THE EFFECT OF GARGE USING VIRGIN COCONUT OIL (VCO) ON COUGH COMPLAINTS IN THE ELDERLY AT THE PAYUNG SEKAKI HEALTH CENTER, PEKANBARU CITY

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Abstrak
The number of elderlies is increasing by the development in the medical field which can be seen from the increase in life expectancy and the decrease in death expectancy. One of the elderlies' health problems is coughing. Coughing is a lung defense mechanism towards various stimuli and physiology reflect that protect the lungs from mechanical trauma, chemical trauma, and temperature. Virgin Coconut Oil (VCO) is one of the traditional medicines that can be used as an antibacterial that can easily be found around society. VCO contains lauric acid that is identified as having antimicrobials activity towards various microorganisms. This research was aimed to find out the effect of gargling with virgin coconut oil on cough complaints of the elderly in Payung Sekaki public health center (PUSKESMAS) Pekanbaru. This is a quantitative research using a quasi-experimental design with post-test and pre-test without control. This research is done in December 2019 to February 2020. The research measurement tool was check-sheet about coughing complain in pre and post-intervention. The research sample is elderlies in Puskesmas Payung Sekaki (26 respondents) working area chosen with total sampling. Each respondent is given 5 ml VCO + 5 ml water to gargle in 60 seconds in the morning and the night for 5 days. The sample was analyzed using a paired t-test. The research result was p-value = 0,000 (< 0,05) which means there is an effect of gargling with virgin coconut oil toward cough complaints of the elderlies in Payung Sekaki public health center (PUSKESMAS) Pekanbaru. This research can be used by nurses as an intervention to reduce coughing complains of elderlies naturally by gargling using VCO
Key Word: Virgin coconut oil, Cough, Elderlies

INTRODUCTION

According to the World Health Organization (WHO), an elderly person is someone who has reached the age of 60 years and over. The elderly are an age group of humans who have entered the final stages of their life. This group, which is categorized as elderly, will experience a process called the aging process. The aging process is something that everyone will experience, including changes in the body's systems, one of which results in a decline in the digestive system, respiratory system, endocrine system, cardiovascular system and even a decrease in musculoskeletal abilities (Fatmah, 2010).

A large-scale study found that the prevalence of cough in the USA was 18% of 1109 people with chronic cough caused by smoking habits. A large-scale survey also reported in Sweden as

many (11%) non-productive coughs; (8%) productive cough; (38%) cough that occurs at night, from these three things, 623 people (aged 31 years) were caused by asthma, allergic rhinitis, gastric relux, and smoking (Chung and Pavord, 2009).

European Respiratory Society survey data on 18,277 subjects aged 20-48 years, of which 30% reported nocturnal coughs, 10% productive coughs and 10% non-productive coughs. Coughing is an effort to defend the lungs against various existing stimuli and a physiological reflex that protects the lungs from mechanical, chemical and temperature trauma. Coughing becomes pathological if it is felt as a nuisance. Such a cough is often a sign of disease inside or outside the lungs and is sometimes an early symptom of a disease. Cough is the most common symptom of respiratory disease and a problem that doctors often face in daily practice (Tamaweol et al., 2016).

Coughing is a reflex action from the respiratory tract that is used to clear the upper airway. A cough that lasts for more than 8 weeks is called a chronic cough. The causes of coughing can come from smoking habits, exposure to cigarette smoke, and exposure to environmental pollution (Pavort et al., 2008). In general, coughs can be divided into two types, namely dry coughs, namely coughs caused by allergies, food, air and drugs. A dry cough can be recognized by its loud sound, while the second is a cough with phlegm which is caused by an infection with microorganisms or viruses and can be recognized by its heavier sound and the presence of phlegm (Djunarko & Hendrawati, 2011). Difficulty in expelling phlegm will result in difficulty breathing which can cause cyanosis, fatigue, apathy and feeling weak (Nugroho & Kristianti, 2011).

The growth of L. acidophilus bacteria should be prevented by using anti-bacterial agents in the form of mouthwash. The anti-bacterial ingredient commonly used as a mouthwash is Chlorhexidine. The disadvantage of Chlorhexidine is that it causes mucosal irritation, discoloration of teeth, erosion of the oral mucosa and a bitter taste (Waghmare et al., 2011). Chlorhexidine's cytotoxic properties also have an effect on osteoblasts which can damage the regenerative potential of periapical tissue (Luddin and Ahmed, 2013). Antibacterial agents can be less effective in inhibiting bacterial growth due to resistance to antibacterial agents and the emergence of various undesirable side effects (Isnarianti et al., 2013).

Methods for treating chronic coughs can be done by administering herbal therapy. In several countries in Asia and Africa, 80% of the population still relies on traditional medicine, especially the use of herbal ingredients (Ekeopara and Ugoha, 2017). One of the traditional medicines that can function as an anti-bacterial that is easily found around the community is pure coconut oil or better known as Virgin Coconut Oil (VCO). VCO is produced without refining, bleaching, deodorizing and without heating. This production process causes VCO to contain many active substances that are naturally found in coconut oil (Maidin & Ahmad, 2015).

A number of fatty acids are found in VCO, such as caproic, caprylic, capric, mirustate, palmitic, stearate, oleric, linoleic and lauric acids which have the highest percentage levels, at 47%. The monolaurin compound from lauric acid causes VCO to have an anti-microbial effect, both for bacteria and fungi by damaging the lipid components of cell membranes (Marina et al., 2009).

In India, virgin coconut oil has been used for many years in food preparation and in Ayurvedic medicine (Oil Pulling) to maintain oral health and general body health. (Salian et al, 2018). Virgin coconut oil (VCO) consists of 92% saturated acid, with lauric acid making up 50% of this saturated acid. Monolaurin and lauric acid monoglyceride have been identified as having antimicrobial activity against a variety of microorganisms. These include Helicobacter pylori, Staphylococcus aureus, Escherichia vulneris, Enterobcater, and Candida species, including Candida glabrata, Candida albicans, Candida stellatoidea, Candida parapsilosis, Candida tropicalis, and Candida krusei as well as various viruses. (Naseem et al, 2017).

Currently, many mouthwashes have been developed based on medicinal plants which are believed to have antibacterial properties with minimal side effects, so they are safer for daily use and can be prepared at home (Ristianti et al., 2015). The most active anti-microbial ingredient in VCO is specific lauric acid in the form of Monolaurin. The anticeptive effect of VCO is due to the fact that it contains Glycerol Monolaurate (monolaurin) which is a specific lauric acid.

The concept of Oil Pulling or gargling using vegetable oil was popularized by Dr. Fedor Karach in the 1990s to prevent dental caries, bad breath, gingival disease, strengthen teeth, and prevent dry throat and chapped lips. (Nagilla et al, 2017). One of the oils that can be used for oil pulling is VCO (Virgin coconut oil). Consists of 92% saturated acid, with lauric acid making up 50% of this saturated acid. Monolaurin and lauric acid monoglyceride have been identified as having antimicrobial activity against a variety of microorganisms. These include Helicobacter pylori, Staphylococcus aureus, Escherichia vulneris, Enterobcater, and Candida species, including Candida glabrata, Candida albicans, Candida stellatoidea, Candida parapsilosis, Candida tropicalis, and Candida krusei as well as various viruses. (Naseem et al, 2017)

Virgin coconut oil (VCO) is a processed coconut product that is safe for consumption by the public and has high economic value. The quality of VCO is determined by the content of medium chain fatty acids (MCFA) and lauric acid (C12:0). The MCFA content and lauric acid levels are influenced by coconut variety, height at growing location, and VCO process technology. VCO contains high levels of lauric acid (up to 51%), a saturated fat with a medium carbon chain (12 carbons) which is usually called MCFA. In the human body, lauric acid is converted into monolaurin, a monoglyceride compound which has antiviral, anti-bacterial and anti-protozoal properties. MCFA is easily absorbed into cells and then into the mitochondria, so that metabolism increases (Sari, 2009). VCO has a lauric acid content greater than or equal to 45.1%. In the human body, lauric acid is converted into monolaurin. Monolaurin has anti-

viral, antibacterial and anti-protozoal characteristics, so it can be used to protect oil-in-water emulsions that are to be injected intravenously from the growth of E. coli, P.aeruginaosa, Stahpylococcus aureus and Candida albicans. Free lauric acid also has anti-bacterial power, namely both lauric acid and monolaurin have anti-bacterial power against S. aureus (Tagwatcharin & Khopaibool (2012). Medium chain fatty acids and their derivatives such as lauric acid and monolaurin have the ability to destroy bacteria that have an envelope. lipids by disintegrating the lipid membrane. The fatty acid content gives VCO anti-bacterial, anti-viral and anti-fungal power. Apart from that, VCO also has properties that are healthy for the body because the fatty acids contained in VCO are easy for the body to absorb and use. VCO also safe to consume because it is natural, so it does not have significant side effects (Enig, 2011). Penggunaan VCO untuk mengurangi batuk dan nyeri tenggorokn dengan cara membasahi tenggorokan terlebih dahulu dengan minum air hangat setengah, kemudian minum VCO sesendok dan jangan langsung ditelan tetapi dikumur-kumur dahulu agar bercampur ludah. Karena VCO yang beretemu air ludah asam laurat akan diubah menjadi monolaurin. Kemudian telan VCO yang telah bercampur ludah kemudian minum air hangat kembali. Rasa nyeri tenggorokan dan batuk akan berkurang/ hilang (Kasim, 2010).

Pure coconut oil or VCO (Virgin Coconut Oil) is famous for its health benefits, such as anti-bacterial, anti-viral and anti-fungal. This is thought to be caused by the medium chain fatty acid content in VCO. Cream containing 5-40% (w/w) VCO shows antibacterial power against the bacteria Escherichia coli, Pseudomonas aeruginosa, Proteus vulgaris, and Bacillus subtilis (Oyi at all, 2010). The monoglyceride emulsion of capric acid, monocaprin, can reduce the viability of Salmonella spp. VCO contains capric acid, so VCO has the potential to have antibacterial power against Salmonella. (Noriko et al, 2014).

According to research conducted by Wasiaturrosyida, 2015, it was found that there was a significant difference before and after gargling with 12.5% pure coconut oil mouthwash, there was a decrease in the number of Porphyromonas gingivalis and Treponema denticola bacteria on the margins of full metal porcelain artificial crowns ($p<0.05$). Based on a preliminary survey conducted in the Payung Sekaki Community Health Center Work Area, Pekanbaru City, information was obtained that the number of elderly people seeking treatment with cough complaints from January – November 2019 was 308 people with a monthly average of 28 people. Some elderly people who experience coughs take medicine from the health center. There has been no previous use of traditional and herbal medicines. For this reason, the author is interested in conducting research with the title "The Effect of gargling using Virgin Coconut Oil (VCO) on Cough Complaints in the Elderly in the Working Area of the Payung Sekaki Health Center, Pekanbaru City".

RESEARCH METHODS

The type of research used is quantitative with the design used in this research being Quasi-Experimental (quasi-experimental research) with the design used being pre-test and post-test

without control, that is, the researcher only intervenes in one group without a comparison. The effect of treatment is assessed by comparing the post test scores with the pre test. In this study, the treatment given to the experimental group was Virgin Coconut Oil (VCO) mouthwash. Previously, the group started with pre-test observations and after being given treatment, post-test measurements were carried out again.

RESEARCH RESULT

General data

Gender

Table 1. Frequency Distribution of Respondents Based on Gender

No	Type Sex	Frekuensi (n)	Persentase (%)
1	Man	14	53,8
2	Woman	12	46,2
Total		**26**	**100**

Source: 2019 primary data analysis

Based on Table 1 above, it can be seen that 14 of the respondents were male (53.8%).

Age

Table 2. Frequency Distribution of Respondents Based on Age

No	Age	Frekuensi (n)	Persentase (%)
1	46-55 Years (Early Elderly)	11	42,3
2	56-65 years old (Late Elderly)	15	57,7
	Total	**26**	**100**

Source: 2019 primary data analysis

Based on table 2 above, it can be seen that the majority of respondents were aged 56-65 years with a total of 15 (57.7%).

Education

Table 3. Frequency Distribution of Respondents Based on Education Level

No	Education	Frekuensi (n)	Persentase (%)
1	Elementary	5	19,2
2	middle school	6	23,1
3	high school	13	50
4	College	2	7,7
Total		**26**	**100**

Source: 2019 primary data analysis

Based on Table 3 above, it can be seen that the majority of respondents had a high school education level of 13 (50%).

Work

Table 4. Frequency Distribution of Respondents Based on Occupation

No	Work	Frekuensi (n)	Persentase (%)
1	Civil servants	2	7,7
2	Self-employed	9	36,6
3	Doesn't work	15	57,7
Total		**26**	**100**

Source: 2019 primary data analysis

Based on Table 4 above, it can be seen that the majority of respondents with farmer occupations were 15 (57.7%).

Long experience of coughing

Tabel 5. Distribusi Frekuensi Responden BerdasarkanLama Mengalami Batuk

No	Long experience of coughig	Frekuensi(n)	Persentase (%)
1	<7 Hari	18	69,2
2	7-14 hari	7	26,9
3	>14 Hari	1	3,8
Total		**26**	**100**

Source: 2019 primary data analysis

Based on Table 5 above, it can be seen that the majority of respondents had a cough for <7 days, 18 (69.2%).

Disease History

Table 6. Frequency Distribution of Respondents Based on Disease History

No	Disease History	Frekuensi (n)	Persentase (%)
1	DM	5	19,2
2	Jantung	4	15,4
3	Paru	2	7,7
4	Hipertensi	15	57,7
Total		**26**	**100**

Source: 2019 primary data analysis

Based on Table 4.6 above, it can be seen that the majority of respondents with a history of hypertension were 15 (57.7%).

Average values of cough complaints before and after VCO administration

Table 7. Frequency Distribution of Average Values of Cough Complaints Before and After Giving VCO Mouth Gargle

No	Perlakuan	Mean	Standart Deviasi (SD)	Min	Max
1	Sebelum VCO	3,08	1,262	1	5
2	Sesudah VCO	0,81	0,849	0	2

Source: 2019 primary data analysis

Based on table 7, it is explained that the mean value obtained before giving VCO mouthwash was 3.08 and the mean after giving VCO mouthwash was 0.81. With a minimum value before administering VCO 1 or on a mild cough scale. And the minimum value after gargling VCO is 0 (no coughing). Meanwhile, the maximum value of cough complaints before giving VCO was on a scale of 5 and the maximum value after giving VCO decreased on a scale of 2, which means that from the minimum and maximum values there was a decrease in cough complaints. With a difference before giving VCO of 3.08 and after giving VCO 0.81. The magnitude of this difference will be tested statistically, using the paired t-test.

Bivariate Analysis

Previously, data normality tests had been carried out using the Kolmogrov-Smirnov test and the Shapiro Wilk test. Judging from the normality test, the Kolmogrov-Smirnov result was 0.130. Judging from the Shapiro Wilk normality test, the result was 0.072, which means the data was normally distributed, so a bivariate analysis was then carried out.

This analysis was carried out to determine the influence between the independent variable and the dependent variable. The results obtained were tested using paired T-test. The paired T-test was carried out to see the difference in cough complaints before giving VCO and after giving VCO.

Table 8. Effect of Virgin Coconut Oil Mouth Gargle

Keluhan Batuk	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Sebelum Pemberian Kumur VCO Sesudah Pemberian Kumur VCO	2,269	1,116	,219	1,819	2,720	10,372	25	,000

Based on Table 8 above, it can be seen that the results of the t test to see the effect of gargling Virgin Coconut Oil (VCO) on cough complaints, the sig value is 0.000 or p <0.05. So it can be concluded that Ho is rejected. This shows that there is a significant influence between giving VCO mouthwash and cough complaints in the elderly in the working area of the Payung Sekaki Community Health Center, Pekanbaru City.

DISCUSSION

a. Gender

Based on the research results, it is known that 14 respondents were male (53.8%). The results of this study are in accordance with the results of research in Lampung which stated that men have a higher risk of developing respiratory tract infections with symptoms of chronic cough than women because the morbidity rate for men is higher than for women. This is also in accordance with the Bandengan sub-district profile (2015) which shows that in the Bandengan sub-district, Kendal Regency, the number of elderly men is 62.8% greater than that of elderly women, which is only 37.2% (Kushariadi, 2010).

b. Age

Patients with an age range > 60 years are at risk of exposure to various diseases including respiratory tract diseases because their respiratory organs are no longer functioning optimally, while the number of irritants themselves is inversely proportional to the decline in respiratory organ function, namely increasing. (Damayanti A, 2013).

According to Maryam (2011), elderly people will not be able to avoid the natural and gradual

aging process. The function of the body's organs in the elderly will decline because the aging process causes damage to cells, resulting in a decrease in the body's immunity. Based on the concept of psychoneuroimmunology, the speed associated with the aging process is more related to damage to body cells. Based on research results and several literature, researchers can conclude that elderly people are susceptible to coughing due to the aging process.

c. Education

Based on the research results, it is known that half of the respondents had a high school education level of 13 (50%). The level of education of the elderly is a source of the elderly's ability to understand a phenomenon in their life, environment or life and determine the best way to deal with this phenomenon. The level of education possessed by the elderly helps the elderly think the best way to determine their steps in their old age. There is a relationship between a person's level of education and his own ability to analyze information into basic knowledge for the actions he takes. Research (Gani, Wahyuni, & Sismini, 2017). Elderly people with higher education are generally those who used to have jobs with relatively high incomes and most of them also have old age/pension security (especially for elderly people who previously worked in the formal sector) so that in their old age they no longer need to work because they have enough. needs for himself and his family without having to work. On the other hand, elderly people with low education are generally those who previously worked in jobs with limited income (thus unable to save/invest for old age) and rarely have old age/pension security. Putri (2011) further said that with higher education, a person will be able to maintain their life longer and at the same time can maintain their independence for longer because they tend to take care of their health. Fahrun (2009) said that because education is basically not only a person's education/knowledge can be obtained not only from school (formal) but also in the family, community, and from other media (magazines, news, etc.).

d. Work

Based on the research results, it is known that the majority of respondents did not work, 15 (57.7%). This research is supported by research by Kuntoro (2009) which states that the volume of work for the elderly is less than that of young people. In this regard, according to Maryam (2011), the degenerative process causes a decrease in the function of the body's organs due to damage to cells due to the aging process, thus making the elderly population vulnerable to biological or physical changes in life and no longer productive.

In line with that, Notoatmodjo (2012) states that work will generate income, so that the individual will use health facilities. Sufficient income is important in ensuring the welfare of workers and is an important component of decent work, including for the elderly. Elderly people have the right to obtain a decent income/wages/salary to ensure their welfare and fulfill their daily needs. In addition, the elderly require costs for health care due to their declining physical condition. (BPS, 2018).

e. Long experience of coughing

Based on the research results, it is known that the majority of respondents had a cough for <7 days, 18 (69.2%). Coughing is an effort to defend the lungs against various existing stimuli and a physiological reflex that protects the lungs from mechanical, chemical and temperature trauma. Coughing becomes pathological if it is felt as a nuisance. Such a cough is often a sign of disease inside or outside the lungs and is sometimes an early symptom of a disease. Cough is the most common symptom of respiratory disease and a problem that doctors often face in daily practice (Tamaweol et al., 2016).

f. Disease History

Based on the research results, it is known that the majority of respondents with a history of hypertension were 15 (57.7%). Most respondents experienced hypertension with 14 respondents (35.0%) in PSTW and 17 respondents (42.5%) in the family. Loss of physical function can be the main source of stressors that trigger depression in the elderly (Azizah, 2011). Based on hospital reports through the Hospital Information System (SIRS) in 2010, the top 10 causes of outpatient diseases among all outpatient diseases in the age group 45-64 years and 65+ years, the highest was essential (primary) hypertension (Ministry of Health of the Republic of Indonesia , 2013). The elderly are the group that experiences the most health problems. As people get older, their strength and endurance decreases. A decrease in body resistance to a certain level can result in a person becoming vulnerable or susceptible to various diseases (Kusuma, 2012). This is especially felt by elderly people. The cause of disease in the elderly is due to the decreased function of various body organs due to the process of getting old (Maryam, 2012).

Bivariate Analysis

A data normality test was carried out before bivariate analysis was carried out using the Kolmogorov Smirnov normality test with a result of 0.124 or p>0.05, which means that the data is normally distributed, so a t test can be carried out. Based on the research results, it is known that the results of the t test to see the effect of gargling Virgin Coconut Oil (VCO) on cough complaints, the sig value is 0.000 or p <0.05. So it can be concluded that Ho is rejected and Ha is accepted. This shows that there is a significant influence between giving VCO mouthwash and coughing in the elderly in the Payung Sekaki Community Health Center working area, Pekanbaru City. Based on the theory, pure coconut oil contains lauric acid, caplyric acid and capric acid which have antiviral, antibacterial, antifungal and antiprotozoal properties. The benefits of lauric acid, which is the largest content in pure coconut oil, can kill various microorganisms, including Gram-negative bacteria (Kasim 2017).

Virgin coconut oil has an antibacterial effect that comes from its active compound content. Virgin coconut oil contains medium chain fatty acids whose mechanism of action is to damage bacterial cell walls, liquefy and show the effect of killing viruses by damaging the DNA and RNA of viruses which are coated with lipids. 8 Medium chain fatty acids consist of lauric acid, myristic acid, palmitic acid , caprylic acid, and capric acid. Of several medium chain fatty acids,

the one with the strongest effect on inhibiting the growth of pathogenic bacteria is lauric acid. Lauric acid is a medium chain saturated fatty acid (medium chain fatty, MCFA) which is easily metabolized and has antimicrobial properties so it can increase the body's immunity (Lisa, 2017). The results of research conducted (Annisa et al, 2015) show that virgin coconut oil has an antibacterial effect against Streptococcus mutans bacteria with an average inhibitory zone diameter of 11.65 mm.

CONCLUSION

Based on the results of the research that has been carried out, the following conclusions can be obtained:

1. The frequency of complaints of coughing in the elderly before giving Virgin Coconut Oil (VCO) mouthwash to complaints of cough with phlegm in the elderly at the Payung Sekak I Community Health Center, Pekanbaru City was the highest with complaints of severe coughing at 14 (53.8%).
2. Frequency of cough complaints in the elderly after giving Virgin Coconut Oil (VCO) mouthwash to complaints of cough with phlegm in the elderly at the Payung Sekak I Community Health Center, Pekanbaru City with complaints of mild cough as many as 14 (53.8%) d the cough disappeared/didn't cough as many as 12 (46.2%).
3. There is an influence between giving VCO gargle and coughing in the elderly in the working area of the Payung Sekaki Community Health Center, Pekanbaru City (p value = 0.000) or $p < 0.05$. So it can be concluded that Ho is rejected and Ha is accepted. This shows that there is a significant influence between giving VCO gargle and coughing in the elderly in the working area of the Payung Sekaki Community Health Center, Pekanbaru City.

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