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The Correlation Between The Severity Of Acne Vulgaris And Quality Of Life Using The Cardiff Acne Disability Index (CADI) Questionnaire At Zaira Skin Care Main Clinic In Jambi City

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ABSTRACT

Background: Acne Vulgaris (AV) is a skin condition characterized by chronic inflammation. The degree of AV used in this study is based on the Lehmann criteria. The quality of life in this study was measured using the CADI questionnaire. The CADI questionnaire is used to assess quality of life specifically for individuals with Acne Vulgaris. **Objective:** To determine whether there is a relationship between the degree of AV and the quality of life of AV patients who seek treatment at Zaira Skin Care Clinic, Jambi City. **Methods:** Of the 97 respondents, 43 respondents (44.3%) had mild AV, with 23 respondents (23.7%) experiencing mild quality of life disturbances, 16 respondents (16.5%) experiencing severe quality of life disturbances, and 4 respondents (4.1%) experiencing very severe quality of life disturbances. In the moderate AV group, consisting of 45 respondents, 13 respondents (13.4%) had mild quality of life disturbances, 24 respondents (24.74%) had moderate disturbances, and 8 respondents (8.25%) had severe disturbances. In the severe AV group, consisting of 9 respondents, 2 respondents (2.06%) experienced moderate quality of life disturbances, and 7 respondents (7.22%) had severe disturbances. The data from the Kendall-tau test analysis showed a significant result with $p = 0.001$ ($p < 0.05$), and a correlation coefficient of 0.381. This indicates a positive and moderately significant relationship. **Results:** The data from the Kendall-tau test analysis showed a significant result with $p = 0.001$ ($p < 0.05$) and a correlation coefficient is 0.381. This indicates a positive and moderately significant relationship. **Conclusion:** There is a relationship between the degree of AV severity and the quality of life of AV patients.

Keywords: Acne Vulgaris, AV severity, quality of life, CADI

INTRODUCTION

Acne vulgaris is a skin disease characterized by chronic inflammation of the pilosebaceous follicles.[1] There are four factors involved in the development of acne vulgaris, namely forkhead box Class O1

(FoxO1), mammalian target of rapamycin complex 1 (mTORC1), survivin, and interleukin-17 (IL-17).[2] Additionally, the causes of acne vulgaris are highly multifactorial, and the clinical manifestations of acne vulgaris are quite diverse, including comedones, papules, nodules, pustules, and cysts.[3]

Acne vulgaris is a non-contagious skin disease. [4] This condition commonly affects about 9.4% of the total population worldwide. The highest prevalence of acne vulgaris occurs in adolescents and varies among countries and ethnic groups. [5] Acne vulgaris generally occurs in teenagers and young adults, with an estimated prevalence rate ranging from 35% to over 90% among adolescents.

The progression of this disease begins at the age of 7-12 years (preadolescent acne) and tends to disappear as individuals reach their 30s. [3] This is in line with research conducted by the Global Burden of Disease (GBD), which found that acne vulgaris affects 85% of adolescents and young adults aged 12-25 years. However, there are some cases where acne vulgaris can persist into adulthood or even first appear in adulthood.[4]

As of now, the etiology of acne vulgaris is not fully understood, but several suspected causes are involved, including intrinsic and extrinsic factors. [6] Intrinsic factors include genetics, race, and hormonal influences, while extrinsic factors include stress, temperature, cosmetics, and diet. Stress affects hormones and can lead to various health issues, including the onset of certain diseases.[7] In some cases, poor dietary habits combined with low levels of physical activity can impact health.[8] Poor dietary factors can trigger inflammation in the body. [9]

Acne vulgaris is categorized by severity, determined through Lehmann's criteria. The severity categories are assessed based on the number of lesions present. In patients with mild acne, the total number of lesions is less than 30. Patients with moderate acne have a total of 30-125 lesions, while those with severe acne vulgaris have more than 125 lesions. [10]

According to the WHO, quality of life is defined as an individual's perception of their position in life within the context of the value system, cultural system, and standards related to individual expectations, life goals, and other relevant factors. In this regard, the quality of life, whether good or bad, significantly affects each person's daily life and their ability to be socially and economically productive.[11]

The other research groups have reported that patients with acne vulgaris experience emotional disturbances as well as social and psychological symptoms similar to those of patients with asthma, epilepsy, diabetes, and arthritis. Some psychological signs that emerge include feelings of shame (70%), anxiety (63%), discomfort (67%), social contact disturbances (57%), and being in a state of unemployment.[12]

There are various questionnaires used to assess the quality of life of patients with acne vulgaris. Some validated questionnaires include Acne-QoL, DLQI, CADI, and others. The questionnaire that is frequently used to assess the quality of life of patients with acne vulgaris is the CADI questionnaire. The CADI questionnaire is a research instrument specifically designed for patients with acne vulgaris.[10]

This questionnaire contains five questions with a Likert scale, categorized into four responses (0-3). The total final score of this questionnaire ranges from 0 to 15. It includes five questions related to the psychological aspects experienced by patients with acne vulgaris over the past month. The categories for the final CADI score assessment are low, with a total score of (0-4); moderate, with a total score of (5-9); and high, with a total score of (10-15). A lower score indicates a higher quality of life, while a higher score indicates a lower quality of life for patients with acne vulgaris.[10]

The reason the author chose the CADI questionnaire is that, among several questionnaires that the author has observed, the CADI questionnaire is the most relevant for assessing the quality of life of patients with acne vulgaris. In Jambi, there have been studies addressing cases of acne vulgaris; however, no research has been found that correlates acne vulgaris with quality of life. This is what piqued the author's interest in researching this issue using the CADI questionnaire.

Based on estimates of epidemiological prevalence in Jambi, patients with acne vulgaris tend to consult at aesthetic clinics rather than atcommunity health centers or hospitals. This is because acne vulgaris is classified as a 4a disease, which means it is not referred to or is rarely found in large hospitals. Additionally, dermatology clinics at community health centers tend to have more complex skin disease cases and do not have many samples of acne vulgaris. Furthermore, acne vulgaris is a condition not covered by BPJS (the national health insurance), so patients with acne vulgaris are more likely to choose to seek treatment at private clinics.[3] For these reasons, the researcher is interested in conducting the study at Zaira Skin Care Main Clinic in Jambi City.

METHODS

This study is a prospective observational research utilizing a cross-sectional approach. The research employs primary data collected through questionnaires administered at the research site. The study is conducted at Zaira Skin Care Main Clinic in Jambi City. The research period is set from August 16 to October 31, 2024.

The population in this study consists of all patients with acne vulgaris who seek treatment at Zaira Skin Care Main Clinic during the specified time frame. The sampling method employed in this research is total sampling, which involves

including the entire population that is willing to participate as research samples.[13] The sampling for this study is based on the inclusion and exclusion criteria established by the researcher. Since the total population for this study is unknown, the minimum sample size was calculated using the Lemeshow formula, resulting in a sample size of 97 respondents.

The inclusion criteria for this study are patients with acne vulgaris who seek treatment at Zaira Skin Care Main Clinic in Jambi City, aged over 19 years, and who agree to participate in the study by signing an informed consent form and completing the questionnaire. The exclusion criteria for this study are patients with acne vulgaris who have other skin diseases located in the predilection sites of acne vulgaris, as this could confound the study results.

In this study, both univariate and bivariate analyses were conducted. The univariate analysis aims to determine the distribution of each data point. This is followed by bivariate analysis, which aims to assess the correlation between the severity of acne vulgaris and the quality of life of the patients, using the Kendall-tau test. The Kendall-tau test is appropriate for assessing monotonic relationships (where an increase in one variable corresponds to an increase or decrease in another variable), and it is conducted to evaluate whether there is a significant relationship between the variables.[14]

The CADI questionnaire in Indonesian has undergone validation testing using Pearson analysis on 15 patients with acne vulgaris who were not included in this study's sample. Based on the five questions that were tested, the results indicated that the Indonesian version of the CADI questionnaire has been validated with values of 0.774, 0.781, 0.686, 0.756, and 0.784. These values exceed the reference value from the Pearson table, which is 0.256. Therefore, it can be concluded that the validity test of the Indonesian CADI questionnaire is valid.

RESULTS

Characteristics of respondents are presented in Table 1. The age categories in this study sample refer to the Ministry of Health, which includes late adolescence (19-25 years), early adulthood (26-35 years), late adulthood (36-45 years), and early elderly (46-55 years).[15]

Table 1. Characteristics of Respondents (n = 97)

Age Categories	Frequency	Percentage
Late adolescence	50	51.5
Early adulthood	32	33
Late adulthood	10	10.3
Early elderly	5	5.2
Gender		
Male	8	8.2
Female	89	91.8

Based on the univariate analysis of age distribution among 97 respondents, the majority were categorized as late adolescents (19–25 years), comprising 50 individuals (51.5%). Early adults accounted for 32 respondents (33.0%), followed by late adults with 10 respondents (10.3%), and early elderly individuals with 5 respondents (5.2%). The highest proportion of respondents was observed in the late adolescence group.

Regarding gender distribution, of the 97 acne vulgaris patients treated at Zaira Skin Care Clinic between August 16 and October 31, 2024, 89 respondents (91.8%) were female and 8 respondents (8.2%) were male. Thus, females constituted the majority of participants in this study.

Table 2. Distribution of Severity of Acne Vulgaris (n=97)

Severity of Acne Vulgaris (AV)	Frequency	Percentage
Mild	43	44.3
Moderate	45	46.4
Severe	9	9.3

The severity of acne vulgaris (AV) was classified into three categories: mild, moderate, and severe, based on physical examination findings conducted by a dermatologist. As shown in Table 2, 43 respondents (44.3%) were diagnosed with mild AV, 45 respondents (46.4%) with moderate AV, and 9 respondents (9.3%) with severe AV. The largest proportion of respondents was observed in the moderate severity group, followed closely by the mild category, while severe cases constituted the smallest proportion of the sample.

Tabel 3. Distribution of Disturbances in Quality of Life (n=97)

Disturbances in Quality of Life	Frequency	Percentage
Mild	36	37.1
Moderate	42	43.3
Severe	19	19.6

Quality of life impairment was assessed using the Cardiff Acne Disability Index (CADI) questionnaire. The CADI scores were categorized as follows: a score of 0 indicated no impairment in quality of life, scores of 1–4 indicated mild impairment, scores of 5–9 indicated moderate impairment, and scores of 10–15 indicated severe impairment.

As presented in Table 3, none of the respondents (0%) reported no impairment in quality of life. Mild impairment was observed in 36 respondents (37.1%), while the majority of respondents, 42 individuals (43.3%), experienced moderate impairment. Severe

impairment was reported by 19 respondents (19.6%). These findings indicate that most acne vulgaris patients in this study experienced moderate levels of quality of life disturbance.

Table 4. The Correlation Between the Severity of Acne Vulgaris and Disturbances in Quality of Life

Severity of Acne Vulgaris (AV)	Disturbances in quality of life n (%)			Total n (%)	p-value	Correlation Coefficient
	Mild	Moderate	Severe			
Mild	23 (23.71)	16 (16.49)	4 (4.12)	43 (44.30)		
Moderate	13 (13.40)	24 (24.74)	8 (8.25)	45 (46.40)	0.001	0.381
Severe	0 (0)	2 (2.06)	7 (7.22)	9 (9.30)		
Total n (%)	36 (37.10)	42 (43.30)	19 (19.60)	97 (100)		

A total of 97 respondents with acne vulgaris were included in this study. Among the 43 respondents diagnosed with mild acne vulgaris, 23 individuals (23.7%) experienced mild impairment in quality of life, 16 individuals (16.5%) experienced moderate impairment, and 4 individuals (4.1%) experienced severe impairment.

Of the 45 respondents with moderate acne vulgaris, 13 individuals (13.4%) reported mild impairment in quality of life, 24 individuals (24.7%) reported moderate impairment, and 8 individuals (8.2%) reported severe impairment. Meanwhile, among the 9 respondents with severe acne vulgaris, 2 individuals (2.1%) experienced moderate impairment and 7 individuals (7.2%) experienced severe impairment in quality of life.

Bivariate analysis using the Kendall's tau test yielded a correlation coefficient of 0.381. A coefficient within the range of 0.30–0.50 is generally interpreted as indicating a moderate correlation. Therefore, the value of 0.381 suggests a positive and moderately strong relationship between acne severity and quality of life impairment. This finding indicates that increased severity of acne vulgaris is associated with greater impairment in patients' quality of life. Although the correlation is not strong, it demonstrates a meaningful association between acne severity and quality of life among patients receiving treatment at Zaira Skin Care Clinic in Jambi City.

DISCUSSION

This study utilized the Cardiff Acne Dermatology Index (CADI) questionnaire, which is a specific measurement tool for acne vulgaris related to non-physical but psychological quality of life for patients at Zaira Skin Care Clinic in Jambi City.

The researcher conducted a validation test on the Indonesian version of the CADI questionnaire, which was translated by Raden Tasya S. Alfein. The

results of the validity test based on 5 questionnaire items were above the reference value in the Pearson table. It can be concluded that the questionnaire used in this study is valid.[10]

1. Characteristics of Respondents

The distribution of respondents' ages in this study consists of 4 categories: early adulthood (19-29 years), adulthood (30-44 years), late adulthood (45-59 years), and elderly (>60 years). The highest frequency is found in the early adulthood category, with a total of 67 respondents (69.1%), followed by the adulthood category with 24 respondents (24.7%), late adulthood with 6 respondents (6.2%), and 0 respondents (0%) in the elderly category. This age range is common for experiencing acne vulgaris.

This is in line with the theory explained by the Global Burden of Disease (GBD), which states that acne vulgaris affects 85% of adolescents and young adults aged 12-25 years.10 A study conducted by Fauzana et al. in 2022 also found that acne vulgaris patients were predominantly aged 18-22 years, accounting for 49 respondents (49%) out of a total of 100 respondents.[18]

In this study, the majority of respondents were female, totaling 89 individuals (91.8%), while males accounted for 8 individuals (8.2%). This is consistent with the research conducted by Alfein, R.T.S., which also showed a predominance of females, with a sample size of 37 respondents (67.3%) compared to males, who numbered 18 respondents (32.7%).[10]

The theory proposed by Lynn et al also explains that women, rather than men, dominate the prevalence of AV.19 This may occur because women experience puberty earlier than men. However, the differences in the frequency of acne vulgaris between women and men in other studies may also be influenced by the sample population size and the age inclusion criteria being studied.

2. Distribution of Severity of Acne Vulgaris

The severity of acne vulgaris (AV) is determined by the Lehmann criteria. According to the Lehmann criteria, there are three categories to determine the severity of AV based on the number of comedones and inflammatory lesions. Mild acne vulgaris is the category with a total of lesions <30, moderate acne vulgaris is the category with a total of lesions between 30-125, while severe acne vulgaris has a total of lesions >125.[20]

In this study, the highest severity of acne vulgaris (AV) was found in the moderate category, with 45 respondents (46.4%), followed by mild AV with 43 respondents (44.3%), and finally, severe AV with 9 respondents (9.3%).

This is in line with the research conducted by Saragih et al., which was carried out in the Mechanical Engineering Program at Diponegoro University in 2023. In that study, it was found that 42 respondents, representing 59.2%, suffered from moderate AV, 27 respondents (38%) had mild AV, and 2 respondents (2.8%)

suffered from severe AV.[21]

In comparison to the research by Alfein, R.T.S., which found that the highest number of respondents had mild acne vulgaris (AV), totaling 28 respondents (50.9%), followed by moderate AV with 15 respondents (27.3%), and finally, severe AV with 12 respondents (21.8%).[10]

The study conducted by Fauzana et al. also found that the highest severity of acne vulgaris (AV) was dominated by the mild AV category, with a total of 67 respondents (67%), followed by moderate AV with 22 respondents (22%), and severe AV with 1 respondent (1%).[18]

3. Distribution of Disturbances in Quality of Life

The next characteristic is the quality of life of the respondents, assessed through the CADI questionnaire. This questionnaire, which consists of 5 questions, is designed to evaluate the quality of life of patients with acne vulgaris, focusing on the psychological aspects related to physical appearance and emotional condition. The assessment is classified based on the scoring system.[16] A score of 0 indicates no impairment in quality of life, a score of 1-4 indicates mild impairment, a score of 5-9 indicates moderate impairment, and a score of 10-15 indicates severe impairment in quality of life.[16]

In this study, it was found that 36 respondents (37.1%) experienced mild impairment in quality of life, 42 respondents (43.3%) experienced moderate impairment, and 19 respondents (19.6%) experienced severe impairment. The research conducted by Qatrunnada included a sample of 70 respondents using a stratified random sampling method. The results of that study were dominated by 55 respondents (78.6%) with mild impairment in quality of life, 8 respondents (11.4%) with moderate impairment, 1 respondent (1.4%) with severe impairment, and 6 respondents (8.6%) who did not experience any impairment in quality of life.[22]

4. The Correlation Between the Severity of Acne Vulgaris and Disturbances in Quality of Life

The bivariate test conducted in this study used the Kendall-tau analysis. The correlation coefficient in this study was 0.381, which indicates that there is a moderate positive relationship between the severity of acne vulgaris (AV) and the quality of life of the AV patients who participated in this study.[17]

The significance value (p) in this bivariate analysis was found to be (p) = 0.001, which means that H0 in this study is rejected and H1 is accepted. This indicates that there is a relationship between the severity of acne vulgaris (AV) and the quality of life of AV patients receiving treatment at Zaira Skin Care Clinic in Jambi City.

Based on a total of 97 respondents in this study, there were 43 respondents (44.3%) with mild AV. The quality of life impairment experienced was predominantly

mild, with 23 respondents (23.7%), followed by 16 respondents (16.5%) suffering from moderate impairment and 4 respondents (4.1%) suffering from severe impairment.

Among patients with moderate AV, there were 45 respondents (46.4%), predominantly experiencing moderate quality of life impairment, totaling 24 respondents (24.74%), followed by 13 respondents (13.4%) with mild impairment, and 8 respondents (8.25%) with severe impairment.

In patients with severe AV, totaling 9 respondents (9.3%), the results showed that 2 respondents (2.06%) suffered from moderate impairment and 7 respondents (7.22%) suffered from severe impairment. This indicates that patients with severe AV are predominantly experiencing severe quality of life impairment. The results of this bivariate test are statistically significant.

In line with the research conducted by Alfein, R.T.S., a correlation coefficient of 0.524 was obtained using the Spearman test. The Spearman test is a non- parametric statistical method aimed at measuring the extent of the monotonic relationship between two variables. The interpretation of these results indicates a strong relationship between the two variables, and the significance value in that study (p) was 0.000 (<0.005). In that study, there were 55 respondents, predominantly with mild AV, totaling 28 respondents (50.9%), and the results from the CADI questionnaire for those respondents were dominated by mild quality of life impairment, with 27 respondents (49.1%).[10]

The study used Fisher's Exact bivariate test. The results of the study showed a significance value (p) = 0.035 and a prevalence ratio of 1.102, which means there is an effect of the severity of acne vulgaris (AV) on quality of life, and it has a risk of quality of life impairment 1.102 times greater than that of non-AV patients. [23]

The study conducted by Qatrunnada involved students from the Faculty of Health Sciences and Nursing (FKIK) at UIN Malang. This study included 70 respondents, with the highest severity of acne vulgaris (AV) being mild, represented by 53 respondents. In this study, the majority of AV patients experienced mild quality of life impairment, totaling 55 respondents. The significant result of the study was (p) = 0.000, and a bivariate analysis was performed using Somer's D test. Somer's D test is a statistical test aimed at measuring the strength and direction of the relationship between two variables. The correlation coefficient obtained was 0.933. This figure indicates a strong positive correlation between the two variables.[22]

The differences in research results between the author and other studies are something that can occur. This is due to

several factors, such as the location of the study, the number and distribution of research samples, the duration of the study, and differing opinions or perspectives regarding quality of life impairment as assessed by the questionnaires used.[24]

Based on the results of the research and analysis conducted in this study, it can be concluded that there is a relationship between the severity of acne vulgaris (AV) and the quality of life of patients with acne vulgaris receiving treatment at Zaira Skin Care Clinic in Jambi City. This was assessed through scoring on the CADI questionnaire and correlated with the degree of AV lesions using Lehmann's Grading System. In this study, the majority of respondents were in the late adolescent age range. This may be influenced by factors contributing to the onset of AV, such as hormonal imbalances, stress levels, lifestyle, and external factors like cosmetic use and environmental conditions. In this study, the most common severity of AV was in the moderate category, and the quality of life impairment experienced was predominantly at the moderate level. Therefore, it can be concluded that the higher the severity of AV, the greater the quality of life impairment experienced by AV patients.

The findings of this study highlight the importance of integrating both clinical management and psychosocial support in the treatment of acne vulgaris. Health practitioners are encouraged to not only focus on reducing the severity of acne lesions but also to address the psychological and social impacts experienced by patients. Regular screening of quality of life alongside clinical assessment can help design more holistic and patient-centered treatment plans. Furthermore, educational programs on lifestyle modification, stress management, and safe cosmetic use may also be beneficial in improving both clinical outcomes and quality of life in acne patients. Limitations of this study include the relatively small sample size and the fact that data were collected from a single clinic, which may limit the generalizability of the findings. In addition, the use of self-reported questionnaires may be subject to response bias. Future studies with larger and more diverse populations, as well as the inclusion of additional clinical parameters, are recommended to strengthen the validity of the results.

CONCLUSION

This study demonstrates a significant relationship between the severity of acne vulgaris (AV) and patients' quality of life at Zaira Skin Care Clinic, Jambi City, as measured using the CADI questionnaire and Lehmann's Grading System. The majority of respondents were late adolescents, with moderate AV severity and moderate impairment of quality of life, suggesting that greater AV severity is associated with worse quality of

life outcomes. However, this study has limitations, including a relatively small sample size, data restricted to a single clinical setting, and the use of self-reported questionnaires that may introduce bias, thereby limiting the generalizability of the findings. The results highlight the importance of a holistic management approach that integrates clinical treatment with psychosocial support, lifestyle modification, and patient education to improve both dermatological outcomes and overall well-being.

RECOMMENDATIONS

Future research should involve larger, more diverse populations, employ longitudinal designs, and incorporate broader assessment tools to strengthen evidence and provide more comprehensive insights into the impact of acne vulgaris on quality of life.

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