VALIDITY AND RELIABILITY OF WHO DISABILITY ASSESSMENT SCHEDULE 2.0 (WHODAS 2.0) TYPE 12 QUESTIONS INDONESIAN VERSION ON BACK PAIN

Kusumawardhany Airlangga Rijanti[1], Imam Subadi[1], Patricia Maria Kurniawati[1]
[1] Department of Physical and Rehabilitative Medicine, Faculty of Medicine, Universitas Airlangga, Surabaya, Indonesia/Dr. Soetomo General Academic Hospital, Surabaya, Indonesia

ABSTRACT

The study was to prove the validity and reliability of the WHODAS 2.0 Indonesian version questionnaire in patients with back pain. This study was an observational cross-sectional study conducted in 2018. The study included the filling of WHODAS 2.0 Indonesian version, Indonesian version of Oswestry Disability Index (ODI) questionnaire, Wong-Baker Scale, conducted at Department of Rehabilitative Medicine, Dr. Soetomo General Academic Hospital, Surabaya, Indonesia, against 82 respondents with back pain. Each respondent was given informed consent. The validity of the WHODAS 2.0 Indonesian version questionnaire was measured using Pearson's test on the correlation of WHODAS 2.0 Indonesian version questionnaire and Oswestry Disability Index questionnaire with r >0.3 (0.862). WHODAS 2.0 Indonesian version questionnaire and Wong-Baker Scale had r >0.3 (0.449–0.785). The reliability of the WHODAS 2.0 Indonesian version questionnaire was measured using Pearson's correlation test with r >0.3 (0.764–0.866). WHODAS 2.0 Indonesian version's internal reliability was tested using Cronbach-Alfa Test with alpha >0.6 (0.634–, 853). In conclusion, the WHODAS 2.0 - Indonesian version is a valid and reliable questionnaire for patients with back pain..

***Keywords**: WHODAS 2.0 Indonesian version Validity; WHODAS 2.0 Indonesian version reliability; WHO Disability Assessment Schedule 2.0, WHODAS 2.0 Indonesian version; human & health*

ABSTRAK

Penelitian ini bertujuan untuk membuktikan validitas dan reliabilitas kuesioner WHODAS 2.0 versi Bahasa Indonesia pada penderita nyeri punggung. Desain penelitian ini adalah penelitian observasional cross-sectional yang dilakukan pada tahun 2018. Penelitian meliputi pengisian WHODAS 2.0 versi Bahasa Indonesia, kuesioner Oswestry Disability Index (ODI) versi Bahasa Indonesia Wong Baker Scale, yang dilakukan di Departemen Rehabilitasi Medik, RSUD Dr. Soetomo, Surabaya, Indonesia, pada 82 reponden penderita nyeri punggung. Setiap responden memberikan persetujuan tertulis. Validitas kuesioner WHODAS 2.0 versi Bahasa Indonesia diukur menggunakan uji Pearson pada uji mengenai hubungan kuesioner WHODAS 2.0 versi Bahasa Indonesia dan kuesioner Owestry Disability Index dengan hasil r >0,3 (0,862). Hasil kuesioner WHODAS 2.0 versi Bahasa Indonesia dan Wong Baker Scale r >0,3 (0,449–0,785). Reliabilitas kuesioner WHODAS 2.0 versi Bahasa Indonesia diukur menggunakan uji hubungan Pearson dengan hasil r >0,3 (0,764–0,866). Reliabilitas internal WHODAS 2.0 versi Bahasa Indonesia diuji menggunakan Uji Cronbach-Alfa dengan hasil alfa > 0,6 (0,634– ,853). Sebagai simpulan, kuesioner WHODAS 2.0 versi Bahasa Indonesia merupakan kuesioner yang valid dan reliabel untuk pasien dengan nyeri punggung.

***Kata kunci**: Validitas WHODAS 2.0 versi Bahasa Indonesia; Reliabilitas WHODAS 2.0 versi Bahasa Indonesia; WHO Disability Assessment Schedule 2.0, WHODAS 2.0 versi Bahasa Indonesia; human & health*

Correspondence: Patricia Maria Kurniawati, Department of Physical and Rehabilitative Medicine, Faculty of Medicine, Universitas Airlangga, Surabaya, Indonesia/Dr Soetomo General Academic Hospital, Surabaya, East Java 60286. Email: patriciasprm@yahoo.com

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INTRODUCTION

The number of people with disabilities in the world has reached more than 1 million every day. Generally, disability is found in people with poor health, education and low economic levels. Understanding disability issues is as important as understanding the diagnosis of the patient's disease. Therefore, disability also requires proper management. Disability in an individual may impede them when they have to return to their routine daily work at home, at work, at school, and other social activities (Üstün 2010a, Üstün et al 2010b).

The ICF (International Classification of Functioning, Disability and Health) explains that someone's function at the level of the body and the role of a person in society, but the ICF is not practical in assessing and describing disabilities in everyday life, so that the World Health Organization establishes a project to assess and classify abilities or features of disability and health level adapted to local culture (Üstün et al 2010a, Üstün et al 2010b).

Back pain is a health problem that is quite common in the community. Disability is important because it occurs in all cultures, disrupts quality of life and work performance, and is the main reason for medical consultations. Back pain is a pain syndrome that is often found in daily practice. Back pain is characterized by main symptoms of pain or a feeling of discomfort in vertebral area and its surroundings (Andini 2015, Allegri et al 2016).

Assessment of functional status with questionnaires is important for research and clinical purposes. Disability is the primary item of treatment evaluation of patients with back pain, and is generally done by questionnaire. Measuring instruments which are standardized and compliant with psychometric rules are often used because they are simple, clinically valuable, valid in measuring health status, symptoms and function. The most widely used instruments to measure disability are the Oswestry Disability Index (ODI), the Roland Morris Disability Questionnaire (RMDQ), the Functional Rating Index, and the Quebec Back Pain Disability Scale (QDS). The Oswestry Disability Index (ODI) is more responsive than similar measuring instruments. In addition, the index is very sensitive to detect clinical changes after conservative treatment in conditions of sub-acute and chronic back pain (Monticone et al 2012, Vanti et al 2017)

In the previous study, we have carried out the translation and cross-cultural adaptation of the WHODAS 2.0 questionnaire into Indonesian, with the results of the WHODAS 2.0 Indonesian version questionnaire. The validity and reliability of WHODAS 2.0 Indonesian version questionnaire is needed to obtain adequate questionnaires in describing disability. Further research is therefore needed to obtain a valid and reliable WHODAS 2.0 Indonesian version questionnaire to describe disability in back pain.

MATERIALS AND METHODS

This study was an observational cross-sectional study consisting of WHODAS 2.0 Indonesian version filling, the Indonesian language version of THE Oswestry Disability Index (ODI) questionnaire Wong Baker Scale, conducted at the Department of Rehabilitative Medicine, Dr. Soetomo General Academic Hospital, Surabaya, Indonesia. Each respondent submitted informed consent. The study was started in October 2018, involving 82 respondents. The questionnaires were conducted using the interview method, with the same two researchers interviewing for the entire study.

Subjects of the Study

Each respondent submitted informed consent. Eligible populations are patients with back pain in Dr. Soetomo General Academic Hospital, Surabaya, Indonesia. The inclusion criteria were age over 18 years with back pain experience in the last 30 days, and were willing to become respondents of the study and follow the entire series of the study.

Data Analysis

The descriptive analysis was conducted to describe respondents' characteristics and distribution. Data normality was tested by using Shapiro-Wilk test. Evaluation of WHODAS 2.0 Indonesian version validity test was carried out using Pearson's test. Validity test results were considered valid if the correlation value was at least 0.3 or showing weak correlation. WHODAS 2.0 Indonesian version reliability test evaluation used Cronbach-alpha test. The test results were regarded as reliable only if the Cronbach-alpha value of each question in WHODAS 2.0 Indonesian version was at least 0.6.

RESULTS

Totally, there were 82 respondents in the validity and reliability test.

Table 1. Characteristics of the respondents

Characteristics		Total	Percentage(%)
Age	18-40	13	15.8
	40-80	69	84.1
	Total	82	100
Marriage Status	Never married	10	12.3
	Married	59	71.9
	Divorced	2	2.43
	Widowed	9	10.9
	Never married	12	14.6
	Total	82	100
Education	≤ 6	14	17.07
	9	10	12.3
	12	21	25.6
	≥ 13	37	45.1
	Total	82	100
Sex	M	12	14.6
	F	70	85.4
	Total	82	100
Occupation	Worker with salary	10	12.3
	Self-employed	10	12.3
	Housewives	46	56.09
	Retired	12	14.6
	No work due to health reason	4	4.87
	No work due to other reasons	3	3.65
	Total	82	100
Respondents' Condition	Dependent	5	6.09
	Independent	77	93.9
Total		82	100

Data were taken in October 2018 in which the data were collected twice from one respondent. The first data collected were WHODAS 2.0 Indonesian version data, Oswetry Disability Index and Wong Baker Scale. The second data collection, the data concerning WHODAS 2.0 Indonesian version, was carried out 5 days after the first data collection. From the WHODAS 2.0 Indonesian version questionnaire we get scores from six domains.

The validity of WHODAS 2.0 Indonesian version questionnaire was measured using the value of Pearson's correlation with WHODAS 2.0 Indonesian version and the Oswetry Disability Index Indonesian version and Wong Baker Scale. WHODAS 2.0 Indonesian version test-retest reliability was measured using Pearson's correlation test. WHODAS 2.0 Indonesian version's internal reliability was assessed using the Cronbach-Alfa test.

Correlation test between WHODAS 2.0 Indonesian version and Oswetry Disability Index showed r >0.3 (0.862) with p <0.05. The WHODAS 2.0 Indonesian version correlation with Wong Baker Scale is shown in Table 2.

Table 2. WHODAS 2.0 correlation with Wong Baker Scale

Domains	r	p
Cognitive	0.659	0.00
Mobility	0.785	0.00
Self-Care	0.649	0.00
Interaction	0.449	0.00
Activity	0.762	0.00
Participation	0.649	0.00

(a) r indicated correlation, correlation was present if r >0.3
(b) p was siignificant if p <0.05

Internal reliability test showed that all WHODAS 2.0 Indonesian version domains had alpha values >0.6 (Table 3).

Table 3. Internal reliability test results

Domains	Alpha Values
Cognitive	0.753
Mobility	0.853
Self-Care	0.844
Interaction	0.634
Activity	0.832
Participation	0.744

Test-retest reliability test results illustrate the relationship for six WHODAS 2.0 Indonesian version domains from the first and second filling with a value of r> 0.3 (Table 4).

Table 4 Test-Retest reliability test results

Domains	Mean WHODAS (H0)	Mean WHODAS (H5)	r	p
Cognitive	1.71±1.73	1.07±1.35	0.764	0.00
Mobility	3.71±2.13	3.52±1.86	0.784	0.00
Self-Care	1.44±1.873	0.96±1.68	0.844	0.00
Interaction	1.07±1.49	0.76±1.25	0.793	0.00
Activity	3.17±1.99	2.76±1.74	0.786	0.00
Participation	2.63±1.966	2.11±1.663	0.866	0.00

(a) r indicated correlation, correlation was present if r >0.3
(b) p was significant if p <0.05

DISCUSSION

Oswestry Disability Index is a questionnaire most often used to assess function limitations in back pain. The Oswestry Disability Index consisted of 14 questions about pain intensity, self-care, lifting, walking, sitting, standing, sleeping, social life, traveling, occupation or household. HODAS 2.0 had a good domain of cognition, mobility, self-care, interaction, activity and participation.

The WHODAS 2.0 questionnaire was given by interviewing 82 respondents with back pain in Dr. Soetomo General Academic Hospital who fulfilled the inclusion criteria. The characteristics of the respondents were male respondents as many as 12 (14.6%), female 70 (85.3%), aged 18 - 40 years as many as 13 (15.8%), aged 40-80 years as many as 69 (84.1 %), worked with salary 10 (12.3%), self-employed 10 (12.3%), housewives 46 (56.09%), retired 12 (14.6%), not working due to health reasons 4 (4, 87%), and not working due to other reasons 3 (3.65%). The status of the respondents showed that dependent as many as 5 (6.09%) and independent 77 (93.9%). The most frequent characteristics were female, age above 40 years, married, length of time for education >13 years, housewife, and independent.

The data showed that most of back pain patients were women. The results of this study were similar as those of Altinel et al (2007) in Turkey, that the prevalence of back pain in women was 63.2% and in men was 33.8%, because in women, the process of menopause might cause reduced bone density due to decrease in the hormone oestrogen, so that it allowed the occurrence of back pain. Women also did a lot of physical activity using their backs (Altinel et al 2007, Wang et al 2016).

The statistical test indicated the correlation between total WHODAS 2.0 Indonesian version score and total ODI score. This was similar to the results of a study by Katri et al (2015) on 62 respondents with back pain in Turkey, where total WHODAS and ODI scores were strongly correlated. This result indicated the similarity of functional assessment in patients with back pain. Another validity study on 172 respondents with inflammatory arthritis in Canada showed that total WHODAS 2.0 score was strongly correlated with total score of SF 36 (physical component) and was moderately correlated to the mental component (Meesters & Verhoef 2009, Katri et al 2015).

Correlation between WHODAS 2.0 and WBS on six WHODAS 2.0 domains showed a strong correlation in the domain of mobility and activity. Pain intensity also had a correlation to the domain of cognition, self-care

and participation. Moderate correlation was found in domain of interaction. Pain intensity felt by respondents had the highest effect on the function of mobility and activity. In 103 patients (73% were females) with musculoskeletal disorder in Turkey, total numeric rating scale and WHODAS 2.0 showed slightly stronger associations in the physical domains of functioning. This could be explained by the fact that the patients had main diagnoses of musculoskeletal disorders (Katri et al 2015).

Internal reliability test results showed that all WHODAS 2.0 Indonesian version domains had alpha values >0.6. Strong reliability was obtained in the domain of mobility, self-care, activity that had value □=0.8. This result was similar to the study conducted by Poesl et al (2004) in Germany on 904 respondents with back pain, rheumatoid arthritis, osteoarthritis, heart disease, obstructive pulmonary disease, asthma, diabetes mellitus, breast cancer, obesity, depression, and stroke with alpha 0.7-0.9. A study by Mike et al (2015) on 1020 respondents with chronic diseases (diabetes mellitus, heart disease, stroke, rheumatoid arthritis, epilepsy, Parkinson's) had alpha results of 0.89 to 0.98. Besides, a study by Küçükdeveci et al (2013) in 188 stroke patients in Turkey showed alpha 0.83-0.99 (Küçükdeveci et al 2013, Mike et al 2015)

The average respondent answered questions with moderate to severe scores on the domain of mobilization and activity, mild to moderate scores on the domain of participation and no to mild scores on the domain of cognition, self-care and interaction. Back pain was strongly correlated with disability in a person's mobility (Una et al 2014).

Test-retest reliability test results illustrated a significant correlation in six domains for both data taking. Similar results were also found in Meesters & Verhoef (2009) against 172 respondents with inflammatory arthritis in Canada, with test-retest reliability of 0.82-0.96. In 225 patients with osteoarthritis, the reliability of test-retest was 0.87-0.97 (Meesters & Verhoef 2009). Kutlay et al (2011) proved good internal reliability and test-retest. This showed that WHODAS 2.0 Indonesian version was reliable and consistent to use as a disability measurement instrument.

A few limitation was necessary to be addressed. The respondents had given different interpretations of several WHODAS 2.0 questions. Hence, a guidance from an interviewer was required to ensure consistency. This study was conducted only on respondents who suffer back pain, so that further study on respondents with different conditions was required to improve the applicability of WHODAS 2.0-Indonesian version.

CONCLUSION

The interview-administered WHODAS 2.0-Indonesian version was valid and reliable to be used as an instrument for measuring disability in patients with low back pain.

REFERENCES

Allegri M, Montella S, Salici F, et al (2016). Mechanisms of low back pain: a guide for diagnosis and therapy. F1000Research 5, 1-11.

Altinel L, Kose K, Ergan V, et al (2008). The prevalence of low back pain and risk factor among adults population in Afyon Region Turkey. Acta Traumatol Turc 42, 328-333.

Andini F (2015). Risk factors of low back pain in workers. Medical Journal of Lampung University 4, 12-19.

Cheung MKT, Hung ATF, Poon PKK, et al (2015). Validation of the world health organization disability assessment schedule II Chinese traditional version (WHODAS-II CT) in person with disabilities and chronic illnesses for Chinese population. Disabilty and Rehabilitation 37, 1902-190.

Katri L, Tuomas V, Anita P, et al (2015). Measuring perceived pain among people with musculoskeletal disorders: Correlation between numeric rating scale and Whodas 2.0. Turku ICF Study. J Rehabil Med Suppl 54, 476

Küçükdeveci AA, Kutlay S, Yildizlar D, et al (2013). The reliability and validity of the world health organization disability assessment schedule (WHODAS-II) in stroke. Disability and Rehabilitation 35, 214-220.

Kutlay S (2011). Validation of the world health organization disability assessment schedule II (WHODAS-II) in patients with osteoarthritis. Rheumatol Int 31, 339-346.

Meesters J, Verhoef J (2009). Validity and responsiveness of the World Health Organization Disability Assessment Schedule II to assess disability in rheumatoid arthritis patients. Rheumatology 49, 326-33.

Monticone M, Baiardi P, Vanti C, et al (2012). Responsiveness of the Oswestry Disability Index and the Roland Morris Disability Questionnaire in Italian subjects with sub-acute and chronic low back pain. Eur Spine J 21, 122-129.

Poesl M (2004). Evaluation of the world health organization disability assessment schedule II (WHO DAS II) – German version disability in patients with musculoskeletal diseases, cardiovascular and general internal diseases, stroke, breast cancer and depressive disorder. aus der klinik für physikalische medizin und

rehabilitation der ludwig-maximilians. LMU München, German.

Una E, Liana F (2014). Restricting back pain and subsequent mobility disability in community-living older persons. J Am Geriatr Soc 62, 2142-2147.

Üstün TB, Chatterji S, Kostanjsek N, et al (2010b). Developing the world health organization disability assessment schedule 2.0. Bull World Health Organ 88, 815-23.

Üstün TB, Kostanjsek N, Chatterji S, et al (2010a). Measuring health and disability: Manual for WHO disability assessment schedule WHODAS 2.0. WHO Press, Swiss.

Vanti C, Ferrari S, Villafañe JH, et al (2017). Responsiveness and minimum important change of the OswestryDisability Index in Italian subjects with symptomatic lumbarspondylolisthesis. J Orthop Traumatol 18, 145-150.

Wang YXJ, Wang J-Q, Kaplar Z (2016). Increased low back pain prevalence in females than in males after menopause age: evidences based on synthetic literature review. Quant Imaging Med Surg 6, 199-206.