



Proceeding Paper

DESIGN OF PROMOTIONAL MEDIA FOR GERTELLA CONSUMPTION COMPLIANCE WITH REDUCING BLOOD PRESSURE IN PRE-ELDERLY IN BENGKULU CITY

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Abstract

Non-communicable diseases (NCDs) are a major factor that can cause death in the world. The use of natural ingredients such as the rosella plant (*Hibiscus Sabdarifa* Fam), is one way that can be done to lower blood pressure. This rosella plant can have an effect on reducing serum creatinine, cholesterol, and glucose levels because it contains chemical compounds. The gertella application can make it easier to help compliance with consuming gertella. The purpose of this study was to determine the effect of promotional media in compliance with consuming gertella as an effort to reduce blood pressure. The research uses a quasi-experimental two group pretest and posttest design. Respondents consumed rosella tea with 1-2 perfect petals (2 grams) per day for seven days. The samples consisted of 30 gertella applications groups and 30 whatsapp groups. The results of the study in the gertella application group there was a difference in mean systolic blood pressure before and after the intervention with $p = 0.000 < 0.05$. There was a difference in mean diastolic blood pressure before and after the intervention with $p = 0.003 < 0.05$. In the whatsapp group, there was a difference in mean systolic blood pressure before and after the intervention with $p = 0.019 < 0.05$. There was a difference in the mean diastolic blood pressure before and after the intervention with $p = 0.009$. Conclusion there is an effect of gertella application on compliance in lowering blood pressure in the elderly.

Keywords: Mental Health, Empowerment, Peer Tutor, Think Pair Share (TPS)

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1. Introduction

Non-communicable diseases (NCDs) are diseases that cause death in the world. In 2015, deaths caused by NCDs amounted to 17 million people aged < 70 years (Rahmayanti, 2017). The 2018 Riskesdas report states that non-communicable diseases have increased when compared to the 2013 Riskesdas results, namely cancer, stroke, chronic kidney disease, diabetes mellitus, and hypertension. Globally, hypertension sufferers are estimated to number 600 million people with 3 million deaths each year in 2016. Patients with hypertension in America are assumed to be 1 in 4 adults. One of the most common public health problems in the world, including Indonesia, is hypertension (WHO, 2016). Cases of hypertension are more common in women (30%) than men (29%), and in 2012 there were an estimated 839 million cases of hypertension, and in 2025 it will increase to 1.15 billion or equal to 29% of the total population in the world (WHO SEARO, 2001).

Found 63,309,620 cases and 427 thousand deaths. Prevalence results of 45.9% at the age of 55-64 years, 57.6% at the age of 65-74 years, and 63.8% at the age of over 75 years of hypertension in the elderly in Indonesia. The percentage of hypertension in Indonesia seen from the results of blood pressure measurements at the age of over 18 years is 25.8% (Ministry of Health, 2016). The results of the 2018 Basic Health Research (Riskesdas) reported that the top three causes of death in Indonesia besides stroke 15.4% and tuberculosis 9.4% were hypertension with a

percentage of 6.8%. The results of measurements of hypertension carried out at the age of over 18 years showed a percentage of 31.7%, in women as much as 31.9% and in men as much as 31.3%.

A total of 35,210 (15.24%) residents aged ≥ 18 years had their blood pressure checked in Bengkulu City. The results of the examination showed that the population aged ≥ 18 years was 5,263 people (14.95%). The Bengkulu City Health Office in 2018 reported that there were 10,257 cases of hypertension (Provincial Health Office Profile, 2018). The risk of hypertension such as congestive heart failure to cerebrovascular disease, can also increase the occurrence of coronary heart disease 5 times and stroke 10 times. As many as 40-70% of stroke survivors are sufferers of hypertension (Bustan, 2007). The disease often has no symptoms before complications occur. Behavioral factors and good living habits can control the risk of hypertension. Smoking, unhealthy diet, lack of exercise, and drinking alcohol are factors that can increase blood pressure due to physiological changes in the body (Ministry of Health, 2015). Deaths worldwide as much as 9.4% are caused by complications of hypertension every year.

Hypertension causes nearly 45% of deaths due to heart disease and 51% of deaths due to stroke. It is predicted that coronary heart death and stroke caused by cardiovascular disease will always increase to 3.3 million deaths in 2030 (Infodatin Cardiac, 2014).

Non-communicable diseases other than hypertension, namely cardiovascular disease. The condition of the cholesterol content in the blood increases above normal or hypercholesterolemia is a disease of the heart and blood vessels. Increased fat levels resulting in cholesterol can also be a trigger for increased blood pressure. Consuming a mixture of Rosella flower petals (*Hibiscus sabdariffa L.*) is an alternative to reduce the number of total cholesterol. The active substance contained in flower petals. *sabdariffa L* that is, *gossypetin*, *anthosianin*, *dan glucoside hibiscin*, as a strong antioxidant that works to eradicate free radicals (Mulyai, 2009).

Rosella (*Hibiscus Sabdariffa Fam*) is a chemical compound that plays a role in suppressing serum levels of creatinine, cholesterol, and glucose, so it can be used as an alternative to lowering blood pressure through natural ingredients (Apriliyanti, 2018). This study is in line with the results of research written by Tamiriyon (2017) that there is a difference in blood pressure before and after the intervention is given $p = 0,001$). Similar research was revealed by Yusni (2011) regarding differences in systolic and diastolic blood pressure before and after being given treatment. Consume rosella flower petals (*Hibiscus Sabdariffa Linn*) which dries in women with elderly hypertension has an impact on systolic and diastolic blood pressure which decreases after consuming rosella calyx infusion which dries for 14 days. Because the organic substances and flavonoids present in rosella flower petals are useful for reducing blood viscosity. The results of Linda's research (2020) said that rosella tea had an effect on lowering blood pressure obtained the mean systolic before 145.31 and the mean systolic pressure after 139.38 with a $p\text{-value} = 0.036 < 0.05$ and obtained an average diastolic pressure before 96.41 and an average diastolic pressure after 91.72 with a $p\text{ value} = 0,033 < 0,05$. In reducing the number of hypertension, appropriate care and treatment must be carried out so that complications do not get worse, therefore for the treatment of hypertension reduce the use of chemical drugs and using more traditional medicine, namely in the form of rosella tea in the Gertella program (rosella tea movement). Therefore, a hypertension risk factor screening application was designed through *smartphone* android. Nowadays, android is similar to *smartphone*. Along with the growth of the times, technological developments are very rapid,

ranging from age groups to even economic status evenly enjoying the technology. User-*smartphone* at most one of them is Indonesia.

Smartphone is a cell phone that has the advantage of functioning similarly to a computer, namely working with *software* relating to standards and foundations for application developers, so as to present modern features in the form of electronic mail, internet, and electronic books (e-books). Almost all *smartphones* today has specifications *android*. Android is a mobile phone operating system whose development keeps up with the times. Therefore, researchers want to design an Android-based hypertension risk factor screening application. The development of the times is something that is greatly enjoyed by humans, one of which is the development of technology *smartphone* namely androids.

Android has become a primary need for people in this new normal era. With a form that is very flexible so that it can facilitate daily human activities such as taking notes, alternative computers/laptops, portraits, as well as various applications and games that are easy to have on your smartphone. *smartphone* android (Shani, Agrista Sarfina, 2017). Various *software* available to support human activities to be more productive. Therefore, humans are very dependent on *smartphones* android. The results of previous research show that there are advantages of using Android to focus on water calculation features and *reminders* (Jessica, Marrieta, George, 2012).

Research purpose is to make an application design about promotion gertella. Utilization of this research with the Android-based Gertella promotion application is expected to remind people to consume rosella tea so that the effectiveness and benefits of rosella tea can be optimal and can reduce blood pressure. It is known that the influence of promotional media on adherence to consuming gertella as an effort to reduce blood pressure in pre-elderly people in Bengkulu City.

2. Materials and Method

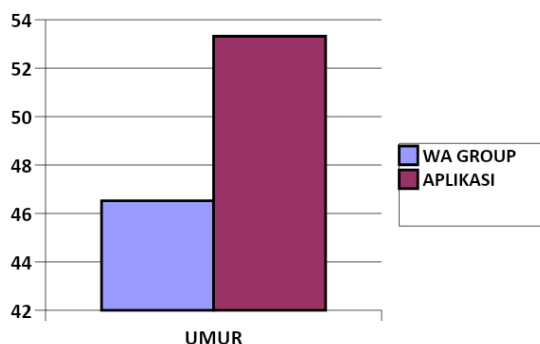
This research is a quantitative research using design *quasi experimental two group pretest-posttest design*. The hypertension sufferer group was pretested and then given treatment by being given an android application reminder in the case group and the group *chat WhatsApp* in the control group in consuming rosella tea every day for 7 days then a post-test was carried out. Respondents in this study were pre-elderly (40-55 years) with a total of 30 people in the intervention group and 30 people in the control group selected randomly with *purposive sampling*

3. Result and Discussion

Results

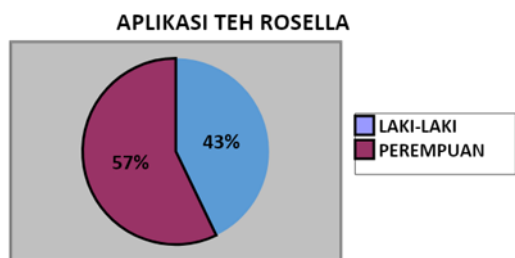
1. Univariate Analysis

Graph 1 Characteristics of Respondents by Age



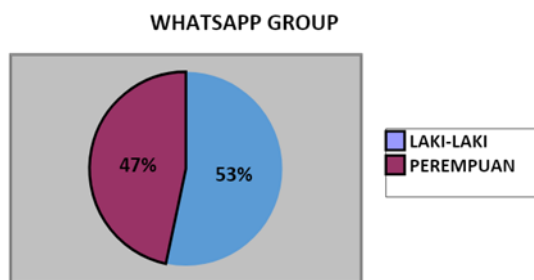
According to graph 1, it can be seen that the average age of the rosella tea application group was (53.32) years and the average age of the rosella tea group was *WhatsApp group* is (46.52) years.

Diagram 1 Characteristics of Respondents Based on Gender in the Whatsapp Group



Based on Diagram 1 above, it shows that the majority (53%) of respondents are group *WhatsApp group* male gender.

Diagram 2 Characteristics of Respondents Based on Gender in the Rosella Tea Application Group



Based on diagram 2 above shows the majority (57%) of group respondents *tea application* female.

Table. 1 Respondents Compliance in Consuming Rosella Tea for 7 days (14 Times)

	Gertella		WA Group	
	N	%	N	%
14	19	63.3	23	76.7
13	1	3.3	1	3.3
12	3	10	3	10
11	3	10	1	3.3
10	1	3.3	1	3.3
9	1	3.3	-	0
8	1	3.3	1	3.3
6	1	3.3	-	0

The results from the table above show that in the *Whatsapp group* 23 respondents (76.7%) were the most obedient (maximum score 14) in consuming rosella tea, while in the *gertella* group there were 19 respondents.

2. Bivariate Analysis

Table 2 Analysis of mean differences in blood pressure before and after the rosella tea application group (intervention)

Group	After		Before		Mean Difference	r
	Mean	SD	Mean	SD		
systolic	124.16	14.08	132.16	19.20	8.00	0.001
Diastolic	83.16	8.20	88.00	9.68	4.84	0.011

Results of bivariate analysis with *Wilcoxon test* for the rosella tea application group (n = 19) the mean systolic pressure before 132.16 and the mean systolic pressure after 124.16 with a p value= 0.001 <0.05 so that there is a difference in the mean systolic pressure before and after drinking rosella tea to the rosella tea application group. Meanwhile, the diastolic pressure has an average diastolic pressure before 88.00 and an average diastolic pressure after 83.16 with a value p = 0.022 < 0.011, so there is a difference in the mean diastolic pressure before and after being given rosella tea in the rosella tea application group.

Table 3 Analysis of mean differences in blood pressure before and after WhatsApp group (control)

Group	After		Before		Mean Difference	r
	Mean	SD	Mean	SD		
systolic	142.39	20.21	150.87	19.28	8.48	0.009
Diastolic	91.52	9.22	96.30	11.89	4.4	0.022

Results of bivariate analysis with *wilcoxon* for the rosella tea application group (n = 23) the mean systolic pressure before 150.87 and the mean systolic pressure after 142.39 with a p value= 0.009 <0.05, so there is a mean difference in systolic pressure before and after drinking rosella tea in the control group *WhatsApp group* (control). While the diastolic pressure obtained the average diastolic pressure before 96.30 and the average diastolic pressure after 91.52 with a p value = 0.022 <0.05, so there is a difference in the mean diastolic pressure between before and having consumed rosella tea in the group *WhatsApp group* (control).

Discussion

Bivariate analysis using *wilcoxon* in the rosella tea application group (n = 19) the mean systolic pressure before 132.16 and the mean systolic pressure after 124.16 with a p value = 0.001 <0.05 so that there is a difference in the mean systolic pressure before and after drinking rosella tea to the rosella tea application group. Meanwhile, the diastolic pressure obtained by the average diastolic pressure before 88.00 while the average diastolic pressure after 83.16 obtained the p value = 0.022 < 0.011, so there is a difference in the mean diastolic pressure before and after being given rosella tea in the rosella tea application group.

Bivariate analysis using *the wilcoxon* test in the rosella tea application group (n = 23) the mean systolic pressure before 150.87 and the mean systolic pressure after 142.39 with a p value= 0.009 <0.05 so that there is a difference in the mean systolic pressure before and after drinking rosella tea in the group *WhatsApp group* (control). While the diastolic pressure obtained the average diastolic pressure before 96.30 and the average diastolic pressure after 91.52 results p = 0.022 <0.05 so that there is a difference in the average diastolic pressure before and after consuming rosella tea in the group (control).

The results of this study are clarified by Linda's researcher (2020) who writes that bivariate analysis uses a *wilcoxon* In the hypertension intervention group, systolic pressure obtained an average systolic pressure before 145.31

and an average systolic pressure after 139.38 to obtain a p -value = 0.036 < 0.05, so there is a difference in the average systolic pressure before and after being given rosella tea.

In line with the opinion of Apriliyanti (2018) that in reducing blood pressure, namely consuming natural ingredients using the rosella plant (*Hibiscus Sabdarifa* Fam. This plant contains compounds that play a role in reducing serum levels of creatinine, cholesterol, and glucose.

In line with Tamiriyona's research (2017) that the t -test is dependent on systolic pressure, the result is a t value of 22.92, a value of $p = 0.001$. Therefore, there is a strong difference in systolic pressure before and after consuming rosella flower tea. Meanwhile, the diastolic pressure was obtained by a value of $t = 12.10$ with a value of $p = 0.001$. So there is a strong difference in diastolic pressure before and after consuming rosella flower tea within 4 weeks.

Rosella flower plants can inhibit adrenergic receptor agonists. Also, this plant can relax blood vessels so that it can have a vasodilator effect. The process of medicinal plants regulate blood pressure by having a dilating effect on blood vessels to slow them down *angiotensin converting enzym (ACE)*. System holdrenin-angiotensin which can lower kidney function to increase blood pressure (Mun'im, 2011).

This statement is also confirmed in Sumitro's research (2011) writing that *anthocyanins* a collection of bioactive contained in rosella flowers have an impact as a lowering of blood pressure. The study was followed by 32 respondents for 2 days with a period of 2 hours. Blood pressure was measured on the respondent after resting for 5 minutes. After that, the researchers gave 300 ml of rosella petals to the respondents. After all was carried out, the respondent's blood pressure was measured again after 90 minutes of infusion of rosella petals.

Based on previous research, one of the obstacles and drawbacks in consuming rosella tea is because respondents often forget the time to consume gertella. Then designing a gertella application and *whatsapp group* can help remind respondents to consume rosella on time.

The results of calculating the number of adherence to consuming rosella tea at seven days with 14 times the time of consuming rosella tea showed that the WA group was the most compliant (maximum score of 14) in consuming rosella tea as many as 23 (76.7%) respondents while in the gertella group as many as 19 (63%) respondents. This is because respondents are more familiar and accustomed to using the application *WhatsApp* from the gertella application. Application *WhatsApp* is used at any time with various needs so that it is more easily seen and accessed by respondents.

This is in line with Nurhafid's research (2017) which states that another advantage is helping users adhere to treatment. Kang & Park (2016) stated that mobile applications for hypertension management based on CPGs are effective in increasing medication adherence. This is supported by Hamine et al (2015) who stated that mHealth facilitates adherence to chronic disease management. Gertella application design is used to remind pre-elderly to consume rosella tea. However, this application is less effective when used on pre-elderly respondents due to several factors, including Middle and lower socioeconomic status so that not all respondents understand the use of Android because it is not a primary need. Pre-elderly age has experienced a decline in memory and intellectual power so they often forget when consuming rosella tea. Pralansia has difficulty adapting to new things, is supported by lower secondary education and does not really understand technology.

4. Conclusion

The design of the Gertella application is used as a guide and reminder for seniors in consuming rosella tea. There were 23 respondents who adhered to consuming rosella tea in the control group (*whatsapp group*), there were 19 respondents who adhered to consuming rosella tea in the intervention group (gertella application), there were differences in systolic and diastolic blood pressure before and after the intervention in the gertella application group and the gertella application group. *whatsapp group*. there is an effect of gertella application as a reminder to consume rosella tea in reducing blood pressure.

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