

Validation of Immune Status Questionnaire (ISQ) in Indonesian Bahasa Language as a Simple Ssessment of Perceived Immune Status

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Abstract

Objective: This study aimed to determine whether the ISQ can be used to assess immune status in daily clinical practice in Indonesia by translating the questionnaire into Bahasa and analyzing its validity and reliability. **Methods:** The ISQ was translated both forward and backward by a professional translator fluent in both English and Bahasa. In this study, a cross-sectional study design was used, and Pearson's correlation test and Cronbach's Alpha calculation were used to perform the validity and reliability test. The questionnaire is valid if the computed R-value exceeds the R table value. Furthermore, it will also be considered reliable if Cronbach's Alpha value is greater than 0.60. **Result:** The computed R-value for each item is greater than the R table value (0.361), implying that all items in the questionnaire are valid. The Cronbach's Alpha value of 0.706 demonstrates that the questionnaire is reliable. **Conclusion:** The ISQ is a reliable and valid questionnaire, which can be used in Bahasa to assess patients' perspectives about their immune status.

Keywords: Immunological State Questionnaire- surveys- questionnaires-Bahasa

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Introduction

Immune function is believed to play an important role in health, and malfunctioning of the immune system can lead to certain diseases in humans. Individuals with chronic diseases, such as cancer, need a healthy immune system because such individuals' are almost certainly affected. Blood inflammatory markers such as white blood cells, erythrocyte sedimentation rate (ESR), plasma viscosity (PV), and c-reactive protein are frequently used, particularly in primary care settings. The more complex examination involves array data, which uses a genomic and epigenomic approach to detect immune system dysfunction. (Slavich GM.,2014). However, these measurements are usually expensive, and as a result, the simple subjective assessment may be used to assist physicians or patients in determining the patient's immune status. The results of a self-assessment questionnaire may influence an individual's decision to be screened for an elevated risk of immune-related illness The development of such a questionnaire is important as an increasing number of chronic illnesses and disorders are linked to immune system dysfunction. (Andreasson et al., 2016; Sievers et al., 2014).

Verspille et al developed and validated the simple Immunological Status Questionnaire (ISQ) used to

assess perceived immune function. They show that ISQ scores can differentiate between individuals having poor and excellent health, and further state that a successful intervention is connected to a significant improvement in the ISQ scores. Finally, the ISQ has an appropriate face, content, and construct validity, and it is a reliable, consistent, and a valid method of assessing an individual's perceived immunological condition over the last 12 months. (Versprille et al., 2019). Subsequently, since there is no similar questionnaire available in Indonesia, the investigators wanted to examine if the ISQ can be used in clinical daily practice, as routine medical checkups are not frequently performed as tools to represent immunological status, and therefore a validity and reliability of test of the questionnaire is required. (Sievers et al., 2014)

Materials and Methods

Survey Instrument Design

The survey items were based on the Immune Status Questionnaire by Verspille et al. It was first translated from English to Indonesian by a qualified professional translator fluent in both English and Indonesian. The translated questionnaire was then evaluated by a team of specialists and minor changes were carried out to adapt and smoothen the translation. The backward translation from the updated

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Indonesian questionnaire to English was performed by another qualified professional translator to ensure that the questionnaire did not lose its original meaning.

To assess their immune health, participants were required to complete the 7 ISQ indicators. -item assessment with an 85 percent predictive validity “Fever,” “diarrhea,” “lightheadedness,” “skin problems (e.g., pimples and rashes),” “joint stiffness discomfort,” “colds,” and “cough” were among the items.

In order to understand and analyze the ISQ overall score, it was requested to convert the original ISQ score (score range 0 to 28) into a New scoring system from 0-10. The 10-score system is presented in Table 1. The ISQ total score ranges from 0 to 10, with a score of 0 indicating very low immune status and a score of 10 indicating the highest immune status. The findings were categorized into three parts: extremely bad immune status (0–3 points), poor immune status (4–5 points), and good immune status (6–10 points).

Data Collection

In this study, a cross-sectional design was used, the inclusion criteria were all patients who visit General Medical Check Up at Hasan Sadikin General Hospital and are willing to fill out the questionnaire and participate. The data were collected from January to March 2021 using paper given out after each patient’s medical check-up. At the beginning of the study, the purpose of the

Table 1. Comparison of ISQ and 1-Item Perceived Immune Functioning Scores

1-item perceived immune functioning	Corresponding ISQ score
0	≥ 15
1	14
2	13
3	11, 12
4	10
5	8, 9
6	7
7	6
8	5
9	3, 4
10	≤ 2

questionnaire was explained to the respondents and then, informed consent was obtained. A sample of 30 patients was selected, based on scale reliability analysis with small samples. (Samuels, 2015). The ethics committee of Hasan Sadikin General Hospital approved this study with a clearance number of LB.02.01/X.6.5/328/2021.

Statistical Analysis

The 7 items in this questionnaire were each translated and tested for validity, and the analysis was performed using Pearson correlation. A validity test was used to measure an instrument and is considered valid if it is greater than 0.361. Then, Cronbach’s Alpha was used to determine reliability.

Results

As shown in Table 2, most respondents with 73.3 percent are male, with an average age of 30 years. The validity test results for the ISQ questionnaire are shown in Table 3. Since the calculated R-value of each item in the question (Rxy) is greater than the value of the R table (Rtable), it can be concluded that each item of the ISQ questionnaire was valid as indicated in Table 3. A Cronbach’s Alpha value greater than 0.60, where 0.706 were obtained, indicated that the questionnaire was reliable (Table 4).

Discussion

This study describes the validity and reliability of the ISQ used to assess patients’ perceptions of their immune status. The ISQ is a brief and simple scoring form that can be used in clinical practice and research to assess a participant’s immunological state quickly compared to the previous year. The final ISQ consists of seven items that

Table 2. Characteristic of the Respondents (Patients Referred to Hasan Sadikin General Hospital, 2021)

Characteristics	Parameter	Frequency (%)
Age (years old)	20 – 25	1 (3.3)
	26 – 30	15 (50)
	31 – 35	14 (46.7)
Gender	Male	22 (73.3)
	Female	8 (26.7)

Table 3. Immune Status Questionnaire (ISQ) in Indonesian Bahasa Language

No.	Question Items	Rxy*	Rtable**	Value
1	Seberapa sering selama 12 bulan ke belakang Bapak/Ibu/Saudara mengalami demam tinggi secara tiba-tiba?	0.459	0.361	Valid
2	Seberapa sering selama 12 bulan ke belakang Bapak/Ibu/Saudara mengalami diare?	0.736	0.361	Valid
3	Seberapa sering selama 12 bulan ke belakang Bapak/Ibu/Saudara mengalami sakit kepala?	0.671	0.361	Valid
4	Seberapa sering selama 12 bulan ke belakang Bapak/Ibu/Saudara mengalami masalah kulit (contoh: jerawat & eksim)?	0.64	0.361	Valid
5	Seberapa sering selama 12 bulan ke belakang Bapak/Ibu/Saudara mengalami nyeri otot dan sendi?	0.667	0.361	Valid
6	Seberapa sering selama 12 bulan ke belakang Bapak/Ibu/Saudara mengalami common cold?	0.79	0.361	Valid
7	Seberapa sering selama 12 bulan ke belakang Bapak/Ibu/Saudara mengalami batuk?	0.771	0.361	Valid

*Rxy, Computed R Value; **Rtable, R Table Value

Table 4. Immune Status Questionnaire (ISQ) Reliability in Indonesian Bahasa Language

No.	Item	Cronbach's Alpha	Number of Item
1	ISQ in Bahasa	0.706	7

assess immune status over the past year by asking about the occurrence of various immune-related symptoms. In a modest but significant way, the aggregate scores on the questions were related to perceived immune fitness and various psychological co-relationships, such as stress and depression. (Versprille et al., 2019).

A validity test determines whether an item's measurement is accurate concerning a variable. The Pearson's product-moment approach was used to link each item to the overall score obtained. The validity test was used to determine how well the questionnaire measures the variables of interest. This study evaluated the validity of the ISQ questionnaire in Bahasa, which was previously only available in English. When compared to the R table value, each computed R-value in this questionnaire is greater than 0.361, indicating that each item in the questionnaire is valid. A measuring instrument is subjected to a reliability test to determine if it can produce accurate results. A reliability test was performed using Cronbach's alpha to evaluate the reliability of the ISQ questionnaire in Bahasa. Furthermore, Cronbach's alpha indicates that a test instrument is reliable if the results are greater than 0.60. The result obtained is 0.706, indicating that the ISQ questionnaire is reliable for use in Bahasa. This corresponds with the reliability score of the ISQ English questionnaires of 0.796.

In conclusion, in this study, the questionnaire used proved to be a valid and reliable tool for assessing patients' perceptions of their immune status. It can be used to determine the knowledge level of different subpopulations or the public more easily and consistently because it is simple to understand and can be completed by participants in a short time and at a lower cost. This information can be useful in everyday clinical practice, allowing physicians to assess a patient's immunological status quickly.

Author Contribution Statement

Conception and design: Yohana Azhar; Administrative support: Yohana Azhar, Zuldi Erdiansyah; Provision of study materials or patients: Yohana Azhar; Collection and assembly of data: Zuldy Erdiansyah; Data analysis and interpretation: Yohana Azhar, Reno Rudiman; Manuscript writing: All authors; Final approval of manuscript: All authors

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General

The questionnaire used in this study proved to be a

valid and reliable tool for assessing patients' perceptions of their immune status. It can be used to determine the knowledge level of different subpopulations or public more easily and consistently because it is simple to understand and can be completed by participants in a short amount of time and at a lower cost. This information could be useful in everyday clinical practice, allowing physicians to quickly assess a patient's immunological status.

Funding Statement

There was no sponsorship in this study.

Conflict of Interest

There was no conflict interest in this study.

Ethical Declaration

This study ethically reviewed and approved by ethical committee of Hasan Sadikin Hospital with ethical clearance number LB.02.01/X.6.5/328/2021

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