



Validation and Reliability of Indonesian Version of Vitiligo-Specific Health-Related Quality of Life Instrument (VITIqoL)

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ABSTRACT

Background: Vitiligo is a long-term autoimmune disorder marked by the loss of melanocytes and the formation of white macules. Vitiligo can have an impact on the patient's look and quality of life. The Dermatology Life Quality Index (DLQI) is a questionnaire that analyzes the quality of life of skin patients in general, but it is not disease-specific. To assess the quality of life of vitiligo patients in Indonesia, a disease-specific instrument is required. **Purpose:** This study aims to analyze the validity and reliability of the Vitiligo Quality of Life (VitiQoL) questionnaire in Indonesia and translate the VitiQoL questionnaire into Indonesian. **Methods:** Using cross-sectional analytic observation, this study was performed on 39 participants with vitiligo at Dr. Soetomo Surabaya between December 2021 and January 2022. The investigation consisted of three phases: the Indonesian translation of VitiQoL, testing for validity, and assessing reliability. **Result:** The VitiQoL questionnaire is a valid and reliable questionnaire. Valid with a correlation coefficient between 0.40 and 0.80 and reliability close to perfection. There was a significant correlation between VitiQoL and DLQI ($r=0.511$, $p=0.001$). **Conclusion:** According to the findings of this study, the Indonesian VitiQoL is a valid and reliable instrument for measuring the life quality of vitiligo patients in Indonesia.

Keywords: Vitiligo, quality of life, VitiQoL, validity, reliability, human and health.

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| Article info |

Submitted: 26-10-2022, Accepted: 03-04-2023, Published: 31-07-2023

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BACKGROUND

Vitiligo is a well-known depigmented skin condition caused by the loss of melanocytes, which manifests in nonscaly and chalky white macules.^{1,2} Depending on the region, between 0.5% and 2% of the population, including both children and adults, are affected by vitiligo.^{3,4} The disease's etiology is unknown; however, it appears to be the outcome of genetic, immunological, and neurogenic interactions.⁵ In 2014, the proportion of new patients with vitiligo at the Cosmetic Division of the Dermatovenereology Outpatient Clinic at Dr. Soetomo General Hospital increased to 0.5%, according to research published by Hutomo in 2012

^{6,7} Patients with vitiligo increase annually, from 51 in 2012 to 67 in 2013 to 70 in 2014.⁸

Vitiligo is often symptomless; hence, its influence on life quality is mostly due to psychological concerns, such as low self-esteem, poor body image, and failing social interactions. In 2005, 56.6% of respondents in the United Kingdom indicated that vitiligo had a moderate to significant impact on their quality of life.⁹ Patients with vitiligo are additionally subject to low self-esteem (SE), depression, social discrimination, and increased stigma.^{9,10}

Quality of life is a broad concept that is determined not only by health factors but also by several non-medical factors, including

socioeconomic situation, level of professional independence, character, psychological state, social relationships, and relationships with the environment, as well as by happiness, aspiration, beliefs, assumptions, and religious experience.¹¹ Dermatology Life Quality Index (DLQI) is a questionnaire used to assess the quality of life of skin patients in Indonesia in general. The Dermatology Life Quality Index (DLQI) is a questionnaire created to evaluate the general life quality of Indonesian skin patients. This questionnaire has a version in Indonesian that has been evaluated for validity and reliability, making its use in Indonesia easier.¹² The DLQI evaluates the impact of the patient's skin on symptoms, feelings, everyday activities, employment or study, intimate relationships, and medication over the past week.¹³ Since itching, scaling, and discomfort are often absent in vitiligo, vitiligo patients require a more specific quality of life evaluation.

In 2013, Lilly and colleagues introduced the Vitiligo Quality of Life Scale, a customized measure of vitiligo patients' quality of life (VitiQoL).¹⁰ VitiQoL is a customized instrument for vitiligo sufferers that attempts to analyze the influence of the previous month's skin effects on stigma, limited engagement, and patient behavior. There are 16 items on the VitiQoL, and each is scored on a seven-point Likert scale that varies from 0 (not at all) and 6 (extremely) (all the time). Final grades vary from 0 to 90 points. On a scale between 0 (no skin involvement) to 6 (severe skin involvement), VitiQoL also gives a tailored assessment of vitiligo severity (worst).¹⁴ Patients with higher scores have a reduced quality of life.¹⁰

VitiQoL exhibits great validity and reliability, with a correlation coefficient of 0.51 and a Cronbach's alpha of 0.93. External validity is suggested by a significant association between VitiQoL and Skindex 16 ($R = 0.82$) and DLQI ($R = 0.83$).¹² VitiQoL was a solid patient-reported measurement with acceptable internal consistency and test-retest reliability in Brazilian and Iranian patients.¹⁵ The objectives of this paper were to translate, cross-culturally adapt, validate, and analyze the reliability of the VitiQoL among vitiligo patients who spoke Indonesian.

METHOD

This research uses a cross-sectional analytic observation research design. The validity and reliability research was conducted in three stages: translation, testing for validity, and testing for reliability. Initially, the Language Center of Universitas Airlangga translated the English-language VitiQoL questionnaire into Indonesian. Afterward, researchers, dermatovenerologists, and psychiatrists discussed the Indonesian translation of VitiQoL. Finally, the Indonesian VitiQoL questionnaire was administered to 10 subjects from the pretest population so that the questionnaire's language difficulty could be determined (Figure 1). This research was carried out on 39 vitiligo patients at Dr. Soetomo General Hospital in Surabaya, Indonesia, from December 2021 to January 2022. The study was authorized by the Clinical Research Unit of the Ethics Committee of Dr. Soetomo General Academic Teaching Hospital Surabaya (0211/KEPK/VI/2021). Patients with a vitiligo clinical diagnosis and an age greater than 17 years were included. After being informed, they signed an approval letter to serve as research subjects (informed consent). Patients with vitiligo who refused to visit the hospital or participate in an interview were excluded from the study.

Statistical Package for the Social Sciences (SPSS) for Windows, version 23, was used to enter and analyze the study's data. In this study, the validity test for each item using the Pearson product moment correlation test, by correlating each item with the total value. Test the validity of each item using the Pearson product moment correlation test by correlating each item with the total value.

The reliability test was conducted by calculating internal consistency with Cronbach's alpha. After calculating internal consistency with Cronbach's alpha, the reliability test was conducted. The questionnaire is declared reliable if the Cronbach alpha value is greater than 0.6. After the Cronbach Alpha reliability test was carried out, the Cronbach Alpha value was 0.951, which was greater than 0.6, so it can be concluded that questions 1 to 16 in the questionnaire were declared reliable. The Indonesian version of VitiQoL was compared using the Pearson correlation coefficient.

Tujuan dari pertanyaan-pertanyaan di bawah ini adalah untuk mengukur seberapa besar pengaruh kulit terhadap diri Anda dalam satu bulan terakhir
The aim of these questions is to measure how much your skin has affected you over the past month

| Dalam sebulan terakhir <i>During the past month</i> | Tidak sama sekali <i>Not at all</i> | Setiap saat <i>All the time</i> |
|---|--|---|
| 1. Apakah anda merasa terganggu oleh penampilan kondisi kulit Anda? <i>Have you been bothered by the appearance of your skin condition?</i> | <input type="checkbox"/> 0 | <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 |
| 2. Apakah Anda merasa frustrasi tentang kondisi kulit Anda? <i>Have you felt frustrated about your skin condition?</i> | <input type="checkbox"/> 0 | <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 |
| 3. Apakah kondisi kulit mempersulit Anda untuk menunjukkan afeksi/ kasih sayang Anda? <i>Has your skin condition made it hard to show affection?</i> | <input type="checkbox"/> 0 | <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 |
| 4. Apakah kondisi kulit Anda memengaruhi aktifitas sehari-hari Anda? <i>Has your skin condition affected your daily activities?</i> | <input type="checkbox"/> 0 | <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 |
| 5. Ketika sedang berbicara dengan seseorang, apakah Anda merasa khawatir akan apa yang dipikirkan orang tersebut tentang Anda? <i>When you were talking to someone, have you worried about what they may be thinking of you?</i> | <input type="checkbox"/> 0 | <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 |
| 6. Apakah Anda merasa takut orang-orang akan menemukan ada yang salah pada diri Anda? <i>Have you been afraid that people will find fault with you?</i> | <input type="checkbox"/> 0 | <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 |
| 7. Apakah Anda merasa malu atau tidak percaya diri karena kulit Anda? <i>Have you felt embarrassed or self-conscious because of your skin?</i> | <input type="checkbox"/> 0 | <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 |
| 8. Apakah kondisi kulit Anda mempengaruhi pakaian yang Anda kenakan? <i>Has your skin condition influenced the clothes you wear?</i> | <input type="checkbox"/> 0 | <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 |

| | |
|---|--|
| 9. Apakah kondisi kulit Anda mempengaruhi aktifitas sosial atau di waktu senggang Anda? <i>Has your skin condition affected your social or leisure activities?</i> | <input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 |
| 10. Apakah kondisi kulit Anda mempengaruhi kesejahteraan mental Anda? <i>Has your skin condition affected your emotional well-being?</i> | <input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 |
| 11. Apakah kondisi kulit Anda mempengaruhi kesehatan jasmani Anda secara keseluruhan? <i>Has your skin condition affected your overall physical health?</i> | <input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 |
| 12. Apakah kondisi kulit Anda mempengaruhi kebiasaan Anda dalam berhias (misalnya gaya rambut, penggunaan kosmetik)? <i>Has your skin condition affected your grooming practices (i.e. hairstyle, use of cosmetics)?</i> | <input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 |
| 13. Apakah kondisi kulit Anda berpengaruh terhadap usaha Anda untuk melindungi diri dari sinar matahari ketika rekreasi (misalnya membatasi waktu paparan matahari saat matahari sedang terik-teriknya, berteduh, memakai topi, baju lengan panjang, atau celana panjang)? <i>Has your skin condition affected your sun protection efforts during recreation (i.e. limiting exposure time during peak sun hours, seeking shade, wearing hat, long sleeves or pants)?</i> | <input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 |
| 14. Apakah kondisi kulit Anda mempengaruhi kesempatan Anda untuk berteman dengan orang-orang baru? <i>Has your skin condition affected your chances for making new friends?</i> | <input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 |
| 15. Apakah Anda khawatir tentang perkembangan dan penyebaran penyakit ini ke area baru pada tubuh? <i>Have you worried about progression or spread of disease to new areas of the body?</i> | <input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 |
| Beri tanda centang pada kolom yang menunjukkan seberapa parah kondisi kulit yang Anda rasakan saat ini <i>Please check how severe is you currently feel your skin condition is</i> | Tidak ada masalah kulit <i>No skin involvement</i> |
| 16. Keparahan kondisi kulit <i>Severity of skin condition</i> | kasus paling parah <i>Most severe case</i> |
| | <input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 |

Sudahkah Anda menjawab setiap pertanyaan? Ya Tidak

Have you answered every item? Yes *No*

Figure 1. Indonesian version of Vitiligo Specific Quality of Life (VitiQol).

RESULT

The pre-test population sample consisted of 10 individuals whose ages ranged from 22 to 52 years, with 5 women and 5 men. Consequently, the validity and reliability of VitiQoL's Indonesian translation can be verified. The majority of participants (approximately 22 people, or 56.4%) are female. The participants ranged in age from 19 to 72 years, with a mean of 40.41 ± 15.11 . The education level of respondents varies, with 51.3% holding a bachelor's degree or more. With 14 responses (35.9%), the vast majority of patients are private sector employees. There were 25 married subjects (64.1% of the population). In this study, focal and mixed vitiligo were the most prevalent types of vitiligo..

Participants' demographic information is provided in Table 1

Each question's coefficient correlation value with the total value of the Indonesian VitiQoL ranges from 0.474 to 0.826, with a mean of 0.695. Based on these results, there is a strong to very strong relationship between each question and the total value of the Indonesian version of VitiQoL. Table 2 lists the correlation coefficients between each question and the total score. Cronbach's alpha for the VitiQoL reliability test in Indonesia is 0.925. Based on these results, it was determined that there was a high level of consistency between each question, so all questionnaire questions were considered very reliable. The distribution of Cronbach's alpha values for each question is presented in Table 3.

Table 1. Distribution of socio-demographic variables in vitiligo patients at Dr. Soetomo General Hospital in Surabaya, Indonesia (December 2021-January 2022)

| Characteristics | Subjects (n=39) | Percentage (%) |
|--------------------|------------------|-------------------|
| Gender | Male | 17 |
| | Female | 22 |
| Age | 17-25 | 9 |
| | 26-35 | 8 |
| | 36-45 | 5 |
| | 46-55 | 11 |
| | 56-65 | 4 |
| | >65 | 2 |
| | Education | Elementary school |
| Junior high school | | 2 |
| Senior high school | | 14 |
| Diploma | | 1 |
| Employment status | Bachelor | 20 |
| | Not working | 5 |
| | Housewife | 7 |
| | College student | 6 |
| | Private employee | 14 |
| Married Status | Civil servant | 7 |
| | Not married | 13 |
| | Married | 25 |
| Type of vitiligo | Divorce | 1 |
| | Segmental | 3 |
| | Focal | 11 |
| | Acrofacial | 4 |
| | Vulgaris | 9 |
| | Mixed | 11 |
| | Universal | 1 |

Table 2. Correlation value for each question with the total value of the Indonesian Vitiligo Specific Quality of Life (VitiQol)

| Question (Number) | Correlation Between Items | Correlation with the Total Value |
|-------------------|---------------------------|----------------------------------|
| 1 | 0.230 – 0.873 | 0.774 |
| 2 | 0.087 – 0.746 | 0.718 |
| 3 | 0.104 – 0.731 | 0.618 |
| 4 | 0.057 – 0.779 | 0.731 |
| 5 | 0.244 – 0.796 | 0.756 |
| 6 | 0.317 – 0.796 | 0.806 |
| 7 | 0.215 – 0.873 | 0.773 |
| 8 | 0.026 – 0.762 | 0.632 |
| 9 | 0.010 – 0.790 | 0.689 |
| 10 | 0.217 – 0.790 | 0.826 |
| 11 | 0.043 – 0.663 | 0.574 |
| 12 | 0.336 – 0.762 | 0.707 |
| 13 | 0.087 – 0.603 | 0.565 |
| 14 | 0.045 – 0.682 | 0.739 |
| 15 | 0.010 – 0.534 | 0.474 |
| 16 | 0.276 – 0.718 | 0.743 |

Table 3. Cronbach's alpha distribution

| Question (Number) | Cronbach's alpha per item | Cronbach's alpha |
|-------------------|---------------------------|------------------|
| 1 | 0.917 | |
| 2 | 0.919 | |
| 3 | 0.922 | |
| 4 | 0.919 | |
| 5 | 0.918 | |
| 6 | 0.916 | |
| 7 | 0.917 | |
| 8 | 0.922 | 0.925 |
| 9 | 0.920 | |
| 10 | 0.916 | |
| 11 | 0.923 | |
| 12 | 0.920 | |
| 13 | 0.926 | |
| 14 | 0.919 | |
| 15 | 0.928 | |
| 16 | 0.919 | |

There are three categories of VitiQoL questions: participation limitation, stigma, and behavior. The participation limitation domain contains seven questions and has a maximum score of 42. (Questions 3, 4, 6, 9, 10, 11, and 14). The stigma domain has a maximum score of thirty and consists of five questions (Questions 1,2,5,7 and 15). The behavior section contains three questions with a maximum point value of 18 (Questions 8, 12, and 13). As indicated by the range of coefficient values for each domain, which is between 0.792 and 0.880, there is a strong correlation between the value of

each domain and the total value of VitiQoL. Cronbach's alpha value for item variations ranges between 0.700 and 0.908, suggesting strong consistency. Table 4 lists the validity and reliability values for each domain. The stigma domain contributes significantly to the quality-of-life value in the validity and reliability test for the Indonesian VitiQoL. In contrast, the contribution of the behavior domain is minimal. The stigma domain contributes nearly the same amount for male and female patients. Table 5 displays the amount of contribution from each domain.

Table 4. Validity and reliability of each domain of the Indonesian Vitiligo Specific Quality of Life (VitiQol)

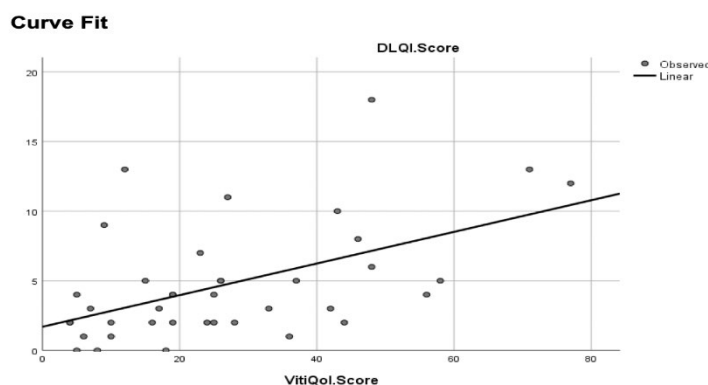
| Domains | Correlation with the Total Value | Cronbach’s alpha per item |
|--------------------------|----------------------------------|---------------------------|
| Participation Limitation | 0.890 | 0.908 |
| Stigma | 0.868 | 0.859 |
| Behavior | 0.792 | 0.700 |

Table 5. Contribution of three domains based on gender toward Indonesian Vitiligo Specific Quality of Life (VitiQol)

| VitiQol Domains | Gender | | Total | p |
|--------------------------|---------------|---------------|---------------|-------|
| | Male | Female | | |
| Participation Limitation | 9,12 ± 10,09 | 6,45 ± 6,98 | 7,62 ± 8,46 | 0,638 |
| Stigma | 12,65 ± 8,47 | 12,14 ± 7,10 | 12,36 ± 7,63 | 0,839 |
| Behavior | 4,18 ± 4,31 | 4,64 ± 4,70 | 4,44 ± 4,48 | 0,711 |
| VitiQol Score (mean±SD) | 28,29 ± 20,37 | 25,68 ± 17,98 | 26,82 ± 18,84 | 0,671 |

VitiQol : Vitiligo quality of life, SD: Standard deviation

The average of VitiQol in the Indonesian version was 26.82±18.84. There was a significant correlation between Indonesian VitiQol and DLQI (r=0.511, p=0.001). Figure 1 displays the correlation between Indonesian .



VitiQol and DLQI.

Figure 2. Correlation between Indonesian Vitiligo Specific Quality of Life (VitiQol) and Dermatology Life Quality Index (DLQI).

DISCUSSION

Due to the considerable disease burden and relatively high frequency of vitiligo, it is vital to evaluate the disease's quality of life on a specialized scale across nations with diverse cultural norms.¹⁰ To evaluate the life quality of vitiligo patients in Indonesia, an Indonesian version of the VitiQoL is required. VitiQoL has been translated, verified, and reliability-tested in Surabaya, Indonesia. Participants in this study's interviews with attending researchers completed the VitiQol questionnaire in Indonesian to reduce negligence.

The Brazilian Portuguese versions of the VitiQoL questionnaire were modified and validated by Catucci and colleagues (VitiQoL-PB). Retest-test reliability was not evaluated in the initial VitiQoL study, which was a drawback. In Catucci's study, sixteen participants (representing 21% of the population) repeated the VitiQoL in Portuguese, confirming the strong intraclass correlations of 0.86 to 0.98, which indicate high retest-test reliability. If a test measures what it purports to measure, it is considered valid.¹⁵ By calculating the Pearson correlation between each statement and the overall score in the range of 0.474 to 0.800, the construct validity analysis for this study was carried out. When a variable can be demonstrated to be measured in a repeated manner or when the results of measuring a steady variable can be relied upon to remain the same after each administration, this is known as reliability.¹⁵ Cronbach's alpha's internal consistency was utilized to analyze reliability, and its value of 0.925 showed that a high level of reliability had been established. This is in line with Cronbach alpha (0.956), which is equivalent to the Cronbach alpha of the original VitiQoL (0.935) and the Boza et al study (Cronbach alpha = 0.944), and confirms the dependability of the Persian version of VitiQol.¹⁶ The Brazilian Portuguese, Persian, and Beginning studies versions all had similar levels of the association between subjective severity and VitiQoL ratings (convergent validity) ($p=0.05$, $r = 0.463$, $p=0.05$, $r = 0.51$, and $p=0.05$, $r = 0.51$).¹⁷

Limited participation, stigma, and behavior are the three categories under which the VitiQoL questionnaire's questions fall. People who have participation restrictions have barriers or challenges when participating in daily activities and social interactions. Stigma refers to a perspective or the attribution of unfavorable traits to particular people. The behavioral domain includes a person's responses to their surroundings.¹² If all of the

domain's queries have been addressed, then each domain can be examined. The correlation of each dimension in the Indonesian VitiQoL in this study shows a good association with values between 0.79 and 0.89 since it dropped between 0.50 and 1.00. A high level of reliability is shown by Cronbach's alpha-value variation per item, which ranges from 0.700 to 0.908, or nearly 1. The association between each domain in VitiQol Indonesia and Cronbach's alpha for each study item varied from 0.756 to 0.918, in line with the findings of Giantoro and associates in Yogyakarta.¹²

Both male and female vitiligo sufferers may acquire psychological difficulties as a result of the visual effects of the condition. Individuals experience emotional stress and diminished self-esteem when their physical appearance is disrupted. An appealing appearance is necessary for acceptance and respect in social and professional contexts. The likelihood of landing a job, meeting new people, and getting married could all decrease. The three VitiQol domains and gender had no relationship, according to the study's findings ($p=0.671$). Women and men experience the same disorder in each of the three domains. Patients with stigmatized vitiligo both men and women experience humiliation, dread, anxiety, and sadness. In comparison to the conduct domain and the participation constraints domain, the stigma domain has the highest overall mean score (12.36). (5.62). (4.44). It was found that men had a somewhat higher mean stigma value than women (12.65 vs. 12.45). According to Abdullahi et al.'s findings, the stigma domain of VitiQol contributed the most compared to other domains.¹⁸ Men are supposed to be the foundation of the family and to raise the family's social status in the neighborhood.¹² Previously, the instrument had only been translated, culturally adapted, and validated in Iranian and Brazilian Portuguese (VitiQoL-PB). In our study, the overall VitiQoL score was 26.8 ± 18.84 , which was lower than the scores in Portugal (40.04 ± 27.32), Poland (39.65 ± 23.34), and Iran (30.5 ± 14.5). Patients whose VitiQol scores are higher have a lower quality of life. This study indicated that vitiligo patients in Indonesia have a higher quality of life than those in Portugal, Poland, and Iran. The external validity of this study was determined by comparing the Indonesian version of VitiQoL to DLQI. The association between Indonesian VitiQol and DLQI was statistically significant ($r=0.511$, $p=0.001$). Similar findings have been obtained in Poland

($r=0.90, p<0.001$), China ($r=0.776, p<0.001$), and Brazil ($r=0.776, p<0.001$).

This research has several limitations. First, test-retest was not carried out in this study. Second, the study was only conducted in one hospital, which did not represent all vitiligo patients in society. Future test-retest evaluations and multicenter studies will help improve the validity and reliability of the Indonesian version of VitiQoL.

The mean correlation coefficient of the VitiQoL Indonesian version, which measures reliability, is 0.695%. With a Cronbach's alpha reliability score of 0.925, the Indonesian VitiQoL version is a trustworthy tool. For Indonesian vitiligo sufferers, the VitiQoL questionnaire's Indonesian translation provides a valid and trustworthy measure of the quality of life. The stigma domain contributes about the same amount to the quality of life for both male and female patients in the validity and reliability test for the Indonesian version of VitiQoL.

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