

Predictors of Quality of Life of Persons with Physical Disabilities in Indonesia

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ABSTRACT

Purpose: Indonesia lacks policies and programmes that would reduce barriers towards improving the Quality of Life (QOL) of persons with disabilities. This cross-sectional study assessed the QOL of persons with physical disabilities in Indonesia and identified its predictors.

Method: A total of 202 participants with physical disabilities completed the attitude subscale of Craig Hospital Inventory of Environmental Factors-Short Form (CHIEF-SF), the World Health Organisation Disability Assessment Schedule 2.0 (WHODAS 2.0), and the World Health Organisation Quality of Life (WHOQOL-BREF) scale. The Rasch model converted the ordinal data to the interval logits scale. Multiple linear regression was used to analyse the QOL predictors.

Results: Participants reported a mean WHOQOL-BREF score of 0.12 ± 0.98 (or poor QOL). The participants perceived people's attitudes as impactful barriers (-1.68 ± 1.44). There was a significant difference in participants' mean WHODAS 2.0 scores with poor (-0.38 ± 1.06) and good QOL (-1.79 ± 0.77). The regression revealed the following significant QOL predictors: severe disability ($B = -1.089$), moderate disability ($B = -0.697$), employment ($B = 0.544$), attitude barrier ($B = -0.096$), and age ($B = -0.015$).

Conclusion: Factors such as unemployment, perceptions of impactful attitudinal barriers, and ageing are associated with the poor QOL reported by persons with moderate to severe physical disabilities. It is necessary to ensure equal employment opportunities and remove stigma in society to promote QOL improvement for them.

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Key words: physical impairment, disability, environmental factors, quality of life

INTRODUCTION

Impairment is a problem in body function and structure, such as a significant deviation or loss (World Health Organisation, 2013). A disability results from the interaction between a person's health condition (such as having impairment because of stroke or multiple sclerosis) and environmental factors that hinder the person's full activities and participation on an equal basis with others. Persons with disabilities experience more barriers, such as negative attitudes, discrimination, inaccessible healthcare services or assistive devices, and social participation barriers in their daily lives, than those without disabilities (Visagie et al, 2017); these may lower their well-being or quality of life (QOL) (Bakula et al, 2011; Rajati et al, 2018).

Quality of Life refers to a person's self-perception regarding his/her position within the cultural context and personal goals, expectations, standards, and concerns (The WHOQOL Group, 1995). Typically, a good QOL implies experiencing good health, subjective well-being, and life satisfaction (Goode, 1994). There is extensive evidence indicating poor QOL among persons with disabilities (Dijkers, 1997; Albrecht & Devlieger, 1999; Livneh et al, 2004; Lucas, 2007; Strine et al, 2008; Bredemeier et al, 2014). However, according to some studies the factors influencing QOL, as reported in existing literature, are varied and contradictory, contributing to discrepancies in the QOL of persons with disabilities. Some persons with moderate or severe disabilities frequently reported good or even excellent QOL, while others reported poor QOL. This is related to their ability to adapt effectively to difficulties (Albrecht & Devlieger, 1999). Other studies investigated the QOL predictors to explore the possible cause of discrepancies. Some studies have demonstrated that age, gender (Stucki, 2005), education, marital status, employment status (Amato et al, 2001) and duration of disability (Stucki, 2005) could not predict QOL. In contrast, other studies indicated that QOL is predicted by age, gender, physical disability level, and physical activity (Kosma et al, 2009). However, the impact on the level of QOL differs with age, income, and cultural context (Grabowska et al, 2022).

These QOL discrepancies emphasise the need for identifying subgroups of persons with disabilities who may be at particular risk of experiencing poor QOL and suggest that poor QOL was affected by factors other than the presence of

impairment *per se* (Emerson et al, 2020). For example, the relatively poor QOL of adolescents and youth with disabilities reflects the difficulty in accessing essential material resources (e.g., a weatherproof coat) and social activities (e.g., a memorable event celebration or birthday party) (Savage et al, 2014; Shahtahmasebi et al, 2011). Poor QOL emerged as a more significant risk factor among persons with physical disabilities who encountered difficulties in accessing financial support and benefiting from social protection (Ashok et al, 2015).

The United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) declared the importance of ensuring improved QOL among persons with disabilities globally, by improving their access to social protection without discrimination (Lombardi et al, 2019; United Nations, 2014). In Indonesia, the government partially covers the needs of persons with disabilities through various health and insurance schemes (Kemenkumham, 2016). However, the prevalence of disabilities due to chronic health conditions, higher medical costs, negative attitudes towards persons with disabilities (Adioetomo et al, 2014) and lack of assistive device coverage for persons with disabilities through the insurance scheme might inhibit them from taking advantage of Indonesia's health and social insurance system (Larasati et al, 2017).

Developing an intervention programme for improving QOL is essential to reduce medical costs (Eriksson et al, 2010; Wu et al, 2015; Haraldstad et al, 2019) and prevent worsening conditions (Robinson et al, 2017; Haraldstad et al, 2019; Phyo et al, 2020). According to previous studies, poor QOL could increase the desire to hasten death through depression and low self-worth among persons receiving palliative care (Robinson et al, 2017). Lower QOL is also associated with higher mortality risk among participants over 18 years of age (Phyo et al, 2020). Thus, it is crucial to identify the predictors of QOL among persons with disabilities in order to develop effective intervention programmes to enhance their QOL (World Health Organisation, 2015).

Existing Indonesian studies have inadequately investigated QOL and its predictors in persons with disabilities, including those with physical disabilities. A study in Indonesia by Rachmat et al (2019) reported that personal factors such as optimism, religiosity, and self-efficacy could predict the QOL of persons with disabilities, without investigating their socio-demographic status that represents environmental and personal factors. Thus, according to the study, the association of QOL with socio-demographic characteristics in Indonesian persons with disabilities remains unclear. Moreover, the study provided no information on

health insurance status, assistive device usage, and attitudinal barriers (e.g., stigma or discrimination) towards persons with physical disabilities. Therefore, it is crucial to improve the understanding of QOL and disability-related factors in Indonesia.

Given these situations, the current study investigated attitudinal barriers, levels of disability, and QOL and its predictors among persons with physical disabilities in Indonesia. It was hypothesised that the QOL of persons with physical disabilities would vary and be predicted by socio-demographic factors (e.g., age, gender, marital status, education status, employment status, and personal income), policy-modifiable factors (e.g., health insurance status, assistive device usage status, and attitudinal barriers), and disability-related factors (e.g., types of physical impairment and disability levels).

Objective

This study was conducted to highlight QOL discrepancies and identify its predictors in persons with physical disabilities. The findings are expected to raise public awareness and obtain support for changes in disability-related issues, as well as enable policymakers to recognise the urgency in addressing the problem through informed decision-making and policy reform. Furthermore, policymakers may be encouraged to prioritise effective strategies for enhancing QOL among persons with physical disabilities.

METHOD

Study Setting

This quantitative cross-sectional study was performed in Bandung, Indonesia, from April to May 2019. Bandung was specifically chosen because it has an excellent registration system for persons with impairments and a well-implemented community-based rehabilitation (CBR) programme (Ferial, 2016). Before conducting the field survey, health cadres (community volunteers promoting health in their local communities) and research assistants from the social office were trained by the authors.

Study Participants

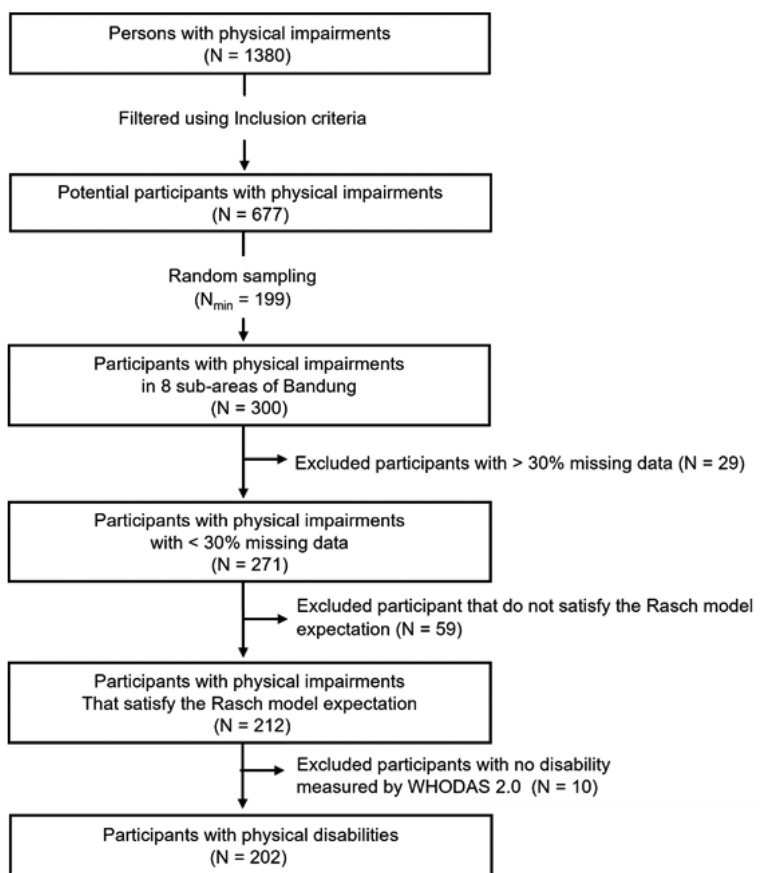
Health cadres, community volunteers whom healthcare professionals have trained to support health promotion programmes (Friska et al, 2022), guided the research

assistants to reach the potential participants. The research assistants explained the study's objective to the potential participants and obtained their written informed consent. Participants completed the questionnaire independently. They were allowed to ask the surveyor if they did not understand questions and were free to withdraw from participation at any stage of the study.

The flowchart below (see Figure 1) shows the sample selection process. A list of 1380 registered persons with physical impairments was obtained from the Social Office of Bandung. A new list was created based on the inclusion criteria, and the sample was randomly selected.

The inclusion criteria were persons from 18 to 60 years of age, residing in Bandung and living with only physical impairment (no other impairments of vision, hearing, and cognition).

Figure 1: Diagram of the Sample Selection Process



A minimum sample size of 199 persons with physical disabilities was calculated using the G*Power version 3.1.9.6 (Faul et al, 2007; Erdfelder et al, 2009) (F test, Linear multiple regression: fixed model, R^2 deviation from zero, 15 predictors). Questionnaires were distributed to 303 potential participants at their homes, and 300 (99%) completed questionnaires were returned. The researchers excluded 88 (29.3%) participants for $\geq 30\%$ missing data or failing to satisfy the Rasch model's expectations (person outfit and infit mean square (MnSq) > 1.5 logit) (Boone et al, 2014), to prevent data bias; thus, a total of 212 participants were retained. Of these, 10 participants (4.7%) indicated not having a disability and 202 (95.3%) stated having a disability in accordance with the World Health Organisation Disability Assessment Schedule 2.0 (WHODAS 2.0). As per the study's inclusion criteria, the 10 participants without disabilities were excluded. The responses from the 202 persons with physical disabilities (those with physical impairment and experiencing disability) were analysed.

Data Collection

Data was collected on three factors:

- 1) Socio-demographic factors, including age, sex (male, female), marital status (single, married), education status (uneducated, elementary school, high school or higher), and employment status (unemployed, employed);
- 2) Policy-modifiable factors, including health insurance status (uninsured, government-subsidised, contributory payment), assistive device usage status (non-user, user), and attitudes barrier;
- 3) Disability-related factors, including the type of physical impairment (hemi-, para- or tetraparesis or paralysis, other), and disability levels (mild, moderate, severe, and extreme).

Instruments

The study employed three self-administered and validated instruments:

- The Craig Hospital Inventory of Environmental Factors-Short Form (CHIEF-SF) attitude barrier subscale (Whiteneck et al, 2004),
- The WHODAS 2.0 (Hilfi et al, 2021; Yuliana et al, 2021), and
- An abridged version of the World Health Organisation Quality of Life assessment (WHOQOL-BREF) questionnaire (Purba et al, 2018).

The researchers translated the CHIEF-SF into Bahasa Indonesia. No back translation took place. The WHODAS 2.0 and WHOQOL-BREF Indonesian versions were obtained from the WHODAS and WHOQOL groups.

According to the Rasch model analysis described in Supplementary Table 1, all instruments used in this study are valid and reliable.

The attitude barrier subscale of CHIEF-SF (consisting of two items each on other people's attitudes at home and discrimination in society) was used to determine whether the attitudinal barrier has been an impactful barrier for participants in the last 12 months. Each item was rated for frequency of occurrence on a 5-point scale (0 = never, 1 = less than monthly, 2 = monthly, 3 = weekly, 4 = daily) and for magnitude (1 = a little problem; 2 = a big problem) (Whiteneck et al, 2004).

The 32-item WHODAS 2.0 was used to measure health and disability at the population level based on the International Classification of Functioning, Disability and Health (ICF)(World Health Organisation, 2010). This questionnaire assesses functioning in the last 30 days in six domains of life: cognitive (domain 1), getting around (domain 2), self-care (domain 3), getting along with people (domain 4), household activities (domain 5), and social participation (domain 6). Responses were rated on a 5-point Likert scale (0 = no difficulty, 1 = mild difficulty, 2 = moderate difficulty, 3 = severe difficulty, and 4 = extreme difficulty).

The WHOQOL-BREF is a 26-item self-reported questionnaire measuring QOL. Each item of the WHOQOL-BREF is scored on a 5-point Likert scale (1 = very low, 5 = very high) asking "how much," "how satisfied," or "how completely" the respondent feels concerning the domains listed. In this study, the overall QOL was measured by calculating the average of the four domain scores, with higher scores indicating higher QOL levels (Mesafint et al, 2020).

Data Analysis

Since the Likert rating responses did not meet the assumption of normal data distribution (Kuzon et al, 1996; Jamieson, 2005), the Rasch model analysis using WINSTEPS 3.75 (Winsteps®, Beaverton, Oregon)(Linacre, 2012) was utilised to convert the ordinal data into equal-interval scale. This made it possible to obtain each participant's Log Odds Unit (logit) score once the construct validity of the instruments had been confirmed (Boone et al, 2014). All the translated instruments used in this study were evaluated and found valid and reliable.

The range of logit scores on the CHIEF-SF attitude barrier subscale spans from -3.58 to 2.24. The higher scores indicate greater perceived attitude barriers. A mean score of logit \geq -1.94 represents an impactful attitude barrier (Research Department, 2001). The logit scores of the WHODAS 2.0 range from -6.82 to 6.36, with the following categories (World Health Organisation, 2010) :1) no disability or full functioning (-6.82 to -3.62 logit), 2) mild disability (-3.61 to -1.41 logit), 3) moderate disability (-1.40 to 0.05 logit), 4) severe disability (0.06 to 3.65 logit), and 5) extreme disability (3.66 to 6.36 logit). However the logit scores of WHOQOL-BREF range from -7.32 to 7.89 logit and use a cut-off score of 0.69 logit to classify participants as having “poor” (versus “good”) QOL (Silva et al, 2014; Bani-issa et al, 2018).

SPSS Statistics 27 (IBM Corp., Armonk, New York) was then used to perform statistical analyses. The means, standard deviations, frequencies, and percentages were calculated for computing the descriptive statistics. The chi-squared test was used to compare the categorical variables. The independent samples t-test and Kruskal-Wallis H test were used to compare two and more than two groups of continuous variables among participants, respectively.

Pearson’s correlation was used to evaluate the relationship between WHODAS 2.0 and WHOQOL-BREF scores with criteria as moderate (0.50–0.69), high (0.70–0.89), or very high (0.90–1) (Hinkle DE et al, 2003). The regression was used to identify the predictors of QOL (dependent variable). Multicollinearity was evaluated using tolerance of collinearity statistics and variance inflation factor (VIF) at less than 0.10 and more than 10, respectively. If multicollinearity was detected among variables, they were removed from the regression analysis. Adjusted R square (adjusted R^2), unstandardised coefficient (B), and 95% confidence interval (CI) were determined for all variables. Statistical significance was set at $P < 0.05$.

Ethics Approval

The Research Ethical Committee of Universitas Padjadjaran (No. 140/UN6.KEP/EC/2019) and Gunma University (No. HS2019-318) approved the study’s ethics. The corresponding Social Office of Bandung approved the survey permit (No. 460/1966-Dinsosnangkis).

RESULTS

Socio-demographic Factors

Table 1 presents the participants' socio-demographic characteristics (n = 202). The age average of the participants was 41.4 ± 12.5 years. Among them, 56.9% were males. More than half (53.0%) of the participants were single. It was found that 13.9% of participants had no formal education, and around 70% were unemployed and had no income.

Policy-modifiable Factors

As seen in Table 2, 70.8% of the participants reported that they had government-subsidised-type health insurance, 52.8% had assistive devices supporting their daily activities, and 37.6% perceived that attitudinal barriers (e.g., people's negative attitudes or discrimination) affected them.

Disability-related Factors

Table 2 also shows the results of disability-related factors. While half of the participants had hemiparesis/plegia, the rest of the participants had paraparesis/plegia (18.8%), tetraparesis/plegia (5%), and other impairments (26.2%) such as limb amputations and malformation. As for the disability level, 32.2% and 67.8% of participants experienced mild and moderate to severe disabilities, respectively.

Quality of Life

The WHOQOL-BREF mean score was 0.12 ± 0.98 , and 71.8% of the participants reported poor QOL. The WHOQOL-BREF mean scores differed significantly according to age, employment status, and personal income. The details are shown in Table 1.

Table 1: Quality of Life (QOL) of Participants by Socio-demographic Factors

Variables	n	%	QOL			P	Poor QOL (M < 0.69)		Good QOL (M ≥ 0.69)		P
			M	SD	Int		n	%	n	%	
All participants	202	100	0.12	0.98	Poor		145	71.8	57	28.2	
Socio-demographic factors											
Age; mean= 41.36±12.53											
Age group (years)											
18–30	45	22.3	0.36	0.81	Poor	0.003 ^a	30	66.7	15	33.3	0.017 ^c
31–40	46	22.8	0.19	1.22	Poor		31	67.4	15	32.6	
41–50	50	24.7	0.27	0.93	Poor		31	62.0	19	38.0	
51–60	61	30.2	-0.23	0.98	Poor		53	86.9	8	13.1	
Sex											
Male	115	56.9	0.15	1.00	Poor	0.689 ^b	81	70.4	34	29.6	0.625 ^c
Female	87	43.1	0.09	0.95	Poor		64	73.6	23	26.4	
Marital Status											
Single (widow/er)	107	53.0	0.20	1.00	Poor	0.217 ^b	74	69.2	33	30.8	0.379 ^c
Married	95	47.0	0.03	0.95	Poor		71	74.7	24	25.3	
Education Status											
Uneducated	28	13.9	-0.19	0.74	Poor	0.096 ^a	24	85.7	4	14.3	0.031 ^c
Graduated from elementary school	78	38.6	0.05	0.97	Poor		60	76.9	18	23.1	
Graduated from high school or above	96	47.5	0.27	1.03	Poor		61	63.5	35	36.5	
Employment Status											
Unemployed	143	70.8	-0.13	0.89	Poor	< 0.001 ^b	118	82.5	25	17.5	< 0.001 ^c
Employed	59	29.2	0.73	0.92	Good		27	45.8	32	54.2	
Personal monthly income (in 10000 IDR); mean=53.40±100.22											
No income	143	71.5	-0.13	0.89	Poor	< 0.001 ^a	118	82.5	25	17.5	< 0.001 ^c
IDR 1 – 150 (USD 105.90)	32	16.0	0.68	1.09	Poor		13	40.6	19	59.4	
IDR 150 – 300 (USD 211.79)	22	11.0	0.73	0.57	Good		12	54.5	10	45.5	
≥ IDR 300	3	1.5	0.91	0.88	Good		1	33.3	2	66.7	

^aBased on the Kruskal-Wallis H test;

^bBased on the results of independent sample t-test;

^cBased on the results of chi-squared test; QOL, quality of life; N, the total number of participants; %, percentage; M, mean; SD, standard deviation; Int, interpretation of QOL Level; P, p-value; IDR, the Indonesian Rupiah; USD, the United States Dollar.

Supplementary Table 1. Instrument's reliability and validity

Psychometric Attribute	Attitude/ support barrier (CHIEF- SF)	Instruments							WHOQOL- BREF
		Overall	Cognitive (domain 1)	Getting around (domain 2)	Self-care (domain 3)	Getting along with people (domain 4)	Household activities (domain 5)	Participation in society (domain 6)	
Number of items	4	32	6	5	4	5	4	8	26
Outfit Mean Square									
Mean	0.91	0.99	0.97	0.94	0.96	1.07	0.95	0.98	1.01
Standard Error Measurement (SEM)	0.16	0.10	0.15	0.14	0.16	0.17	0.16	0.10	0.10
Item separation	2.97	7.06	4.92	9.04	5.40	2.37	7.87	3.92	6.88
Item reliability	0.90	0.98	0.96	0.99	0.97	0.85	0.98	0.94	0.98
Test reliability (alpha)	0.69	0.97	0.94	0.95	0.93	0.85	0.94	0.86	0.92
Unidimensionality									
Raw variance	31.50%	56.30%	69.00%	79.10%	75.30%	60.90%	79.10%	49.70%	43.30%
Unexplained variance in 1 st contrast	3	4.7	1.7	1.7	1.9	1.9	1.9	2.4	2.4

Acceptable raw variance > 20%; acceptable unexplained variance in 1st contrast < 5; acceptable reliability > 0.60; acceptable separation > 2; acceptable mean -1.5-1.5; CHIEF-SF, the Craig Hospital Inventory Environmental Factor-Short Form; WHODAS 2.0, the World Health Organization Disability Assessment Schedule 2.0; WHOQOL-BREF, the abridged version of World Health Organization Quality of Life instrument.

Among the age groups, those between 51–60 years reported the lowest mean QOL score (-0.23 ± 0.98). The unemployed participants (or those with no income) and participants with personal income < IDR 1,500,000 had mean QOL scores ranging between -0.13 ± 0.89 and 0.68 ± 1.09 , respectively, while employed participants with personal income > IDR 1,500,000 (USD 105.90) reported good QOL. For most socio-demographic variables, the proportion of participants with poor QOL was generally higher than those with good QOL, except for those who were employed (54.2%) and those with personal income IDR 1 – 1,500,000 (59.4%) and \geq IDR 3,000,000 (66.7%) groups.

Table 2: Participants' Quality of Life (QOL) by Policy-intervention Modifiable Factors and Disability-related Factors

Variables	n	%	QOL			P	Poor QOL (M < 0.69)		Good QOL (M ≥ 0.69)		P
			M	SD	Int		n	%	n	%	
Policy-modifiable factors											
Health Insurance											
No insurance	34	16.8	0.12	1.06	Poor	0.702 ^a	23	67.6	11	32.4	0.839 ^c
Government subsidised	143	70.8	0.09	0.96	Poor		104	72.7	39	27.3	
Contributory payment	25	12.4	0.27	0.93	Poor		18	72.0	7	28.0	
Assistive device usage status											
None	94	47.2	0.28	1.03	Poor	0.026 ^b	57	60.6	37	39.4	< 0.001 ^c
User	105	52.8	-0.03	0.89	Poor		86	81.9	19	18.1	
Attitude barrier											
Not impactful barrier	126	62.4	0.26	0.91	Poor	0.009 ^b	85	67.5	41	32.5	0.079 ^c
Impactful barrier	76	37.6	-0.12	1.03	Poor		60	78.9	16	21.1	
Disability-related factors											
Physical Impairment Type											
Hemiparesis/plegia	101	50.0	0.14	0.89	Poor	0.005 ^a	71	70.3	30	29.7	0.071 ^c
Paraparesis/plegia	38	18.8	-0.11	1.05	Poor		32	84.2	6	15.8	
Tetraparesis/plegia	10	5.0	-0.65	1.15	Poor		9	90.0	1	10.0	
Other	53	26.2	0.12	0.97	Poor		33	62.3	20	37.7	
Level of Disability (WHODAS 2.0):											
Mild disability	65	32.2	0.82	0.94	Good	< 0.001 ^a	26	40.0	39	60.0	< 0.001 ^c
Moderate disability	89	44.0	-0.01	0.80	Poor		71	79.8	18	20.2	
Severe disability	48	23.8	-0.58	0.66	Poor		48	100.0	0	0.00	
Extreme disability	0	0.00	NA	NA	NA		NA	NA	NA	NA	

^aBased on the Kruskal-Wallis H test; ^bBased on the results of independent sample t-test; ^cBased on the results of chi-squared test; QOL, quality of life; N, the total number of participants; %, percentage; M, mean; SD, standard deviation; Int, interpretation; P, p-value; CHIEF-SF, the Craig Hospital Inventory Environmental Factor-Short Form; WHODAS 2.0, the World Health Organisation Disability Assessment Schedule 2.0; NA, not available.

The WHOQOL-BREF mean scores also differed significantly according to assistive device usage status, attitude barriers, physical impairment type, and disability level. Even though both non-users and users of assistive devices, on average, revealed poor QOL, non-users demonstrated a higher mean QOL score (0.28 ± 1.03) than the users (-0.03 ± 0.89). Participants who perceived attitudinal barriers as impactful showed significantly lower mean QOL scores (-0.12 ± 1.03) than those who did not perceive them as impactful. Participants with hemiparesis/plegia had a higher mean QOL score (0.14 ± 0.89) than those with paraparesis/

plegia, tetraparesis/plegia, or other impairments (e.g., limb amputation or malformation). Participants with mild levels of disability indicated good QOL scores. The proportion of participants with good QOL was higher in the group with mild levels of disability. Table 2 provides further information about The WHOQOL-BREF mean scores according to assistive device usage status, attitude barriers, physical impairment type, and disability level.

Results presented in Table 3 show the profile of all participants, and of those participants with poor QOL and good QOL, in terms of (i) perception of attitudinal barriers and (ii) overall disability level (32-item version of WHODAS 2.0) and within each WHODAS 2.0 domain.

Table 3: Means of Attitude/Support Barrier subscale (CHIEF-SF) and WHODAS 2.0 scores of all Participants and among Participants with poor and good Quality of Life (QOL)

Variables	All participants			Quality of Life (QOL)					
				Poor (M < 0.69)			Good (M ≥ 0.69)		
	M	SD	Int	M	SD	Int	M	SD	Int
Attitude barrier subscale (CHIEF-SF)	-1.79	1.44	Impactful barrier	-1.68	1.42	Impactful barrier	-2.03	1.47	Not impactful barrier
Disability domain (WHODAS 2.0):									
Overall disability*	-0.79	1.17	Moderate	-0.38	1.06	Moderate	-1.79	0.77	Mild
Cognitive (domain 1)*	-3.02	3.37	Mild	-2.45	3.32	Mild	-4.44	3.06	No
Getting around (domain 2)*	0.36	3.99	Severe	0.98	3.73	Severe	-1.19	4.20	Mild
Self-care (domain 3)*	-2.61	3.96	Mild	-2.07	3.90	Mild	-3.96	3.82	No
Getting along with people (domain 4)*	-2.70	2.73	Mild	-2.20	2.74	Mild	-3.92	2.31	No
Household activities (domain 5)*	-0.39	4.79	Moderate	0.34	4.54	Severe	-2.19	4.97	No
Social participation (domain 6)*	-0.99	1.28	Moderate	-0.74	1.19	Moderate	-1.59	1.31	Mild

CHIEF-SF⁷ mean score of ≥ -1.94 logit represents the perceived impactful barrier; WHODAS 2.0 level: 1) no disability (-6.82 to -3.62 logits); 2) mild disability (-3.61 to -1.41 logits); 3) moderate disability (-1.40 to 0.05 logits); 4) severe disability (0.06 to 3.65 logits); 5) extreme disability (3.66 to 6.36 logits); QOL, quality of life; M, mean; SD, standard deviation; Int, interpretation; *, significant with $p < 0.001$.

It was observed that the mean score for the attitude barrier was -1.79 ± 1.44 . The mean score for the overall disability level (32-item of WHODAS 2.0) and the domains ranged from -0.99 ± 1.28 to 0.36 ± 3.99 . The overall disability level of the participants with poor and good QOL was generally moderate (mean = -0.38 ± 1.06) and mild (mean = -1.79 ± 0.77), respectively. The means of the overall

WHODAS 2.0 and its domains in participants with poor and good QOL were significantly different ($p < 0.001$).

Predictors of Quality of Life

The WHODAS 2.0 logit scores had a moderate negative correlation with WHOQOL-BREF logit scores ($r = -0.585$, $p < 0.001$). This correlation suggests that the higher the level of disability, the lower the QOL, and vice versa. Figure 2 shows all participants' scatter patterns of bivariate correlations between the WHODAS 2.0 and WHOQOL-BREF logit scores.

Figure 2: Correlation between WHODAS 2.0 and WHOQOL-BREF Scores

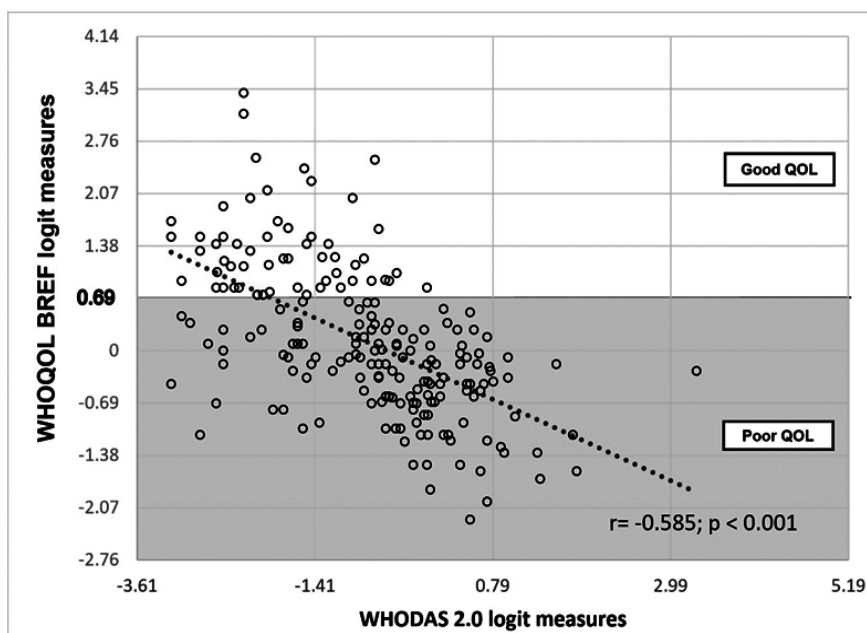


Table 4 presents the results of multiple linear regression analyses for the QOL predictors. Prior to performing multiple linear regression, the personal income variable was excluded in the regression analysis because of multicollinearity.

Table 4: Multiple Linear Regression Analysis of Quality of Life (QOL) of Participants with Physical Disabilities

Variables	QOL			P
	B	95% CI		
		Lower	Upper	
Socio-demographic characteristics				
Age	-0.015	-0.026	-0.005	0.004
Sex (reference, male)				
Female	0.070	-0.167	0.306	0.562
Marital status (reference, single)				
Married	-0.051	-0.308	0.206	0.695
Education status (reference, uneducated)				
Graduated from elementary school	0.072	-0.284	0.427	0.691
Graduated from high school or above	-0.054	-0.417	0.309	0.770
Employment status (reference, unemployed)				
Employed	0.544	0.264	0.824	<0.001
Policy-modifiable factors				
Health insurance status (reference, no insurance)				
Government subsidized	0.064	-0.244	0.372	0.682
Contributory payment	0.344	-0.082	0.769	0.112
Assistive device usage status (reference, not user)				
User	-0.146	-0.369	0.078	0.200
Attitude/support barrier	-0.096	-0.176	-0.016	0.019
Disability-related factors				
Physical impairment types (reference, Other)				
Hemiparesis/plegia	-0.190	-0.461	0.082	0.170
Paraparesis/plegia	-0.054	-0.409	0.301	0.764
Tetraparesis/plegia	-0.418	-0.982	0.146	0.146
Disability level (reference, mild disability)*				
Moderate	-0.697	-0.955	-0.439	<0.001
Severe	-1.089	-1.431	-0.748	<0.001
Regression model statistics				
N	202			
Adjusted R ²	0.377			
P-value	<0.001			

It was found that severe disability (B= -1.089), moderate disability (B= -0.697), employment (B = 0.544), attitude barrier (B = -0.096), and age (B = -0.015) were the significant predictors of QOL with 37.7% of the variance in their QOL being explained by the predictors (adjusted R²= 0.377, p < 0.001).

DISCUSSION

The study aimed to contribute evidence-based data to design effective strategies for persons with physical disabilities and enhance people's understanding of disability-related conditions in Indonesia.

Although the results indicate that, on average, participants with mild and moderate or severe disability typically reported good and poor QOL scores, respectively, the chi-squared test showed that 40% of participants with mild disability reported poor QOL and 20.2% of participants with moderate disability reported good QOL. This study's results are similar to results in other studies, suggesting that persons with the same impairment experienced different levels of disability and QOL, depending on their contextual factors, i.e., personal and environmental factors (Fellinghauer et al, 2012).

The regression results implied that disability levels, employment, people's negative attitudes towards persons with disabilities, and age were significant predictors of participants' QOL. A study by Muslimah et al (2019) demonstrated that older age, lower education levels, unemployment, comorbidity, and moderate disability were significantly associated with poor QOL in rehabilitated post-ischemic stroke clients over 18 years old in Yogyakarta, Indonesia. In Chicago, a study by Albrecht and Devlieger (1999) inferred that health conditions, limited resources, lack of knowledge, and environmental barriers increase the risk of poor perceived QOL among persons with moderate or severe disabilities.

Participants' QOL was significantly correlated with their employment status. About 70% of the participants had no job or income, and 81.38% of participants with poor QOL were unemployed. In England, physical impairments *per se*, difficulty with transportation, lack of incentives, and difficulty in finding a job can be the reasons for unemployment among people with disabilities (Donnell, 1998). However, the reason for the low employment rate in Indonesia is debatable. In 2014, the Indonesian Ministry of Health (Indonesian Ministry of Health, 2014) reported that 60.3% of persons with a disability could not receive education or graduate even from elementary school, contributing to low employment access.

Persons with physical disabilities might be limited in social interaction, activities, and participation, increasing the risk of poor QOL (United Nations, 2006; World Health Organisation, 2013). This study indicated that disability level and other people's negative attitudes significantly predicted participants' QOL. Importantly, the findings imply that higher disability levels, mainly in household

activities and social participation domains, correlate considerably with poor QOL. This finding reflects that support from family and community to reduce the difficulty of performing household activities and social participation are crucial to improving their QOL. These results are consistent with studies in India (Datta & Datta, 2014) and Canada (Mayo et al, 2002) reporting that persons with lower daily living activities showed significant correlations with lower QOL.

However, a Dutch study found a different result, implying that the QOL of the Dutch population with physical disabilities was not significantly correlated with social participation (Van Campen & Iedema, 2007). People's characteristics, personal goals for participation, and people's perceptions of social participation may contribute to these results. In Indonesia, the societal member interaction is intimate, intense, and valuable. Therefore, Indonesians' emphasis on social participation may impact their QOL. These differences between the characteristics of the Dutch and Indonesian populations may explain the varied findings.

A study in Guangzhou showed that other people's negative attitudes towards persons with disabilities influenced their poor QOL (Zheng et al, 2014). Consistently, around 10% of persons with disabilities in Indonesia face difficulties in their family and community life (Adioetomo et al, 2014). Family members' treatment of persons with disabilities at home significantly impacts their QOL. In Indonesia, a person with a moderate or severe disability imposes greater demands on families' financial resources for expenses such as personal assistance, medical care, and prosthetic aids, which can affect the family's dynamics and engender negative attitudes towards persons with disability (Cameron & Contreras Suarez, 2017).

In this study, age was negatively associated with QOL. On average, participants' QOL was poor among the age subgroups, but the lowest QOL was observed in participants aged 51–60 years. Issues particular to this age group may contribute to lower QOL, such as living with no income or job, experiencing moderate or severe disability levels, and being single. In Purworejo, Indonesia, being female, single, or having low education and socio-economic status were significant predictors of poor QOL among older people (Ng et al, 2010).

The findings reported in this study raise some concerns regarding QOL in persons with physical disabilities in Indonesia. Regardless of their impairments, it is crucial to recognise other contextual factors (World Health Organisation, 2013), such as older age, unemployment, and attitude barriers, that can worsen the QOL of persons with a physical disability.

Improving the QOL of persons with physical disabilities is essential. The current study implied that the government agencies, social cadres, disability organisations, and CBR should collaborate to facilitate inclusiveness for persons with physical disabilities by: 1) ensuring equal employment opportunities and optimising vocational rehabilitation (e.g., self-esteem and marketing skills) to enhance their economic independence through sustainable self-employment; 2) removing attitude barriers to accessing essential public services, such as healthcare services; and, 3) increasing health and social protection coverage and properties, including health insurance and assistive device accessibility. In addition, immediate policy and programmatic action are crucial to improving the QOL by enhancing work abilities and support systems to remove barriers for persons with physical disabilities (Ferdiana et al, 2021).

Although this study's results did not show a significant association between the participants' QOL and the health insurance type, the study provided novel findings regarding this association in Indonesia. About 72% of the participants with poor QOL had government-subsidised-type or contributory payment-type health insurance. It is assumed that some participants did not utilise their health insurance benefits, such as healthcare services. This conclusion is consistent with the finding of the Centre for Health Financing of the Indonesian Ministry of Health, indicating the lack of utilisation of healthcare benefits among 20%–50% of insured people (Agustina et al, 2019). However, further investigation is needed into the health insurance-related factors among Indonesian persons with physical disabilities.

Since disability is a human condition, it can affect all individuals regardless of their impairment and health status. Thus, future research that performs a comparative QOL analysis of persons with and without disabilities is essential. This comparison will strongly encourage Indonesian policymakers to support disability-related policies.

Study Limitations

This study has certain limitations. First, self-administered questionnaires are inherently subject to response biases due to differences in participants' understanding of the questions. Second, participants were recruited only from one Indonesian region (Bandung). This parameter limits the generalisability of findings to other Indonesian areas. Third, QOL predictors were not analysed specifically for participants with each level of disability (mild, moderate, severe,

or extreme) because of the limited sample size. Fourth, this study lacked clear criteria for categorising mild, moderate, and extreme disability levels. This led to two concerns: 1) the inability to precisely compare and analyse participants' QOL based on their levels of disability, and, 2) the reduced generalisability of the results to a broader group of persons with disabilities. Future studies can overcome these limitations to have a better understanding of disability levels and the QOL relationship.

CONCLUSION

Persons with moderate to severe physical disabilities in Bandung, Indonesia, reported poor QOL. In addition, factors such as unemployment, perceptions of impactful attitudinal barriers, and ageing are associated with poor QOL in persons with moderate to severe physical disabilities. It is critical to ensure equal employment opportunities and remove stigma in society to promote QOL improvement for persons with moderate to severe physical disabilities.

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