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Effect of Motivational Interviewing Counseling Model On Toothbrushing Practice Among Adolescents

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ABSTRACT

Adolescence is characterized by a period of significant dental caries activity. research has proven that the level of caries in adolescence tends to have a high prevalence. One of the factors causing caries is the lack of awareness of adolescents in maintaining oral and dental hygiene, to increase awareness of adolescents can be done by promoting dental health through dental health education. Conventional dental health education that has been applied only focuses on increasing patient awareness of the severity of a disease problem through providing information/advice. The selection of the right approach in the process of delivering dental health education materials to adolescents is the intervention of the motivational interviewing counselling model.

This study aims to determine the effectiveness of the motivational interviewing (MI) counselling model in improving the practice of brushing teeth in adolescents. The research and development (R&D) research method have five stages of research, namely: information collection, model design, expert validation, and model testing of a sample of 80 adolescent students. Sampling using a purposive sampling technique. Test the normality of the data using Shapiro Wilk, test the feasibility of the module using the intraclass correlation coefficient, test the paired data using the Paired sample t-test and test the unpaired data using the Independent Sample Test. The results showed that the motivational interview counselling model intervention has the potential to improve teeth brushing skills in adolescents ($p=0.001$) and reduce plaque index scores ($p=<0.001$). The conclusion shows that the MI counselling model is effective as a method of dental health education.

Keywords: Motivational Interviewing; Toothbrushing Practice; Teenagers

Introduction

Oral health is often the umpteenth priority for most people. Whereas teeth and mouth are the gateways for germs and bacteria to enter so that they can affect other body parts so that it will interfere with daily activities.¹

The problem of cavities is still a lot of complaints by children and adults. The prevalence of caries in school-age children in Indonesia is 89%. Meanwhile, nationally, according to the 2018 Basic Health Research, the age group of 10-14 years is 57.6%.² The incidence of dental caries and periodontal disease has a significant relationship in adolescents.³ This is evidenced by the caries prevalence rate in adolescents aged 12 years in Yogyakarta of 80.4%.⁴ While the gingival status, the gingival index in Jakarta, which is 53%, has a score of two and 68% suffers from gingivitis.⁵ This can have a major impact on adolescents both physically, psychologically and socially.⁶

Instilling the habit of brushing teeth with toothpaste containing fluoride along with regular visits to the dentist is effective in preventing oral diseases.⁷ In Indonesia, a program has been running to address dental health problems in school children, namely Usaha Kesehatan Gigi Sekolah (UKGS). The UKGS Handbook explains that imparting knowledge to students is carried out using a conventional health education approach (Dental Health Education).⁸

The conventional health education approach is clinician-centred, an approach that places the extension worker as an expert with a focus only on delivering information and suggestions so that practitioners give direct messages to encourage patients to follow their recommendations/suggestions. This puts the patient in a position of acceptance, but passively.⁹ However, this approach in motivating patients is still considered ineffective.¹⁰ To overcome the limitations of the conventional health education model, Motivational Interviewing (MI) has been developed by William R. Miller and Stephen Rollnick (2013) to change a person's behaviour.

Motivational Interviewing (MI) is a client-centred counselling technique to increase the

*patient's intrinsic motivation. in changing behaviour.*¹¹ MI is described as a method of changing behaviour by reflecting and respecting the client's autonomy so that the client actively interprets his own needs and evaluates his behaviour.^{12,10,13}

A randomized control trial conducted in Hong Kong to determine the effectiveness of MI on dietary behaviour and oral hygiene in adolescents showed that the MI group could increase the frequency of brushing teeth, limit the habit of consuming cariogenic foods, and increase self-efficacy in oral health.⁶ However, Some studies show MI as an intervention on health behaviour through a school approach does not have a positive impact on preventing dental caries in children aged 18 years and Early Childhood Caries (ECC) in high-risk populations.¹⁴ Meanwhile, in several other studies, the potential for MI has shown to be effective against ECC.^{9,16}

The potential of MI in improving dental and oral health care is still considered controversial, has varied results and there are still MI studies in the field of dental health that have been published in the form of study protocols.^{12,9,17,18} However, MI still holds promise in other settings/populations for preventing other dental diseases and may be an adjunct to other behavioural/social interventions that do not stand alone but are supplemented by other methods.¹⁹ Thus, the application of the Motivational Interviewing method to produce good results, more effective in this study coupled with a demonstration of tooth brushing practice (TBP) which its application will be given to adolescents.

Research Methods

The research method used is research and development (R&D). This study aims to produce an MI counselling model module as a guide to oral health promotion for dental therapists and to determine the effectiveness of the MI counselling model in improving the correct brushing practice of adolescents.

The research and development (R&D) method consists of 5 stages, namely: 1) Information gathering, 2) Model Design, 3) Expert validation test, 4) Model testing and 5)

Model results. The research design was quasi-experimental (pre and post with control group design).²⁰

Sampling used a purposive sampling technique with 40 adolescent students in the intervention and control groups. This research was conducted at SMP N 21 and SMP N 26 Semarang City. Statistical test using intraclass correlation coefficient, normality test using Shapiro Wilk and effectiveness test using paired sample test and independent-sample test

Research Results

A. Information Collection

The results of information collection were carried out using interviews with the health office, education office, heads of health centres, school principals and health workers (dentists and dental therapists) and a systematic review concluded that:

1. Dental health education implemented in health centres by dental therapists uses the one-way method assisted by several learning media.
2. The adolescent phase is very crucial in human life.
3. Dental health problems that are often experienced by adolescents are dental caries, gingivitis, crowding of teeth, calculus and cases of persistent teeth are still frequently encountered. In addition, the awareness of adolescents in maintaining oral hygiene is still low and indifferent to self-care.
4. Learning media favoured by teenagers such as videos designed with animated images.

B. Design the model

The motivational interviewing counselling model was developed as a guideline for dental therapists in delivering dental health education to improve teeth brushing skills in the right way and reduce plaque index scores in adolescents. Implementation of the MI counselling model can improve the status of good oral hygiene. The stages of the MI counselling model are arranged in a module that is validated by 3 experts, namely psychologists, dental health promotion experts and experts.

C. Expert Validation

Table 1. Expert validation statistical test

	N	F(%)	p-value
Relevant	10	100	0,006
Irrelevant	10	0	

*Intraclass correlation coefficient

The results of expert validation show that p-value = 0.006 which means that the MI counselling model is relevant as a dental health education method and the MI counselling model module is effective as a learning guide in improving correct toothbrushing practice in adolescents.

D. Test Model

Table 2 . Normality test for intervention and control groups.

Variabel	p-value*	
	Intervention N=40	Control N=40
TBP <i>pre-test</i>	0,102	0,100
TBP <i>post-test</i>	0,118	0,156
Plaque indeks <i>pre-test</i>	0,083	0,604
Plaque indeks <i>post-test</i>	0,065	0,071

*Shapiro-wilk

The results of the normality test show that the p-value = > 0.05 so it can be concluded that the data of the two groups has the same variation and is homogeneous. The data test of the two groups was followed by a parametric test.

Table 3. Paired Data Effectiveness Test for Toothbrushing Practice and Adolescent Plaque Index

Variable	Paired Data Test				
	n	Mean±SD	Delta	P-value	
ToothBrushing Practice					
Intervention	Pre	40	11,43±2,530	7,98	<0,001
	post	40	36,68±2,877		
Control	Pre	40	11,20±3,639	5,80	<0,001
	post	40	17,00±3,297		
Plaque Index					
Intervention	Pre	40	71,43±15,43	47,70	<0,001
	post	40	23,73±7,906		
Control	Pre	40	89,73±4,139	36,52	<0,001
	post	40	53,20±16,06		

*Paired sample t- test

Table 3 shows that the results of the paired data effectiveness test have a p-value <0.001 (p<0.05). This means that the motivational interviewing counseling model and dental health education are both effective in improving the correct brushing practice and reducing plaque index scores in adolescents.

Table 4. Test of the Effectiveness of Unpaired Data for Toothbrushing Practice and Adolescent Plaque Index

Variable	Non-Paired Data Test			
	n	Mean	SD	P- value
ToothBrushing Practice				
Intervention	40	19,38	2,569	0,001
Control	40	17,00	3,297	
Plaque Index				
Intervention	40	23,73	3,297	<0,001
Control	40	53,20	7,906	

****Independent Sample Test**

Table 4. shows the non-paired data test on its effectivity. The information obtained from the table is that the p-value is 0.001(p < 0,05), meaning that the motivational interviewing counselling model is more effective in improving the correct brushing practice of adolescents.

The effectiveness test of the adolescent's plaque index score data shows that the p-value is < 0,001 (p < 0,05) meaning that the motivational interviewing counselling model is more effective than conventional dental health method.

E. Model Results

The results of this study are in the form of a Motivational Interviewing counselling model module which is a guideline in the implementation of dental health promotion using a motivational interviewing counselling model for dental therapists to improve the practice of brushing teeth in the right way in adolescents.

The module "motivational interviewing counselling model in

establishing the right way of brushing teeth in adolescents" has been approved and has obtained an intellectual property rights certificate (Registration letter from the Ministry of Law and Human Rights No. EC00202126037)

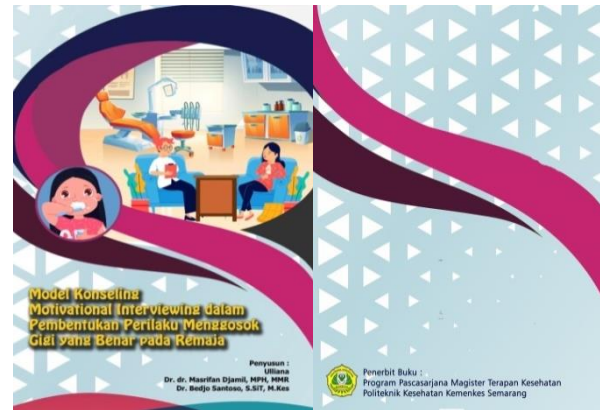


Figure1 : MI Counseling Model Module

Discussion

The motivational interviewing counseling module for compiling the formation of tooth brushing behaviour in adolescents initially started with collecting information through interviews with the health office, Semarang city education office, school principals, teachers and dental health workers. The results of the information obtained from several stakeholders can guarantee that psychologically a teenager has an increased sense of independence, which triggers the emergence of independence and often refuses to regulate in receiving advice/suggestions so that dental health education delivered must be adapted to the characteristics of adolescents by acknowledging, respecting and value protecting during its development.²¹

The feasibility of the module as a dental learning guide was carried out by expert validation, it was found that 90% were relevant as a guide for dental and oral health learning in carrying out dental health promotion using the motivational interviewing model method in shaping tooth brushing behaviour in the right way. The expert validation process is very important to assess the feasibility of the basic concept, the substance used and the feasibility of

a product.²² This expert test is carried out by experts who have extensive experience and insight in their fields.

The success of MI counselling in improving the practice of brushing teeth in the right way is because dental health education through the motivational interviewing counselling model is carried out with asking, listening, and affirmation skills, so that feedback occurs between counsellors and adolescent students without judging and respecting the autonomy of the patient. The motivational interviewing counselling process was carried out for 15-20 minutes. Motivational interviewing counselling can be given in a short time called brief negotiation and is very suitable to be applied to outpatient health services because counselling can be repeated at every patient visit such as in health services at the dental clinic.²³

The basic principle of motivational interviewing counselling is to generate intrinsic motivation and commitment to be able to take an action based on a desire that arises from himself that he is ready to change behaviour in a good direction.²⁴ Research by Batliner et al and Markland et al mention MI can improve health behaviour teeth and mouth in a better direction.²⁵

Follow-up counselling was also carried out to adolescent students through telephone contact 3 times a week after the face-to-face counselling was given. This is to maintain contact between the respondent and the counsellor, strengthen the commitment to change readiness that has been chosen by the respondent and provide support. Research by Gao Xioli et al. stated that motivational interviewing (MI) has great potential in changing health-related behaviour. In addition to the delivery of face-to-face counselling, MI can also be delivered through online groups where the method is very attractive to adolescents, easy to access, time-efficient and offers several benefits.²¹

Toothbrushing practice has increased in adolescent students after being given MI counseling intervention supported by the existence of counseling media in the form of video tooth brushing practice which really helps the process of forming teeth brushing behavior in the right way in adolescent students.

Behavioristic theory based on Skinner's concept suggests that behavior is formed through the operant conditioning process, namely the interaction between stimulus-response.²⁶ The stimulus given to adolescent students is in the form of video tooth brushing practice that provides stimulation through the eyes and ears. Counseling media is needed so that the counseling process is effective and efficient. In accordance with the research of Latuconsina, R and Maelissa, S R, 2019 that audio-visual media can improve students' brushing skills.²⁷

Table 3 shows that adolescent tooth brushing behaviour has a p-value of 0.001 (< 0.05) and the PI has a p-value of 0.001 (<0.05), meaning that the impact of the motivational interviewing counselling intervention was effective in reducing plaque index scores. Plaque is a soft layer that sticks to teeth from food debris and germs that can be harmful to dental health.²⁸ A systematic review reported that the effectiveness of motivational interviewing can control periodontal infection in patients with non-surgical periodontal therapy, reduce caries, decrease plaque scores and improve hygiene behaviour teeth and mouth.¹² Research by Lingli Wu et al, 2017 stated that MI has the potential to shape correct tooth brushing behaviour in adolescents.²⁹

Conclusion

Based on the results of the study, it can be concluded that the motivational interviewing counselling model is effective as a method of dental health education and is effective in improving tooth brushing practice in the right way in adolescents marked by a decrease in plaque index scores.

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