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A COMBINATION INTERVENTION OF CONVENTIONAL EDUCATIONAL MODELS AND MOTIVATIONAL INTERVIEWS INCREASED KNOWLEDGE OF DENTAL AND ORAL HEALTH AND REDUCED DENTAL HYGIENE INDEX, DENTAL CARE INDEX, AND GINGIVA INDEX IN PRIMARY SCHOOL CHILDREN IN TOMOHON CITY, NORTH SULAWESI

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ABSTRACK
His experimental community trial investigates the impact of combining Conventional Education and Motivational Interviewing (CE-MI) models on oral health knowledge and indices among elementary school children in Tomohon City. A pretest and posttest control group design involved 106 randomly assigned respondents. The intervention group received the CE-MI model, while the control group had no intervention. Results revealed a significant increase in oral health knowledge in both groups. The control group showed a 5.02±1.01 knowledge score increase ($p < 0.05$), and the intervention group exhibited a substantial increase of 11.71±3.11 ($p < 0.05$). Furthermore, both groups experienced a decrease in dental hygiene index (OHI-S), with the control group decreasing by 3.50±1.07 ($p < 0.05$) and the intervention group by 4.13±2.30 ($p < 0.05$). Similarly, a reduction in dental caries index (DMF-T) was observed, with the control group decreasing by 2.84±1.21 ($p < 0.05$) and the intervention group by 4.13±2.30 ($p < 0.05$). The dental gingival index (GI) also fell in both groups, with the control group showing a reduction of 0.04±0.01 ($p < 0.05$) and the intervention group a decrease of 0.91±0.06 ($p < 0.05$). In conclusion, the CE-MI model intervention effectively enhances oral health knowledge and reduces dental indices in 5th and 6th-grade elementary school children in Tomohon City.
Keywords: Conventional Education dan Motivational Interviewing (CEMI), elementary school students, knowledge, oral hygiene index, dental caries index, gingi val index

INTRODUCTION

Dental and oral health constitute an integral component of overall well-being, directly influencing an individual's quality of life. The benchmarks for assessing dental and oral health status adhere to the Global Goals for Oral Health 2020, collaboratively developed by FDI and WHO. Oral health encompasses the absence of persistent pain, sore throat, oral cancer, craniofacial anomalies like cleft mouth, gum ailments, tooth decay, tooth loss, or any disorders

impacting the oral tissues. Recognized as a crucial public health concern, oral diseases exhibit high prevalence and incur substantial treatment costs, significantly affecting individuals' quality of life.

Dental caries is a prevalent ailment affecting nearly half the global population, equivalent to 3.58 billion people. Gum disease (gingiva) ranks as the 11th most pervasive ailment globally. The Global Burden of Disease Study in 2016 indicates that oral cancer holds the position of being the 3rd most common type of cancer in the Asia Pacific region.

WHO's report in 2013 reveals that dental caries prevalence is strikingly high, affecting 80-90% of children aged 6-12 years in European, American, and Asian countries, including Indonesia. This underscores the urgent need for comprehensive strategies to address oral health issues, considering their wide-reaching impact on global populations. School-age children worldwide are estimated to have suffered from caries, the lowest prevalence is in Africa. Dental caries is a chronic disease that often occurs in children. Dental caries of Aboriginal children in Western Australia, is the fifth most common disease that causes children to be hospitalized in pre-school children aged 1-4 years. More than 50 school hours per year are lost as a result of toothache in children.(Kwan et al., 2005) Sheiham suggested three effects of dental caries on the growth and development of pre-school children, namely (1) untreated dental caries can cause pain so that it interferes with children's food intake, (2) pain can cause sleep disturbances and further interfere with glucosteroid production and growth, (3) chronic inflammation of dental caries can suppress hemoglobin and subsequently cause anemia because the production of erythrocytes in the bone marrow is reduced. This explains the urgent need to treat dental caries in school-age children to improve growth and development and improve the quality of life of children (Sheiham, 2006)

The prevalence of dental caries and periodontal disease is still high, especially in developing countries. In the UK, 28% of children aged 5 years suffer from caries(Bagramian et al., 2009). In Iran, a Middle Eastern country, according to several studies, the prevalence of dental caries in children compared to developed countries is still high (Frencken et al., 2017). However, evidence on the prevalence of caries in mixed dentition in children is rare (Temilola et al., 2014). Dental caries and gingival inflammation are widespread oral conditions affecting the global population, leading to numerous complaints from both children and adults, as reported by the World Health Organization (WHO) in 2013. WHO's findings indicate that dental caries impacts 60-90% of school children, encompassing developing and developed nations. Additionally, research reveals a prevalence of dental caries reaching up to 83.3% among school children in the Middle East (Sultana et al., 2022). The caries prevalence found in the study was higher than that reported in several studies conducted in other Asian countries such as Yemen, India, Malaysia China. This finding can be explained by the first that dental caries is a major oral

health problem in elementary school children studied. All oral health care system is not sufficiently developed, and the cost of dental caries treatment is very expensive(Ismail et al., 2013). Dental caries and periodontal disease are generally caused by poor oral hygiene, resulting in the accumulation of plaque containing various kinds of bacteria(Christersson et al., 1991). Caries is a condition affecting dental tissues, marked by damage that initiates from the enamel, progresses to the dentin, and may extend towards the pulp. The development of dental caries is attributed to several factors, including carbohydrate consumption, microorganisms, saliva composition, tooth surface and structure, and specific cavity-causing bacteria, notably Streptococcus mutans and Lactobacillus. This condition can lead to pain, tooth loss, and infection when not addressed (Tarigan, 1989).

The cause of dental caries is multifactorial, including due to acid which is the result of carbohydrate fermentation by bacteria, this acid can dissolve tooth layers such as enamel, dentin and cementum. (Elamin et al., 2021). Untreated dental caries in permanent teeth is the overall health condition with the highest prevalence (35% for all ages). Human activities and survival are supported by a healthy body, which includes physical, mental, social and spiritual health that enables everyone to live socially and economically productive lives. The etiology of dental caries is caused by four main factors, namely the tooth surface, cariogenic bacteria, fermented carbohydrates and time. In addition to these four factors, there are also predisposing factors that cause dental caries, namely characteristics caused by the environment such as diet, lifestyle, socioeconomic status also influenced by ethnicity, race and culture.

Dental and oral health issues persist within the Indonesian population, evident in the escalating prevalence of such problems. According to the 2018 Basic Health Research Results (Riskesdas), the primary dental concerns in Indonesia are damaged, decayed, or ailing teeth, constituting 45.3% of the cases. Swollen gums and oral ulcers account for most oral health problems, at 14%. The 2018 Riskesdas outcomes reveal that, among the 267 million population, the average Indonesian individual has 4-5 problematic teeth. Furthermore, the prevalence of dental caries, as per WHO standards, indicates an 8.43% occurrence in the age group of 5-6 years, with 67.3% of 5-year-olds having experienced dental caries, categorized under severe early childhood caries (deft 6). This initial investigation focused on children in grades 5 and 6 of elementary school, aged between 10 and 12 years, as they typically have all permanent teeth at this stage of development (Mariati, et.al., 2021). The proportion who have problems with their teeth and mouth and receive services from medical personnel from 57.6%, only 10.2% who receive services from medical personnel, who brush their teeth every day in the population aged 3 years 94.7%, who brush their teeth teeth correctly in the population aged 3 years 2.8%. Dental and oral problems are below the average in 13 provinces and dental and mouth problems are above the average in 12 provinces. In several provinces, the number suffering from active caries is very high compared to the national rate, such as Kalimantan 80.2%,

Sulawesi 74%, Sumatra 65.4% based on household health surveys. Severity and tooth decay can be described by the def-t index and DMF-T. According to WHO 2006 dental caries index (DMF-T) is a number that indicates clinical dental caries disease. The DMF-T index shows the number of caries experiences of a person's permanent teeth, namely D (Decayed) where the carious tooth can still be filled, M (Missing) is a carious tooth that has been lost or extracted, F (Filling) where the carious tooth has been filled and T (Tooth) are permanent teeth. The DMF-T number is the missing and filled carious tooth element in each individual.

According to data from the Executive Board of the Indonesian Dental Association (PDGI), at least 89% of people with cavities are children under 12 years of age. Elementary school children are a group of children who vulnerable to dental caries because at this period permanent tooth growth occured. There is a variety of milk teeth and permanent teeth together in the mouth so that it becomes a mixed dentition in children. The newly growing teeth are susceptible to damage(LESTARI, 2013). Permanent teeth that grow only once in a lifetime must be maintained, cared and maintained propeerly needed to avoid tooth decay. Tooth decay in children cause problems with growth and development in children(Sari et al., 2015). If the growth and development of children is disturbed, the next generation of the nation will have poor quality.

Children are individuals who are in a range of developmental changes starting from infancy to adolescence. Childhood is a period of growth and development starting from infants (0-12 months), toddlers (1-3) years old, and pre-school (3-5) years. According to Potter, the school age of 6-12 years is the age of children sitting in elementary school. At the beginning of the age of 6 years, children begin to enter school, so that children begin to enter into a new world, where they begin to relate a lot to people outside their families and get acquainted with new atmospheres and environments in their lives. The period of children aged 9-12 years is an important age in the growth and physical development of children. This period is also referred to as the critical period because at this time children begin to develop habits that usually persist into adulthood, one of which is the habit of maintaining dental and oral health. The behavior of Indonesian children in maintaining oral health is still in the low category. The effective age for providing all information that leads to children's cognitive and motor development is the age of 9-12 years, for example brushing teeth. According to Piaget's theory of cognitive development, children aged 9-12 years who enter the concrete operational and formal operational stages can classify any information they receive and can think logically. Motor development itself is in accordance with the child's physical development. At the age of 9-12 years, the child's physical development is followed by motor development, so it is very good when given teaching about dental health education at that age. At school age, they are prone to health problems, namely dental problems, the most important of which are dental caries and periodontal disease.

Factors that influence the disease is behavior. Interventions through education with appropriate methods and media can be done to increase children's knowledge.

Dental caries in children has an impact on the occurrence of premature tooth loss where the permanent molars have not yet grown, the primary molars have fallen out prematurely, so they will lose space for the permanent molars to grow. Dental caries also results in disruption of mastication. Loss of teeth also has an impact on difficulty eating, talking, socializing, discomfort and shame. Dental caries is one of many preventable childhood diseases and everyone is susceptible to this disease throughout his life. The presence of dental caries can interfere with the masticatory system in general, and can become a focal infection that interferes with the health and development of children (Li, et. al., 2000).

Efforts to prevent dental and oral diseases in elementary school children have been carried out by the Indonesian government, namely through the School Dental Health Business (UKGS). The UKGS program has existed since 1951, but there has been no significant change in dental and oral disease. The Ministry of Health has programmed promotive and preventive efforts for school-age children through the School Dental Health Business (UKGS). The most effective promotive and preventive efforts are targeted at elementary school children, because dental health care must be carried out from an early age and carried out continuously so that it becomes a habit. The School Dental Health Business (UKGS) is one of the main businesses of the Puskesmas which is included in the School Health Business (UKS). Included in the UKGS program is the implementation of dental and oral health services for elementary school students, which includes dental health education and dental and oral examinations (LESTARI, 2013).

Dental health education is a learning initiative to enhance oral and dental well-being. Individuals acquire knowledge and information through various educational media throughout this educational process. The academic press serves as a crucial tool within the educational framework. Using methods and media in the educational process is grounded in Dale's Cone of Experience theory from 1969. This theory posits that employing methods involving multiple senses in the educational process facilitates easier comprehension and retention for individuals. The effectiveness and optimization of dental and oral health education are achieved using suitable methods and media (Soekidjo, 2010).

The usual method for preventing dental caries and gingivitis is the conventional method by conducting counseling on dental and oral health education. Counseling is one of the efforts to prevent dental and oral health problems, through counseling programs it is hoped that it can increase public knowledge and awareness so that they participate actively in improving health status. Dental health education focuses on disseminating information and providing normative advice, which is conventional education. However, what appears to be a belief for professionals

may not appeal to patients or may even result in patient resistance to change . Research has been carried out on the promotion of dental and oral health education which is conventional dental health education, but this education is rarely able to change a person's behavior

Conventional health education methods are widely used as information channels and have been researched previously, including lectures, posters, brochures and counseling training methods, and focus group discussions; method of game play method of demonstration, film, and game. However, the most popular method and is often used by researchers is lecture. When viewed from the health education method used, the delivery method used by the government in the UKGS program is the lecture and demonstration method. Some researchers consider the lecture method to be a conventional method (Gao et al., 2015) which is considered less attractive. Dental health education media currently being conducted still use conventional approaches and tend to be less attractive to children, even though the existing counseling media already apply modeling principles, but the selection of media used is felt to be less evocative, monotonous, and unattractive to children. tend to be easy to forget .

In order to overcome the limitations and shortcomings of conventional health education or conventional methods, motivational interviewing (Motivation Interviewing) was developed as an intervention style, motivation interviewing (MI) as an innovative intervention where a person-centered counseling approach developed(Elamin et al., 2021). Evolved from Roger's approach to counseling centered and embracing transtheoritical theory, motivational interviewing (MI), intrinsic motivation, increasing patient readiness to change and seeking to explore, and resolve health problems The person-centered or individual approach is very different from traditional (conventional) health education in general and motivational interviewing (counseling) where professionals are the most active counselors in presenting problems and offering solutions, while patients are usually able to come out of problems and can make a decision.

In general, the delivery strategy of health counseling is something that must be considered, a face-to-face approach that often has a positive influence on oral hygiene behavior. The method of health education with counseling is a method that is often used by researchers from abroad. In Hong Kong (Gao et al., 2015) in his research using conventional methods and motivational interviews to improve oral health more effectively and can change dental health behavior. In Indonesia, in his research used fluoride counseling and intervention methods to see caries risk factors. In conventional Education (CE) and Motivational Interviewing (MI) models, apart from using the caries risk assessment, the questionnaire and clinical examination methods are based on the Caries Risk Assessment Tools AAPD form which is a combination of conventional methods or Conventional Education (CE) and motivational interviews or interviews. Motivation Interviewing (MI), also provided information in the form of

pamphlets, dental health education in the form of modules, motivational and interactive counseling in the form of dental examinations and dental caries risk assessment and tooth brushing exercises. The model is used to simplify the time frame, meaning that by using the model, controlling dental caries in elementary school children is in accordance with what is in the community efficiently in terms of time, effort, risk and funds

In North Sulawesi, the prevalence of dental and oral health issues is 31.6%, surpassing the national average of 25.9%. Correspondingly, the percentage of individuals in North Sulawesi requiring and receiving treatment is below the national rate of 7.9%. Tomohon City needs to focus more on dental and oral health status. Based on WHO criteria, existing research on dental caries status among elementary school children in Tomohon City indicates a moderate DMF-T index. Another study by Marsela Liwe et al. (2015) in Tomohon City revealed a high caries prevalence among elementary school children in South Tomohon District. The untreated caries severity (PUVA index) averaged 1.7, with the highest incidence observed in the 11-year age group. Given the identified issues related to dental caries, gingival disease, and dental and oral hygiene in Tomohon City, coupled with the limited research on the dental and oral health status of elementary school children, it is imperative to conduct a study on interventions involving Conventional Education and Motivational Interviewing models. This research aims to enhance knowledge and dental and oral hygiene status and reduce dental caries and gingival issues among elementary school children in Tomohon City.

Preliminary research on the Conventional Education and Motivational Interviewing model on elementary school children in Tomohon City have already carried out with the finding that there is a relationship between knowledge and oral hygiene where the results of the study show that the better the dental and oral hygiene (Mariati, et.al., 2021).

RESEARCH METHODS

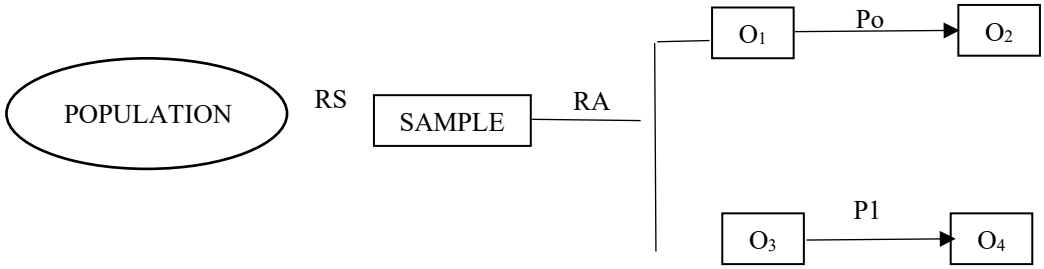
Research Location and Time

This research was conducted in elementary schools throughout the city of Tomohon and was selected as the research sample according to the specified criteria. Data collection was carried out in July-September 2021.

Research Design

This research is a quasi-experimental research (community trial) using a Randomized Pre-test and Post-test Control Group Design (Zainuddin, 2010; Sugiyono, 2014). The design is depicted in Figure 1.

Figure 1. Research Design



RS: Random Sampling is done to determine the sample from the population affordable

RA: Random Allocation is done to divide the sample into Groups Intervention and Control Group

O1, O3: Observation of pre-test data on knowledge, hygiene index teeth, dental caries index, and gingival index before intervention

O2, O4: Observation of post test data on knowledge, hygiene index

Data Analysis

The research data were analyzed using the SPSS program. Descriptive analysis including demographic data is used to see the diversity of data in two sample groups based on mapping: age, number of children, education level, age of marriage, and type of work. Data is presented in the form of percentages and numerical data with normal distribution is presented in the form of mean and SD, while numerical data is not normally distributed in the form of median and interquartile.

The normality test aims to assess the normality of the distribution of the dependent variable (numerical scale) in each group using the Kolmogorov-Smirnov test (if $p>0.05$ the data distribution is normal and vice versa). These results determine the selection of the next different test.

Analysis to determine the occurrence of increased knowledge, decreased dental hygiene index, decreased dental caries index, and decreased gingival index used paired t-test because all data obtained were normally distributed. Likewise, to find out there were differences between the control group and the treatment group on the parameters studied, including knowledge, oral and dental hygiene status, decreased dental caries index, and decreased

gingival index using unpaired t-test analysis, Significance was determined based on p value < 0 ,05.

RESULTS AND DISCUSSION

Overview of Research Sites Gen*der distrinution*

This study was carried out in Tomohon City, North Sulawesi, involving 110 elementary school children divided into two groups: the control group, comprising 55 individuals, and the treatment group, comprising 55 individuals. In the control group, four children withdrew, resulting in 51 individuals, and 55 in the treatment group still met the minimum required sample size according to the calculated sample size. Astronomically, Tomohon City is situated at 01; 18'; 51" North Latitude and 124; 49'; 40" East Longitude.

Tomohon City is 100 km from the provincial capital, Manado City. Based on its geographical position, Tomohon City is entirely limited by Minahasa Regency. Tomohon City consists of 5 Districts, namely South Tomohon District, Central Tomohon District, East Tomohon District, West Tomohon District and North Tomohon District.

The population of Tomohon, as indicated by the 2020 Population Census, stands at 100,587 individuals. This reflects a growth of 0.91 percent compared to the population recorded in the 2010 census. Furthermore, the sex ratio in 2020, calculated as the ratio of the male population to the female population, is 102.1. The population density in Tomohon City, based on the 2020 census, reaches 683 people per square kilometer. In terms of the workforce, Tomohon City had a total of 50,911 individuals in 2020, comprising 31,976 males and 18,935 females (BPS Tomohon City 2021).

Characteristics of Research Subjects

Characteristics of research subjects include age and gender. The results of the analysis of the characteristics of the research subjects are presented in Table 1. Data Table 1 shows that the median age of respondents for the control and treatment groups is 11.0, respectively. This means that there is no difference in the median age value. Furthermore, it was found that the most male respondents were in the control group (28 respondents) and the most female respondents were in the treatment group (29 respondents).

Table 1. Comparison of the Characteristics of Research Subjects between the Treatment Group and the Control Group

Variable	Intervention Median (IQR) (n)	Control Median (IQR) (n)	*p**
Umur	11,0 (56)	11,0 (51)	-
Sex Male Female	 26 29	 28 23	 0.555

The results of the chi-square test found that there was no difference in gender of the research subjects between the treatment group and the control group (p>0.05).

Knowledge of Dental and Oral Health

Dental and oral health knowledge data in the form of interval data obtained based on scores. The data obtained were normally distributed, indicated by the p value > 0.05. Furthermore, paired t-test was conducted to determine the occurrence of an increase in oral health knowledge after the intervention treatment of the Conventional Educational Model and Motivational Interviewing (CE-MI) combination intervention. The results are presented in Table 2.

Table 2. Dental and Oral Health Knowledge Data in the Treatment Group and the Control Group Before and After the Intervention

Group	Pretest	Posttest	Difference	*p**
Control	10.96±1.28	15.98±1.21	5.02±1.01	0.001
Intervention	10.98±2.38	22.69±1.83	11.71±3.11	0.001

Remarks:

Control Group: conventional group

Treatment Group: Conventional Educational and Motivational Interviewing (CE-MI) combination intervention model.

*Significant at value <0.05

From Table 4.2 above, it can be seen that in both the control group and the intervention group there was an increase in knowledge of oral and dental health in the control group, an increase in knowledge with a score of 5.02±1.01 and statistically significant, indicated by a p value <0.05. Likewise, in the intervention group, there was an increase in knowledge of oral and dental health by 11.71±3.11 and statistically significant, indicated by the p value <0.05.

Furthermore, to determine the difference in the increase in knowledge of oral and dental health that was significantly different in the control group compared to the intervention group, an independent t-test was performed. The results of the analysis are presented in Table 3.

Table 3. Data on Differences in Differences in Knowledge of Dental and Oral Health in the Treatment Group and the Control Group Before and After the Intervention

Group	Difference	*t*	*p**
Control	5.02±1.01	15.93	0.001
Intervention	11.71±3.11		

Remarks:

Control Group: conventional group

Treatment Group: Conventional Educational and Motivational Interviewing (CE-MI) combination intervention model.

*Significant at value <0.05

Dental Hygiene Index

Dental hygiene index data in the form of interval data obtained based on scores used to see the index of children's dental hygiene so that they can be compared before and after receiving the intervention. The examination was carried out by a dentist according to the OHI-S index. The data obtained were normally distributed, indicated by the p value > 0.05. Next, a paired t-test was conducted to determine the occurrence of a decrease in the dental hygiene index after the combined intervention of the Conventional Educational Model and Motivational Interviewing (CE-MI). The results are presented in Table 4.

Table 4. Dental Hygiene Index Data in the Treatment Group and Control Group Before and After Intervention

Group	Pretest	Postest	Difference	*p**
Control	4.43±1.10	1.47±0.37	2.96±0.79	0.001
Intervention	4.58±1.11	1.08±0.17	3.50±1.07	0.001

Remarks:

Control Group: conventional group

Treatment Group: Conventional Educational and Motivational Interviewing (CE-MI) combination intervention model.

*Significant at value <0.05

From Table 4. above, it can be seen that in both the control group and the intervention group there was a decrease in the dental hygiene index in the control group, a decrease in the dental hygiene index by 2.96 ± 0.79 and statistically

significant, indicated by the p value < 0.05. Likewise, in the intervention group there was a decrease in the dental hygiene index by 3.50±1.07 and statistically significant, indicated by the p value <0.05. Furthermore, to determine the difference in the decrease in dental hygiene significantly different in the control group compared to the intervention group, an independent.test was performed. The results of the analysis are presented in Table 5.

Table 5. Data on Differences in Differences in Dental Hygiene Index Decrease in the Treatment Group and the Control Group Before and After Intervention

Kelompok	Selisih	*t*	*p**
Kontrol	2,96±0,79	2,94	0,004
Perlakuan	3,50±1,07		

Remarks:

Control Group: conventional group

Treatment Group: Conventional Educational and Motivational Interviewing (CE-MI) combination intervention model.

*Significant at value <0.05

From Table 5 it can be seen that the difference in the decrease in dental hygiene index data between the control group and the intervention group was significantly different, indicated by the p value < 0.05. This means that the treatment given, namely the Conventional Education and Motivational Interviewing Model Combination Intervention (CEMI) is effective in reducing the dental and oral hygiene index of elementary school children in Tomohon City.

Dental Caries Index

Dental caries index data in the form of interval data obtained based on the index used to see the child's dental caries index so that it can be compared before and after receiving the intervention. The examination was carried out according to the DMF-T Index (DMF-Teeth) for permanent teeth. The definition of DMF-T is that D/d (decay) is a tooth with cavities due to

caries, M (missing/extracted) is a tooth that is indicated to be extracted or a tooth that has been lost due to caries, F (filling) is a carious tooth that has been patched and filled. still good. Dental caries index (DMF-T) data obtained were normally distributed, indicated by p>0.05. Next, a paired t-test was conducted to determine the occurrence of a decrease in the dental caries index after the intervention treatment of the Conventional Educational Model and Motivational Interviewing (CE-MI) combination intervention. The results are presented in Table 6.

Table .6

Dental Caries Index Data in the Treatment Group and Control Group Before and After Intervention

Group	Pretest	Postest	Difference	*p**
Control	5.71±2.37	2.86±1.17	2.84±1.21	0.001
Intervention	5.87±1,75	1.74±1.08	4.13±2.30	0.001

Remarks:

Control Group: conventional group

Treatment Group: Conventional Educational and Motivational Interviewing (CE-MI) combination intervention model.

*Significant at value <0.05

Furthermore, to determine the difference in the decrease in the dental caries index, which was significantly different in the control group compared to the intervention group, an independent t-test was performed. The results of the analysis are presented in Table 4.7.

Table 7. Data on Differences in Dental Caries Index in the Treatment Group and the Control Group Before and After the Intervention

Group	Difference	*t*	*p**
Control	2.84±1.21	3.55	0.010
Intervention	4.13±2.30		

Remarks:

Control Group: conventional group

Treatment Group: Conventional Educational and Motivational Interviewing (CE-MI) combination intervention model.

*Significant at value <0.05

From Table 7, it can be seen that the difference in the decrease in dental caries index between the control group and the intervention group was significantly different, indicated by the p value < 0.05. Taking into account that the initial data on the dental caries index did not differ, it means that the treatment given, namely the Conventional Educational and Motivational Interviewing Combination Model Intervention (CE-MI) was effective in reducing the dental caries index of elementary school children in the city of Tomohon.

Gingival Index

Gingival index data in the form of interval data obtained according to the Gingival Index (GI) of Loe and Silness. Definition (GI) Loe and Silness is an examination carried out on the gingiva surrounding teeth 16 and 26 buccal parts, teeth 11 facial parts, 36 and 46 lingual parts and teeth 31 labial parts. The data obtained are normally distributed, indicated by the value of p> 0.05. Next, a paired t-test was performed to determine the occurrence of a decrease in the gingival index of the teeth after the combination intervention of the Conventional Educational Model and Motivational Interviewing (CE-MI) intervention. The results are presented in Table 8.

Table 8. Dental Gingival Index Data in Treatment Group and Control Group Before and After Intervention

Group	Pretest	Posttest	Difference	*p**
Control	1.15±0.09	1.10±0.31	0.04±0.01	0.035
Intervention	1.19±0.07	0.28±0.03	0.91±0.06	0.001

Remarks:Control Group: conventional group

Treatment Group: Conventional Educational and Motivational Interviewing (CE-MI) combination intervention model.

*Significant at value <0.05

From Table 8 above, it can be seen that in both the control group and the intervention group there was a decrease in the dental gingival index, in the control group the decrease was 0.04 ± 0.01 and statistically significant, indicated by the p value < 0.05. Likewise, in the intervention group there was a decrease in the dental caries index by 0.91 ± 0.06 and statistically significant, indicated by the p value < 0.05.

Furthermore, to determine the difference in the decrease in the gingival index of the teeth that was significantly different in the control group compared to the intervention group, an independent t-test was performed. The results of the analysis are presented in Table 4.9.

Table 9. Data on Differences in Differences in Dental Gingival Index in

the Treatment Group and the Control Group Before and After the Intervention

Group	Difference	t	*p**
Control	0.04±0.01	9.48	0.001
Intervention	0.91±0.06		

Remarks:

Control Group: conventional group

Treatment Group: Conventional Educational and Motivational Interviewing (CE-MI) combination intervention model.

*Significant at value <0.05

From Table 4.9, it can be seen that the difference in the decrease in tooth gingival index data between the control group and the intervention group was significantly different, indicated by the p value < 0.05. This means that the treatment given, namely the Conventional Education and Motivational Interviewing Model Combination Intervention (CEMI) is effective in reducing the gingival index of elementary school children in the city of Tomohon.

CONCLUSION

In this study, a module has been produced regarding the intervention of a combination of Conventional Education and Motivational Interviewing models. about dental and oral health education to complement the conventional methods used so far to change behavior. The modules are in the form of books and videos to be given to elementary school children and also a dental examination module which is given to dentists and health workers as an examination guide. Implementation of the CE-MI Model Combination can significantly improve:

The combination of the Conventional Educational Model and Motivational Interviewing (CEMI) can improve dental and oral knowledge of elementary school children in the city of Tomohon.

The combination of the Conventional Educational Model and Motivational Interviewing (CEMI) can reduce the dental and oral hygiene index in elementary school children in the city of Tomohon.

The combination of the Conventional Educational Model and Motivational Interviewing (CEMI) can reduce the dental caries index of elementary school children in the city of Tomohon.

The combination of the Conventional Educational Model and Motivational Interviewing (CEMI) can reduce the gingival index of elementary school children in the city of Tomohon.

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