%

with propensity related need is 14.7% high, 9.3% medium, and 5.8% low, then who doesn't have any impact is 10.5% propensity related need 2.9% high, 5.8% medium, and 1.8% low. Not severe caries presentation which has an impact on daily life is 30.9% with propensity related need is 10.5% high, 6.5% medium, and 13.9% low, then which doesn't an impact is 15.2% with propensity related need is 3.5% high, 5.8% medium, and 5.8% low.



**Figure 2.** Theoretical model for oral health needs combining the socio-dental approach and index of Family Living Conditions (FDI Index).



**Figure 3.** Propensity related need using normative need on FDI categories Very severe.

Figure 4 shows that Normative need on FDI severe was 82.8% with severe caries 31.6% and not severe caries 51.2%. Caries presentation which has an impact on daily life was 25.1% with propensity related need was 16.3% high, 4.4% medium, and 4.4% low, then who doesn't have any impact is 6.5% with propensity related need was 2.2% high, 0% medium and 4.3% low. Not severe



caries presentation which has an impact on daily life was 41.4% with propensity related need was 20.7% high, 11.9% medium, and 8.8% low. Then who doesn't an impact on daily life was 9.8% with propensity related need 9.8% high, 0% medium, and 0% low.

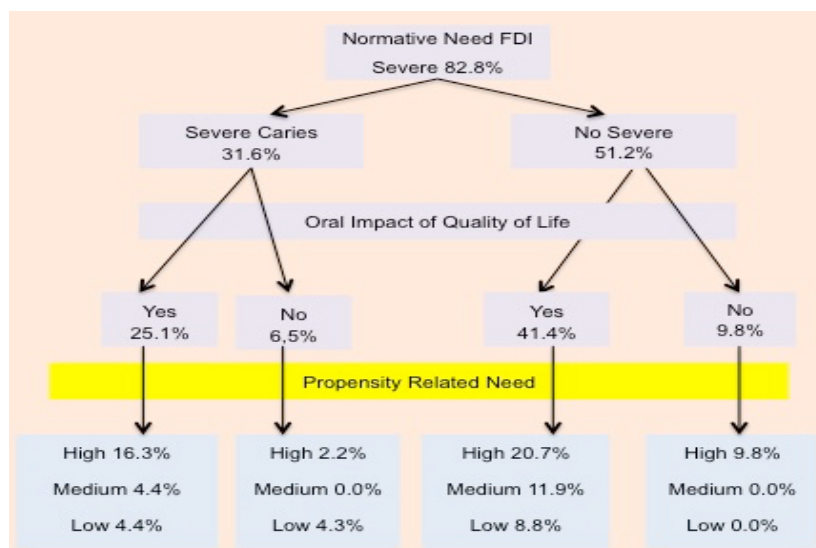


Figure 4. Oral health normative need on FDI categories Severe.

Figure 5 shows that Normative need on FDI not severe was 71.4% with severe caries 33.3% and not severe caries 38.1%. Severe caries presentation who has an impact on daily life is 28.5% with propensity related need 14.3% high, 7.1% medium, and 7.1% low, then who has no impact on daily life is 4.8% with propensity related need is 0% high, 4.8% medium, and 0% low. Not severe caries presentation who has an impact on daily life is 21.4% with propensity related need 7.1% high, medium 11.9%, and 2.4% low, then who has no impact on daily life is 16.7% with propensity related need 0% high, 9.5% medium, and 7.2% low.

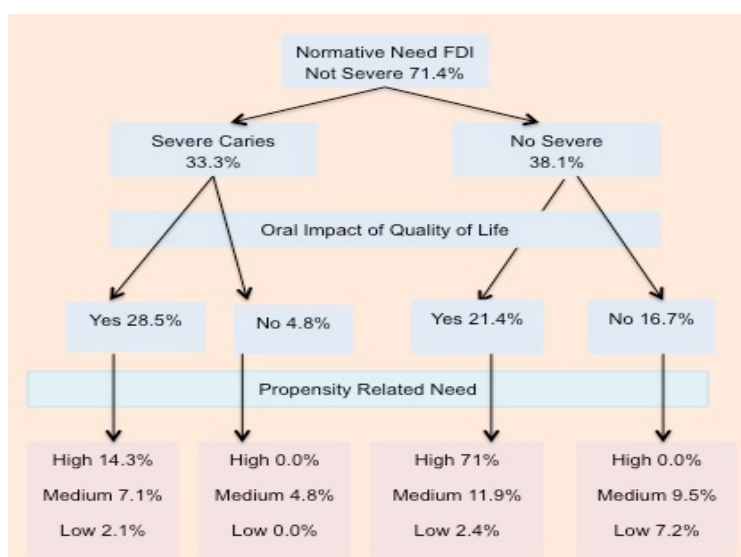


Figure 5. Oral health normative need on FDI categories not severe.



## Discussion

This research compares caries treatment need with oral status in children 12 years old in Baubau City using family living condition rated by the family group on Family Development Index (FDI). By using oral status and information about a family living condition can give the information for setting oral health treatment service on children 12 years old. To ensure all of the population of children 12 years old in Baubau city could be representative, so the sample choose randomly in each junior high school in each district of Baubau city.

To evaluate and equitable distribution of resources also provide oral health treatment is one of the main goals of a system of oral health treatment which is influenced by structure, society condition, and local government policy. Health resources should be allocated for the right purposes (allocative efficiency) and will produce big benefit with low cost (technique efficiency). Therefore, information about oral health for planning and treatment of oral health is very needed so that it can increase the quality of life and oral condition in a population.

Evaluation of oral health treatment include 3 dimensions, there are clinics, psychological, and social. Oral health status can help in the setting of oral health provider because it can direct the most appropriate treatment for the individual so that it can get the full benefit in cured and decrease the possibilities of extra cost because of unneeded treatment [7].

This research found that there are 84.2% children who need caries treatment, and who an impact in their live 71.4%. It's the same with research that has been done in North California on 2012 reported that confidence level from someone also determined by their literacy, oral condition, and oral behaviour [9]. The results of this study were obtained for the normative need group of very severe, severe and not severe FDI was 52.6; 30.6 and 16.8% did not distinguish away from the results found in Brazil [5].

Ignore the characteristic of social economy, like family living condition when planned oral health treatment for children and teenagers, will get obstacle in utilize dental health service. People in the higher household economic index (HEI) use more specialized care, while those in the lower household economic index use more regular nurs. The using of Family Development Index (FDI), for measure family living condition, could give benefit to differentiate child oral health using dental status and Oral Health-Related Quality of Life (OHRQoL).

In addition to assessing the impact of dental health on existing quality of life is the Oral Health Quality of Life (OHRQoL) [10] questionnaires, the Child-Oral Impacts on Daily Performances (Child-OIDP) [11], the Early Childhood Oral Health Impact Scale (ECOHIS) [12,13] and the Scale of Oral Health Outcomes (SOHO-5) [14]. In the case of untreated dental caries and its clinical consequences can affect the quality of life of school children [15]. The more severe the condition of the family living condition of a child will make higher the value of generic and specific Child-OIDP, DMFT, and propensity related treatment. The use of oral health-related quality of life indicators and measures of perceived needs has highlighted the large difference between normative and perceived assessments of dental treatment needs and demonstrated an inconsistent relationship between clinical measures and oral symptoms and impacts [7,16].

Results of the OIDP questionnaire in this study obtained overall the sample has experienced complaints about dental health problems of 36.3%. It is appropriate that dental and oral health conditions such as oral health, age, presence of pain and chronic disease of individuals have significant influence on health-related quality of life [17].

Generally, respondents will go to the dentist when experiencing the above. Feeling sick is an important part of disease and toothache is one of the worst rated pain by society, so it will make them find a way to get rid of the pain. Eating disorders, sleeping, talking and resulting in not going to school. Similar results have been conducted in some countries [1,18].

Research that has been done in India found that the highest decay prevalence has been found on children who lived at orphanage, with the average of teeth that have to be treated is 1 tooth 26.2%, 2 teeth or more 12.3%, 11.1% need tooth extraction, 19% need endodontic treatment, and 0.9% need fissure sealant treatment [19]. From the results of research in some countries, access to oral and dental care on a regular basis in the past year as in Jordan, 47.4%; in India 46% [20-22]. The cost issue is one of the reasons people not to seek treatment or do not regularly consult a dentist. Based on the results of previous studies in South Sulawesi, for cost reasons as much as 22.6%.

Results obtained in Sweden showed a frequency of 90.6% for regular visits to the dentist [23]. Based on these results it can be concluded that the behavior of people still lacks access to regular dental care, utilization of community health centers and the use of insurance as a financing system. Socioeconomically disadvantaged individuals who are known to be at higher risk of the oral disease often forgetting about dental care for economic reasons. Efforts should be made to provide dental public health service facilities are evenly distributed throughout the territory of Indonesia.

According to several surveys that have been conducted in some countries the state of children aged 12 years who have never been to dentists and require dental curative treatment, also found that family conditions have an impact on dental status in children, OHRQoL and child confidence. it can be concluded that the relationship between dental caries and the child's OIDP index is evidence of the impact of this condition on the quality of life of school children.

Children who lived with their own biological parents has protector factor, so commonly they don't need teeth restoration treatment because their oral condition tends to be good than children who not live with their biological parents. Also, social impact of oral, behaviour and psychology of children is one of the factors of increase or decrease child's visit to the dentist [24,25].

The research that has been done in children and teenagers found that oral disease like caries and malocclusion can give impact on someone life. But, it possible that it's not happen to all the people because of several factors there are an individual, social environment, and their residence. Parents perceptions of their children's oral health can give impact to their children appraisal on their own mouth.

Oral health is one of the parts of public health, that often ignored by the society. The lack of social awareness, lack to access to dental treatment, and underestimate oral health cause the low of

dental health in a few area [26]. Based on these results, the need for normative dental care for 12-year-olds was 72.1% and had an impact on quality of life of 71.4%, requiring initially planned treatment of 17.9% and most appropriate treatment (6%). Result of grouping of society based on index of FDI hence group of society with severe condition is equal to 83.3%. It is a situation that needs special attention, until now some developing countries need to focus on providing services and strategies for health conditions based on socio-dental. Dental caries is associated with socio-demographic and behavioral aspects.

Considering the existence of changeable etiological factors of dental caries, nowadays, it is crucial to conduct regular studies concerning the major oral pathologies and associated risk behavior's, allowing a proper planning of actions to be carried out in the oral health field [27]. Socioeconomic factors contribute to better access to care and in a complete service unit, for cost reasons [28,29]. This resulted in the general community coming to the dental health service unit with the reason of a toothache and came to remove his teeth. Very few come for check-ups or for preventive factors [30]. The state of dental health status, especially the high prevalence of caries, periodontal disease in some developing countries, especially Indonesia which has a number of population approximately 200 million with wide geographical area hence education factor about knowledge, attitude and attitude need to be given by structured planning. According to Alexandrina L. Dumitrescu that through oral health Education should focus on improving knowledge and attitudes as well as removing barriers to oral health care day-to-day [31]. Health behavior factors determine one's health status, focusing on behavior alone can not reflect general health and dental health in societies with different social status [28]. This is needed with the aim of improving the dental health status of the community.

## Conclusion

The approach in socio-dental and family condition can be used in dental health services planning. The result of grouping of society based on index of FDI hence group of society with severe condition is equal to 83.3%. It is a situation that needs special attention, until now some developing countries need to focus on providing services and strategies for health conditions based on socio-dental.

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