

Assistance in Skills Training for Making Herbal Mouthwash Green Tea Leaves and Its Herbal Combinations for Posbindu Partner Cadre

Dicki Bakhtiar Purkon¹, Mimin Kusmiyati¹, Elvi Trinovani¹, Faizah Min Fadhillah², Yayat Sudaryat¹, Zahra Anggraeni¹, Tanika Miatul Hadid¹, Afifah Rahmawati¹

¹Department of Pharmacy, Poltekkes Kemenkes Bandung, ²Department of Pharmaceutical Biology, Faculty of Mathematics and Science, Universitas Garut

Email: dickibakhtiar_farmasi@staff.poltekkesbandung.ac.id

Abstract

The level of knowledge and awareness of the Indonesian people towards preventive efforts of various diseases related to the oral cavity and teeth has not been optimal. The importance of the role of self-effort in optimizing oral cavity hygiene and inhibiting the growth of various types of harmful bacteria that can lead to plaque formation, dental caries, causes of gingivitis, and periodontitis, such as: bacterial species *Streptococcus mutans* and *Porphyromonas gingivalis*. The combination of green tea, cloves, cinnamon bark, and mint leaves containing secondary metabolites from the sterols, tannins, phenols, saponins, and flavonoids groups has traditionally been used as antibacterial, anti-plaque and anti-aviation. The purpose of this community service activity is to improve understanding of health and prevention of infections in the oral cavity and teeth, as well as assistance in training skills in making herbal combination mouthwash with simple formulations for Posbindu partners. This activity was attended by lecturers and students of the D-3 Pharmacy Study Program, Department of Pharmacy, Poltekkes Kemenkes Bandung. Changes in health knowledge and skills of Posbindu partners were evaluated by giving pre-test and post-test questions. In the results of the evaluation of health understanding and skills, there was an increase in the total score of Posbindu partners in the 1st session of 20.41% from 67.35% to 87.76% (14 people were achieved, initially only 7 people exceeded the minimum score limit of 60.00%; N=14). Meanwhile, in the second session of Posbindu partners, the score increased by 28.57% from 63.64% (pre-test) to 92.21% (post-test) with the number of people who exceeded the minimum score limit of 11 people (post-test) from the pre-test results. the previous test was only 5 people (N=11). Thus, the better the health knowledge, attitudes, and skills of Posbindu partners in processing various herbal ingredients into herbal mouthwash products, it will create an increase in the degree of oral and dental health for the community.

Keywords: Cloves, green tea leaves, mint leaves, cinnamon bark, herbal mouthwash.

Abstrak

Tingkat pengetahuan dan kesadaran masyarakat Indonesia terhadap upaya preventif beragam penyakit yang berhubungan dengan rongga mulut dan gigi belum optimal. Pentingnya peran upaya diri sendiri dalam mengoptimalkan kebersihan rongga mulut dan menghambat pertumbuhan berbagai jenis bakteri merugikan yang dapat menyebabkan pembentukan plak, karies gigi, penyebab gingivitis, dan periodontitis, seperti: spesies bakteri *Streptococcus mutans* dan *Porphyromonas gingivalis*. Kombinasi teh hijau, cengkeh, kulit kayu manis dan daun mint yang mengandung senyawa metabolit sekunder dari golongan sterol, tanin, fenol, saponin, dan flavonoid secara tradisional sebagai antibakteri, antiplak dan antikavietas. Tujuan kegiatan pengabdian masyarakat ini untuk meningkatkan pemahaman kesehatan dan pencegahan infeksi di rongga mulut dan gigi, serta pendampingan pelatihan keterampilan pembuatan obat kumur kombinasi herbal dengan formulasi yang sederhana kepada mitra Posbindu. Kegiatan ini dilakukan kepada kader mitra Posbindu dan masyarakat lainnya di wilayah kerja Puskesmas Pasirkaliki Kota Cimahi, Jawa Barat. Perubahan pengetahuan kesehatan dan keterampilan mitra Posbindu dilakukan evaluasi dengan pemberian soal *pre-test* dan *post-test*. Pada hasil evaluasi pemahaman kesehatan dan keterampilan terdapat peningkatan skor total pada mitra Posbindu sesi ke-1 sebesar 20.41 % dari 67.35 % menjadi 87.76 % (14 orang tercapai yang awalnya hanya 7 orang melampaui batas skor minimal 60.00 %; N=14). Sedangkan pada mitra Posbindu sesi ke-2 terjadi peningkatan skor sebesar 28.57 % dari 63.64 % (*pre-test*) menjadi 92.21 % (*post-test*) dengan jumlah orang yang melampaui batas skor minimal sebanyak 11 orang (*post-test*) dari hasil *pre-test* sebelumnya hanya 5 orang (N=11). Sehingga, semakin baiknya pengetahuan kesehatan, sikap dan keterampilan mitra Posbindu dalam mengolah berbagai bahan herbal menjadi produk obat kumur herbal, maka akan tercipta peningkatan derajat kesehatan rongga mulut dan gigi bagi masyarakat.

Kata kunci: Cengkeh, Daun teh hijau, daun mint, kulit kayu manis, obat kumur herbal.

Introduction

The oral cavity has a very complex environmental condition, where the possibility of mechanical, physical, and chemical irritation can affect the occurrence of changes in the environmental conditions of the oral cavity and allow the occurrence of an oral disease. According to the 3rd survey of the National Health and Nutrition Examination (NHANES), mechanical irritation from the habit of biting the lips and cheeks ranks 3rd in causing oral disease, which is 3.05% of 17,235 adult respondents in the United States. In Indonesia, the percentage of the population who have dental and oral problems according to Risesdas in 2007 and 2013 increased from 23.2% to 25.9% of the population who have dental and oral health problems, the percentage of the population receiving medical care increased from 29.7% to 31.1% (Annita & Panus, 2018).

The process of formation of dental caries, gingivitis, periodontitis, and plaque can be caused by various kinds of bacteria, such as: *Streptococcus mutans* (gram positive) which plays a role in the formation and increase in plaque accumulation and is also the main pathogenic factor causing caries (Toar et al., 2013). Therefore, controlling/preventing the formation of caries, gingivitis, periodontitis and plaque is needed as an effort to maintain dental and oral health with modern/conventional or herbal mouthwash preparations (Toar et al., 2013).

Green tea plants, cinnamon bark, cloves, and mint leaves are very popular in Asia. They contain chemical compounds such as tannins, phenols, saponins, and flavonoids, which are antibacterial and can help maintain oral hygiene, such as mouth fresheners and are very good at replacing available drugs (Sudaryat et al., 2015). Another study stated that the activity of broad-spectrum microorganisms that have bioactive molecules such as sterols with the mechanism of action is the interaction between the surface of the sterols and the cell wall of the bacterial membrane, causing changes in the main structure of the cell wall which causes degradation of bacterial components. Then another report, the activity of sterol compounds also damages the permeability of bacterial membranes. Green tea leaves from research by Almeida, et al. (2019) stated that green tea leaves contain phenolic compounds (verbacoside) which have antibacterial activity by inhibiting the growth or proliferation of several pathogenic bacteria such as *Staphylococcus aureus* and *Listeria monocytogenes*. When compared with black tea, green tea turned out to have a higher antibacterial activity than black tea (Almeida et al., 2019).

Cinnamon bark has antibacterial and antifungal functions that are potential to be used in mouthwash and toothpaste preparations that are promising as antimicrobial agents in oral and dental health. Cinnamon bark content such as cinnamyl-alcohol, cinnamyl-acetate, p-Eugenol and cinnamaldehyde have high activity on the bacteria *S. mutans*, *Lactobacillus plantarum*, *S. aureus*, Methicillin-resistant *Staphylococcus aureus* (MRSA), *C. albicans* and *C. glabrata* in the oral (Yanakiev, 2020).

Mint leaf is a popular herbal leaf that is used in various dosage forms for commercial products and is one of the most widely used. Various products from mint leaf herbal ingredients include household health equipment products, functional foods and medicinal product ingredients for various medicinal dosage forms. Mint leaves also exhibit antibacterial and antioxidant activity. The essential oil in mint leaves has antibacterial activity against various types of bacterial pathogens. Mint leaves are well known worldwide for their use and can be used regularly as a mouthwash as well as a potential source of other renewable therapeutic preparations. Mint leaves have more than 30 secondary metabolite components, with substantial content including: menthol (35-60%) and menthone (15-30%), as well as other ingredients such as: menthyl acetate, eucalyptol, limonene, and pulegone (Herro, 2010). Mint leaves also prevent the formation of inflammation (anti-inflammatory) and treat skin irritation in various parts of the body including the oral cavity. Mint leaves have also become common and enhance the quality of certain products when combined with tea leaves (Herro, 2010).

Posbindu RW.04 and 14 partner cadres in the working area of the Pasirkaliki Public Health Center, Jalan Gunung Batu, Pasirkaliki Village, Cimahi District, on average, they serve 150-200 target residents aged 18 years or over and are the target of the program to increase the degree of dental and oral health in the area. One of the functions of Posbindu partner cadres is as a role model for the use of various herbal ingredients as natural medicines in formal health, including playing a role in informing health related to the oral cavity and teeth. Posbindu partner cadres in RW. 04 and 14 also understand quite a few families medicinal plants (TOGA), including green tea leaves, cloves, cinnamon bark, and mint leaves which have not been properly optimized as natural medicines, so it is necessary to provide counseling on how to process and use them as natural/herbal combination mouthwash.

Herbal combination mouthwash is a solution containing antibacterial substances to reduce the number of microorganisms in the mouth and provide freshness to the oral cavity as well as cleaning the mouth of plaque and organisms that cause disease in the oral cavity, used as an oral rinse, easy to use and can reach the opening area. in the oral cavity that is difficult

to reach by a toothbrush. Mouthwash can contain synthetic or natural ingredients. Mouthwash can also provide freshness to the oral cavity (Gartika et al., 2019; Harnis et al., 2020). This study is very important to make effective and inexpensive oral health products for the middle socioeconomic community. From the description above, the combination of green tea, clove, cinnamon bark, and mint leaf can be used for oral hygiene, the cost is low and relatively easy, so it is necessary to make mouthwash preparations for the community that are easy to apply in the community with the following justifications:

1. Not optimal understanding and public awareness of preventive efforts in diseases related to the mouth and teeth.
2. The price of mouthwash products in the market is relatively expensive.

Therefore, from the various statements above, we intend to carry out community service activities under the Community Partnership Program (PKM) scheme to Posbindu partner cadres and other communities in the work area of the Pasirkaliki Health Center, Cimahi City in providing education/counseling about the types of diseases/health disorders in the oral cavity and teeth; some of the solutions offered in maintaining and improving the health of the oral cavity and teeth; diverse health benefits on simplisia (dry matter) of green leaves, herbaceous liver moss *Marchantia paleacea* Bertol., and its combinations; the virtues of the benefits of using herbal mouthwashes; demonstration of the manufacture of herbal mouthwashes with simple formulations; and mentoring training in the skills of making herbal mouthwashes with simple formulations. In the various series of community service activities, we aim to improve the degree of health of the oral cavity and teeth, increase understanding in the prevention of bad breath, anti-plaque in teeth, and other oral disorders, as well as understanding and skill in using and making herbal mouthwashes with simple formulations in Posbindu partner cadres and other communities in the work area of the Pasirkaliki Health Center, Cimahi City.

Method

This community service is carried out to Posbindu partner cadres in the work area of the Pasirkaliki Health Center, Cimahi City so that they better understand the importance of maintaining oral and dental health and are skilled in making herbal mouthwashes from a variety of herbal ingredients that are relatively easy to obtain, either harvested directly or purchased from stores. supermarket/traditional market. Because in terms of expenses, the manufacture and use of herbal combination mouthwashes compared to using

modern/conventional mouthwashes are more efficient and have relatively the same level of effectiveness (Toar et al., 2013). This activity is part of a community service grant with the Community Partnership Program (PKM) scheme of Direktorat Jenderal Tenaga Kesehatan (Ditjen. Nakes.) and UPPM Poltekkes Kemenkes Bandung which was carried out in March – December 2021 in the form of providing health education, diffusion of science and technology, training, and mentoring in skills training (Purkon et al., 2021). In detail, the method of implementing this community service activity can be seen in Figure 1.

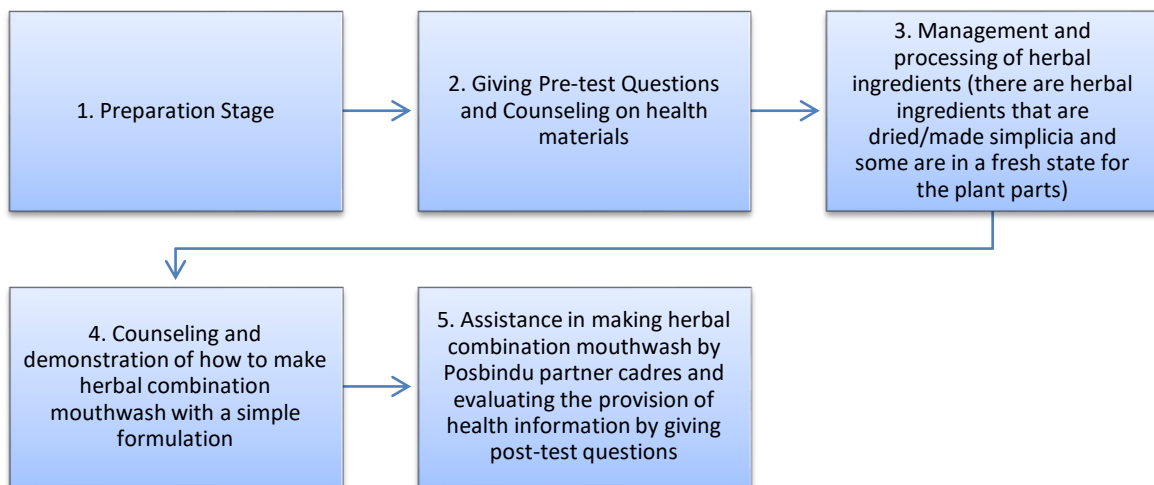


Figure 1. Flowchart of the method of implementing community service with the Community Partnership Program (PKM) scheme for Posbindu partners in the work area of the Pasirkaliki Public Health Center (RW. 04 and 14)

1. Preparation Stage

- a. Coordinate with Pasirkaliki Public Health Center employees and representatives of Posbindu partner cadres in the Pasirkaliki Health Center work area, North Cimahi Village, Cimahi City.
- b. Determine the target and the number of Posbindu partner cadres in the working area of the Pasirkaliki Health Center.
- c. Prepare various health education materials related to oral and dental health, prevention of various types of diseases in the oral cavity, and teeth, as well as the use of various herbal ingredients as antibacterial, anti-plaque and anti-cavity.

- d. Making a booklet with the title "Cultivation and Utilization of Yard Land as Family Medicinal Plants (TOGA) and the Importance of Disseminating and Using the Covid-19 Vaccine in Forming Herd Immunity".
 - e. Making a simple formulation of a herbal combination mouthwash from green tea leaves, cloves, cinnamon bark, and mint leaves.
2. Giving Pre-test Questions and Health Information Counseling
 - a. The objectives of counseling to Posbindu partner cadres are:
 - 1) Improving the health insight of Posbindu partner cadres about the importance of maintaining oral and dental health, how to prevent various types of diseases in the oral cavity and teeth, the use of various herbal ingredients as antibacterial, anti-plaque, and anti-cavity agents, as well as how to make a combination mouthwash with simple formulation.
 - 2) Improve the skills of Posbindu partners in making herbal ingredients simplicia (for herbal ingredients that must be dried in their use related to prevention of microbial contamination and quality degradation of secondary metabolite content from parts of these types of plants) or direct use of fresh herbal ingredients.
 - 3) Improve the skills of Posbindu partners in making herbal combination mouthwash from herbal tea leaves, cloves, cinnamon bark, and mint leaves.
 - 4) Increasing the role of Posbindu partners as agents of family health promotion.
 - b. Various health education materials were provided, namely:
 - 1) PowerPoint softfile materials (PPT)
 - 2) Booklet with the title: "Pembudidayaan dan Pemanfaatan Lahan Pekarangan sebagai Tanaman Obat Keluarga serta Pentingnya Sosialisasi dan Penggunaan Vaksin Covid-19 dalam Membentuk Kekebalan Bersama (*Herd Immunity*)".
 - c. The extension methods and media used are:
 - 1) Counseling on various health materials related to the importance of maintaining the health of the oral cavity and teeth, how to prevent various types of diseases in the oral cavity, and teeth, the use of various herbal ingredients as antibacterial, anti-plaque, and anti-cavity.
 - 2) Demonstration of how to make a herbal combination mouthwash with a simple formulation as antibacterial, antiplaque, and anti-cavity agent.
3. Evaluation of Extension with Questions and Answers Discussion and Post-test Questions

Evaluation of various health material counseling was carried out using pre-test and post-test questionnaires to see changes/improvements in the understanding of Posbindu partner cadres regarding health materials and skills on how to make herbal mouthwashes that had been delivered. Analysis of the data obtained and then processed using the application program *Ms. Excel* as done by Dikson, et al. (2021) and Purkon, et al. (2021).

Results

This community service activity is part of the Community Service (PKM) scheme of Poltekkes Kemenkes Bandung. This PKM was carried out by a team of lecturers and students from the Department of Pharmacy, Poltekkes Kemenkes Bandung, in collaboration with one of the lecturers at Garut University. The coordination of planning oral health counseling activities and mentoring skills on how to make herbal combination mouthwash has been carried out with Posbindu partner cadres in the Pasirkaliki Health Center work area and Pasirkaliki Health Center employees which resulted in an agreement between Posbindu partner cadres selected from the RW. 04 and 14 which amounted to approximately 10-15 people per counseling session. This counseling was divided into 2 counseling sessions because the size of the meeting building used was only sufficient for \pm 15 people by following the health protocols during the Covid-19 pandemic, namely in the Gedung Serba Guna (GSG) RW. 04 Cimindi Raya Complex, North Cimahi Village, Cimahi District.

Various activities that have been carried out are in the form of distributing softfile booklets with the title “Pembudidayaan dan Pemanfaatan Lahan Pekarangan sebagai Tanaman Obat Keluarga serta Pentingnya Sosialisasi dan Penggunaan Vaksin Covid-19 dalam Membentuk Kekebalan Bersama (*Herd Immunity*)”, health presentations/counseling and interactive question-and-answer discussions about the importance of maintaining oral and dental health, how to prevent various types of diseases in the oral cavity and teeth, the use of various herbal ingredients as antibacterial, anti-plaque, and anti-cavity agents.

In addition, mentoring on skills on how to make herbal combination mouthwash from several herbal ingredients, namely: green tea leaves, cloves, cinnamon bark, and mint leaves. The herbal ingredients used are relatively easy to obtain, either by harvesting directly from their own garden (family medicinal plants) or buying them from traditional markets/supermarkets. A simple procedure/formulation in the manufacture of herbal combination mouthwash can be seen in Table 1.

Table 1. Simple Formulation for Making Herbal Mouthwash from Green Tea Leaves, Cloves, Cinnamon Bark and Mint Leaves

Various Components of Herbal Ingredients and Number of Parts Used in Simple Formulation of Herbal Mouthwashes:				
Green tea leaves	Cinnamon bark	Cloves	Mint leaves	Boiled water
10 g simplicia	5 pieces of cinnamon bark with @ pieces ± 3 cm long	10 g simplicia	4-5 fresh leaves	900 mL
↓				
The three herbal ingredients are mixed/inserted into a pot filled with 900 mL of boiled water, heated until the temperature is reached 95°C then left for 15 minutes (infundation/infusion extraction method) until various secondary metabolites which have antibacterial and anti-plaque properties are dissolved into the boiled water solvent.				

Source: (Gunawan et al., 2020; Harnis et al., 2020; Purkon et al., 2021; Yuristiawan et al., 2016)

The distribution of pre-test and post-test questionnaires were also carried out at the end of the implementation stage as a form of evaluation of the entire series of activities that had been carried out. This evaluation aims to see changes in the understanding of Posbindu partner cadres within a certain time after being given various health materials.

The results of the pre-test and post-test evaluations showed that there was an increase in health understanding about health information on the importance of maintaining oral and dental health, the benefits of various herbal ingredients and their herbal combinations as antibacterial, anti-plaque, and anti-cavity, as well as how to make herbal mouthwash with simple formulations for Posbindu partner cadres in RW. 04 and 14 in the 1st and 2nd sessions. As shown in Table 2 and Figure 2 in the 1st session of Posbindu partner cadres, there was an increase in health understanding with a score of 87.76% (post-test) with 14 people achieving (N= 14). Meanwhile, the results of the pre-test were only 67.35% with the achievement of 7 people with a minimum score limit of 60.00%.

Tabel 2. Evaluation of Health Knowledge Materials and Methods of Making Herbal Mouthwash for Posbindu Cadre Partners Session 1

Types of Posbindu Cadre Partners from RW. 04 and 14 1 st Session	Average Score (N = 14)	
	<i>Pre-test</i>	<i>Post-test</i>
Average value (%)	67.35	87.76
Description of Pre-test and Post-test Achievements (Accomplished Persons)	7	14

*Minimum score limit: 60.00

Table 3. Evaluation of Health Knowledge Materials and Methods of Making Herbal Mouthwash for Posbindu Cadre Partners Session 2

Types of Posbindu Cadre Partners from RW. 04 and 14 2 nd Session	Average Score (N = 11)	
	Pre-test	Post-test
Average value (%)	63.64	92.21
Description of Pre-test and Post-test Achievements (Accomplished Persons)	5	11

*Minimum score limit: 60.00

Table 3 and Figure 2 show the evaluation scores of Posbindu partner cadres for the 2nd session in the RW. 04 and 14 also increased understanding of health with post-test results of 92.21% with the achievement of 11 people (N=11).

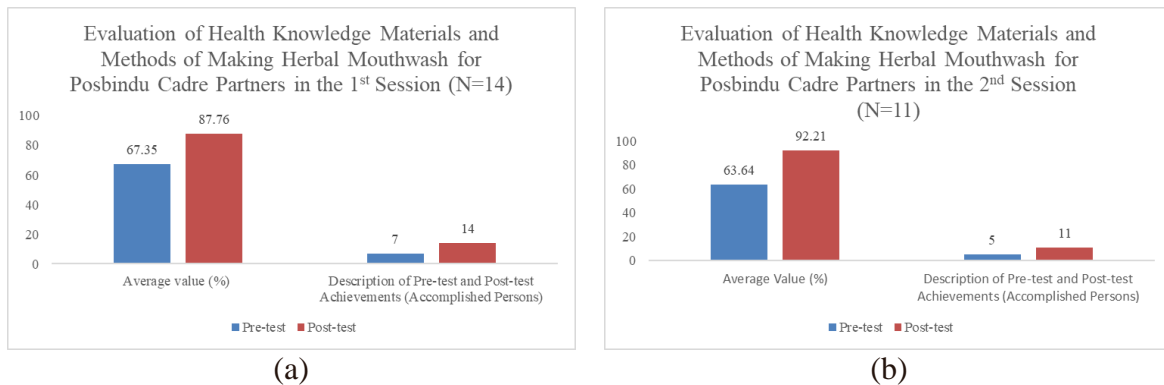


Figure 2. Bar chart (histogram) evaluation data of changes (increases) in understanding of health materials and skills in making herbal mouthwash for Posbindu cadre partners in the 1st session with N = 14 (a) and the 2nd session with N = 11 (b)

From the evaluation results in both sessions (1 and 2) for Posbindu partner cadres, there was an increased understanding of the health material that had been delivered from the post-test results so that they could answer the various questions given.

At the end of this community service, souvenirs were handed over to all Posbindu partner cadres in the form of red ginger products (AMH), empty containers/bottles for packaging containers for herbal combination mouthwash, and various herbal ingredients used in making herbal mouthwashes.

Discussion

This community service activity with the PKM scheme is carried out with health counseling/education methods and training assistance which aims to provide sufficient knowledge for cadres regarding the prevention of oral and dental infections, the use of a combination of green tea, cloves, cinnamon bark, and mint leaves. This skills training and mentoring will also improve the skills of Posbindu partner cadres in making herbal combination mouthwash and how to use it (Gartika et al., 2019; Thioritz et al., 2021).

Health education on various materials related to the importance of maintaining oral and dental health as well as the importance of using various herbal ingredients in certain dosage forms as antibacterial, antiplaque, and anti-cavity agents is one way to support various health programs to improve the quality of oral and dental health in the community, especially Posbindu partner cadres. This is in line with the concept of providing health education as a form of individual, group, or community learning process that initially does not understand health values so that they can understand, from being unable to overcome various oral and dental health problems to becoming more capable (Waliyanti et al., 2020).

The distribution of booklets as a guide for cadres is also a reference for Posbindu partner cadres in carrying out their various duties at Posbindu regarding types of oral and dental diseases, how to prevent infection, the use of a combination of green tea leaves, cloves, cinnamon bark, and mint leaves as antibacterial, antiplaque, anti-cavity in the form of a combination of herbal mouthwash preparations. The herbal ingredients used are relatively easy to obtain, either by harvesting directly from their own garden (family medicinal plants) or buying them from traditional markets/supermarkets (Amos, 2009). The results of the herbal combination mouthwash that had been carried out and then organoleptic testing for ± 2 weeks (14 days) showed a stable dosage form during storage at room temperature (25°C) and cold temperature (2-8°C) in a closed container. The results of observations on this herbal combination mouthwash preparation include taste, color, smell, and the dosage form are still in good condition. The fragrance of this preparation is that it has a strong clove and mint scent, as well as a fresh sensation in the mouth area because of the mint leaves. This is in accordance with the results of research related to the use of herbal ingredients by Dewi & Rusita (2017) dan Puspita, et al. (2019) in dosage forms with herbal ingredients/combinations in general have stability and durability of the dosage form for approximately 14 days. In the dosage form of this herbal combination mouthwash, it also has several herbal ingredients that have natural antibacterial activity from green tea leaves and cloves so that they can prevent

longer contamination by microorganisms (Anita et al., 2019; Puspita et al., 2019; Wulandari et al., 2020).

Implementation of question-and-answer discussions with all Posbindu RW. 04 and 14 partner cadres in sessions 1 and 2 took place interactively offline. All Posbindu partner cadres seemed enthusiastic about asking questions and giving gestures full of concentration. And when Posbindu partners were asked to describe something or part of the material presented, they seemed to understand well. When preparing various preparation processes of various medicinal plants (eg, how to harvest various herbal ingredients/extraction/infusion processes), it is necessary to pay attention to the temperature and length of time used to prevent damage to the active substances during heating (Isnawati & Retnaningsih, 2018; M & Lingganingrum, 2021; Purkon et al., 2021). During the question-and-answer discussion, most of the Posbindu partner cadres in the Pasirkaliki Health Center's working area felt an increase in their confidence in carrying out their duties as Posbindu partner cadres. This is in accordance with the statement from the application of research to community cadres conducted by Rumahorbo, et al. (2021) that counseling and training activities like this further increase knowledge about various health materials and skills in certain cases that have been trained with serious implementation assistance but are not made tense.

From the evaluation results in both sessions (1 and 2) as shown in Tables 1, 2, and Figure 2 for Posbindu partner cadres, there was an increased understanding of the health materials that had been delivered from the post-test results so that they could answer the various questions given. Therefore, Posbindu partner cadres are expected to be able to apply and disseminate health information to their families and other communities so that the level of oral health and dental health of the community can also increase (Thioritz et al., 2021). Based on the statement by Zuhrotun, et al. (2020) regarding the application of research/community service with the science and technology diffusion method, namely: the low pre-test score indicates that education and health information is still needed about the various benefits (efficacy) and how to make various forms of herbal preparations, including mouthwash this herb so that it has a high economic value (Zuhrotun et al., 2020). This evaluation aims to see changes in the understanding of Posbindu partner cadres within a certain time after being given various health materials. This is in line with the concept of providing health education as a form of individual, group, or community learning process that initially does not understand/understand health values so that they can understand/understand, from being unable to overcome various oral and dental health problems to becoming more capable (Waliyanti et al., 2020). People's awareness, desire, and ability to behave in a healthy

and hygienic life are important factors in preventing and controlling various public health problems, including oral and dental health problems (Rumahorbo & Waluya, 2021). Empowerment of Posbindu partner cadres who become agents of change figures for the community in their respective villages through various trainings and useful skills assistance by the health extension team shows an increase in the participation of the public. These Posbindu partner cadres include community members whose all activities interact with the surrounding community and communicate with the same culture and language and understand the needs of the community. So that these things facilitate the dissemination of information related to health materials to another public more easily understood.

The entire series of community service activities can have a good/positive impact in improving/increasing the level of knowledge in preventing bad breath, anti-plaque in teeth, swelling of the mouth, and other oral disorders and making Posbindu partner cadres and the community become others better understand how to use herbal mouthwashes and are skilled in making herbal mouthwashes for each cadre and their families. This aims to obtain the degree of dental and oral health to all cadres of Posbindu partners and their families, as well as the community in general in the optimal work area of the Pasirkaliki Health Center. This is in line with community service activities by Hanifah Rahmi, et al. (2019) that the provision of health education, demonstration of certain skills, and skill assistance in community service activities can increase the level of understanding and skills in the cadres being fostered. Apart from this, activities like this according to Hanifah Rahmi, et al. (2019) can inspire and make capital for business opportunities/herbal mouthwash business with a relatively simple formulation using a variety of ingredients that are easy to obtain and relatively affordable prices (Rahmi et al., 2019).

As a form of advice in the sustainability of this form of community service program, it is necessary to provide training assistance for making herbal mouthwash information etiquette attached to the primary packaging of the herbal mouthwash container. In addition, training is provided related to the manufacture of leaflets/brochures related to herbal mouthwash products so that they have an appropriate selling value and also need to carry out other training for the processing of other herbal ingredients into a nutraceutical product, household health supplies (PKRT), and other dosage products that can be utilized by the wider community. This is in line with the information conveyed by Ismono, et al. (2018) that every citizen who has a broad level of understanding and a high entrepreneurial spirit related to the processing of herbal ingredient products has a very large opportunity in

increasing family income by obtaining large profits and opening up job opportunities (Ismono et al., 2018).

Conclusion

Implementing the empowerment of RW. 04 and 14 Posbindu partner cadres in the work area of the Pasirkaliki Public Health Center, Cimahi City in providing various oral and dental health materials, the importance of preventing oral and dental infections, the use of herbal ingredients as antibacterial, anti-plaque, and anti-cavity agents, as well as assistance in training skills on how to make mouthwash combinations of herbs from herbal ingredients of green tea leaves, cloves, cinnamon bark, and mint leaves that have been carried out well. Counseling and service activities with the PKM scheme can increase public health knowledge, public attitudes in self-medication of various herbal preparations to maintain oral and dental health and are skilled in the manufacture of herbal combination mouthwash products. Thus, the better the health knowledge and attitudes of RW. 04 and 14 Posbindu partner cadres will create an increase in the degree of oral and dental health for the public.

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References

- Almeida, S. D., Pimenta, T., Pressete, C. G., Azevedo, L., Stampini, H., Martino, D., Cameron, L. C., Simões, M., Ferreira, L., Augusto, F., & Barros, R. De. (2019). Kombuchas from green and black teas have different phenolic profile, which impacts their antioxidant capacities, antibacterial and antiproliferative activities. *Food Research International*, 108782. <https://doi.org/10.1016/j.foodres.2019.108782>
- Amos, A. (2009). Gambir Sebagai Antibakteri Dalam Formulasi Obat Kumur. *Jurnal Sains Dan Teknologi Indonesia*, 11(3), 188–192. <https://doi.org/10.29122/jsti.v11i3.830>
- Anita, A., Syamsul, D., & Suprianto, S. (2019). Evaluasi Pemakaian Antibiotik yang Rasional pada ISPA Non Pneumonia di Puskesmas Induk Kota Binjai. In *Jurnal Dunia Farmasi* 3(3), 106–114.. Institut Kesehatan Helvetia. <https://doi.org/10.33085/jdf.v3i3.4481>
- Annita, & Panus, H. (2018). Daya Hambat Ekstrak Daun Teh Hijau (*Camellia sinensis*) terhadap Bakteri *Streptococcus mutans*. *Jurnal Kesehatan Sainika Meditory*, 1(1), 1–9.

<https://jurnal.syedzasaintika.ac.id>

- Dewi, I. K., & Rusita, Y. D. (2017). Uji Stabilitas Fisik Dan Hedonik Sirup Herbal Kunyit Asam. *Jurnal Kebidanan Dan Kesehatan Tradisional*, 2(2), 79–84. <https://doi.org/10.37341/jkkt.v2i2.52>
- Dikson, M., Wida, A. S. W. D., & Mukin, F. A. (2021). Melkias Dikson: Effect of Praying Meditation: “God in a breath” on Reducing Blood Pressure Effect of Praying Meditation: “God in a breath” on Reducing Blood Pressure in Hypertension Patients. *Media Karya Kesehatan*, 4(1), 78–85.
- Gartika, M., Dewi, W., & Pramesti, H. T. (2019). Pengaruh obat kumur herbal jeruk nipis (*Citrus aurantifolia*) terhadap penurunan indeks plak gigi murid. *Padjadjaran Journal of Dental Researchers and Students*, 3(2), 145. <https://doi.org/10.24198/pjdrs.v3i2.24074>
- Gunawan, I., Ardini, D., & Makhdalena. (2020). Pelatihan Pembuatan Obat Kumur (Mouthwash) Kayu Manis (*Cinnamomum burmanii*) dan Daun Sirih (*Piper betle* L.) Bagi Kelompok Kader Posyandu Desa Hajimena. *Sakai Sambayan - Jurnal Pengabdian Kepada Masyarakat*, 4(1), 14–19.
- Harnis, Z. E., Ginting, A., Iillsanna, C., Barus, B. R., & Margata, L. (2020). Formulasi Obat Kumur Gambir dan Uji Efektivitas terhadap Bakteri *Staphylococcus aureus*. *Jurnal Penelitian Farmasi & Herbal*, 3(1), 38–47.
- Herro, E. (2010). *Mentha piperita* (Peppermint). *Dermatitis*, 21(6), 327–329. <https://doi.org/10.2310/6620.2011.10080>
- Ismono, I., Suyatno, S., & Hidajati, N. (2018). Pelatihan Pembuatan Serbuk Minuman Herbal Instan Untuk Warga Desa Jajar, Kecamatan Talun, Kabupaten Blitar. *Jurnal ABDI*, 3(2), 76. <https://doi.org/10.26740/ja.v3n2.p76-83>
- Isnawati, A. P., & Retnaningsih, A. (2018). Perbandingan Teknik Ekstraksi Maserasi Dengan Infusa pada Pengujian Aktivitas Daya Hambat Daun Sirih Hijau (*Piper betle* L.) Terhadap *Escherichia coli*. *Jurnal Farmasi Malahayati*, 1(1), 19–24.
- M, E. S., & Lingganingrum, F. S. (2021). Teh Hijau Bubuk Dari Daun Ashitaba Menggunakan Proses Spray Drying. *Teknik Kimia*, 16(1), 22–28.
- Purkon, D. B., Kusmiyati, M., Trinovani, E., & Fadhlillah, F. M. (2021). Peningkatan Pemahaman dan Keterampilan Mitra Posbindu dalam Pembuatan Minuman Tradisional Herbal sebagai Imunostimulan. *Jurnal SOLMA*, 10(02), 210–219. <https://doi.org/10.22236/solma.v10i2.6270>
- Puspita, S., Yanto, E. S., & Farhan, F. (2019). Pembuatan Sediaan Teh Celup Daun Saga (*Abrus Precatorius* Linn) Dan Daun Sirih (*Piper betle*) untuk obat kumur. *Journal of Holistic and Health Sciences*, 2(2), 78–81. <https://doi.org/10.51873/jhhs.v2i2.30>
- Rahmi, H., Rachmania, R. A., & Wardani, E. (2019). Pembuatan Obat Kumur Alami Daun Sirih Bagi Anggota Aisyiyah di PRA Cabang Perumnas I dan Jakasampurna. *Jurnal SOLMA*, 8(1), 119. <https://doi.org/10.29405/solma.v8i1.3102>
- Rumahorbo, H., & Waluya, N. A. (2021). Implementasi Model Pemberdayaan Segitiga Kerjasama pada Pengelolaan Posbindu PTM. *Media Karya Kesehatan*, 4(2), 131–143.

- Sudaryat, Y., Kusmiyati, M., Pelangi, citra ratu, Rustamsyah, A., & Rohdiana, D. (2015). Aktivitas Antioksidan Seduhan Sepuluh Jenis Mutu Teh Hitam (*Camellia sinensis* (L.) O. Kuntze) Indonesia. *Teh Dan Kina*, 18(2), 95–100.
- Thioritz, E., Asridiana, A., & Ilham, K. (2021). pH Saliva Setelah Penggunaan Obat Kumur Siwak (*Salvadora persica*). *Media Kesehatan Gigi: Politeknik Kesehatan Makassar*, 20(1), 29–34. <https://doi.org/10.32382/mkg.v20i1.2195>
- Toar, A. I., Posangi, J., & Wowor, V. (2013). Daya Hambat Obat Kumur Cetylpyridinium Chloride Dan Obat Kumur Daun Sirih Terhadap Pertumbuhan *Streptococcus mutans*. *Jurnal Biomedik (JBM)*, 5(1), S163–S168. <https://doi.org/10.35790/jbm.5.1.2013.2639>
- Waliyanti, E., Sutantri, S., Oktaviyanti, M., & Shafira, W. (2020). Gerakan Remaja Sehat di Dukuh Gedongan (GEMAS DONG). *Jurnal SOLMA*, 9(2), 379–388. <https://doi.org/10.22236/solma.v9i2.4829>
- Wulandari, A., Farida, Y., & Taurhesia, S. (2020). Perbandingan Aktivitas Ekstrak Daun Kelor dan Teh Hijau serta Kombinasi sebagai Antibakteri Penyebab Jerawat. *Jurnal Fitofarmaka Indonesia*, 7(2), 23–29. <https://doi.org/10.33096/jffi.v7i2.535>
- Yanakiev, S. (2020). Effects of Cinnamon (*Cinnamomum* spp.) in Dentistry: A Review. *Molecules*, 25(4184), 1–17. <https://doi.org/10.3390/molecules25184184>
- Yuristiawan, F., Gunawan, G., & Iryani, D. (2016). Perbandingan Kekerasan Bahan Glass Ionomer Cement yang Direndam Antara Obat Kumur Beralkohol dengan Obat Kumur Bebas Alkohol. *Andalas Dental Journal*, 4(2), 88–95. <https://doi.org/https://doi.org/10.25077/adj.v4i2.59>
- Zuhrotun, A., Hasanah, A. N., & Sulistiyaningsih, R. (2020). Edukasi Pemanfaatan Tumbuhan Berkhasiat Obat menjadi Sediaan Herbal. *Media Karya Kesehatan*, 3(2), 109–121. <http://journal.unpad.ac.id/mkk/article/view/24887>