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The Validity and Reliability Test of The St George's Respiratory Questionnaire (SGRQ) Indonesian Version in Ari Patients in The City of Pontianak

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ABSTRACT

ARI is a respiratory disease that causes of infectious diseases in the world which can be measured thequality of life. One of the measuring tools that can be used is the SGRQ which is a questionnaire to measure the quality of life of people with respiratory diseases. The SGRQ instrument is valid and reliable against other respiratory diseases such as TB, COPD, and Asthma The purpose of this study was to determine the validity and reliability of the Indonesian version of the SGRQ as an instrument to measure the quality of life of ARI patients in Pontianak City. The validity test was performed using the Pearson correlation method (correlation value ≥ 0.3) and the reliability test used the Internal consistency technique (Cronbach alpha coefficient ≥ 0.7). The validity test results show that there are three question items, namely items number 12 and 37 (activity domain), item number 19 (impact domain) which has a correlation value for each item ≤ 0.3 (0.05) and the reliability test results show Cronbach alpha coefficient ≥ 0.7 (0.05). The conclusion of study is the Indonesian version of the SGRQ instrument is declared reliable by not including invalid question items.

1. Introduction

ST George's Respiratory Questionnaire(SGRQ) is a self-administered questionnaire developed by Jones et al. (1991).The SGRQ is a specific questionnaire used to measure the quality of life of people with respiratory diseases (Hendrik, 2015). The SGRQ instrument is valid and reliable to measure the quality of life for asthma, COPD (Chronic Obstructive Pulmonary Disease), and TB (Tuberculosis) (Pratiwi, 2017, Adnan, 2014, Nurrizqi, 2019). The SGRQ consists of 50 question items and is divided into three domains, namely the symptom domain, the activity domain, and the impact domain. Each item in the questionnaire has a weight, which can give an estimate of the difficulty associated with the symptom or condition described. The score of the SGRQ ranges from 0 to 100. A high score of the SGRQ indicates a poor quality of life (Pratiwi, 2017) The SGRQ instrument in this study was used to determine the validity & reliability in measuring the quality of life of ARI patients.

Respiratory tract infection is a common disease in the community which is one of the highest causes of death in children and adults (Depkes RI, 2005). Acute respiratory infections (ARI) are the leading cause of infectious disease morbidity and mortality in the world (WHO, 2007). ARI is one of the diseases with the highest number of patient visits in health facilities. ARI patients who visit for treatment at the puskesmas are 40-60% and visits for treatment in the outpatient and inpatient departments are 15-30% (Depkes RI, 2009).

Based on the 2018 Basic Health Research, the prevalence of ARI in Indonesia in 2018 was 9.3%. The prevalence of ARI in West Kalimantan according to diagnosis by health workers (doctors, nurses or midwives) is 3.2% and symptoms experienced by ART (household assistants) are 8.4%. The prevalence of ARI disease in Pontianak City based on the 2018 Basic Health Research according to a diagnosis by health workers (doctors, nurses or midwives) was 1.84% and symptoms experienced by ART were 5.00% (Depkes RI, 2018).

Based on the description above, ARI is one of the acute respiratory diseases whose quality of life can be measured. Factors that can affect the quality of life of patients, one of which is increasing age, many elderly have problems with their physiological functions, this results in an increase in disease in the elderly, both acute and chronic (Juanita, 2016). Several previous studies have stated that the SGRQ instrument is valid and reliable for other respiratory diseases (Agnesti, 2013) so it is necessary to study the validity and reliability of the SGRQ instrument in ARI patients in the Pontianak City Region.

The purpose of this study was to assess the validity and reliability of the Indonesian version of the SGRQ as an instrument to measure the quality of life in ARI patients in the Pontianak City Region. This research has passed the ethical review with No. 2967/UN22.9/TA/2020 by the ethics team of the Faculty of Medicine, Tanjungpura University.

2. Method

Tool

The tools used in this research are a laptop/PC that has been equipped with the IBM SPSS Statistics 23 program and the St. The George Respiratory Questionnaire (SGRQ) which has been translated into Indonesian has 50 question items.

Ingredient

The material used for this research is a Google Form which consists of patient characteristics data, medical diagnosis data, and treatment data for ARI patients in the Pontianak City Region.

Method

The method used in this study is an analytical observational method, with a cross sectional approach (Sugiyono, 2007). Data collection is done by distributing questionnaires through Google Forms as the main measuring tool for collecting data. The inclusion criteria for this study were patients with a history of ARI. Patients aged 18-65 years. Exclusion criteria were ARI patients with comorbidities (TB, COPD, Asthma, Diabetes, and others).

1. Stage I Research
   Spread of the instrument link of St. The Indonesian version of the George Respiratory Questionnaire (SGRQ). with Google Form via social media.
2. Stage II Research
   Searching for ARI patient data through an electronic database using google form in the Pontianak City Region.
3. Stage III Research
   The collection of ARI patient data in the Pontianak City Region in the form of patient's name, gender, age, occupation, last education, and disease history.
4. Stage IV Research
   Test the validity and reliability of ARI patients in the Pontianak City area using a questionnaire*StGeorge's Respiratory Questionnaire (SGRQ).*

Data analysis

1. The validity procedure used is content validity. It is said to be valid if the correlation between the question items and the total score is 0.3. If the correlation coefficient < 0.3 then the question items in the instrument are declared invalid.
2. Reliability is used to determine whether the measuring instrument can be trusted or relied on. Intended to see the stability or consistency of an instrument in measuring the level of pain in patients. The instrument is declared to have good internal consistency if it has a Cronbach Alpha value greater than or equal to 0.7 (α 0.7).

3. Results and Discussion

This study aims to assess the quality of life and supporting data on patient characteristics with the SGRQ instrument in ARI patients in the Pontianak City area. This study uses a google form that is distributed through social media and is intended for ARI patients in the Pontianak City area. Based on data from the West Kalimantan Provincial Health Office, the Pontianak City area is one of the cities with the largest incidence of ARI, which is 3,611 cases.

Screening of subjects based on inclusion criteria and exclusion criteria was carried out after all subjects were collected, the number of subjects who were willing to fill out the SGRQ instrument was 52 subjects. However, the subjects who met the inclusion criteria were 40 samples while 12 of them included the exclusion criteria. The 5 subjects included in the exclusion criteria were not in the Pontianak City Region, and 7 of them had comorbidities. Comorbidities can affect the results of the study, this is because the perceived side effects often interfere with treatment results. So this study did not use subjects with comorbidities (Ivona, 2016).

Indonesian version of SGRQ Instrument Validity Test

The validity test in this study was carried out by calculating the total score of the SGRQ questionnaire. The total score is calculated by adding up all the positive responses in the questionnaire and is generated in the form of a percentage of the total weight of the items in the questionnaire. Each questionnaire response has a different weight value starting from 0 and the highest is 100. The score is calculated by dividing the total weight of the positive responses in the questionnaire with the maximum weight in the domain and the results are obtained as a percentage, the scores are calculated for each domain. The maximum number of weights is the sum of the highest scores from each domain. The maximum number of weights for each domain is: Symptoms of 662.5; Activity of 1209.1; Impact of 2117.8. So the higher the positive response value, the worse the quality of life value.

The scores obtained were then analyzed using the SPSS tool. Validity test was conducted to determine whether the statement on the questionnaire was worthy of research. Determination of whether or not an item is feasible to use, usually a correlation significance test is carried out at a significance level of 0.05, meaning that an item is considered valid if it has a significant correlation with the total score. If you make a direct assessment of the correlation coefficient, the minimum correlation value limit of 0.30 can be used. The validity test was conducted on 40 respondents who met the predetermined criteria. The statement is declared valid or feasible if r-count > r-table. The r-table was obtained from the SPSS provisions for 40 respondents. The r-table used was 0.3 (Junaidi, 2010). The results of the validity test can be seen in table 1.

Table 1. Validity Test Results

Symptom	Impact	Activity
Q1 = 0.720	Q9 = 0.597	Q11 = 0.581
Q2 = 0.802	Q10 = 0.648	**Q12 = 0.270**
Q3 = 0.839	Q18 = 0.608	Q13 = 0.556
Q4 = 0.896	Q19 = 0.774	Q14 = 0.466
Q5 = 0.770	Q20 = 0.505	Q15 = 0.588
Q6 = 0.640	Q21 = 0.730	Q16 = 0.425
Q7 = 0.621	Q22 = 0.688	Q17 = 0.624
Q8 = 0.702	Q23 = 0.695	Q36 = 0.586
	Q24 = 0.543	**Q37 = 0.282**
	Q25 = 0.705	Q38 = 0.482
	Q26 = 0.532	Q39 = 0.767
	Q27 = 0.726	Q40 = 0.652
	Q28 = 0.749	Q41 = 0.737
	Q29 = 0.164	Q42 = 0.696
	Q30 = 0.398	Q43 = 0.677
	Q31 = 0.599	Q44 = 0.734
	Q32 = 0.685	
	Q33 = 0.401	
	Q34 = 0.340	

Q35 = 0.541
Q45 = 0.651
Q46 = 0.620
Q47 = 0.483
Q48 = 0.434
Q49 = 0.378
Q50 = 0.466

Based on Table 1, the SGRQ questionnaire has 50 question items, where the items are divided into three domains that are calculated in the SGRQ, including the domains of symptoms, activities, and impacts. The symptom domain is calculated by adding up the weights of the positive responses from questions 1-8. All question items in the symptom domain have a correlation coefficient value of 0.3. There is a question item that has the highest value, namely the symptom domain at number 4 of 0.896. These results are consistent with other studies which state that the symptoms that appear will indirectly have an effect on the patient's routine activities in daily life and consequently will cause the patient's quality of life to decrease (Ivona, 2016). So that the question items are suitable for the symptoms of ARI which can affect the patient's quality of life.

The impact domain is calculated from adding up the weights of positive responses from questions 9-10, 18-35 and 45-50. The impact domain has 26 question items to assess the decline in social and psychological functioning in patients with respiratory disease (Pratiwi, 2017). However, in this study, there was 1 question item in the impact domain which was declared insignificant, namely the question item number 29. The question item in the impact domain could be stated not to affect the decline in social and psychological function in ARI patients. There are several question items that do not meet the validity criteria, namely the question item number does not meet the validity criteria because the correlation coefficient value is 0.3.

The activity domain is calculated by adding up the weights of the positive responses from questions 11-17 and 36-44. The activity domain has 16 question items that are used to determine how the patient's respiratory status affects daily activities (Pratiwi, 2017). The results of this study in the activity domain have two question items that are not significant, namely question items number 12 and 37. So question item number 12 and 37 did not affect daily activities in ARI patients.

According to research by Adnan, et al, there are several question items in the activity domain and impact domain that do not meet the validity criteria, because the domain value is smaller than the correlation coefficient value. The high or low validity value can be seen from the respondents' responses in answering questions whose answers are "yes and no". (Adnan, 2014) The results of this study are the same as those presented in Pratiwi's research, that the results for all domains of the SGRQ provide a good correlation, except for the impact domain (Pratiwi, 2017).

Indonesian version of SGRQ Instrument Reliability Test

Reliability test is a series of measurements or a series of measuring instruments that have consistency when the measurements made with the measuring instrument are repeated. A construct or variable is said to be reliable, if it has a cronbach alpha value 0.7 (Bae, 2011). The following are the results of reliability tests conducted on 40 respondents who were deemed to meet the predetermined criteria.

Table 2. Reliability Test Results

Domain	**Reliability**
Symptom	0.887
Impact	0.747
Activity	0.740

Based on table 2, it can be seen that the reliability test conducted on 40 respondents showed that the data was declared reliable, where the symptom domain was 0.887, the impact domain was 0.747, and the activity domain was 0.740. The questions in this questionnaire are considered feasible and can be used for research purposes, because the SGRQ questionnaire is specific enough to be applied to patients with respiratory disorders. The results are declared reliable by looking at the Cronbach alpha value for each domain of more than 0.7.

Cronbach's alpha value can be influenced by factors, one of which is Cronbach's alpha value depending on the magnitude of the correlation between items and the number of items in the measuring instrument. If the number of questions on the measuring instrument is large, Cronbach's alpha will increase, although it does not mean that the measuring instrument is good (Murti, 2011).

According to research by Adnan, et al, where Cronbach's alpha value is above 0.7, the data is reliable. Based on the results of the data declared reliable, the study provides additional facts that the SGRQ is an appropriate instrument used to measure the quality of life in patients with respiratory diseases. So it can be concluded that the Cronbach alpha value obtained is similar to this study (Adnan, 2014).

The results of this study are reliable but there are several question items that are declared invalid. The validity of a questionnaire can be achieved by modifying invalid question items and eliminating invalid question items as long as there are representative items (Murti, 2011). Couldit can be concluded that the reliable value obtained is in accordance with the theory, so the questionnaire can be used without including invalid questions.

4. Conclusion

The Indonesian version of the SGRQ instrument does not meet the validation criteria for measuring quality of life in ARI patients in the Pontianak City Region with three question items, namely items number 12 and 37 (activity domain), question item number 29 (impact domain) which has a correlation value of each item. 0.3 (0.05).

The Indonesian version of the SGRQ instrument is reliable by not including invalid question items into the analysis to measure quality of life in ARI patients in the Pontianak City Region which has a Cronbach alpha coefficient value of 0.7 (0.05).

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