

Original article

# Empowering adolescent cadres for promoting oral health behavior: A persuasive communication training pilot study in Indonesia

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## ABSTRACT

**Background:** Adolescents are considered good cadres who can socialize healthy dental behavior. Therefore, designing a dental health education program is necessary to prepare adolescents to socialize dental health behavior. **Purpose:** This study evaluates the pilot program for trainers using persuasive communication to socialize dental health behavior. **Methods:** Thirty-five participants (13–16 years old) were trained by a persuasive communication coach and practiced the skills with a simulated client. This one-day training had a two-phase structure: lectures and practicum. The evaluation was completed utilizing three of the four-level methods from Kirkpatrick (1959). The data analysis used for the reaction evaluation was descriptive statistics, calculating the average score per category of training support assessment items (curriculum, facilitator, accommodation, and overall score). The learning outcome analysis resulted from an analysis of the pre- and post-test results using the N-Gain value and paired t-test. Behavior outcomes were also analyzed descriptively by calculating the average score of all participants in every timeline (baseline and two weeks after the training). **Results:** Evaluation of this training revealed that reaction has an average total score of 4.02, which shows that the participants were satisfied with the training, learning has an N-Gain acquisition of 48.28%, and behavior level shows a positive outcome as an increase in points from 3.4 to 4.2. **Conclusion:** The training program produced thirty cadres ready to implement the program in the community.

**Keywords:** cadre; caries-free; dental health behavior; parents; persuasive communication training

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## INTRODUCTION

Oral health in adolescents is often neglected in primary care. Oral health care is the most unmet health care need in children and adolescents. Data from the 2018 basic health research stated that 73% of adolescents in Indonesia suffered from dental caries, and dental health problems in this group increased from 25% in 2013 to 56% in 2018.<sup>1,2</sup> Like other chronic diseases, dental and oral diseases are mostly multifactorial in etiology and primarily determined by a person's "lifestyle," reflected in the person's behavior toward their health.<sup>3</sup> The World Health Organization's (WHO) promotion of healthy oral behavior has been identified as the focus and strategic direction of oral health promotion.<sup>4</sup>

A study conducted by Purwaningsih et al.<sup>5</sup> shows that some adolescents brush their teeth twice a day, but there are still adolescents who do not perform brushing behavior with the recommended frequency. Teens tend to brush their teeth at night. However, some adolescents do not pay attention to the time spent brushing their teeth properly. Most adolescents use a combination technique; some use vertical techniques, and female adolescents abroad tend to use dental floss as a supporting tool for brushing their teeth.<sup>5</sup>

Apart from brushing teeth, other dental health behaviors, such as routine dental check-ups, have not been widely practiced in Indonesia as indicators of dental health behavior. The general public in Indonesia will only visit the dentist if they have complaints. Dental health tends to be

neglected in most Indonesian societies, especially those in rural areas. They do not think dental problems cause death, so maintaining good oral health is not a priority. They are unaware that various dental problems can affect the function of other organs in the body and the efficiency of daily work. Dental and oral diseases are risk factors affecting a person's overall health and are sources of infection for various systemic diseases. A person is considered unhealthy if they do not have healthy teeth. Almost everyone suffers from dental and oral diseases worldwide; the same is true in Indonesia.<sup>6–10</sup>

According to the 2018 Basic Health Study data,<sup>2</sup> 93% of children are affected by dental caries in early childhood. This data means that only 7% of children in Indonesia are caries-free. Compared with the 2013 data, the data in 2018 showed a 7.4% increase in the prevalence of caries. The Ministry of Health unveiled a plan in 2015 to make Indonesian children as young as 12 free of dental caries by 2030.<sup>6</sup> Now, in 2022, less than seven years before the government's target, all aspects of the Ministry of Health's plan must be accelerated.

Traditionally, health education has focused on disseminating information and providing normative advice. Research has identified drawbacks to this approach.<sup>11</sup> Although knowledge about dental health can almost always be increased using traditional methods, knowledge gained in this way does not lead to lasting changes in behavior. Traditional health education is futile, leaving eager dentists hopeless and skeptical about the effort.<sup>12</sup>

Designing an oral health education program based on background descriptions and support from local findings could improve the skills of youth leaders in socializing dental health behaviors as part of health promotion. Apart from material related to dental health, it is necessary to instruct these youth cadres on how to communicate their ideas effectively so they can carry out their duties. Persuasive communication is emphasized in the design of this project; it is a driving force in a person, forcing them to follow the communicator.<sup>13</sup> The purpose of this study is to analyze training trials on the use of persuasive communication in socializing healthy dental behavior among youth cadres. In addition, the data from this study will be beneficial to assess the trainee's ability to motivate parents to adopt healthy oral health, which increases the potential for implementing the program as part of community oral health business services.

## MATERIALS AND METHODS

The Universitas Padjadjaran Health Research Ethics Committee approved this research with file 094/UN6. KEP/EC/2021. In the pilot study, as a situational analysis, a simple pre-survey of adolescents' level of knowledge and attitudes toward oral health was conducted involving junior high school students in Sukagalih village, Sukajadi sub-district, Bandung. Questionnaires were distributed

directly in a classroom to 150 students of adolescent age (13–16 years old). The *knowledge* item is five true or false questions that test adolescents' knowledge about dental caries and what foods are good for teeth. All participants were instructed on how to fill out the questionnaires prior to their completion.

Based on the initial findings and the basic concepts of adult learning, the training program was structured to be delivered as lectures and practicums. The resource person is an expert in the field of persuasive communication and a pediatric dentist. The training participants were prospective cadres at the "Posyandu Remaja" in Sukagalih village, Sukajadi District, Bandung City, Indonesia. They were recruited through a selection system with the following criteria: adolescents assisted by Karang Taruna in Sukagalih Village who are currently in high school. A minimum sample size of 30 was obtained from 35 registrants according to the Slovin formula with an error rate of 5%.<sup>14</sup>

A total of 35 participants took part in this training activity: three males and 32 females. The lowest age is 12, and the highest is 19, with an average of 16 years. The training consists of several activity units. Introductory lectures on Posyandu for adolescents, lectures on oral health education, individualized and persuasive communication methods in oral health promotion, and oral health education. Practicums are follow-up sessions with role-playing (as leaders and community/patients) among participants. Training evaluation was analyzed using three of Kirkpatrick's four-level assessment methods.<sup>15</sup>

Level 1 assesses trainee satisfaction responses in several areas: materials provided, facilities available, strategies for delivering materials used by trainers, learning media available, and schedule of activities. An evaluation form using a 5-point rating scale, ranging from strongly agree to disagree completely, is used as the instrument (Table 1). This Training Satisfaction Response Evaluation Form contains assessment components for the course, facilitator, accommodation, and overall activity. The average total score indicates the trainees' satisfaction with the training: poor, less than 0–2; fair, 3; very good, 4–5.<sup>15–17</sup>

Level 2 assessments measure participants' level of understanding after completing the training. This level of assessment is measured through a pre- and post-test consisting of fifteen multiple-choice questions (Table 2) and five skill-assessment components. The pre-test and post-test results were compared to determine whether participants' understanding of the training material improved during the program. The qualification level N-Gain score evaluation training effectiveness analysis: ineffective, <40%; not very effective, 41–55%; quite effective, 56–75%; effective, >76%.<sup>18</sup>

Level 3 assesses participants' behavior after training. The aim was to understand how the participants performed after attending the training, what steps were taken, and the stakeholders' attitudes toward the training results.

**Table 1.** Satisfaction reaction evaluation form

Component	Scale
Curriculum	
1. The topic presented interests me.	
2. Topics delivered according to my needs.	
3. The information provided in this program can be applied in my work.	
4. The material provided is in accordance with the objectives of this program.	
Facilitator	
1. Deliver material/ideas/concepts in a clear and easy-to-understand manner.	
2. Prepare well and understand the topic presented.	
3. Listen and respond well to participants.	
4. Motivate participants to participate and express opinions on the topics discussed.	
5. Provide factual and easy-to-understand examples.	
6. Deliver material in a sequential and structured manner.	
Accommodation	
1. The written material provided is useful and easy to understand.	
2. Audio-visual tools are well used and help my understanding.	
3. Group discussions/exercises/case studies/role-playing conducted in this program helps my understanding.	
4. I gained new knowledge and skills.	
Overall, this program is useful for me.	

**Table 2.** Pre- and post-test questions

Questions	
According to Sarwono and the American Academy of Pediatrics, adolescents are boys and girls between the ages of:	
a. 10–15 years	d. 12–17 years
b. 15–20 years	e. 12–15 years
c. 11–21 years	
Caries or cavities are caused by which activity:	
a. Eating fruits that are too sweet	d. Not brushing your tongue while brushing your teeth
b. Brushing your teeth without using toothpaste	e. Not changing toothbrushes for a long time
c. An acid produced by the reaction of bacteria and sugar	
Vitamins that are good for dental health are:	
a. Vitamin A, Vitamin D, Vitamin C	c. Fluoride
b. Vitamins B1, B12, B complex,	d. Calcium
The teeth are:	
a. Crown of tooth, tooth root, hard palate	d. Crown, enamel, and tooth root
b. Root canal, uvula, and gums	e. Retromolar trigone, uvula and dentine
c. Floor of mouth, gums, and dentin	
Foods/drinks that are good for dental health are foods/drinks that contain fluoride, namely:	
a. Tea	d. Honey
b. Eggs	e. Green vegetables
c. Milk	
The following are components of persuasive communication except:	
a. Communicator	d. Feedback
b. Message	e. Communicatee
c. Effect	
Skills that should be possessed by a cadre attack except:	
a. Listening	d. Restraining yourself
b. Recognize body language	e. Empathizing
c. Refined vocals	
The most important elements in persuasive communication are:	
a. Effect	d. Media
b. Message	e. Communication
c. Feedback	
The changes that occur in the communicator from unwilling to willing in the communication process are called:	
a. Psychomotor	d. Substantial
b. Conative	e. Cognitive
c. Affective	

Showing the disadvantages of not following the cadre's advice so that women will feel anxious is a persuasion technique known as:	
a. Leaving it up to you	d. Say it with flowers
b. Simulated disinterest	e. Don't ask if, ask which
c. Yes-yes-technique	
What is the age range for teenagers according to the WHO?	
a. 9–12 years	c. 10–19 years
b. 10–15 years	d. 12–17 years or 12–19 years
One of the benefits of Posyandu for teenagers is:	
a. Establishing clean and healthy behavior	d. Acquiring knowledge and skills
b. Bringing access to basic services closer	e. Improving coordination in the delivery of health services
c. Helping solve specific problems	
One of the stages in the formation of a youth Posyandu related to the identification of the problems faced and the potential they have is:	
a. Village community meeting	d. External activities
b. Internal approach	e. Self-survey
c. Implementation and monitoring of Posyandu activities	
The Parties involved in youth Posyandu are:	
a. Pemberdayaan Kesejahteraan Keluarga (PKK) mobilizing team, stakeholders, religious groups	c. Youth cadres, health centers, religious groups
b. PKK mobilizing team, Pokja, community leaders	d. Puskesmas, community organizations, youth organizations
e. Puskesmas, stakeholders, the police	
How many steps are there in implementing a youth Posyandu?	
a. 5	d. 2
b. 4	e. 1
c. 3	

**Table 3.** Behavior tracking survey

Question	Scale				
	1	2	3	4	5
1. I understand persuasive communication.					
2. I have used persuasive communication techniques in my daily life.					
3. I use the spirit of persuasive communication in all my interactions with the community.					
4. I once tried to teach the community persuasive communication skills.					
5. I feel the need to have persuasive communication skills.					
6. I feel challenged to learn persuasive communication techniques.					
7. I feel I have mastered persuasive communication techniques.					
8. I don't think persuasive communication techniques are important.					
9. Although there are other techniques, I feel that persuasive communication techniques are the most appropriate for disseminating a behavior.					
10. My boss (community leader) always motivates me to communicate persuasively.					

1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree

This was assessed by sending all participants a behavioral follow-up survey (Table 3). The survey was designed to measure participants' thoughts on their use of persuasive communication and any changes in participants' behavior. To quantify level 3 participant behavior surveys, all responses were assigned a numerical value: 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, and 5=strongly agree. These scores were then aggregated and averaged to provide an overall picture of participants' perceptions of changes in their behavior. The survey has been implemented and sent every two months for a year after the training. The first survey was sent to participants before the training took place to establish a behavioral baseline, and the second was sent two weeks after the training.

The Kirkpatrick evaluation model<sup>15</sup> provides four levels of evaluation: level 4, which is a long-term evaluation, aims to evaluate the institution's performance as a result of the

organizational members participating in the training. This evaluation can be done three to four years after the training. No instruments were developed to collect this data. Since this was a pilot project, the level 4 evaluation still needs to be implemented.

The data analysis used to evaluate *reaction* is descriptive statistics, namely calculating the average score per category of training support assessment items (curriculum, facilitator, accommodation, and overall score). The learning outcome analysis resulted from an analysis of the pre- and post-test results using the N-Gain value and paired t-test. This t-test is carried out if the data is normally distributed according to Shapiro-Wilk. Behavior outcomes were also analyzed descriptively by calculating the average score of all participants in every timeline (baseline, two weeks, one month, and two months after the training).

## RESULTS

Preliminary survey results show that 87% of adolescents have a low level of knowledge about oral health, while the survey results indicate that 100% of the adolescents demonstrate a negative attitude toward oral health; this specifically refers to their lack of motivation to maintain or improve oral health practices, rather than an outright disregard or apathy towards oral health itself. The results show that they have a limited understanding of practices related to healthy dental behavior at an early age, such as what drinks to give younger children before going to bed, when a child should go to the dentist for the first time, how to brush teeth properly, when younger children should stop using bottles, and what foods are good for oral health.

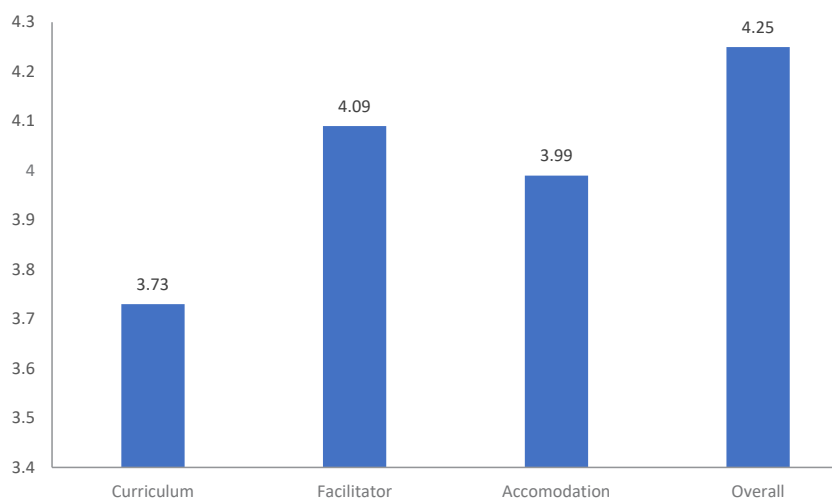
Figure 1 presents the results of participant assessments based on the component curriculum by the organizer (average 3.73), facilitators (average 4.09), accommodation (average 3.99), and participants’ responses to the overall event (average 4.24). The average total score was 4.02, which is “very good,” demonstrating that the participants were satisfied with the training.<sup>15</sup>

Learning outcomes (level 2) were evaluated, including achieving learning objectives and outcomes expected from the learning process. This evaluation is essential because, as a pilot project, the results of this evaluation provide valuable information about what needs to be improved. The results of the evaluation of the *knowledge* aspect carried out by a written test showed an average N-Gain acquisition of 48.28% (qualification degree of N-Gain score 41–55), which was categorized as “not very effective” (Table 4).<sup>18</sup>

Table 5 shows the acquisition of the p-value for the normality test with the Shapiro method for the pre-test variable 0.103 (10.3%) and post-test 0.062 (6.2%), meaning that the data comes from a normally distributed population ( $p\text{-value} > \alpha$  where  $\alpha = 5\%$ ). The paired t-test obtained a p-value of .000, meaning that the average pre-test and post-test results were not the same or there was a change.

**Table 4.** Learning outcome evaluation

Participant	Pre-test	Post-test	N-Gain Score %
1	0	2	13.33
2	3	8	41.67
3	3	10	58.33
4	2	8	46.15
5	2	15	100.00
6	6	12	66.67
7	0	10	66.67
8	3	11	66.67
9	4	10	54.55
10	1	3	14.29
11	3	9	50.00
12	2	6	30.77
13	3	6	25.00
14	3	10	58.33
15	2	11	69.23
16	2	12	76.92
17	5	7	20.00
18	3	9	50.00
19	1	9	57.14
20	2	6	30.77
21	1	5	28.57
22	1	6	35.71
23	0	2	13.33
24	5	9	40.00
25	4	6	18.18
26	3	11	66.67
27	0	10	66.67
28	3	11	66.67
29	3	8	41.67
30	1	10	64.29
31	1	10	64.29
32	5	11	60.00
33	4	4	0.00
34	4	11	63.64
35	4	11	63.64
		Mean	48.28
		Minimum	0
		Maximum	100



**Figure 1.** Assessment of participants’ reactions to the training organizer.

A level 3 assessment was conducted to determine how the training material applied to the participant in their community. This change in behavior was supposed to be measured multiple times, with the first measurement occurring before training was implemented so a baseline of behavior could be established. The overall average of all responses to the first survey was 3.1. The average changed to 3.4 two weeks after the training, 4.1 one month after, and 4.2 two months after the training (Table 6).

## DISCUSSION

According to the Child Protection Law,<sup>19</sup> an adolescent is between the ages of 10 and 18, constituting a significant portion of the Indonesian population (nearly 20%). Therefore, all training participants still fall within the adolescent category.<sup>19</sup> Each program evaluation model has strengths and weaknesses for measuring training activities, but research has shown that Kirkpatrick's evaluation models are more appropriate than the other models.<sup>15,20</sup> Therefore, we used Kirkpatrick's model to evaluate participants' overall reactions to the training regarding communication methods in their activities as cadres. The result of the training evaluation in level 1 showed that the participants were satisfied.

Participant reaction as an assessment of level 1 of the Kirkpatrick training model is designed to measure participant reaction to product learning. It can include reactions to its relevance, training methods, trainers, qualifications, and assessment methods.<sup>15</sup> That said,

evaluating participants' reactions may not determine the effectiveness of the training; however, capturing participants' perspectives on a training can identify gaps in learning needs, highlight training strengths and weaknesses, and define barriers to learning.

Evaluation of the second level of Kirkpatrick's model showed significant differences between participants' scores before and after the intervention. The overall results of this study suggest increased learning and satisfaction and changes in behavior scores. Dorry et al. also tested the effect of in-service training on cardiopulmonary resuscitation using Kirkpatrick's model. They found it effective in increasing participants' learning and knowledge.<sup>16</sup> Mata et al. conducted research using Kirkpatrick's model to evaluate interactive communication skills in healthcare personnel. Results show that when staff attend interactive communication skills training in inter-professional groups, they find it useful and relevant, learn the communication tools involved, and adopt new and more positive behaviors.<sup>21</sup>

Adolescent cadres are changing their methods as a result of this training. At the level 3 evaluation, a change is seen in the behavior of these youth cadres in terms of communicating persuasively when promoting healthy dental behavior. The changes in the two-month timeline show an increase in the average behavior scores of these youth cadres (Figure 2). In addition, a striking change can be seen in the increase in agreement with the statement, "I feel I have mastered persuasive communication techniques," as detailed in Table 6. This reveals that, over time, the cadres can master persuasive communication techniques.

**Table 5.** Statistical analysis of learning outcome

Test	Shapiro-Wilk			Paired difference					t	df	Sig (2-tail)
	Statistic	df	Sig	mean	SD	Std Error mean	95% CI of the difference				
							Lower	Upper			
Pre-test	.949	35	.103	-6.029	2.875	.486	-7.016	-5.041	-12.407	34	.000
Post-test	.942	35	.062								

**Table 6.** Behavior tracking survey result

Questions	Average			
	BL	2w	1m	2m
1. I understand persuasive communication.	3.0	3.8	4.4	4.4
2. I have used persuasive communication techniques in my daily life.	2.9	3.5	4.2	4.2
3. I use the spirit of persuasive communication in all my interactions with the community.	2.8	2.9	3.9	4.1
4. I once tried to teach the community persuasive communication skills.	2.7	3.7	4.4	4.6
5. I feel the need to have persuasive communication skills.	2.6	4.0	4.1	4.2
6. I feel challenged to learn persuasive communication techniques.	2.4	3.4	4.4	4.6
7. I feel I have mastered persuasive communication techniques.	2.9	3.0	4.0	4.2
8. I don't think persuasive communication techniques are important.	4.8	2.9	2.8	2.4
9. Although there are other techniques, I feel that persuasive communication techniques are the most appropriate for disseminating a behavior.	3.5	3.5	4.4	4.4
10. My boss (community leader) always motivates me to communicate persuasively.	2.9	2.9	4.4	4.9
Total average of behavior tracking	3.1	3.4	4.1	4.2

BL=baseline, 2w=2 weeks, 1m=1 month, 2m=2 months

Correspondingly, there is a decrease in agreement with the statement, “I don’t think persuasive communication techniques are important,” meaning, as time passes, the cadres are increasingly convinced that persuasive communication techniques are important. This behavior change is based on self-reports and not on observed behavior change. However, as illustrated above, this change in behavior should be followed by a level 4 evaluation conducted 3–4 years after the training.<sup>16,22</sup>

Dental health education using the traditional means of providing advice and information was found to be ineffective in adopting improved dental and oral health behaviors.<sup>23,24</sup> Frost shows that patients are not following 50% of health advice, concluding that adherence to healthy behaviors is critical to achieving positive outcomes. Increased adherence to healthcare professionals advice has been demonstrated when knowledge and advice are combined with behavioral strategies.<sup>25</sup> Such health education advice or public persuasion will not motivate the patient and may lead to defensiveness if they are not ready for behavioral change. It is, therefore, not surprising that many patients do not change behaviors, leading to disease progression despite the best efforts of healthcare professionals. In addition, if defensive behavior occurs between physicians and patients, patients may avoid returning, increasing the disease burden.<sup>26</sup>

The training also has a long-term goal of incorporating elements of dental health education into the community dental health service curriculum. As health educators, healthcare professionals are important contributors to overall healthcare and are often the source of information about the risks and benefits of proposed dental treatments. Because they value communication and education, healthcare professionals are able to build trusting relationships with patients, who may follow their treatment recommendations.<sup>27</sup>

Regarding identifying potential barriers to persuasive communication, current and future communication needs in health practices, and technologies that could enable more effective interpersonal communication, responding adolescents’ perspectives were similar regardless of the school year level. Likewise, all students reported that their interpersonal skills benefited once their advanced communication skills improved, especially when dealing with older or younger individuals, those with physical disabilities, and those with low literacy skills. It is commendable that teenagers place such emphasis on acquiring these higher-level skills.<sup>27–29</sup>

Activity evaluation was carried out to measure whether the participant’s perceived skills were successful or not. The participants filled in the questionnaire, which included their assessment of the overall activity in general, the expectations they fulfilled after attending the training, and their opinions about the material. Interviews and observations will be conducted again with training participants using the same measuring instrument grid as the competency assessment of the participants who will evaluate the program’s success.<sup>15,30,31</sup>

This study has limitations regarding the time required to assess behavior outcomes. However, it is evident which gaps must be modified in order to develop the next process in implementing training into the curriculum at youth Posyandu. The small number of participants and the impossibility of measuring the fourth level of the Kirkpatrick model were also limitations of the present study.

In conclusion, the aim of the field data collection and initial testing was to assess the trainee’s ability to motivate parents to adopt healthy oral health, which increases the potential for implementing the program as part of community oral health business services. In addition, the program design needs to be evaluated, monitored, and refined after the program is implemented.

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