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The Effectiveness of Nigella Sativa Oil Application to Skin Integrity Disorders in Adolescents with Acne Vulgaris

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The Effectiveness of Nigella Sativa Oil Application to Skin Integrity Disorders in Adolescents with Acne Vulgaris

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Keywords: *Acne Vulgaris; Adolescent; Nigella Sativa; Skin Integrity Disorders*

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Abstract

Background: Nigella sativa oil from several studies can reduce the problem of skin integrity disorders because Thymoquinone, the main ingredient of black cumin, is pharmacologically active quinine that has analgesic (pain reliever), anti-inflammatory, and antitumor effects.

Objective: The research objective was to analyze the effectiveness of Nigella Sativa oil administration on skin integrity problems in adolescents with acne vulgaris in Kedensari Village RT 17 RW 05 Tanggulangin Sidoarjo.

Methods: This study used Quasi-experimental with a pre-post-test control group design approach. The sample was selected using the simple random sampling technique. A total of 28 adolescents divided into two groups: the experimental group of 14 people and the control group of 14 people. The independent variable was the administration of Nigella Sativa oil, while the dependent variable was the degree of skin integrity disorders in adolescents with acne vulgaris. The treatment group was given Nigella Sativa oil for 1 week, where every day, it was applied to the face for 15 minutes and then rinsed with water. The control group was not given Nigella Sativa oil. The research instrument was a skin condition observation sheet. Data analysis used the Wilcoxon test and the Mann Whitney test with a significance value of $\alpha = 0.05$.

Results: The results showed significant differences in the intervention group in terms of skin integrity before and after intervention p-value=0,001<0,05). Significant results were also shown from the difference between the control and intervention groups with p-value =0,000 <0.005.

Conclusion: Giving Nigella Sativa oil effectively improves skin integrity problems in adolescent with acne vulgaris. It is expected that the nurses can use Nigella Sativa oil in providing care for adolescents with acne vulgaris.

INTRODUCTION

Acne vulgaris (Acne) is a skin disease at all ages, especially in teenagers who have just reach puberty (Dewi et al., 2017). Acne vulgaris is a complex disease (multifactorial). Acne Vulgaris has pathogenesis of follicular epidermal hyperproliferation, excessive sebum production, inflammation, and the activity of Pro-piononil bacterium Acne. Acne can be caused due to the cosmetics use and signs of puberty. Puberty in adolescents has hormonal, physical, and psychological changes, usually occurring one year before menarche or the first menstruation in women (Ramdani, 2015). Acne vulgaris that is left unchecked can cause skin integrity disorders. According to the PPNI DPP IDHS Working Group Team (2018), skin integrity disorders are damage of the skin (dermis and epidermis) or tissues (mucous membranes, cornea, fascia, muscles, bones, cartilage, joint capsules and ligaments) (Darmawan, 2020).

Adolescents who suffer from acne vulgaris are estimated to be 80-85% of the population aged 15-18 years, women aged 25 years are 12%, and 35-44 years is 3%. The incidence of Acne vulgaris is mainly experienced by men and smokers. Based on the Indonesian cosmetic dermatology study records in 2006, there were 60% of Acne Vulgaris patients, whereas, in 2007, there were as many as 80%. The incidence of acne vulgaris in 2007 was found to be 80-100% occurring in young adults (Kabau, 2012).

Acne vulgaris is caused by genetic factors, national factors, race, food factors, climate factors, hygiene factors, cosmetic use factors, psychological factors, or fatigue (Afriyanti, 2015). Patients usually complain of a skin rash in comedo, pustules, nodes, or cysts, and may be accompanied by itching (Andriana et al., 2014). Acne vulgaris, in addition to the face, in areas such as the neck, back, chest and shoulders are often also found (Kusbianto et al., 2017). Acne vulgaris treatment given in a hospital or clinic often uses antibiotics orally or topically. Antibiotics are used to inhibit inflammation and kill bacteria. Examples of commonly used antibiotics are tetracycline, erythromycin, doxycycline, and clindamycin. In addition, benzoyl peroxide, Azelaic acid, and retinoids are often used. Continuous use of antibiotics can lead to increased antibiotic resistance (Madelina & Sulistiyaningsih, 2018).

Nigella Sativa oil as one of the herbal ingredients is widely chosen by the public, primarily because it can be used to reduce skin integrity disorders, especially acne problems (Lenysia et al., 2015). Nigella Sativa Oil contains 2.22% thymoquinone, which has antibacterial properties (Chaieb et al., 2011). Black cumin oil is also known to contain linoleic acid (44.7-56%), which is thought to inhibit the proliferation of follicular epidermal cells that can inhibit the growth of acne (Priani et al., 2019) (Latifah & Kurniawaty, 2015).

METHODS

Study Design

The research design was a Quasi-experimental with pre-post-test control group design.

Settings

The research was conducted in 2020 at Kedensari Village RT 17 RW 05 Tanggulangin, Sidoarjo.

Research subject

The research population is teenagers who experience acne vulgaris or acne in Kedensari Village RT 17 RW 05 Tanggulangin, Sidoarjo. The sample in this study is adolescents with acne vulgaris who have impaired skin integrity. The research sample is 28 people. Sampling was done by simple random sampling. A sample of 28 respondents was divided into the experimental and control group, each with 14 respondents. The experimental group, for 14 days, was given Nigella Sativa Oil 2 times a day 2 ml for (5-10 minutes) after cleansing the face in the morning and evening. The control group was given antibiotics according to the doctor's prescription.

Instruments

The research instrument was in the form of an observation sheet, which the researcher designed, containing skin conditions including redness, pain, bleeding, and hematoma.

Data collection

Data collection was carried out by distributing form observation to respondents directly. In the data collection process, researchers draw attention to health protocols. Researchers use masks, maintain distance, and use latex gloves during the data collection.

Data Analysis

Data analysis used univariate and bivariate. Univariate analysis analyzed demographic data and the level of impaired skin integrity as a percentage. Bivariate analysis using Wilcoxon Sign Test statistical test and Mann Whitney test with $p < (0,05)$.

Ethical Consideration

This research has conducted a research ethics test at Nahdlatul Ulama University Surabaya.

RESULTS

1. Univariate Analysis

a. Distribution of Respondents by Age and gender

Table 1 Frequency distribution of respondents by age and gender of adolescents in Kedensari village RT 17 RW 05 Tanggulangin, Sidoarjo

Control Group			
	Category	Frequency	Percentage (%)
Age	12-16	14	100
	17-25	0	0
Gender	male	7	50
	women	9	64,2
total		14	100
Experimental Group			
	Category	Frequency	Percentage (%)
Age	12-16	14	100
	17-25	0	0
Gender	Male	7	50
	Women	5	35,7
Total		14	100

Source: Primary Data, July 2020

Based on table 1, in the control group, after 12-16 years, as many as 14 (100%), there was no age 17-25 years (0%). The experimental group aged 12-16 years was 14 (100%), and there were no 17-25 years old (0%). Gender in the control group was 7 (50%) males, 9 (64.2%). The male sex experimental group was 7 (50%) while the female was 5 (35.7%).

b. Distribution of the degree of impaired skin integrity in patients with acne vulgaris in the experimental and control groups before administration of Nigella Sativa oil

Table 2 Frequency distribution of experimental and control groups before administration of Nigella sativa oil Impaired skin integrity of patients with acne vulgaris in adolescents in Kedensari village RT 17 RW 05 Tanggulangin, Sidoarjo

Group Pre	The Severity of Skin Integrity Disorders Acne Vulgaris				Total
	Heavy	Currently	Light	Normal	
Experimental Group	11(78,6%)	3(21,4)	0(%)	0(%)	14(100%)
Control Group	6(42,6)	8(57,1%)	0(0%)	0(0%)	14(100%)

Source: Primary Data, July 2020

Table 2 shows that of the 14 respondents in the experimental group, 11 (78.6%) had a severe degree of skin integrity disorder, and 14 respondents in the control group, most (57.1%), had a severe degree of skin integrity disorder.

c. Degree of Impaired Skin Integrity in the experimental group and the intervention control group

Table 3 Frequency distribution of the experimental group and the control group after the intervention of acne vulgaris sufferers in adolescents in Kedensari Village RT 17 RW 05 Tanggulangin Sidorjo

Group Post	The Severity of Skin Integrity Disorders Acne Vulgaris				Total
	Heavy	currently	light	Normal	
Experimental Group	0(0%)	3(10,7%)	8(57,1%)	3 (10,7%)	14 (100%)
Control group	(0%)	6(42,9%)	7(50,0%)	1 (7,1%)	14 (100%)

Source: Primary Data, July 2020

Table 3 shows that of the 14 respondents in the experimental group, most (57.1%) had a mild degree of skin integrity disorder. Furthermore, 14 respondents in the control group mostly (35.7%) had moderate severity of Skin Integrity Disorder.

2. Bivariate analysis

a. Distribution of differences in severity of skin integrity disorders in acne vulgaris in experimental and control groups before and after intervention

Table 4 Distribution of differences in severity of Acne vulgaris Skin Integrity Disorder in the experimental and control groups before and after intervention in acne vulgaris sufferers in Kedensari village RT 17 RW 05 Tanggulangin Sidoarjo

Category	Pre Experiment		*Post* Experiment		*Pre control*		*Post* control	
	N	%	N	%	N	%	N	%
Heavy	11	78,6	0	0	6	42,9	0	0
Currently	3	21,4	3	10,7	8	57,1	6	42,9
Light	0	0	8	57,1	0	0	7	50,0
Normal	0	0	3	10,7	0	0	1	7,1
Total	14	100	14	100	14	100	14	100
Wilcoxon	Z = 0.001				Z = 0.001			
Man Whitney	Asymp.Sig = 0.00							

Source: Primary Data, July 2020

Table 5 shows that of the 14 respondents in the experimental group, before being given Nigella Sativa oil treatment, most of them (78.6%) had severe skin integrity disorders. After being given the intervention of giving Nigella Sativa oil, most of the 14 respondents (57.1%) in the experimental group had a mild severity of Skin Integrity Disorder. Meanwhile most of the 14 respondents before being given health education (57.1%) had a moderate degree of Skin Integrity Disorder from the control group. After providing health education regarding Acne Vulgaris, most (35.7%) in the control group had moderate severity of Skin Integrity Disorder.

Based on the statistical test results of the Wilcoxon Sign Rank Test with SPSS for Windows with a significance level of = 0.05, the values of = 0.001 and = 0.05 were obtained. Because < (0.001

< 0.05), then H0 is rejected and H1 is accepted, which means that Nigella Sativa oil is effective. To reduce the degree of impaired skin integrity in acne vulgaris sufferers in Kedensari Village RT 17 RW 05 Tanggulangin Sidoarjo.

The two groups' differences were analyzed using the Mann-Whitney test with a significance level of = 0.05. The analysis was conducted using SPSS For Windows program. It was found that p = 0.000 < 0.05 indicates that H0 is rejected, meaning a difference between the experimental and control groups.

DISCUSSION

Based on the statistical test Wilcoxon Sign Rank Test with SPSS for Windows with a significance level of = 0.05, the values of = 0.001 and = 0.05 were obtained. Because < (0.001 < 0.05), then H0 is rejected, meaning that Nigella Sativa oil effectively reduces the degree of skin integrity disorder in patients with Acne vulgaris in Kedensari Village RT 17 RW 05 Tanggulangin Sidoarjo. The Mann-Whitney test found that = 0.000 <0.05, which indicates that H0 is rejected <0.05, meaning a difference between the experimental and control groups. The exact cause of the emergence of Acne vulgaris is not yet known clearly (Afriyanti, 2015). However, it is caused by multifactorial originating from outside (exogenous) and from within (endogenous). Inflammation Propionyl bacterium acnes has chemotactic factors that attract polymorphonuclear leukocytes into the lumen of comedo (Aini et al., 2019). Suppose polymorphonuclear leukocytes phagocytize Propionibacterium acnes and secrete hydrolysis enzymes. In that case, it will cause damage to the follicular wall and cause rupture so that the follicle contents (lipids and keratin components) enter the dermis, resulting in an inflammatory process (Yufiradani et al., 2020).

Nigella Sativa Oil is believed to be an alternative to eliminating acne vulgaris. Nigella Sativa oil contains linoleic acid, oleic acid, palmitic acid, stearic acid, lauric acid, myristic acid and linolenic acid [14]. Linoleic acid in Nigella Sativa oil inhibits the proliferation of follicular epidermal cells, which can inhibit the growth of acne (Priani et al., 2019). Many factors cause acne vulgaris, and many ways to get rid of it. If lifestyle and discipline are not maintained, giving herbal products or chemical drugs will not accelerate the healing process and problems with skin integrity disorders. So, all must be applied, the use of herbal products and the application of a healthy lifestyle.

LIMITATION

Respondent forgot to use Nigella Sativa oil, and Direct observation is difficult.

CONCLUSION

Most of the adolescents with acne vulgaris in Kedensari village RT 17 RW 05 before administering Nigella Sativa oil had severe skin integrity disorders. After the intervention, adolescents with acne vulgaris in Kedensari village RT 17 RW 05 mainly experienced mild skin integrity

disorders. Administration of Nigella Sativa oil is effective against skin integrity disorders in adolescents with acne vulgaris in Kedensari Village RT 17 RW 05 Tanggulangin Sidoarjo.

Future researchers are expected to use a combination of other variables to examine Nigella Sativa oil's effectiveness in treating skin integrity disorders.

AUTHOR CONTRIBUTION

Nunik Purwanti : Conceptualization, methodology, writing-original draft, supervision, formal analysis, funding acquisition and writing-review and editing

Andikawati Fitriasari : Investigation, data duration, visualization, project administration, software, validation, and resources

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CONFLICT OF INTEREST

There is no conflict of interest in this research.

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