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Effect of topical aloe vera on striae gravidarum severity among pregnant women

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Abstract

Background: Striae gravidarum is one of the most common physiological skin changes experienced during pregnancy, affecting up to 90-95% of pregnant women. It may cause itching, skin irritation, and decreased self-confidence. Aloe vera has been reported to possess moisturizing and skin-regenerating properties that may help reduce the severity of stretch marks during pregnancy.

Purpose: This study aimed to determine the effect of aloe vera application on reducing striae gravidarum among pregnant women.

Methods: This quantitative study employed a quasi-experimental design using a non-equivalent control group pretest–posttest approach. A total of 37 pregnant women were recruited using total sampling. Aloe vera was applied for four weeks, and observations were conducted before and after the intervention. Data were analyzed using descriptive statistics and the Paired t-test.

Results: Most respondents were classified as non-risk age (81.08%) and multiparous (64.86%). Statistical analysis demonstrated a significant reduction in striae gravidarum scores after four weeks of aloe vera application ($p=0.000$; $p<0.05$), indicating a significant difference between pretest and posttest measurements.

Conclusion: Aloe vera application significantly reduced the severity of striae gravidarum in pregnant women after four weeks of intervention. Aloe vera may be considered a safe and affordable complementary intervention for managing stretch marks during pregnancy.

Keywords: Aloe Vera; Pregnancy; Pregnant Women; Striae Gravidarum; Stretch Marks.

INTRODUCTION

Pregnancy is defined as a physiological process experienced by all women. Healthy reproductive organs and regular menstruation increase the risk of pregnancy. In other words, the chances of pregnancy are greater. Therefore, a pregnant woman must be able to adapt to both psychological and physiological changes. (Fatimah & Nuryaningsih, 2017).

As the fetus develops, the mother's body also undergoes changes to meet the needs of the baby's growth and development. One of the changes that occurs in pregnant women is striae gravidarum. Striae gravidarum occurs due to increased blood flow to the skin during pregnancy, which functions to remove excess heat and gives a dark or reddish effect on the abdominal wall and breasts that form like lines. These

slightly concave reddish lines on the skin of the abdomen, thighs, and breasts are called striae gravidarum or what we commonly know as stretch marks (Andini & Khairiah, 2023).

Physiological changes during pregnancy affect various body systems, including the skin. These changes are primarily caused by hormonal alterations, particularly the secretion of estrogen, progesterone, and somatomammotropin hormones produced by the placenta. Skin pigmentation changes are common during pregnancy and may manifest as linea nigra, chloasma gravidarum, darkening of the areola and nipples, and striae gravidarum (Prawirohardjo, 2016). Striae gravidarum is one of the most common dermatological conditions experienced

by pregnant women. It usually appears during the sixth or seventh month of pregnancy as reddish or purplish streaks that gradually become pale, atrophic, and hyperpigmented after delivery. These lesions commonly occur on the abdomen but may also develop on the breasts, thighs, and axillary areas (Hajhashemi, Rafieian, Boroujeni, Miraj, Memarian, Keivani, & Hagholahi, 2018).

According to the World Health Organization (WHO), in 2018 the number of pregnant women who experienced striae gravidarum increased by 5% from the previous year or around 300,990 with the incidence of experiencing Striae Gravidarum 198,800 or around 66% during pregnancy. In Indonesia itself, pregnant women who experience Striae Gravidarum reached 95% with varying levels due to the lack of health education for pregnant women so that they are less appropriate in handling it (Zulaekhah, 2022).

The prevalence of striae gravidarum among pregnant women can reach up to 95%, with varying degrees of severity. In Indonesia, limited health education regarding pregnancy-related skin changes contributes to the inadequate management of this condition (Melliawati, 2018). Although striae gravidarum is not considered a life-threatening condition, it may negatively affect maternal self-confidence and psychological well-being. Approximately 90% of pregnant women with striae gravidarum experience skin irritation, reduced moisture, and decreased skin elasticity, making the skin more susceptible to bruising and thinning. In some cases, itching associated with stretch marks may lead to scratching and skin injury. Although striae gravidarum may gradually fade within several months to two years postpartum, it rarely disappears completely. Therefore, preventive measures are necessary to minimize permanent skin changes during pregnancy.

Various interventions have been proposed to prevent and reduce the severity of striae gravidarum. Laser therapy is one of the available treatment

options; however, it is relatively expensive and inaccessible for many pregnant women (Hajhashemi et al., 2018). Aloe vera gel has emerged as a more affordable and widely available alternative. Historically, aloe vera has been used for skin care due to its moisturizing, anti-inflammatory, and wound-healing properties. Previous studies have demonstrated that aloe vera gel can accelerate wound healing and improve skin regeneration. In addition, aloe vera contains bioactive compounds that contribute to skin hydration and elasticity, making it potentially beneficial for preventing and reducing stretch marks (Marhaeni, 2020; Sianturi, 2019).

RESEARCH METHOD

This study employed a quantitative approach using a quasi-experimental design with a non-equivalent control group pretest–posttest design. The study was conducted at the Munggon Integrated Health Post (Posyandu Munggon), Berbah District, Sleman Regency, Special Region of Yogyakarta, Indonesia.

The study population consisted of all pregnant women registered at the Munggon Integrated Health Post during the study period. A total of 37 pregnant women were recruited using the total sampling technique. Respondents who met the inclusion criteria participated in the study and received topical aloe vera intervention for four weeks.

Data were collected using an observation sheet to assess the severity of striae gravidarum before (pretest) and after (posttest) the intervention. Respondents' demographic characteristics, including maternal age and parity, were also recorded.

Descriptive (univariate) analysis was performed to describe the frequency distribution of respondents' characteristics. Inferential (bivariate) analysis was conducted using the Paired t-test to determine the effect of aloe vera application on reducing striae gravidarum. Statistical significance was set at $p < 0.05$.

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RESEARCH RESULTS

Table 1. Characteristics of Respondents (N=37)

Variable	Results
Age (Mean±SD) (Years) (Range)	(27.5 ± 4.2) (18-45)
20-35	30/81.8
20 or >35	7/18.91
Parity (n/%)	
Primiparous	13/35.13
Multiparous	24/64.86

Table 1 shows that 81.08% of pregnant women were at risk, while 18.91% were at risk. The majority of respondents were multiparous (64.86%), while 35.13% were primiparous.

Table 2. Effect of Aloe Vera Application on Striae Gravidarum Among Pregnant Women

Variable	Statistical Test	p-value	Interpretation
Aloe vera application before and after intervention	Paired t-test	0.000	Significant difference between pretest and posttest scores

The results of the study show that H0 is rejected or the two population means are not identical (the average pretest and posttest scores are significantly different) with a probability/significance level of 0.000 (p value <0.05).

DISCUSSION

This study was conducted to determine whether the administration of aloe vera has an effect on striae gravidarum (stretch marks) in pregnant women. The characteristics of respondents showed that the majority of respondents were in the non-risk age category, accounting for 81.08%. This indicates that the respondents' age at the time of the study was within the healthy reproductive age range, as 20–35 years is considered the optimal age for pregnancy. At this age, the bones are still strong, whereas after the age of 35 years, bone density begins to decrease and the pelvis may become less favorable. Furthermore, pregnancy and childbirth at the age of over 35 years are associated with increased health risks, decreased uterine function, and a higher potential for medical

complications that may lead to adverse outcomes for both the fetus and the mother.

The administration of aloe vera to pregnant women experiencing stretch marks showed a significant change, with a p-value of 0.000 (<0.05). This finding is consistent with another studies which showed that 10 out of 15 respondents (66.7%) had more visible stretch marks before treatment. After the application of olive oil and aloe vera, a reduction in stretch marks was observed in 5 postpartum mothers (66.7%). The Wilcoxon test showed a p-value of 0.025, indicating that the application of olive oil and aloe vera had a significant effect on reducing stretch marks in postpartum mothers (Masthura, Wati, & Nursa'adah, 2024).

Another studies also demonstrated a statistically significant result, with a significance value of 0.001 (<0.05). Therefore, it can be concluded that there was a significant difference in the fading process of stretch marks before and after the use of olive oil and aloe vera extract in the working area of Tigo Baleh Public Health Center, Bukittinggi City, in 2019 (Hasnita, Silvia, & Octazuria, 2019). Another study conducted

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showed that after providing care twice daily every morning for 10 days, there was a noticeable improvement in stretch marks. The mother reported that the skin lines became less visible after receiving aloe vera and olive oil treatment (Yuspa & Febrianti, 2021).

This finding is supported by the theory that stretch marks are a common skin condition occurring during pregnancy. The epidemiology and exact causes of stretch marks are not fully understood. The main contributing factors include excessive maternal weight gain during pregnancy, young maternal age, and family history. Stretch marks, also known as *striae gravidarum*, commonly appear around 24 weeks of pregnancy and are characterized by linear lesions with a length of at least 5 cm. Initially, they appear reddish or purplish and gradually transform into white lines or atrophic hypopigmented scars during the postpartum period. These striae gravidarum may appear as either thin or wide lines (Fatmasari 2014).

Olive oil and aloe vera have advantages, including oleic acid, phenolic acid, sterols, tocopherols, and flavonoids that brighten the skin (Pratami, Permadi, & Gondodiputro, 2014). Meanwhile, aloe vera gel contains lignin, saponins, tannins, and allectin. Tannins are organic compounds composed of a mixture of complex polyphenol compounds in certain amounts. These compounds can be stored in leaves, fruit, stems, or roots. Tannins have antibacterial properties, where the protein is reprecipitated and does not crystallize due to the polyphenol mixture in the tannin (Arifin, Setiasih, & Hamdani, 2016).

Aloe vera is widely recognized as an effective plant for skin care, and one of its benefits is reducing the appearance of stretch marks. Aloe vera contains various essential nutrients and active compounds that can support skin repair and can be used for managing minor skin injuries (Hasnita, 2019).

Based on these findings, it can be concluded that there is a difference in the average number of stretch marks before and after the application of aloe vera. Therefore, aloe vera administration is an appropriate intervention to reduce the appearance and severity of stretch marks in pregnant women.

CONCLUSION

The application of aloe vera over a four-week period significantly reduces the severity of striae gravidarum (stretch marks) in pregnant women. Therefore, aloe vera can be utilized as a safe, effective, and affordable complementary intervention to manage and reduce stretch marks during pregnancy.

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