

# Development of Youth Participation Supportive Model for Oral Health Promotion in Secondary School: A Case Study of Understanding for Cleft Lip-Cleft Palate

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**Background:** People's participation in solving their own health problems is needed to be promoted. The oral health promotion model development (youth's health alliances) was expected to promote oral health awareness and increase public's consciousness.

**Objective:** To develop the model for youth's participation toward oral health promotion and to evaluate the model's effectiveness on creating cleft lip-cleft palate perception.

**Material and Method:** This research had 3 steps, including situation analysis, developing the model and testing the model. In the 1<sup>st</sup> step, a survey was conducted with 1,192 students. During the 2<sup>nd</sup> step, an action research was conducted with 103 volunteers, resulting in the CHANYA model. For the final step, an experiment was applied to 53 out of 103 volunteers. The data were analyzed with descriptive statistics and inferential statistic using paired t-test.

**Results:** The model promoted youths' participation in the high to highest range and prepared oral health messages through drama at the high to highest range. The model's effectiveness in creating cleft lip-cleft palate perception was statistically significant ( $p < 0.05$ ).

**Conclusion:** The CHANYA model was developed for supporting youth participation toward oral health promotion and the model was effective in creating cleft lip-cleft palate perception. Moreover, the model could increase self-esteem, congruence, self-awareness, thoughtful and collaboration within their team.

**Keywords:** Youth participation, Supportive model, Oral health promotion, Cleft lip-cleft palate

**J Med Assoc Thai 2017; 100 (Suppl. 6): S102-S108**

**Full text. e-Journal:** <http://www.jmatonline.com>

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The oral health promotion procedures performed by oral health officers such as oral health education, pit&fissure sealants and fluoride application are effective in preventing oral disease. Nevertheless, they cannot solve the oral health problems with sustainability<sup>(1,2)</sup>. The findings from Thailand oral health surveys during 1984-2012 show that northeastern part of country had the lowest prevalence of dental caries based on DMFT index in 1984. Nevertheless, dental caries increased continuously until ranked as the highest prevalence comparing to the other part of Thailand in 2012<sup>(3)</sup>. Considering the evidence, the factors affecting oral health are not only the hosts, the microorganisms but also the socio-environmental factors<sup>(4,7)</sup>. So, solving the oral health problems only

by dental health officers are not enough to improve people's oral health.

To promote oral health awareness by people's participation and encourage them to be the health alliances would be the suitable strategy in this situation<sup>(8-13)</sup>. Youths are important jigsaws to shape the future of nation especially middle adolescent. In this period of life, the youths are constructing their self concepts. The oral health survey conducted in Kalasin during 2012 reported that prevalence of dental caries and gingivitis increased by age. Moreover, untreated caries and unmet pit&fissure sealant were higher among 15-year-old than 12-year-old adolescents<sup>(14)</sup>. If these problems existed, the adolescents with poor oral health would grow up to be the adults with higher severity of oral health problems.

Previous health projects revealed that promoting youths' participation could develop their health concerns as well as create public consciousness<sup>(15-17)</sup>. Thus, the purposes of this study

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were to develop a model promoting oral health awareness in youths and evaluate effectiveness of the model.

### **Objective**

To develop the model for youths' participation toward oral health promotion and to evaluate effectiveness of the model on creation of perception about cleft lip-cleft palate.

### **Material and Method**

The mixed-method methodology was used in this study which was composed of survey research, action research and experimental research. There were 3 steps in this study including situation analysis, model synthesis, and model's effectiveness evaluation.

In situation analysis, the target group was 11,158 students, grade 9-11 who studied in secondary schools of municipality area in Kalasin province. The 1,192 samples were recruited by multi-stage cluster random sampling. This step gathered both quantitative and qualitative data.

The quantitative data were from oral health examination and self-administration questionnaire. Firstly, the oral health examination was conducted by one dentist. Then, the questionnaire regarding knowledge and belief in oral health, self-perceived oral health as well as anxiety from dental treatment was filled out by the students. Reliabilities of the questionnaires using Cronbach's alpha were 0.86, 0.88, 0.85, and 0.89 for knowledge, belief in oral health, self-perceived oral health and anxiety from dental treatment, respectively.

The qualitative data were derived from a focus group discussion of 35 out of 1,192 subjects who were recruited by purposive sampling. The topics in the focus group discussion included meaning of happiness and good oral health.

The results from situation analysis were the 3-activity-program. The 3-activity-program was approved by 5 experts from 6 specific fields (people's participation, family medicine, psychotherapy based on Satir model, coaching psychology, self-improvement via enneagram, and transformative drama).

In model synthesis, the action research methodology was used. This step was conducted with the 103 out of 1,192 students, who were attending grade 10 of the secondary schools. The 103 students had parental consent to participate and were able to join more than 80% of the program duration.

The result from model synthesis was the model

namely CHANYA: C stood for CONGRUENCE and CONFRONT, H for Humanistic, A for AUTONOMY, N for NURTURE, Y for Yield and A for Awareness. This name was derived from the information why the 3-activity-program was effective for youths' participation.

In model's effectiveness evaluation, the experimental research methodology was used to verify cleft lip-cleft palate knowledge and the benefit of the preparation to oral health message about cleft lip-cleft palate through drama. This step was conducted with 53 students out of 103 students. The data were analyzed with descriptive statistics and inferential statistic using paired t-test.

This study protocol was approved by the Ethics committee at Khon Kaen University, Khon Kaen, Thailand (HE591199).

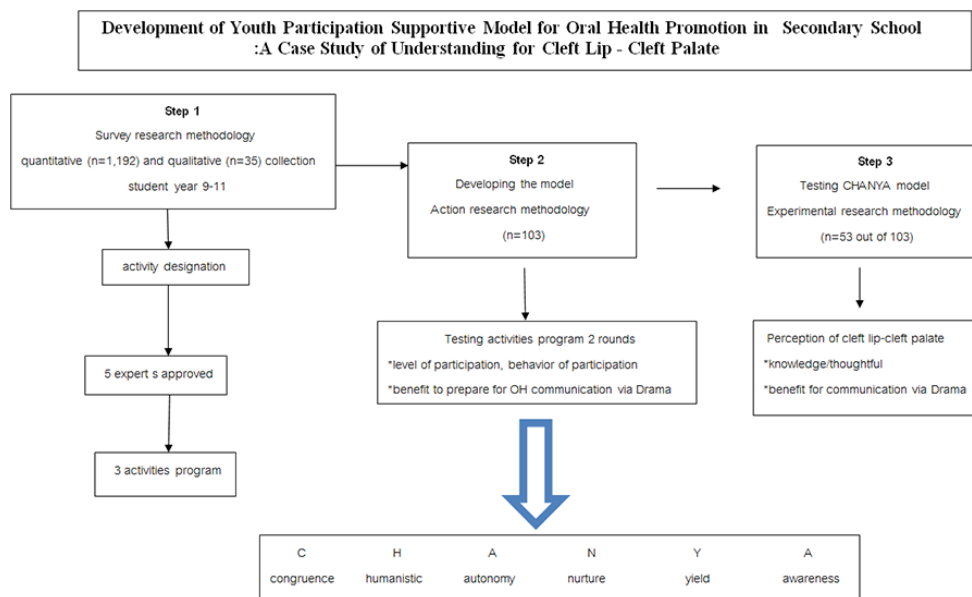
### **Results**

To begin with the activity program creation, the activity designation resulted in three program activities, including "Mouth: gateway to good health", "Explore yourself through drama for transformation" and "Changing yourself using the Enneagram". Following the model development of youth's participation supportive model toward oral health promotion in secondary school students, this resulted in the CHANYA model (Fig. 1).

The effectiveness of the program activities under the CHANYA model was measured by the changes in knowledge scores before and after the programs. The results found that the participants' mean knowledge scores of the post-test had increased significantly ( $p < 0.05$ ) comparing to the pre-test scores (Table 1). Comparisons between the pre- and post-test mean knowledge scores, the results showed that the mean score of the pre-test was 6.88 (SD = 1.20); whereas the mean score of the post-test was 11.98 (SD = 1.21). The mean difference (d) was 5.10 (95% CI: 4.68 to 5.49) and the difference of mean knowledge score was statistically significant ( $p < 0.05$ ).

Lastly, the results found that the most beneficial program was the first program entitled "Mouth: gateway to good health" with a mean score of 4.32 (SD = 0.59), whilst the third program entitled "Changing yourself using the Enneagram" had a mean score of 4.32 (SD = 0.26). The second program entitled "Explore yourself through drama for transformation" had a mean score of 4.01 (SD = 0.53) (Table 2).

Firstly, comparisons of the development of youth participation supportive model toward oral health promotion in secondary school students emphasized



**Fig.1** Flowchart of development CHANYA model and testing.

on youth development under the servant leadership concept<sup>(18-21)</sup>. Other youth participation supportive models might have similar concepts, but they did not set up a potential framework for development. Next, the comparisons of other models with the same framework stated that the influences on youth were the same<sup>(22-25)</sup>, including enhancing knowledge about those healthcare issues<sup>(22-25)</sup>, developing public consciousness<sup>(25)</sup> and multiple intelligences<sup>(22)</sup>. However, this research could evaluate only the personal and working group levels whereas the effects on community level must be further explored.

Secondly, by using the CHANYA model, the results of enhancing perception about cleft lip-cleft palate were as follows. Regarding the knowledge about cleft lip-cleft palate, the mean knowledge scores of the post-test was significantly higher ( $p < 0.05$ ). Future studies are needed to provide more activities which promoting awareness in the following issues: development delay, risk of respiratory tract infection, speech problems, hearing problems, the abnormality of face structure and malocclusion, the complications from illnesses, malnutrition or lack of folic acid during pregnancy (Table 1).

Based on the subject's opinions on the benefit levels from the program-activity of the CHANYA model (Table 2), the means score of benefit levels were in the range of high to highest level. This was because of the application of experiential learning theory. The subjects experienced the process directly which led to the

consideration of those experiences. The subjects could develop their experiences to improve skills, attitudes, and creative thinking<sup>(26)</sup>.

Lastly, the results from the qualitative method (53 subjects) revealed the consequence from developing public consciousness and multiple intelligences which were categorized into 6 groups. These included knowing yourself, realize hidden potential, congruence, thoughtful, collaboration skill and the value of self-awareness.

#### Limitation

Only one school took part in Step 2 and Step 3 in this present study.

#### Conclusion

The CHANYA model was effective in enhancing knowledge about cleft lip-cleft palate risk prevention among the secondary school students, including preparation for oral health messages through drama. Moreover, the model effected improvement in multi-intelligence regarding the aspects of self-awareness and human relationship.

#### What is already known in this topic?

- 1) The oral health promotions by dental health officers as in the past were not sufficient to solve the dental health problems.
- 2) Youths were significant allies for health promotion.

**Table 1.** The mean scores of pre- and post-tests of the activities program in the CHANYA model

Questions	Pre-test(n=53) Answer correctly	Post-test(n=53) Answer correctly	p-value
1. The causes of cleft lip- cleft palate are due to the combination of genetic and environmental factors. Right or Wrong?	n = 34 (81.13)	n = 49 (92.45)	0.001
2. The environmental factors or other factors are involved with cleft lip-cleft palate up to 80%. Right or Wrong?	n = 22 (41.51)	n = 46 (86.79)	<0.001
3. Smoking during pregnancy not involved with the cleft lip- cleft palate in babies. Right or Wrong?	n = 39 (73.58)	n = 48 (90.57)	0.019
4. Cleft lip- cleft palate commonly occur in the 5 <sup>th</sup> -12 <sup>th</sup> week of pregnancy. Right or Wrong?	n = 13 (24.53)	n = 25 (47.17)	0.027
5. If you regularly smoke cigarette and drink alcohol, you have to avoid them 6 months prior pregnancy. Right or Wrong?	n = 40 (75.47)	n = 48 (90.57)	0.044
6. If you have medical problems, including epilepsy and autoimmune diseases which require corticosteroid for treatment, you should consult a doctor before getting pregnant. Right or Wrong?	n = 38 (71.70)	n = 52 (98.11)	<0.001
7. You should see a doctor as soon as possible when you realize that you got pregnant. Right or Wrong?	n = 34 (64.15)	n = 51 (96.23)	<0.001
8. Cleft lip-cleft palate are incurable. Right or Wrong?	n = 15 (28.30)	n = 50 (94.34)	<0.001
9. The illnesses during pregnancy, malnutrition or lack of folic acid during pregnancy do not increase the risk of cleft lip-cleft palate in babies. Right or Wrong?	n = 8 (15.09)	n = 22 (41.51)	0.003
10. Foods that should be consumed to prevent cleft lip- cleft palate are foods with high folic acid such as broccoli, wholegrain, liver. Right or Wrong?	n = 43 (81.13)	n = 46 (86.79)	0.472
11. Taking vitamin B6, B12, Zinc, and folic acid before pregnancy 2 to 3 months after birth could reduce the risk of cleft lip- cleft palate in babies. Right or Wrong?	n = 11 (20.75)	n = 34 (64.15)	<0.001
12. The effects of cleft lip- cleft palate are developmental delay, risk of respiratory tract infection, speech problems, hearing problems, the abnormality of face structure and malocclusion. Right or Wrong?	n = 4 (7.55)	n = 17 (32.08)	0.341
13. The cleft lip surgery would be proceeded in 3-4 months after birth and the wounds would pale in color when the children grow up. Right or Wrong?	n = 11 (20.75)	n = 43 (81.13)	<0.001
14. The cleft palate surgery must be waited until the children are 1-2 years old when the upper jaws developed completely. Right or Wrong?	n = 11 (20.75)	n = 52 (98.11)	<0.001
15. Feeding babies with breast milk could decrease the risk of otitis media and respiratory tract infection rather than feeding with powdered milk. Right or Wrong?	n = 33 (62.26)	n = 52 (98.11)	<0.001

**What this study adds?**

The core values of this research were as follows:

1) The program activities and processes supporting youth's participation in oral health

promotion could be implemented by youth project officers who are not public health officials such as teachers, lecturers, private development organization.

2) The CHANYA model could be applied to enhance self-awareness, empathy development, and

**Table 2.** Benefit levels after completing the program activities of the CHANYA model

Program activities	Benefit level					X	S.D.	Interpreter
	Lowest (%)	Low (%)	Moderate (%)	High (%)	Highest (%)			
1. Mouth: gateway to good health								
1.1 To be informed of the effects of cleft lip-cleft palate which could support you to act truthfully in order to make the audience give empathy to the patients and their families	0	0	n= 32 (60.38)	n=21 (39.62)	0	3.39	0.49	High
1.2 To be informed of the risk factors of cleft lip-clip palate which could help you to write the script realistically	0	0	n = 1	n = 16	n = 36	4.67	0.48	Highest
1.3 To be informed of the surgery treatment in different ages that could help you to differentiate the role play in order to communicate with different types of audience	0	0	n = 8 (15.09)	n = 32 (60.37)	n = 13 (24.5)	4.09	0.60	High
1.4 Oral self-care practicing could make you more confident when you have to communicate about abnormal oral health through drama	0	0	n = 3 (5.66)	n = 7 (32.07)	n = 33 (62.26)	4.69	0.48	Highest
1.5 To be informed the information from the program which could expand your working area and network to be cooperate with	0	0	n = 4	n = 8	n = 41	4.80	0.46	Highest
Overall						4.32	0.59	Highest
2. Explore yourself through drama for transformation								
2.1 You could write the script from stories, articles, and news	0	0	n = 7 (13.21)	n = 38 (71.71)	n = 8 (15.09)	4.01	0.53	High
2.2 You could use your body language instead of speech	0	0	n = 4 (7.54)	n = 36 (67.9)	n = 13 (24.5)	4.05	0.42	High
2.3 You could be more empathetic to other's feelings and thoughts when you act as those person's character	0	0	n = 3 (5.6)	n = 42 (79.24)	n = 8 (15.09)	4.05	0.42	High
2.4 You could see yourself clearly when you have to analyze the script	0	0	n = 1 (1.88)	n = 28 (52.8)	n = 24 (45.2)	4.55	0.51	Highest
2.5 You are getting sharper when you have to solve the unexpected problems.	0	0	n = 7	n = 37	n = 9	3.97	0.47	High
Overall								
3. Changing yourself using the Enneagram								
3.1 You could see the different interpretation from the different scripts by the different types of Enneagram or from the same type with different attitudes	0	0	n = 10 (18.87)	n = 13 (24.53)	n = 30 (56.60)	4.37	0.79	Highest
3.2 You avoid judging others' thoughts and feelings based on their action	0	0	n = 1 (1.88)	n = 31 (57.9)	n = 13 (24.5)	4.33	0.49	Highest
3.3 You worry less when you have to work with unfamiliar friends	0	n =2 (3.77)	n = 2 (3.77)	n = 37 (69.8)	n = 12 (22.6)	4.22	0.58	Highest
3.4 You are more encouraged to speak and share your opinions which are different from others' ideas	0	0	n = 14 (26.4)	n = 32 (60.37)	n = 7 (13.20)	4.74	0.49	Highest
3.5 You learn how to manage with the disagreement in a group work	0	0	n = 3 (5.66)	n = 15 (8.00)	n = 35 (66.03)	4.01	0.52	Highest

to improve the diversities management skills for youth.

3) The advantages for youths who participated in this research was that they are able to learn how to drive social mobilization by gaining experience directly through action.

4) To create public areas for youths in expressing their potential creatively.

#### Acknowledgements

The authors would like to thank the youths who participated in this study, the Center of Cleft Lip-Cleft Palate and Craniofacial Deformities, Khon Kaen University under Tawanchai Royal Grant Project for publication support.

#### Potential conflicts of interest

None.

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การพัฒนาแบบการสนับสนุนการมีส่วนร่วมของเยาวชนเพื่อส่งเสริมสุขภาพช่องปากในโรงเรียนมัธยมศึกษา: กรณีศึกษาปากแห้งเพดานโหว่

ชัญญา วีระโชติ, สุภาภรณ์ นัทรชัยวัฒนา, อมรรัตน์ รัตนสิริ, สุธีรา ประดับวงษ์, บวรศิลป์ เชาวน์ชื่น

ภูมิหลัง: การส่งเสริมการมีส่วนร่วมของประชาชนในการแก้ไขปัญหาสุขภาพฟันเป็นสิ่งสำคัญที่ควรสนับสนุนการพัฒนา รูปแบบการสนับสนุนให้เยาวชนร่วมเป็นภาคีส่งเสริมสุขภาพ นอกจากจะมีประโยชน์ต่อการสร้างความตระหนัก เรื่องสุขภาพช่องปากแล้วยังช่วยพัฒนาความมีจิตสาธารณะอีกด้วย

วัตถุประสงค์: เพื่อพัฒนาแบบการสนับสนุนการมีส่วนร่วมของเยาวชน ในการดำเนินงานส่งเสริมสุขภาพช่องปาก และทดสอบประสิทธิผลการนำไปใช้ในกรณีสร้างความเข้าใจเรื่องปากแห้งเพดานโหว่

วัสดุและวิธีการ: การศึกษาครั้งนี้ ประกอบด้วย 3 ขั้นตอน ประกอบด้วย การศึกษาสถานการณ์ การพัฒนาแบบ และการทดสอบประสิทธิผลของโมเดลในขั้นแรก ใช้การวิจัยเชิงสำรวจในกลุ่มตัวอย่างจำนวน 1,192 ในขั้นที่สอง ใช้การวิจัยเชิงปฏิบัติการเพื่อพัฒนาแบบ ในกลุ่มอาสาสมัคร ซึ่งเป็นนักเรียนจำนวน 103 ราย สรุปผลได้เป็น CHANYA โมเดล ขั้นตอนสุดท้ายเป็นการทดสอบประสิทธิผลของโมเดลในอาสาสมัคร จำนวน 53 ราย จาก 103 ราย และวิเคราะห์ข้อมูลโดยใช้สถิติเชิงพรรณนาและสถิติเชิงอนุมานชนิด Paired t-test

ผลการศึกษา: พบว่าโมเดลส่งเสริมให้เกิดการมีส่วนร่วมในระดับมากถึงมากที่สุดและทำให้เกิดความพร้อมต่อการสื่อสารประเด็น สุขภาพช่องปากผ่านละครในระดับมากถึงมากที่สุด สำหรับประสิทธิผลของโมเดลต่อการรับรู้ ภาวะปากแห้งเพดานโหว่ พบค่าเฉลี่ยคะแนนความรู้ก่อนและหลังใช้โมเดลมีความแตกต่างกันอย่างมีนัยสำคัญที่ระดับ 0.05

สรุป: CHANYA model สามารถส่งเสริมให้เยาวชนเกิดการมีส่วนร่วมในการส่งเสริมสุขภาพช่องปาก และโมเดลนี้ยังมีประสิทธิผลต่อการสร้างความเข้าใจเรื่องปากแห้งเพดานโหว่ นอกเหนือจากนั้นโมเดลนี้ยังช่วยเพิ่มการเห็นคุณค่าในตนเอง ความสอดคล้องในความคิด และการแสดงออก การมีสัมพันธภาพ ความเห็นอกเห็นใจผู้อื่น และสร้างความร่วมมือในการทำงานเป็นทีม

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