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Aloe Vera Extract 75% Effective in Providing Xerosis Repair In Chronic Kidney Failure Patient's

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Abstract

The prevalence of chronic kidney disease in Indonesia is increasing, especially in Saiful Anwar Hospital Malang, because the patients must undergo hemodyalisis therapy. Hemodialysis therapy has an effect to induce xerosis. Untreated xerosis will cause pruritus. Therefore this condition needs to use moisturizer to prevent pruritus like aloe vera extract. The purpose of this research was to determine the effect of using aloe vera extract on the treatment of the skin of patients with chronic kidney failure. The research method was true experimental research and used simple random sampling technique to recruit 25 respondents. Aloe vera extract was used by rubbing it onto the skin with xerosis and assessment was conducted in the first, second and third week. The analysis of this research used the Kruskal-Wallis test and Linear Regression. The result of different test was p = 0.001 or á <0.01 showed that there was significant differences between groups of independent variables. The R ^ 2 value was 69% , it mean that aloe vera extract had an effect as much as 69% of improvement in skin conditions of xerosis patients and 31 % was influenced by other factors besides extract aloe vera. The results showed that aloe vera extract with 75% concentration gave the most effective treatment for xerosis patients. Therefore, aloe vera could be a therapy for xerosis as a management of independent nursing care with nursing problems of skin integrity disorders.

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INTRODUCTION

Kidney disease, a disease which caused the function of the kidney organs has decreased until it is unable to work on filtering and removing electrolytes in the body, unable to maintain the balance of body fluids and chemicals, such as sodium, potassium in the blood (Berawi, 2016). Based on data from the World Health Organization (WHO) in 2013, it indicated that those suffering from acute and chronic kidney failure reached 50%, while those who were known and received treatment were only 25% and 12.5% which treated well.

In Indonesia, the prevalence of kidney failure achieved 31.7% of the population in the age of 18 years old above (Indrasari, 2015). Basic Health Research (2017) found out the prevalence of kidney failure in Indonesia was 2% (499,800 people) with the most of the patients were male, namely 40% with the total number of patients with kidney failure 52,835 of totals patients who were actively undergoing hemodialysis. Patients with chronic renal failure require long-term hemodialysis therapy patients must undergo dialysis therapy throughout their life to maintain their survival and reduce the symptoms of uremia. Dialysis therapy itself has various complications, including decreased hemoglobin, xerosis, and pruritus that occur during dialysis when metabolic end products remain in the skin (Agustina 2018; Agustina 2019; Tansil, 2016).

Dry skin or xerosis is a skin disease caused by impaired lipid modification and hydration. The damage in the stratum corneum results in a 10% reduction in water retention capacity. Dry skin was characterized by skin that is scaly, rough, cracked, and itchy (Purnomo, 2014). Then, Puspita (2015) stated that based on the research at PKU Muhammadiya Hospital Yogyakarta, which showed that 71.4% of chronic kidney failure patients undergoing routine hemodialysis had xerosis. Meanwhile, Patel (2012) stated that the prevalence of xerosis associated with dialysis ranges from 22% - 90%.

Based on the results of a preliminary research conducted by researchers on September 24-26, 2018, regarding the prevalence of chronic kidney failure patients undergoing hemodialysis at dr. Saiful Anwar Malang for the last three months from June to August 2018 with a total of 568 patients, while patients undergoing hemodialysis suffered from xerosis approximately 17% or as many as 97 people. According to research by Zainoel (2017), most patients ignored the condition of their dry skin, which can lead to pruritus and xerosis. This case can be handled by maintaining skin moisture by treatments using aloe vera extract. In the aloe vera gel, there is a lot of water content that moisturize the skin. It is in line with research conducted by Agoes (2015), which stated that aloe vera gel contains 99% water and other ingredients, namely glucomannans, amino acids, lipids, sterols, and vitamins. Aloe vera can also stimulate fibroblasts, which produce collagen and elastin fibers that make the skin more elastic and reduce wrinkles, the amino acids in aloe vera can also reduce rough skin and function as an astringent to reduce pores (Furnawanti, 2014).

Based on the data and descriptions from the background, the researcher is interested in researching "The effect of using aloe vera extract on the skin of patients with chronic kidney failure in the hemodialysis room of dr. Saiful Anwar Malang".

METHODS

The design of the research used true experimental design where the researcher can control all variables that affected the experiment.

This research had 40 chronic renal failure patients undergoing hemodialysis with skin damage (xerosis) due to hemodialysis in the hemodialysis room RSUD dr. Saiful Anwar Malang as the population. The subjects involved in the research were 25 patients, which divided into five groups, namely one control group and four treatment groups. The treatment groups differentiated based on the concentration of aloe vera extract, namely the 100%, 75%, 50%, and 25% treatment groups. The sampling technique in this research was carried out by employing Probability Sampling, namely Simple Random sampling. The population was 40 respondents who met the inclusion criteria, then the researcher used a number table to select samples by taking odd numbers (1,3,5,7,9, 11, and so on) until a sufficient number of samples were 25 respondents who met the inclusion criteria which include:

a. Respondents were female patients with chronic renal failure aged 50 to 60 years with xerosis.
b. The patient was undergoing routine hemodialysis therapy for more than six months.
c. Want to be a research respondent.
d. Able to do skincare independently.
e. There is a companion family at home.

The instrument used was aloe vera extract moisturizer with four concentrations (100%, 75%, 50%, 25%) in the treatment group and aqua bikes in the control group. Aloe vera extract was applied to the skin that has xerosis. There was an assessment of changes in skin conditions in xerosis patients before and after treatment, which was carried out in the first, second, and third weeks. The instrument for assessing changes in skin condition used the Specific symptom sum score with the following assessments: squama, roughness, redness, and cracks, abbreviated as SRRC.

RESULTS

The skin repair chart below had shown several results, namely:

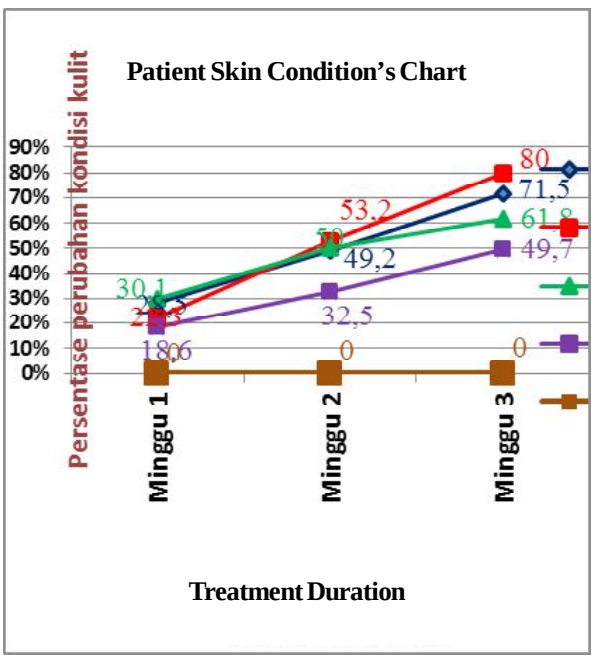

Figure 1 Distribution of Xerosis Patient Skin Conditions

According to Figure 1 of 20 respondents, the results showed that in the third week of the aloe vera extract group, the one with the highest change in xerosis skin conditions was the aloe vera extract group 75% with an average percentage change of 80% and included in the category of mild xerosis assessment.

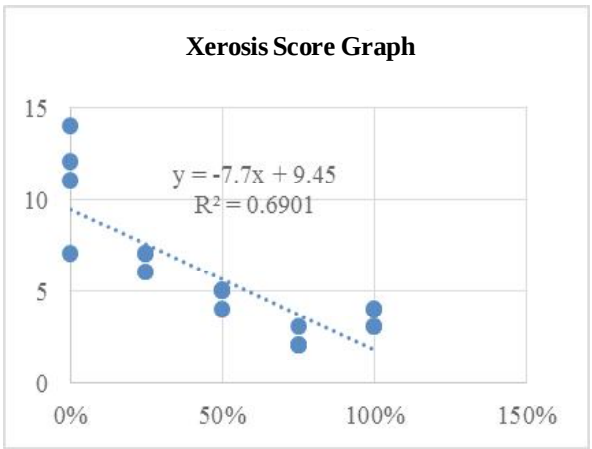

Figure 2 Xerosis Score Graph

The results of the Kruskal-Wallis difference analysis test above) indicated that the value of p = 0.001 or p <0.01, meaning that there was a significant difference in the concentration of aloe extract between groups.

Based on the table of the results of the Linear Regression Test (effect test), the correlation coefficient value = 0.831, meaning that the relationship between the two research variables was in the very strong correlation category. However, the coefficient of determination was 69%, which means that giving aloe extract had a contribution effect of 69% on the skin condition of xerosis patients and 31% influenced by other factors outside the variable giving aloe extract.

Based on the statistical results of the normality test (data distribution test), the p-value for the concentration of the aloe extract group was 100% p 0.024, the p-value for the aloe extract group was 75%, namely p 0.001, the p-value for the aloe extract group was 50% namely p 0.001, and the p-value the value of the aloe extract group 25% is p 0.024. Therefore, it can be concluded that the p-value of the aloe extract concentration group of 100%, 75%, 50%, and 25% have a p-value <0.05, which means that the data did not distribute with normal or H0 rejected. Hence, those with a normal distribution or H0 accepted only in the 0% aloe extract concentration group with a p-value of 0.734> 0.05. Therefore, the requirements for the ANOVA test were still not fulfilled, so it continued by using the Kruskal-Wallis test.

DISCUSSION

Initial Skin Condition of Patients with Chronic Kidney Failure

Based on the results of the research analysis, it was found that the average value of skin conditions in all groups was severe skin conditions. The details were the 100% group with an average percentage of xerosis skin conditions of 61.25%, the 75% group with an average percentage of xerosis skin conditions of 56.25%, 50% group with an average percentage of xerosis skin conditions of 62.5%, 25% group with an average percentage of xerosis skin conditions of 65%, and the control group with an average percentage of xerosis skin conditions of 55%. Therefore, all of the groups had the category of severe xerosis in the initial skin conditions with the lowest percentage of xerosis skin conditions, namely the control group with an average percentage of 55% skin conditions. The assessment of the skin condition for xerosis was assessed using the Specific symptom sum score, which was the newest method of assessing dry skin established by the Europan Group on the Effectiveness of Measurement of cosmetics and other topical products in 1994 in France (Siregar, 2013). This score divided the assessment into several clinical criteria so that it was easier to use, namely: squama (scale), roughness (skin roughness), redness (erythema), and cracks (fissure), which were abbreviated as SRRC (Sachdeva, 2015)

Based on Siregar (2013), dry skin provided several characteristic features, namely:

1. Visible characteristics: redness, dull surface, dryness, white patches, layered appearance, cracks, and fissures.
2. Palpable characteristics: dull and uneven.
3. Sensory characteristics: feels dry and uncomfortable, painful, and itchy.

It was also needed to provide sufficient information to respondents so that respondents understand how to manage aloe vera extract and stop using aloevera if there was an allergy, and inform the benefits of aloevera, the content of aloevera extract, and provided information about changes in skin condition. Thus, it could prevent complications that occured when administering aloevera to xerosis patients.

Skin Condition of Patients with Chronic Kidney Failure After Appliying Aloe Extract 100%

The results of the descriptive analysis of the research on the skin conditions of patients with chronic renal failure after giving 100% aloe extract showed that there was the highest percentage of skin condition improvement by the 100% aloe extract group in the third week, with an average percentage of 71.5%. The greater the active substance concentration, the better the drug diffusion. A good drug diffusion will accelerate the absorption of the skin against the drug so that it works following the function of the medicinal compounds contained therein.

Research conducted by Widurini (2013) stated that using aloe vera with a concentration of 100% that applied to the inflammation of the oral mucosa of rats showed that it was able to reduce inflammation of the oral mucosa of rats. The results show that aloe vera did not have a single anti-inflammatory mechanism. This plant contained various elements and substances that were believed to act as anti-inflammatory agents, including salicylic acid, vitamins, polysaccharides, and fatty acids (Widurini, 2013).

The intervention conducted by researchers with a concentration of 100% aloe vera only made a 71.5% change in the xerosis condition which meant that the higher the concentration of aloe vera extract could accelerate the skin condition of xerosis. However, it coud be influenced by many factors which one of it, was the difference in the level of acidity (PH) between the aloe vera concentration and the acidity level of the skin in the epidermis.

Skin Condition of Patients with Chronic Kidney Failure After Appliying Aloe Vera Extract 75%

The results of the descriptive analysis of the research on the skin conditions of patients with chronic renal failure after giving aloe extract 75% showed that there was the highest percentage of skin condition improvement by the aloe extract group 75%, which was in the third week with an average percentage of 80%. The improvement in skin condition in the group was 75% higher than that in the 100% group. According to the researcher, there was no effect of using aloe vera extract on skin

conditions in the first week because it was still in the inflammatory phase. Then, in the second week of giving aloe vera extract, the skin conditions begin to change because they entered the proliferation stage. In the third week, the skin condition was far away better, which means experiencing increased healing, namely enter the finishing or maturation stage.

Based on the results of the research, the treatment group that was given aloe vera extract with a concentration of 75% was the fastest to improve skin structure and skin moisture xerosis. At this concentration, the ph of aloe vera and ph of epidermis were almost the same, which was giving aloe vera the ability to penetrate the stratum corneum properly.

Skin Conditions of Patients with Chronic Kidney Failure After Giving Aloe Vera Extract 50% and 25%

Researcher's observation on the skin conditions of patients with chronic renal failure after applying 50% aloe extract showed there was the highest percentage of skin conditions by the aloe extract group 50% in the third week with an average percentage of 61.80%. Then, the results of the observations of researchers on the skin conditions of patients with chronic renal failure after giving aloe extract 25% showed that the condition of skin improvement in the third week had an average percentage of 49.7

In the results of the Kruskal-Wallis difference test, the value of $p = 0.001$ or $p < 0.01$, which means that there was a significant difference between the aloe extract concentration groups. In the results of the Linear Regression Test (effect test), the correlation coefficient value = 0.831. Here, it can be interpreted that the relationship between the two research variables was in a very strong correlation category. However, the coefficient of determination was 69%, which means that giving aloe extract had a contribution effect of 69% on the skin condition of xerosis patients and 31% influenced by other factors outside the variable giving aloe extract.

Based on the results of the research, the treatment group was given aloe vera extract, with a concentration of 75% was the fastest to improve skin structure and skin moisture xerosis. It happens due to the concentration the pH of aloe vera and pH of the epidermis were almost the same, thus giving aloe vera the ability to penetrate the stratum corneum properly. According to previous research by Agoes (2015), it stated that aloe vera gel contained 99% water and the other glucomannans, amino acids, lipids, sterols, and vitamins. Aloe vera stimulated fibroblasts, which produced collagen and elastin fibers, which made skin more elastic and reduced wrinkles then, the amino acids in aloe vera also reduced rough skin and acted as an astringent to reduce pores (Furnawanti, 2014). Besides, the content of aloe vera extract compounded in the form of amino acids and protease enzymes was able to function to help to accelerate the development of new cells tremendously and eliminating dead cells in the epidermis.

CONCLUSION

The use of aloe vera extract on the skin conditions of patients with chronic renal failure showed that there was an improvement in the xerosis skin after applying aloe vera extract. The highest skin improvement was found in the group with 75% aloe vera extract with an average percentage of 80% improvement in skin conditions.

SUGGESTION

It suggested that further research needs sample selection with the same level of xerosis in patients with different concentrations of aloe vera extract. The sample selection needs to be differentiated based on the length of time undergoing the same hemodialysis therapy so that the effectiveness of aloe vera concentrations is more accurate. The acidity level of the aloe vera concentration and the acidity of the skin also need to be measured as comparison. Measurement of the concentration of active substances before and after dilution needs to be measured to get the optimum concentration.

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