



# Meta-Analysis: Relationship of Implementation of Promotive and Preventive Activities in School Dental Health with The Status of Elementary School Students

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## ABSTRACT

One of the technical programs of the Department of Non-communicable Disease Prevention and Health Promotion that accommodates global oral health programs is WHO Global Oral Health Program (GOHP) by advising countries in the world to develop policies for the prevention of dental and oral diseases as well as the promotion of oral health that is integrated with public health programs. This research aims to determine the tendency for the greater relationship between the implementation of activities promotive and preventive SDHP on dental and oral health status of elementary school students. This study used a meta-analysis study. Research data collection was carried out by researchers by browsing online journals, using the SCOPUS database, PubMed, Google Scholar and Garuda Portal. There is a significant relationship between the implementation of promotive and preventive activities for school dental health with the dental and oral health status of elementary school students in selected journals with the combined effect size value for promotive activities of 2.121; [95% CI: 1,508-2,982, Z = 4,325, p = 0.000]; and for preventive activities 1,898; [95% CI: 1,988-2,228, Z = 7,830, p = 0.000]. There is a greater tendency relationships in business promotional activities with the school dental health dental health status of primary school students (OR = 2.121) compared to the preventive activities of business school dental health with oral health status of primary school students (OR = 1.898).

Keywords: SDHP, promotive, preventive, dental health, oral health

## INTRODUCTION

The Global Burden of Disease Study in 2016 stated that dental and oral health problems, especially dental caries, are diseases that affect nearly half of the world's population (3,58 billion people). WHO in 2012 also reported that 60-90% of school children worldwide have cavities. Meanwhile, according to data obtained from PDGI (Indonesian Dentistry Association), at least 89% of carries sufferers are children. Until now, dental caries remain as a health problem in both developed and developing countries.

Based on data obtained from Riskesdas in 2007 and 2013, dental and oral problems in the age groups of 5-9 and 10-14 years old experienced the highest increase compared to other age groups, namely in age group of 5-9 and 10-14 years old had increased, consecutively, from 21,6% to 28,9% and 20,6% to 25,2%. According to Riskesdas in 2018, dental and oral health problems in the age groups of 5-9 years old have a very high number, as much as 67,3%, compared to other age groups, but only 14,6% have received treatment by dental medical personnel.

Factors that affect oral health in the community, both as service providers and users/customers, according to the Blum (1974) concept are influenced by 4 main factors, namely: environment, behaviors, health services and heredity (Notoatmodjo, 2005). Based on the data mentioned before, we can conclude that dental problems in the world, especially in Indonesia, continue to increase every year, particularly in children aged 5-14 years old. Those particular age group are known as elementary school-age children who are experiencing the change from primary teeth to permanent teeth and is the focus for better dental health maintenance. Efforts to maintain dental and oral health should be conducted from an early age. The role of school is very much needed in the process of creating healthy habit of brushing teeth in children and elementary school age is the ideal time to train children's motoric skill, such as brushing teeth (Riyanti, 2012).

The School Dental Health Program (SDHP) is an integral part of the school's clinic that carries out planned dental and oral health services to students, especially elementary school-age, within a certain period of time and is carried out continuously through the UKS package such as: minimal, standard and optimal package. Through SDHP, a good attitude towards oral health can be instilled through counseling and health education activities carried out, as well as existing actions and treatments (Depkes RI, 2004).

SDHP activities include promotive and preventive efforts that are coordinated within UKS programme. Promotional effort in SDHP is dental and oral health education, especially on how to brush teeth properly, conducted by health workers or teachers in charge of the school's clinic. Prevention efforts in SDHP are including brushing teeth and rinsing with fluoride solution together, conducted by health workers themselves on a regular basis (PDGI, 2011).

According to study of promotive activities in improving dental and oral health conducted by Haque, et al (2016), stated that the relationship between oral health education programme at school with the dental health's status is valued significantly of ( $p=0.01$ ;  $OR=4.93$ ). A study conducted by Zhang, et al (2020), stated that the relationship between oral health education programme at school with the dental health's status is significantly valued of ( $p=0.000$ ;  $OR=4.93$ ). While, according to Nguyen, et al (2016), there is significant relation between School Oral Health Promotion (SOHP) with the dental and oral health's status (value of  $p=0.001$ ;  $OR=1.9$ ) and has moderate prevalence of caries. Study conducted by Tashihiro, et al (2019), showed that there is a relation between Health Promoting Schools (HPSs) programme with dental health status that is less significant with value of ( $p=0.049$ ;  $OR=1.47$ ). Meanwhile, a study of Preventive Activities in Preventing Dental and Oral Problems conducted by Gasoyan, et al (2019) stated that the relation between school based preventive programme with the dental health's status is valued significantly of ( $p=0.008$ ;  $OR=0.689$ ) and has low rate of dental problems. According to a study conducted by Alsumait, et al (2019), there is a relation between School Based Oral Health Prevention Programme with the dental and oral health's status is valued significantly of ( $p=0.001$ ;  $OR=3,613$ ) and has low rate of dental problems. In a study conducted by Setiari, et al (2017), stated that there is a relation between dental caries preventive actions at school with the dental health problem's status is valued significantly of ( $p=0.000$ ;  $OR=6,632$ ). According to Ruff and Niederman study in 2018, there is a relation between School-based Caries Prevention with the dental and oral health's status is valued significantly of ( $p=0,01$ ;  $OR=0,79$ ).

The results of several studies mentioned before indicates that the implementation of promotional and preventive activities for dental health with the student's dental and oral health's status is running properly and some studies mentioned that both promotive and preventive activities have relation with dental health's status in children. But on the other hand, the evidence gap were seen that several studies have different odds ratios. According to Haque, et al (2016), OR value of  $OR=0,51$  means promotive action is 0,51 times related with the children's dental health's status. But, according to Zhang, et al (2020), OR value of 4.93 means promotive action is 4.93 times related with the children's dental health's status. Gasoyan, et al (2019), stated that preventive action's OR value is  $OR=0.689$ , which means preventive action is 0,689 times related with the children's dental health's status. But, according to Setiari, et al (2017), OR value of  $OR=6,632$  means preventive action is 6,632 times related with the children's dental health's status. Therefore, a combined research result is needed to determine the greater tendency of relationship between the implementation of SDHP' promotive and preventive activities with the dental and oral health status of elementary student. The method used is known as meta-analysis (Anggriani, 2012).

Meta-analysis is research that combine two or more original studies that can be combined (Anwar, 2005). Based on the introduction's description previously mentioned, those are the reasons for the author to study the relation of the implementation of dental and oral health activities with dental and oral's health.

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## METHOD

Research design used in this study was meta-analysis study. The reference used to formulate research questions is "SPIDER". The identification in this study are as follows:

- a. S for Sample. Sample in this study is elementary school student.
- b. P and I for Phenomenon of Interest. The phenomenon of interest in this study is how and why SDHP' promotive and preventive activities affects elementary school student's dental and oral health's status.
- c. D for Design. Research design in this study is quantitative research with cross-sectional study design.
- d. E for Evaluation. Evaluation from this study is significant  $p$ -value, OR and CI of 95% that may represent conditions in the actual population.
- e. R for Research Type. Research type in this study is quantitative research.

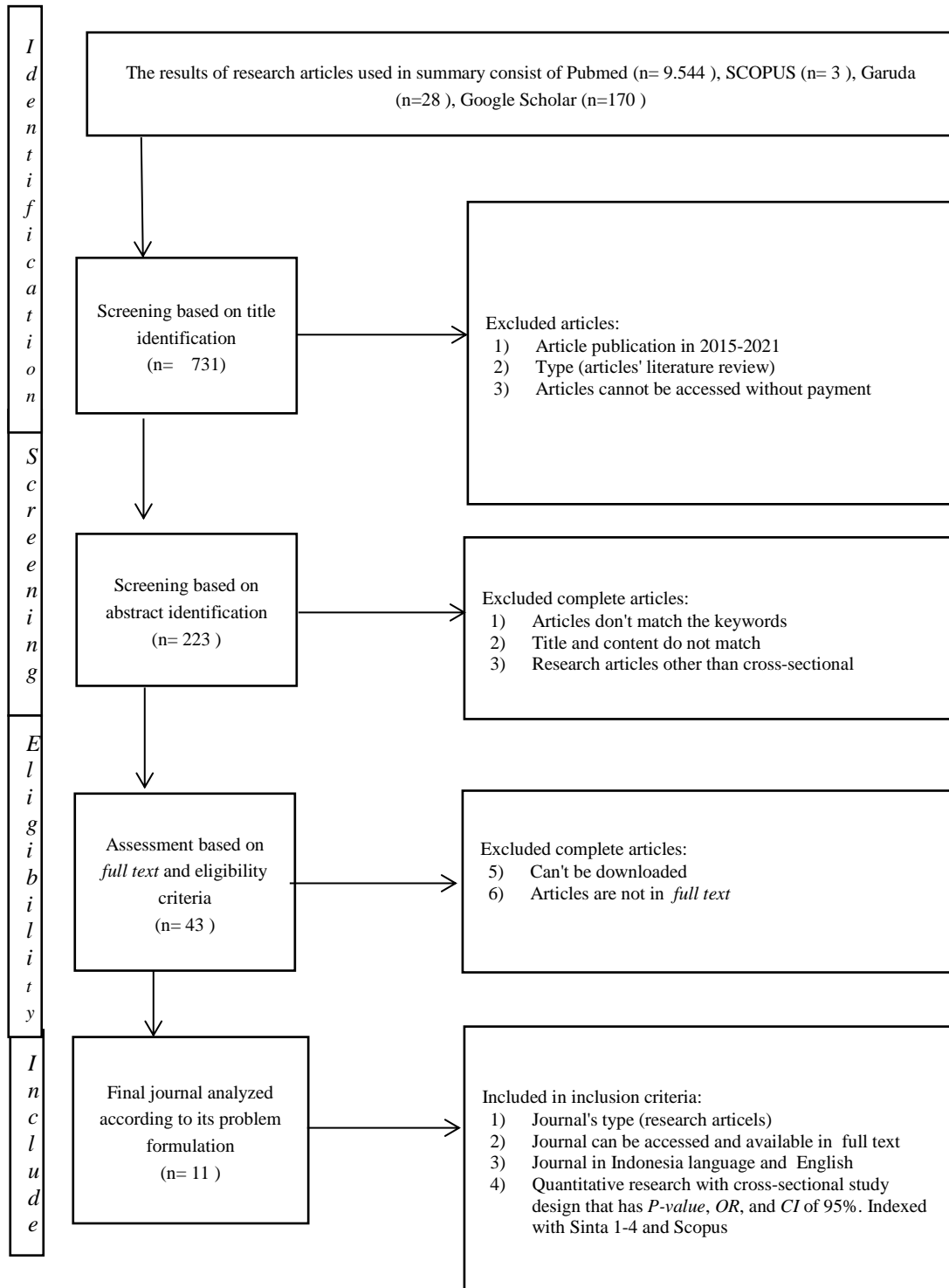


Fig. 1 Flow Chart PRISMA of The Research of Relationship between Promotive and Preventive Activities of SDHP with Elementary School Student's Dental and Oral Health

## RESULT

**Table 1. List and details of articles under meta-analysis in this study**

No	Journal Biography			Phenomeon Of Interest	Study Design	Evaluation				Research Type
	Title	Author Name/Year	Sam ple			OR	LCI	UCI	P	
Implementation of SDHP's PromotiveActivities										
1	Effect of school oral health promotion program on dental health in vietnamese school children	Thuy Trang Nguyen, Bui Bao Tien Nguyen, Minh Son Nguyen, Jana Olak, Mare Saag (2016)	556	<i>School Oral Health Promotion</i> has a significant relationship with dental and oral health's status in elementary school student. Although it causes moderate rate of caries and decreasing the incidence every year, <i>School Oral Health Promotion</i> has not improved the oral health behaviour of school-age children.	Cross-sectional	1,900	1,300	2,800	0,001	Quantitative
2	Effect of a school based oral health education in preventing untreated dental caries in bangladesh	Syed Emdadul Haque, Mosiur Rahman, Kawashima Itsuko, Mahmuda Mutahara, Sakisaka Kayako, Atsuro Tsutsumi, Md. Jahirul Islam And Md. Golam Mostofa (2016)	944	<i>oral health education</i> programme results in significant improvement of higher oral health practices on dental and oral health. Therby reducing the prevalence of dental caries. Unfortunately, <i>oral health education</i> in Bangladesh, conducted by teachers through training, was not reported successful due to teachers's limitation in receiving instructions and lack of support from Bangladesh government.	Cross-sectional	1,650	1,369	2,026	0,01	Quantitative
3	The impact of a school based toothbrushing program on dental caries (health promoting schools)	Yuri Tashiro, Keiko Nakamura, Kaoruko Seino, Hiroshi Ishii, Masaru Hasegawa, Yoshimichi Kawauchi And Mitsuyuki Chiba (2019)	2043	<i>Oral health promoting schools</i> significantly related with children health's status. Schools in Tokyo have dental health education, as activity to promote dental and oral health, that instilled awareness in student to maintain their teeth. Especially in	Cross-sectional	1,470	1,000	2,150	0,049	Quantitative

No	Journal Biography		Sample	Phenomeon Of Interest	Study Design	Evaluation			Research Type	
	Title	Author Name/Year				OR	LCI	UCI		P
				brushing teeth or gargle after eat.						
4	Assessment of risk factors for early childhood caries at different ages in Shandong, China and reflections on oral health education	Meng Zhang, Xinyue Zhang, Yuan Zhang, Yanan, Chunchun Shao, Shijiang Xiong, Jing Lan And Zhifeng Wang (2020)	1301	There is a significant relationship between the oral health education (OHE) programme with dental and oral health status.	Cross-sectional	4,930	2,390	10,14	0.000	Quantitative
5	Oral health promotion practices of Australian community health professionals	Roisin McGrath, Rodrigo Marino and Julie Satur	471	There is a significant relationship between the oral health promotion with dental and oral health.	Cross-sectional	3,906	1,765	8,648	0.001	Quantitative
Implementation of SDHP's Preventive Activities										
6	School based prevention dental program in rural communities of the republic of armenia	Halmet Gasoyan, Armen Safaryan, Lusine Sahakyan, Nairuhi Gasoyan, William E.Aaronson, Robert A, Bagramian (2019)	422	There is significant relationship between <i>school based preventive program</i> in Armenia, namely brushing with fluoride toothpaste with children's dental health's status. Brushing teeth with fluoride toothpaste is an effective way to reduce caries and periodontal disease and those who practice good oral hygiene at an early age more likely to retain their teeth throughout their lives.	Cross-sectional	1,992	1,671	2,373	0,008	Quantitative
7	Impact evaluation of a school based oral health program : Kuwait National Program (School based oral health prevention program)	Aishah Alsumait, Mohamed Elsalhy, Sahar Behzadi1, Kim D. Raine, Rebecca Gokiert, Ken Cor, Sabiha Almutawa And Maryam Amin (2019)	440	There is a significant relationship between <i>school based oral health preventing program</i> with the dental health's status of elementary school student. The dental and oral health status of elementary school children in Kuwait is relatively good. The prevention of dental and oral problems in Kuwait's elementary schools is by brushing teeth with fluoride toothpaste and	Cross-sectional	1,790	1,682	1,904	0,001	Quantitative

No	Journal Biography		Sample	Phenomeon Of Interest	Study Design	Evaluation			Research Type	
	Title	Author Name/Year				OR	LCI	UCI		P
				gargling with fluoride solution.						
8	Oral health status of 12-year-old school children in Yemen. A cross-sectional survey (School-Based Dental Prevention)	M F Al-Otaibi and Feryal Al-Mamari (2015)	384	There is a significant relationship between efforts to prevent dental caries by the <i>toothbrush program</i> with dental and oral health's status.	Cross-sectional	1,21	0,970	1,510	0,001	Quantitative
9	School-Based Caries Prevention, Tooth Decay, and the Community Environment	R.R. Ruff, and R. Niederman (2018)	400	There is a significant relationship between <i>school based caries prevention</i> activities with the oral health's status of elementary school students in New York. Children who received prevention of these dental problems have a relatively low level of tooth decay.	Cross-sectional	2,203	1,811	2,680	0.01	Quantitative
10	Dental caries in 12-year-old schoolchildren: multilevel analysis of individual and school environment factors in Goiânia (School-Based Dental Prevention)	Lorena Batista de OliveiraI, Rafael da Silveira MoreiraiI, Sandra Cristina Guimaraes Bahia ReisIII, Maria do Carmo Matias FreireI (2015)	50	There is a significant relationship between dental care from Programa de Atencao Odontologica ao Escolar (PAOE) at schools with children dental and oral health's status. Student in elementary schools who have <i>preventive oral health care</i> activities have good dental health status.	Cross-sectional	3,096	1,261	7,600	0.000	Quantitative
11	Preventive action of dental caries in elementary school students	Lidia Septianingtias Setiari, Muji Sulistyowati (2017)	2075	Dental caries prevention measures in elementary school students, namely mass toothbrushes carried out routinely in schools can reduce the status of dental and oral problems in children themselves.	Cross-sectional	2,233	2,157	2,311	0,000	Quantitative

3.2 Synthesized result of promotive activities

The analysis of variation found among studies is aimed to determine whether the collected studies is heterogeneous or homogeneous. The collected studies are homogeneous if P-value in heterogeneity test is bigger than 0,05 or  $I^2$  and  $T^2$  value are relatively small. Heterogeneity test at  $df = 4$  shows Q-value of 13,028, P-value of 0,011 and  $I^2$  value of 69,2%. This means that the collected studies varied (heterogeneous) due to  $p < 0,05$  or big  $I^2$  and  $T^2$  value. Result of this analysis shows that variation among collected studies is heterogeneous, and thus model used to calculate combined effect is random effect model.

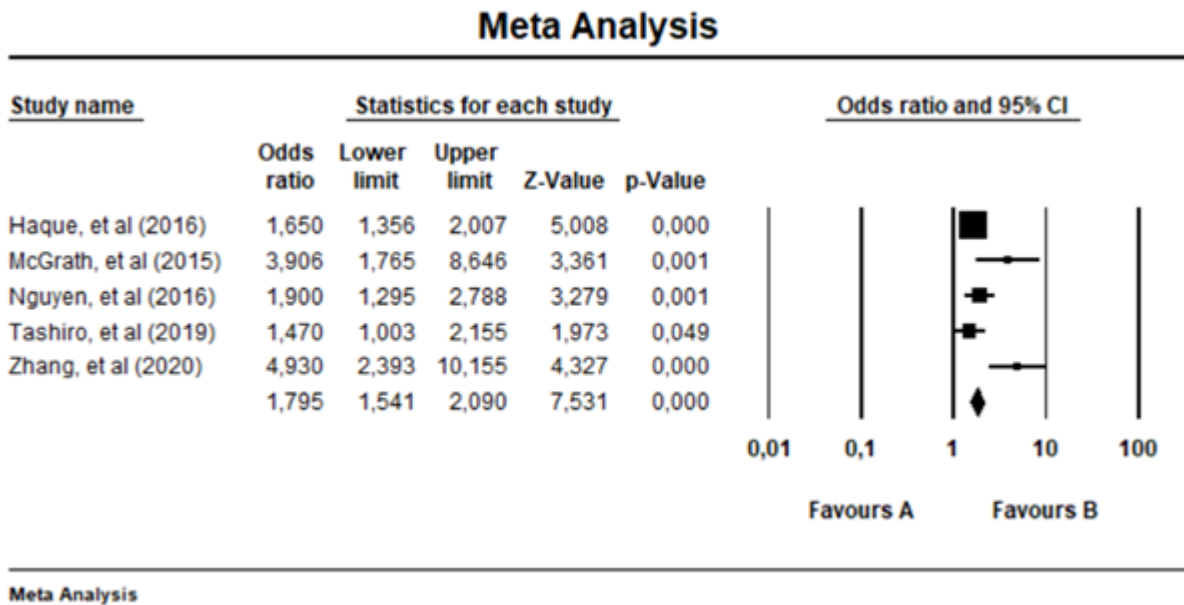


Fig. 2 Forest Plot Random Effect Model Graphic of Relationship between The Implementation of SDHP' Promotive Activities with Dental and Oral Health's Status of Elementary School Student

Combined effect value of these five studies' result is 2,121 with confidence interval of 1,508-2,982. This combined effect also results in Z-value of 4,325 and P-value of 0,000.  $p < 0,05$  means there is significant relationship between the implementation of SDHP' promotive activities with dental and oral health's status of elementary school student.

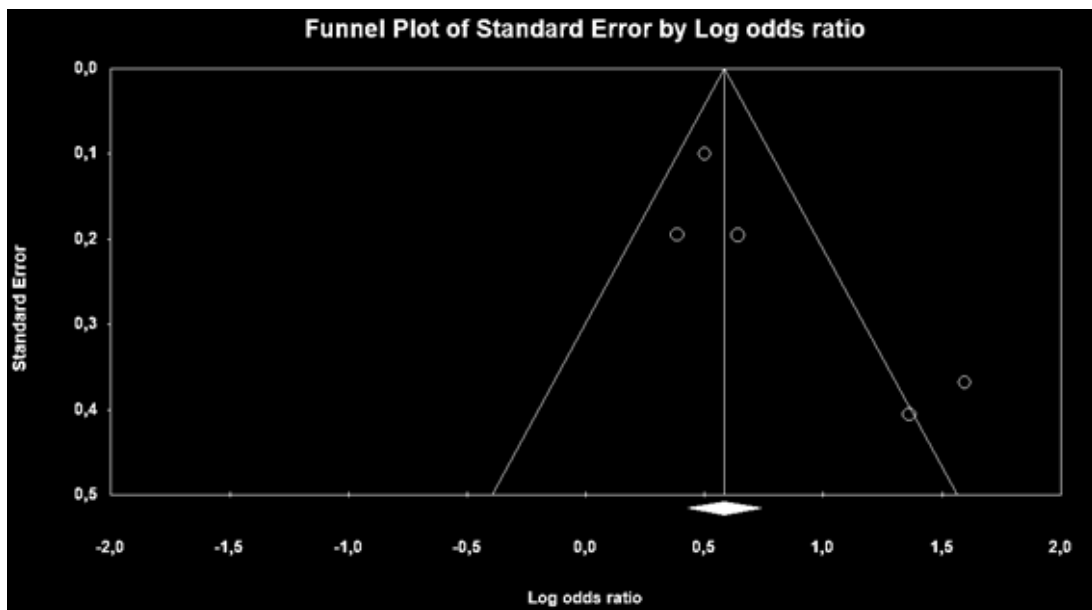
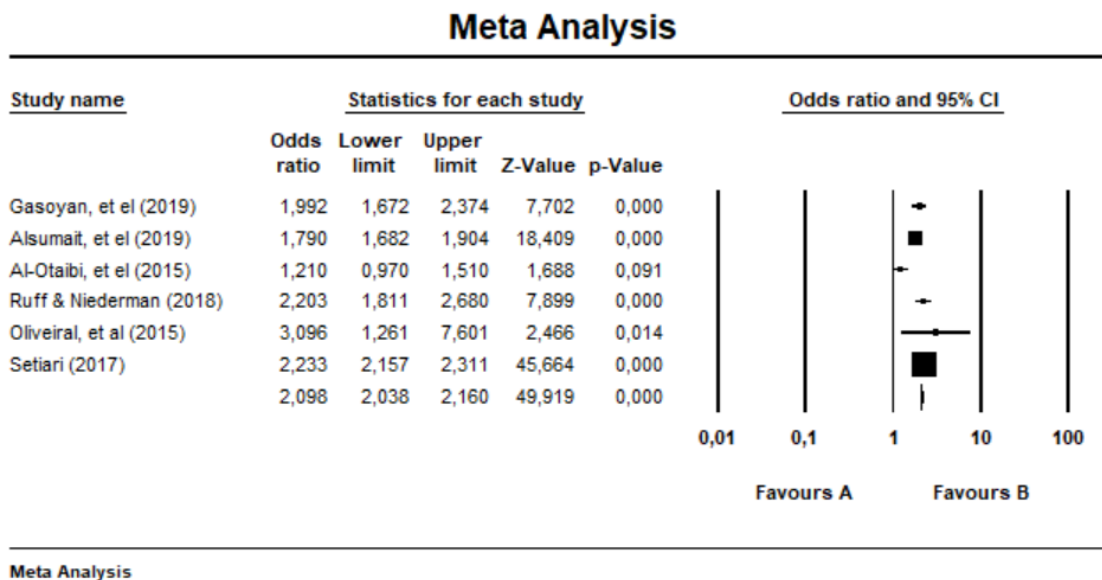


Fig. 3 Funnel Plot Graphic of Relationship between The Implementation of SDHP' Promotive Activities with Dental and Oral Health's Status of Elementary School Student

As seen in Figure 3., those 5 journals form funnel plot that spread asymmetrically in the triangle area. When small sample looks asymmetrical between left and right, so does the large sample. The figure up above shows that the research conducted has publication bias.

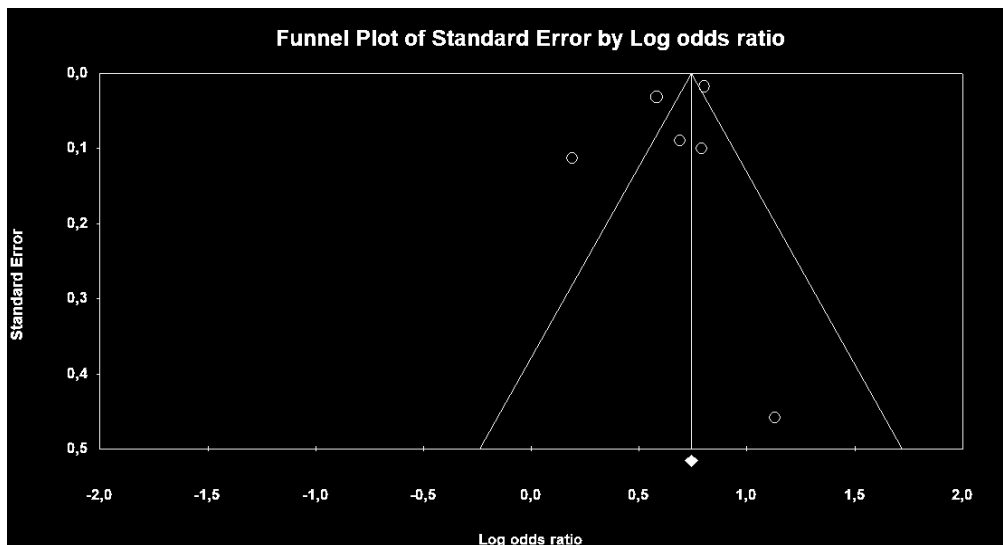
**3.3 Synthesize result of preventive activities**

The analysis of variation found among studies is aimed to determine whether the collected studies is heterogeneous or homogeneous. The collected studies are homogeneous if P-value in heterogeneity test is bigger than 0,05 or I<sup>2</sup> and T<sup>2</sup> value are relatively small. Heterogeneity test at df = 5 shows Q -value of 62,82, P-value of 0,000 and I<sup>2</sup> value of 92%. This means that the collected studies varied (heterogeneous) due to p<0,05 or big I<sup>2</sup> and T<sup>2</sup> value. Result of this analysis shows that variation among collected studies is heterogeneous, and thus model used to calculate combined effect is random effect model



**Fig. 4 Forest Plot Random Effect Model Graphic of Relationship between The Implementation of SDHP' Preventive Activities with Dental and Oral Health's Status of Elementary School Student**

Combined effect value of these six studies' result is 1,898 with confidence interval of 1,617-2,228. This combined effect also results in Z-value of 7,830 and P-value of 0,000. p< 0,05 means there is significant relationship between the implementation of SDHP' preventive activities with dental and oral health's status of elementary school student.



**Fig. 5 Funnel Plot Graphic of Relationship between The Implementation of SDHP' Preventive Activities with Dental and Oral Health's Status of Elementary School Student**



As seen in Figure 5, those 6 journals form funnel plot that spread asymmetrically between left and right in small sample, but left and right symmetrical in large sample. The figure up above shows that the research conducted has publication bias in small sample.

## 4. DISCUSSION

### 4.1 The Implementation of SDHP' Promotive and Preventive Activities

Analysis' result from five journals of the relationship between the implementation of SDHP' promotive activities with students dental and oral health status shows different weight. Haque, et al (2016) with weight of 29.21% is study with the biggest weight. While, McGrath, et al (2020) with the lowest weight of 11.72%. This outcomes corresponding with theory, expressed by Dahlan (2012), that the weight in a study is directly proportional to the number or research subjects (research sample). It can be concluded that research conducted by Haque, et al (2016) is good in quality because of its large sample (n=944), while McGrath, et al (2020) has the lowest value because of the smallest number of sample (n=141).

The quality of data collected in the study of relationship of the implementation of SDHP' promotive activities with student's dental and oral health status with relevant result of journal search (n = 5) can be seen from its heterogeneity (p = 0,011 means p<0,05 and I<sup>2</sup>=69.2%). Thus, Random Effect Model was used. Result of Random Effect Model used assume that those 5 journals originated from population vary from all over the worlds namely from Vietnam, Bangladesh, Japan, China and Australia.

In Figure 4.1 Forest Plot implementation of SDHP' promotive activities with student's dental and oral health status, forest plot is the synthesized result of meta-analysis that describes the conclusion taken from several similar studies that are combined together with the effect size value of each study and combined effect size value. In forest plot there are diamond shape (◆) that symbolize effect size value of each studies and particular confidence interval from those 5 studies that results in p=0,000 (p<0,05) and combined effect size from OR value in the implementation of SDHP' promotive activities with student's dental and oral health status of 2,121 with wide confidence interval (95%CI) the lower limit of 1,508-2,982. This means there is significant relationship between implementation of SDHP' promotive activities with student's dental and oral health status with 2,121 times more related than respondents that not conducting SDHP' promotive activities at school.

In addition to see the magnitude of the combined effect of those 5 journals, publication bias also needs to be seen from the results of the funnel plot. Visually, it can be seen that the distribution of the funnel plot is asymmetrical in the triangular area. Means that it looked asymmetrical between left and right in the small sample as well as in the large sample. This means that there is a publication bias in the sample, because of only 5 journals meet the requirements and criteria (an indicator that research is missing or unpublished) in promotive activities. This publication bias could be caused by promotive activities to improve dental health status in children does not depend only on dental education on children but also because of parents' role in increasing children's dental health is also significant. Thus, parents counseling has become one of important effort to improve children's dental health at an early age. Dental health counseling on children's parents aims to make parents able to monitor their child's brushing behavior and to control children's cariogenic eating patterns everyday. Parents' role is very necessary in guiding, giving attention, providing understanding, reminding and providing facilities to children so that later on children can maintain their own dental hygiene by brushing their teeth properly (Mustika, et al, 2014). This is in accordance with research conducted by Andriyani (2015) that stated parents have role in changing children's behaviour in maintaining dental hygiene, namely providing good examples of dental care, motivating dental care, supervising children in brushing their teeth and bringing children to dentist when they had toothache. If parents' behavior, especially mothers, regarding dental health is good, it is expected that the dental health status of their children will also be good.

Promotive activities in schools to improve dental and oral health are very important and mandatory for every school, because the start of the school is an important stage to develop children's habit to always maintain health from an early age through education/health promotion. Dental and oral health education is an effort to influence someone to behave well and to motivate to maintain dental and oral health, as well as to increase students awareness on the importance of dental and oral health and providing understanding of ways to maintain dental and oral health (Khan, 2013).

Children spend most of their time at school, so the development of healthy environment and the adoption of health-promoting behaviors are most suitable to be conducted at school. Intervention is carried out with the aim that learning about dental hygiene and health can be carried out as early as possible, to increase student knowledge about the importance of maintaining health, especially oral health (Almujadi, 2016).

Promoting activities for dental health in children is an effort that emotionally eliminates fear, fosters curiosity, eager to observe, and finally physically performs the activities in such a way that is good for personal health. The purpose and objective of promoting dental and oral health in children is essentially to introduce children to the world of dental health and all dental issues, so that they are able to maintain dental health, train children's limbs so that they can clean their teeth according to their abilities, and get good cooperation when they need treatment for their teeth. Another opinion states that the goal of dental and oral health education is to improve people's ability to help themselves in the health sector, to be able to play an active role in supporting health, especially in dental and oral health, to change one's behavior patterns to live a healthy life, especially those related to dental and oral health, as well as supporting general health development (Herijulianti, 2002).

Analysis' result from six journals of the relationship between the implementation of SDHP' preventive activities with students dental and oral health status shows different weight. Setiari (2017) with weight of 23.05% is study with the biggest weight. While, Oliveira, et al (2015) with the lowest weight of 2.81%. This outcomes corresponding with theory, expressed by Dahlan (2012), that the weight in a study is directly proportional to the number or research

subjects (research sample). It can be concluded that research conducted by Setiari (2017) is good in quality because of its large sample ( $n=2075$ ), while OliveiraI, et al (2015) has the lowest value because of the smallest number of sample ( $n=50$ ).

The quality of data collected in the study of relationship of the implementation of SDHP' preventive activities with student's dental and oral health status with relevant result of journal search ( $n = 6$ ) can be seen from its heterogeneity ( $p = 0,000$  means  $p < 0,05$  and  $I^2 = 92\%$ ). Thus, Random Effect Model was used. Result of Random Effect Model used assume that those 6 journals originated from population vary from all over the worlds namely from Armenia, Kuwait, Saudia Arabia, USA, Brazil, and Indonesia..

In Figure 4, Forest Plot implementation of SDHP' preventive activities with student's dental and oral health status, forest plot is the synthesized result of meta-analysis that describes the conclusion taken from several similar studies that are combined together with the effect size value of each study and combined effect size value. In forest plot there are diamond shape (◆) that symbolize effect size value of each studies and particular confidence interval from those 6 studies that results in  $p=0,000$  ( $p < 0,05$ ) and combined effect size from OR value in the implementation of SDHP' promotive activities with student's dental and oral health status of 1,898 with wide confidence interval (95%CI) the lower limit of 1,617-2,228. This means there is significant relationship between implementation of SDHP' promotive activities with student's dental and oral health status with 1,898 times more related than respondents that not conducting SDHP' preventive activities at school.

In addition to see the magnitude of the combined effect of those 6 journals, publication bias also needs to be seen from the results of the funnel plot. Visually, it can be seen that the distribution of the funnel plot is asymmetrical between left and right in small sample but symmetrical in large sample. This means that there is a publication bias in the small sample, because of only 6 journals meet the requirements and criteria (an indicator that research is missing or unpublished) in preventive activities. This publication bias could be caused by preventive activities does not depend only on brushing teeth with fluoride toothpaste and gargling with fluoride solution but also can be in the form of pit and fissure sealant, scalling, consume fluor tablet and checking with the dentist every 6 months. This is in accordance with the statement of Marlindayanti, et al (2018) that implement efforts to prevent dental and oral diseases (preventive): (1) Plaque examination, (2) Proper toothbrush technique, (3) Dental caries cleaning, (4) Dental caries prevention with fluoride by gargling and applying fluoride to teeth, (5) Filling of dental pits and fissures with fissure sealant, (6) Dental and oral health maintenance of general hospitalized patients will be maximized to prevent tooth decay if carried out regularly and routinely.

Preventive activities to prevent dental problems at SDHP include mass toothbrushes and rinsing using fluoride solution which is routinely carried out on elementary school student. School-based programs are often more effective because children will go to school every day so that they can be scheduled to do mass toothbrushes and fluoride mouthwashes every week or two weeks (Depkes RI, 1996).

A study conducted by Divaris (2012) in North Carolina proves that children who never been given preventive measure, namely brushing their teeth and rinsing their mouth with fluoride solution, have a four times higher risk of dental caries. Dental health prevention is mainly given to school-age children. School is an effective environment in carrying out caries preventive activities, because the delivery of dental and oral health education and the implementation of mass toothbrushing in the classroom is more accepted by children (Darwita, 2011).

The S-FMR (School-based Fluoride Mouth Rinse) programme is one of the SDHP programme from WHO guidebook which was carried out for 3 months and an evaluation was carried out after. The programme consist of toothbrushes with fluoride-contained toothpaste and rinse with fluoride solution (Casamassimo, 2013). Supervision in the S-FMR programme can be carried out by dentists or directly by teachers at schools. S-FMR has been designed since the 1980s as an alternative to water fluoridation to the community. Researches since 1990s has proven that the caries rate (DMF-T/dmf-t) has decreased in school students who carry out the S-FMR programme. This is in line with the research conducted by Horowitz and Fraiser that show S-FMR programme in fluoridated areas for student aged 6-12 years old showed a reduction in caries risk by 30-35% (Nowak, 2013).

#### **4.2 Effect Size Relationship Of Implementation Of Promotive And Preventive Activities In School Dental Health With The Status Of Elementary School Students**

Based on the results above, it can be seen that the promotional activities at SDHP in improving oral and dental health tend to have greater relationship value (OR=2,121; 95% CI=1,508-2,982) with student's dental and oral health status, compared to preventive activities at SDHP (OR=1,898; 95% CI=1,898-2,228). This is because the international and national targets require every school to 100% implement School Oral Health Promotion Program (namely education/counselling of dental and oral health) conducted by teachers/health personnels. This is a policy that must be carried out by experts to ensure that the school oral health promotion program continues. Meanwhile, for preventive activities, 80% of the activities are carried out in the SDHP program, namely mass toothbrushes using fluoride toothpaste and gargling with fluoride solution. As can be seen from the promotive and preventive targets, each school still only focuses on promotive activities compared to preventive activities (Kemenkes RI, 2012).

The most effective promotive and preventive efforts are carried out on elementary school student, because efforts to improve health must be instilled as early as possible and carried out continuously so that it becomes a habit. In addition, this group is also easier to shape, considering that elementary school children are always under the guidance and supervision of teachers. Thus, this particular group of age has the potential to instilled with healthy life habits (Depkes RI, 2000).

Dental and oral health must be maintained from an early age, especially during mixed teeth period, namely children aged 6-12 years old, due to at this age children are classified into group prone to dental and oral disease (Maulani an Enterprise, 2005). According to Astoeti (2006), optimal dental and oral health status also can be achieved by starting promotive and preventive as early as possible. Considering the essence of health efforts are achieving the ability to live a healthy life for every citizen in order to obtain an optimal degree of health as an element of general welfare and national goals, it is

proper for us as health personnel to be fully responsible for realizing SDHP as one of the government programme. SDHP is one of many form of activities to see the condition of student's dental and oral health, especially elementary school student, because that age group (12 years old) is WHO's indicator of the success of dental and oral health.

However, from this study's result, there is a larger effect size in promotive activities compared to preventive activities. This all due to promotive activities at schools are more prioritized than preventive activities, and also promotive activities are said to be a precursor to dental health programme. Promotive activities conducted at school are more directed toward dental health education approach. According to Nofalia (2011) dental and oral health counselling plays an important role in schools, especially to improve student's dental health. The material given during counselling must be in adjusted to children's age. Promotive efforts are carried out to improve dental and oral health in children at school through SDHP, where health counselling activities and skills training are carried out extracurricularly (Notoatmodjo, 2012).

Based on these results, it is known that the promotion of dental and oral health activities has the greatest relationship in overcoming the dental and oral health status of elementary school students. This result is in parallel with SDHP' policy to prioritize promotive activities. It has already known that the implementation of improving dental and roal health status itself is more oriented to promotive activities, followed by preventive activities. So, it is clear that policies in handling dental health prioritize new promotional activities then followed by other activities. If promotive activities carried out properly, then preventive activities can be done properly. So that, dental and oral health status of elementary school student can improve.

Promotional activities in SDHP policy are recommended not only to provide counselling to elementary school student but also to provide counselling to parents, because of their important role in improving dental and oral health in children. In preventive activities, SDHP' policy not only toothbrushes with fluoride toothpaste and gargling with fluoride solution but also pit and fissure sileant, scalling, consume fluor tablet and control to dentist every 6 months will prevent tooth decay if done regularly.

Based on the results of this meta-analysis, it is found that SDHP policy's management seem to have more effect, especially on promotive compared to preventive activities. Thus, promotive activities that only focus on counselling for children are expected to be further strengthened with counselling for parents, UKS' teacher/supervisor training, and little doctors programme. So that, optimal dental and oral health at elementary school can be achieved.

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## 5. CONCLUSION

The OR value in the implementation of SDHP' promotive activities with dental and health status of elementary school student in study conducted by Zhang, et al (2020) is OR=4,930, McGrath, et al (2019) OR=3,906, Nguyen, et al (2016) OR=1,900, Haque, et al (2016) OR=1,650, Tashiro, et al (2019) OR=1,470. OR value in the implementation of SDHP' promotive activities with dental and health status of elementary school student in study conducted by OliveiraI, et al (2015) is OR=3,096, Setiari (2017) OR=2,233, Ruff & Niederman (2018) OR=2,203, Gasoyan, et al (2019) OR=1,992, Alsumait, et al (2019) OR=1,790, Al-Otaibi, et al (2015) OR=1,21.

There is significant relationship between SDHP' promotive and preventive activities with the dental and oral health status of elementary school student in chosen journals with combined effect size value in promotive activities of 2,121; [95% CI : 1,508-2,982, Z=4,325, p=0,000]; and in preventive activities of 1,898; [95% CI : 1,617-2,228, Z=7,830, p=0,000]

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