

Jurnal Info Kesehatan

Vol. 24, No. 2, June 2026, pp. 386-398

P-ISSN 0216-504X, E-ISSN 2620-536X

DOI: [10.31965/infokes.Vol24.Iss2.2385](https://doi.org/10.31965/infokes.Vol24.Iss2.2385)

Journal homepage: <https://jurnal.poltekkeskupang.ac.id/index.php/infokes>



RESEARCH

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Potential and Quality of Life of Health Cadres Assisting Persons with Disabilities in Bandung, Indonesia: A Cross-sectional Study

Lukman Hilfi^{1a*}, Gabriela Romora Rumahorbo^{2b}, Mulya Nurmansyah Ardisasmita^{1c}

¹ Department of Public Health, Faculty of Medicine, Universitas Padjadjaran, Bandung, West Java, Indonesia

² Medical Education Program, Faculty of Medicine, Universitas Padjadjaran, Bandung, West Java, Indonesia

^a Email address: lukman.hilfi@unpad.ac.id

^b Email address: gabriela22001@mail.unpad.ac.id

^c Email address: mulya@unpad.ac.id

Received: 22 January 2026

Revised: 18 March 2026

Accepted: 20 April 2026

Abstract

The number of persons with disabilities in Bandung City increased from 1,810 in 2021 to 9,020 in 2022, underscoring the urgent need for adequate community-based support to ensure inclusive health services. This study aimed to assess the potential and quality of life (QoL) of health cadres who assist persons with disabilities in Bandung, Indonesia, and to analyze the correlation between their potential and QoL. This cross-sectional study employed purposive sampling to select 648 health cadres in Bandung City, using secondary data from the 2024 Universitas Padjadjaran Riset Percepatan Lektor Kepala; cadre potential was measured with the NDIS Self-Assessment Tool, quality of life with the EQ-5D-5L, and Rasch analysis with Spearman's rank correlation ($\alpha = 0.05$) was used to examine the association between both measures. Most health cadres (94%) work in general support or ancillary roles, and higher education levels were associated with greater potential ($p = 0.001$). The mean EQ-5D-5L index was 0.93, indicating that the majority of cadres have good mobility (90.74%) but suffer from mild pain (33.49%) and mild anxiety (20.68%). Cadre potential showed a weak but significant positive correlation with QoL ($r = 0.164$, $p < 0.001$). In conclusion, health cadres in Bandung demonstrated strong potential and QoL in supporting persons with disabilities. Still, the low association between the two indicates that enhancing training, workload management, and psychosocial support will be important for optimizing their role performance and well-being.

Keywords: Potential, Quality of Life, Health Cadres, Persons with Disabilities.

Corresponding Author:

Lukman Hilfi

Department of Public Health, Faculty of Medicine, Universitas Padjadjaran, Bandung, West Java, Indonesia

Email: lukman.hilfi@unpad.ac.id



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1. INTRODUCTION

Persons with disabilities are an important part of society, and they need special care to ensure they can live a decent and independent life. Approximately 1.3 billion people worldwide, or 16% of the total population, live with a disability (World Health Organization, 2023). According to the Ministry of Social Republic of Indonesia, 22.5 million Indonesians, or 5% of the country's total population, were disabled in 2020. The most populous province in the nation, West Java Province, saw its population increase from 35,963 (0.07%) in 2021 to 72,565 (0.15%) in 2022. (Badan Pusat Statistik, 2022). Bandung City also saw a fivefold increase, from 1,810 persons with disabilities in 2021 to 9,020 (0.36%) in 2022 (Dispendukcapil, 2021).

There are many reasons why a greater number of people are becoming disabled, such as an aging population, malnutrition, congenital conditions, more chronic health problems, previous life-changing injuries, and a lack of healthcare infrastructure (Cameron & Contreras Suarez, 2017). The International Labor Organization (2007) reports that 80% of persons with disabilities who cannot obtain medical care live in developing countries. The World Bank also declares that 20% of the world's poorest people are disabled. These people often face barriers to accessing adequate healthcare (Lunsky, Bobbette, Selick, & Jiwa, 2021).

In the Republic of Indonesia, Law No. 8 of 2016 aimed to facilitate persons with disabilities in overcoming hindrances. It specifically protects the right of every citizen, including persons with disabilities, to obtain non-discriminatory health care services (Widjaja, Wijayanti, & Yulistyaputri, 2020). This right needs to be protected through structural support, such as infrastructure that makes it easy to access, and there are enough personnel in health facilities. One of the most relevant programs is the Family Welfare Empowerment (Pemberdayaan Kesejahteraan Keluarga; PKK) program, initiated in the 1970s and intended to increase community health workers' (Community Health Worker (CHW) Central, 2017) participation.

By 2009, the establishment of over 250,000 integrated service posts nationwide engaged approximately 1–1.5 million trained health cadres (Kementerian Kesehatan RI, 2018). These cadres support the achievement of Sustainable Development Goals (SDGs) 3 (Good Health and Well-being) and 10 (Reduced Inequality) by promoting inclusive public health and advocating for equal rights for persons with disabilities (PWDs). At the grassroots level, these cadres are vital because they help people with disabilities access healthcare and other services. Their efforts help achieve inclusive development by reducing stigma and promoting community participation among persons with disabilities (Kementerian Kesehatan RI, 2018; Muflikhah, Jauhari, & Indriati, 2018; Rachmat, Fanani, Darsono, & Suwanto, 2019; Sunandar et al., 2022).

The knowledge, attitudes, and skills of health workers have been demonstrated to influence the quality of support they provide to PWDs (Marks, Sisirak, Chang, & Murphy, 2019). Being highly positive, welcoming, and sensitive to patients' needs fosters enabling environments and more effective support (Lawn, Westwood, Jordans, & O'Connor, 2017). A total of 82.6% of health workers with a positive attitude are shown to be able to create a more inclusive environment, thereby increasing the active participation of persons with disabilities in social life and improving the welfare of health cadres themselves (Ihegihi et al., 2022). However, negative attitudes increase stigma and lead to poorer service quality (Silva et al., 2024). Various challenges, such as inadequate training, heavy workload, and lack of institutional support, may also affect the overall performance and well-being of health cadres.

The quality of life (QoL) of health cadres plays an essential role in boosting their motivation, performance, and ability to provide inclusive healthcare, particularly for persons with disabilities. Improved QoL is linked to greater work motivation and job performance ($r = 0.375$) (Gunawan, Ch, Sukartiningsih, & Landudjama, 2022; Kusumawardani & Muljono, 2018). Knowledge and behavior change are also increased by 15.5% through targeted educational interventions. At the same time, routine training builds capacity and reduces burnout, enabling more effective, sustainable services to be offered to at-risk communities

(Emilia, Regina, Novita, & Hary, 2019; Graham, Shaw, & Johnson, 2019). In contrast, burnout impacts cadre performance and well-being, with about 74.6% health workers experiencing poor QoL (Asante, Li, Liao, Huang, & Hao, 2019). Furthermore, social support and psychological flexibility significantly influenced QoL among health cadres (Alonso et al., 2022).

Health cadres primarily facilitate community-based support for PWDs. However, additional factors such as inadequate training, heavy workload, and lack of institutional support may negatively affect their QoL. Despite the importance of their contribution, empirical evidence on the association between health cadres' ability and their QoL while assisting PWDs in Bandung remains limited. This study aims to comprehensively assess the potential and QoL of health cadres supporting PWDs in Bandung, Indonesia. Furthermore, it seeks to analyze the relationship between their potential and QoL, providing evidence to understand better how these factors influence their effectiveness as community-based disability companions.

2. RESEARCH METHOD

This quantitative cross-sectional study used secondary data collected in March 2025. The secondary data were obtained from a cross-sectional census conducted across all districts of Bandung City between July and December 2024, funded by the 2024 Riset Percepatan Lektor Kepala (RPLK) program of Universitas Padjadjaran (Contract Number 1649/UN6.3.1/PT.00/2024). The census dataset served as the database to measure healthcare cadres' baseline characteristics, their potential using the NDIS Self-Assessment Tool, and their quality of life (QoL) using the EQ-5D-5L, all analyzed simultaneously at a single point in time.

The subjects of this study were all health cadres in Bandung City listed in the 2024 RPLK dataset. A census sampling technique was applied, enrolling all eligible cadres to ensure maximum representativeness and minimize sampling error. After applying the inclusion criteria—residency in Bandung City and age 18 years or older—and excluding records with more than 30% missing data, the final analytical sample comprised 648 cadres, as shown in the sample selection diagram. The dataset contained responses to three main sections of the questionnaire: (1) sociodemographic information, including age, highest level of education, and length of service as a cadre; (2) the National Disability Insurance Scheme (NDIS) Self Assessment Tool for Potential Workers, developed under the NDIS Workforce Capability Framework to assess attitudes, skills, and knowledge related to disability support work (Workforce Commission, 2023); and (3) the EuroQol 5 Dimensions 5 Levels (EQ-5D-5L) Bahasa version, to measure QoL (Emrani, Akbari Sari, Zeraati, Olyaeemanesh, & Daroudi, 2020). The NDIS tool evaluates understanding of disability, interpersonal communication, and the ability to provide appropriate support. At the same time, the EQ-5D-5L measures health status across five dimensions, along with a visual analog scale for overall self-perceived health.

Prior to statistical analysis, the RPLK data were validated, coded, and cleaned to ensure accuracy. Responses with excessive missing or inconsistent values were excluded, and exploratory analyses identified anomalies or outliers that could affect data integrity (Rojas, Guilera, Arias-Patiño, Barrios, & Gómez-Benito, 2025). Rasch model analyses were performed to assess the psychometric properties of the NDIS Self Assessment Tool and EQ-5D-5L, transforming ordinal responses into interval-level logit measures compatible with parametric analysis using WINSTEPS (Bond & Fox, 2015; Leung, Thumboo, Yeo, Wylde, & Tannant, 2022; Linacre, 2012). Univariate analyses described respondent characteristics, while bivariate analyses examined the correlation between cadre potential and quality of life using nonparametric tests, as the Kolmogorov–Smirnov test indicated non-normal data distribution. The Kruskal–Wallis and Spearman's rank correlation tests were applied with a significance threshold of $\alpha = 0.05$, where $p < 0.05$ denoted a statistically significant relationship (Laerd Statistics, 2013). Ethical approval for this study was obtained from the Research Ethics Committee of Universitas Padjadjaran (No. 60/UN6.KEP/EC/2025).

Initially, data from 713 cadres were identified, comprising 181 community-based rehabilitation cadres, 504 integrated health service post cadres, and 28 social service cadres. Records not available in the dataset were excluded, leaving 648 cadres. All remaining cadres were aged 18 years or older and had less than 30% missing data, resulting in a final analytical sample of 648 health cadres.

Table 1. The reliability and validity indices (Bond & Fox, 2007) of NDIS Self-Assessment for Potential Workers and EQ-5D-5L

Indices	Instruments	
	NDIS	EQ-5D-5L
Number of items	648	648
Raw variance explained by measures (%)	80.6	53.9
Unexplained variance in 1st contrast (%)	3.50%	14.80%
Item Reliability	1	0.99
Cronbach's alpha	0.8	0.66
Item fit average (SD)	0 (3.18)	0 (1.94)
Person fit average (SD)	0.83 (0.75)	6.57 (1.66)

Acceptable raw variance explained by measures ≥ 50 ; acceptable unexplained variance in the 1st contrast $< 15\%$; acceptable item reliability ≥ 0.68 ; acceptable Cronbach's alpha ≥ 0.68 ; acceptable item fit average (SD) $-1.5 < x < 1.5$; acceptable person fit average (SD) $-1.5 < x < 1.5$; SD, standard deviation; NDIS, National Disability Insurance Scheme Self-Assessment Tools for Potential Workers; EQ-5D-5L, European Quality of Life 5 Dimensions 5 Level.

In this study, the EQ-5D-5L demonstrated a Cronbach's alpha of 0.66, which is slightly lower than the commonly cited minimum of 0.68 and is considered acceptable for internal consistency at least for group-level comparisons when calculated from multidimensional instruments like the EQ-5D. The slightly lower alpha in our sample may reflect the heterogeneity of health problems in the target population and the fact that the EQ-5D-5L covers distinct health domains rather than a single latent construct, which naturally reduces inter-item correlations. Nevertheless, other psychometric indicators in our Rasch analysis (high item reliability and acceptable fit statistics) supported the overall reliability and construct validity of the EQ-5D-5L in this context, suggesting that the instrument remains suitable for assessing health-related QoL in our study population. However, we acknowledge this limitation in internal consistency.

3. RESULTS AND DISCUSSION

Table 2. Distribution of demographic characteristics of health cadres.

Characteristics	n	%
Age group (years)		
Mean $\pm$ SD (49.54 $\pm$ 9.50)		
18–40	101	15.66
41–60	473	73.33
>60	71	11.01
Education level		
Primary and Lower Secondary Education	133	20.56
Upper Secondary Education	422	65.22
Higher Education	92	14.22
Duration of Service (years)		

Mean $\pm$ SD (8.88 $\pm$ 9.30)		
<1	70	10.84
1–5	269	41.64
6–10	114	17.65
>10	193	29.88

Table 2 indicates that the majority of health cadres fall within the 41–60 age group (73.33%), reflecting a predominance of middle-aged health cadres, while those aged 18–40 represent the smallest proportion (15.66%). In terms of educational attainment, most health cadres have completed upper secondary education (65.22%), whereas only 14.22% hold a higher education degree, highlighting a limitation in formal advanced education. Regarding service duration, the largest proportion of health cadres have served for 1–5 years (41.64%), while those with less than 1 year of experience represent the smallest group (10.84%).

Table 3. Potential scores (NDIS) by sociodemographic factors

Variables	n	%	NDIS Self-Assessment tool		Score Category of NDIS Self-Assessment Tool for Potential Workers							
					P	80-96		35-79		16-34		P
			M	SD		n	%	n	%	n	%	
Overall	648	100	69.96	7.47		59	9.10	588	90.74	1	0.15	
Age group (years)					0.733 ^a							0.804 ^b
18–40	101	15.66	69.45	7.23		9	8.9	92	91.1	0	0.0	
41–60	473	73.33	70.08	7.65		46	9.7	426	90.1	1	0.2	
>60	71	11.01	69.72	6.80		4	5.6	67	94.4	0	0.0	
Education level												
Primary and Lower Secondary	133	20.56	69.26	6.91		8	6.0	125	94.0	0	0.0	
Upper Secondary	422	65.22	69.55	7.27	0.001 ^a	30	7.1	391	92.7	1	0.2	<0.001 ^b
Higher	92	14.22	72.94	8.46		21	22.8	71	77.2	0	0.0	
Duration of Service (years)					0.568 ^a							0.577 ^b
<1	70	10.84	70.04	7.33		9	12.9	61	87.1	0	0.0	
1–5	269	41.64	69.63	8.43		26	9.7	242	90.0	1	0.4	
6–10	114	17.65	69.56	6.45		6	5.3	108	94.7	0	0.0	
>10	193	29.88	70.66	6.62		18	9.3	175	90.7	0	0.0	

80-96 (general support work and advanced support work); 35-79 (general support work and ancillary roles); 16-34 (lack of skills)

Table 3 indicates that only cadre potential mean scores ($p = 0.001$) and categories ($p < 0.001$) are significantly associated with members' education, among sociodemographic factors. The educated cadres have the highest mean potential score (72.94) and the highest proportion in category 80–96 (advanced support work) at 22.8%, indicating that formal education has a greater influence on age or length of service in determining cadre capability (Wahyudiyono, Najib, & Suminah, 2023).

The grand mean potential score was 69.96 (SD = 7.47). Most cadres are in the general support work and ancillary roles category (90.74%), scoring 35–79, while only 9.10% are in

the advanced support work category (80–96). There are no significant differences in scores according to age ($p = 0.733$) and years of service ($p = 0.568$), indicating that the increase in cadre potential may not be owing solely to age or experience factors (Aslam, 2018; Platis & Zoulias, 2015). Among education levels, cadres in the higher education group scored the highest (72.94), followed by upper secondary (69.56) and primary/lower-secondary schools (69.26), reflecting that educational level plays an important role in leadership competency and decision-making for health workers (Wahyudiyono et al., 2023). In comparison, potential rating values within age and years in service groups are more similar; this might be because many cadres' tasks are administrative/operational, and therefore differences in leadership behavior according to age are less obvious (Aslam, 2018).

The discrepancies observed in the distribution of sociodemographic characteristics were primarily due to missing data, as some respondents did not complete all items related to age, educational level, and duration of service. Nevertheless, all respondents ($n=648$) included in the analysis had completed the Quality of Life (QoL) and Potential of Cadres questionnaires (NDIS Self-Assessment Tools), ensuring the completeness of the main variables. Therefore, the integrity of the primary analysis remains unaffected. Future studies should consider strategies to minimize missing data, such as improving questionnaire administration and monitoring during data collection.

These findings imply that policies to strengthen the potential of the health cadre should prioritize expanding access to higher education and structured leadership training. Combining formal education with systematic capacity-building, mentoring, and continuous professional development is likely more effective than relying on seniority or years of service alone to produce cadres capable of assuming broader and more strategic roles in disability-related services (Aslam, 2018; Platis & Zoulias, 2015; Wahyudiyono et al., 2023).

Table 4. EQ-5D-5L frequencies and proportions reported by dimension and level (health profile).

	Mobility n(%)	Self-care n(%)	Usual activities n(%)	Pain/discomfort n(%)	Anxiety/ depression n(%)
Level 1	588 (90.74)	636 (98.15)	620 (95.68)	415 (64.04)	503 (77.62)
Level 2	55 (8.49)	9 (1.39)	24 (3.70)	217 (33.49)	134 (20.68)
Level 3	4 (0.62)	3 (0.46)	3 (0.46)	9 (1.39)	7 (1.08)
Level 4	0 (0)	0 (0)	0 (0)	5 (0.77)	2 (0.31)
Level 5	1 (0.15)	0 (0)	1 (0.15)	2 (0.31)	2 (0.31)
Total	648 (100)	648 (100)	648 (100)	648 (100)	648 (100)

Level 1 = no problems; Level 2 = mild problems; Level 3 = moderate problems; Level 4 = severe problems; Level 5 = unable/experiencing extreme problems; N represents the total number of participants, and % indicates the percentage.

Table 4 shows that most health cadres have good functional health, with very few reporting problems in mobility, self-care, or usual activities. Pain or discomfort is the most frequent complaint, affecting about one-third of cadres, while around one-fifth report anxiety or depression.

Overall, quality of life was high, with a mean EQ-5D-5L utility score of 0.93 and an EQ-VAS average of 87.73 ± 13.43 , reflecting a positive perception of health. Approximately 33.49% of cadres report pain or discomfort, and 22.99% report anxiety or depression, indicating that these two domains are important targets for interventions to maintain and improve well-being.

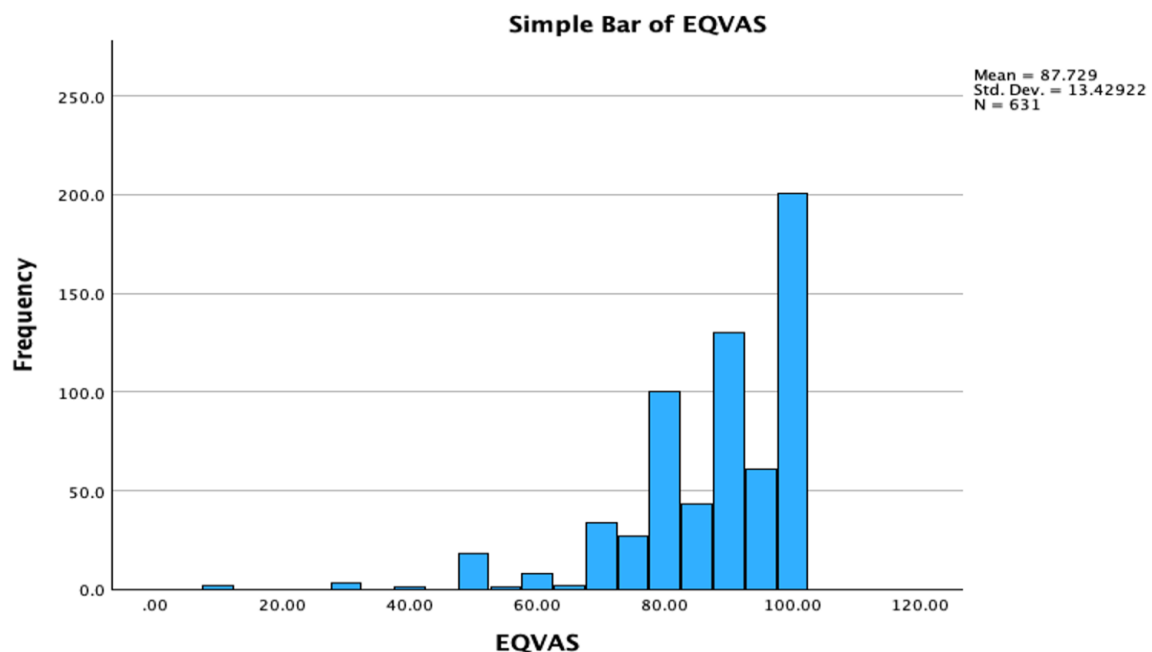


Figure 2. EQ-5D-5L VAS frequency distribution data. The EQ-5D-5L VAS refers to the European Quality of Life 5 Dimensions 5 Level Visual Analog Scale.

Based on the EQ-VAS results, health cadres reported a higher average self-rated health score (87.73, SD = 13.43) than the in-between average, indicating a generally positive sense of health. However, one subset of the health cadres is much worse than the rest (see Figure 2), and the largest standard deviation means that different people can rate their health quite differently. These results suggest that most health cadres rate their health as good to excellent; however, those with lower self-ratings of health may need additional support.

Table 5. EQ-5D-5L Index (utility score) by sociodemographic factors.

Variables	n	%	EQ-5D-5L Index		P
			M	SD	
Overall	648	100	0.93	0.12	
Age group (years)					
18–40	101	15.66	0.95	0.82	0.128
41–60	473	73.33	0.93	0.13	
>60	71	11.01	0.92	0.10	
Education level					
Primary and Lower Secondary Education	133	20.56	0.91	0.12	0.279
Upper Secondary Education	422	65.22	0.94	0.10	
Higher Education	92	14.22	0.92	0.19	
Duration of Service (years)					
<1	70	10.84	0.93	0.08	0.063
1–5	269	41.64	0.94	0.09	
6–10	114	17.65	0.95	0.09	
>10	193	29.88	0.91	0.17	

The p-value test is carried out based on the Kruskal-Wallis H test; M, mean; SD, standard deviation; P, p-value; EQ-5D-5L Index, a health status measure that summarises a patient's health across five dimensions.

A high average EQ-5D-5L index score (0.93) is reported in Table 5 for the health cadres, indicating a favorable QoL. Sociodemographic: Age ($p = 0.128$), education ($p = 0.279$), and duration of service ($p = 0.063$)--No statistically significant association with QoL scores.

Younger cadres (18–40 years) rate higher on average (0.95) than those over 60, who are significantly frailer (SAR = 0.92), paralleling age-related health loss, but not significantly so (Rantanen et al., 2021). Cadres with secondary education had the highest scores (0.94), followed by those with higher education (0.92) and primary-level education (0.91). However, differences are modest, as education may have had less impact in this regard due to other contextual factors (Utomo, Rukmana, Andarmoyo, & Anurogo, 2023). Service length is highest in the 6–10-year range (0.95), then tapers off after 10 years, but this trend did not reach statistical significance (Patel, 2016).

The high prevalence of pain/discomfort (35.96%) and anxiety/depression (22.38%) compared with reference population rates is quoted (Nguyen, Tran, Hoang Le, Tran, & Latkin, 2017). Supportive environments and lower pressure probably maintain high QoL despite these challenges (Asante et al., 2019; Balabem et al., 2021). Focusing on workload and psychological health could further improve cadres' well-being.

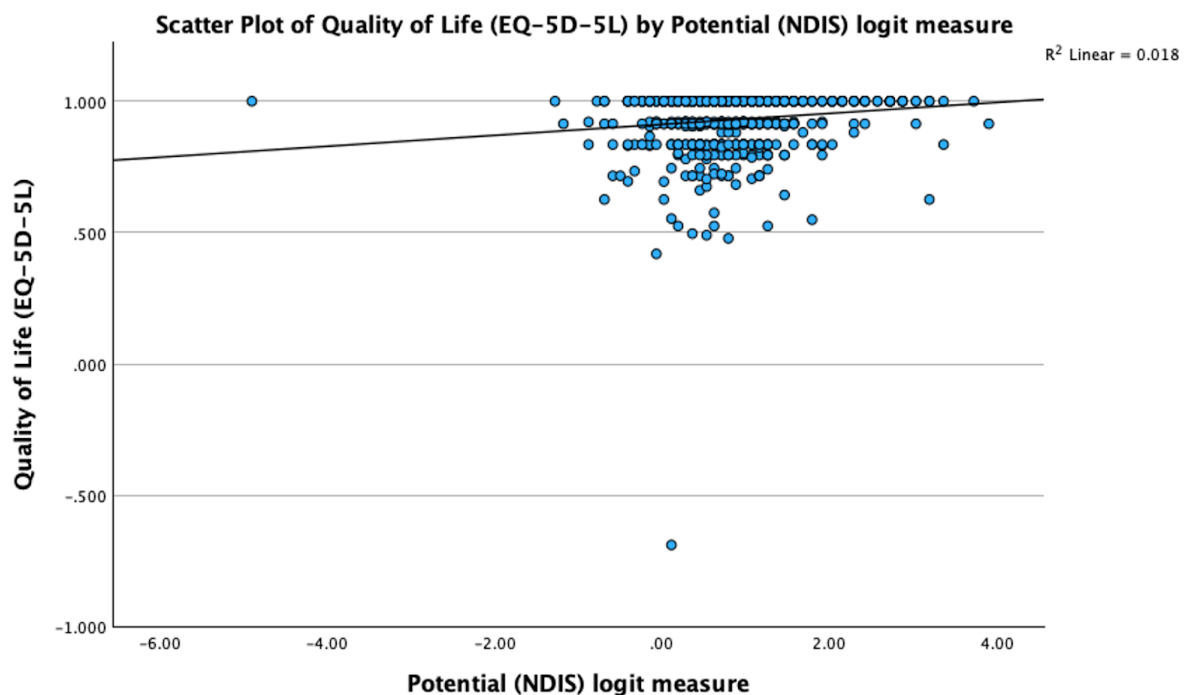


Figure 3. Scatter plot correlation of potential with the quality of life of health cadres. R^2 , coefficient of determination; NDIS, National Disability Insurance Scheme Self-Assessment Tool for Potential Workers; EQ-5D-5L, European Quality of Life 5 Dimensions 5 Level

Figure 3 shows a statistically significant, weakly positive correlation between health cadre potential (as measured by NDIS Self-Assessment logit scores) and quality of life (EQ-5D-5L index; $r = 0.164$, $p \leq 0.001$). As shown by the R^2 value of 0.018, cadre potential accounts for a mere 1.8% variation in QoL. This modest linear trend is also supported by the scatter plot, which shows data points for levels 1–13. However, some cadres have very low potential logits with poor QoL (negative index scores, Level 5), indicating an urgent need for a targeted intervention (Naghibi, Torabipour, Khiavi, & Cheragian, 2017).

This relationship is consistent with that of Naghibi (2017), who observed a significant relationship between quality of work life and performance of healthcare workers ($B = 0.164$; 95% CI: 0.091–0.237). People who acknowledge and maximise their potential often have a higher psychological well-being, which is an important factor in QoL, while better QoL enhances motivation and job performance, as evidenced by correlations up to $r = 0.375$

between individuals' motivation and effectiveness for health workers (Gunawan et al., 2022; Krabbenborg, Boersma, van der Veld, Vollebergh, & Wolf, 2017; Naghibi et al., 2017)

However, the low correlation ($r = 0.164$) indicates poor predictability: high potential gains have little effect on QoL improvements. The remaining 98.2% of the variance is presumed to be due to unmeasured causes. Self-assessment tools for potential may be confounded by perception biases that do not accurately reflect on-the-job competencies (Koca, Deniz, İnceoğlu, & Kılıç, 2024). Outside factors such as workload, psychosocial stress, and working environment impact well-being to a greater extent (Sjöberg, Pettersson-Strömbäck, Sahlén, Lindholm, & Norström, 2020).

Comparison studies also corroborate this subtlety. 2.5 Caregiver competence and HRQoL Caregiver competence is linked to HRQoL, with the relationship significantly mediated by workload, which explains 34.18% of variance with a total effect of -0.980; direct effect = -0.645, while indirect impact through workload = -0.335 (Niu, Ding, Wu, Ma, & Shi, 2023). In line with these results, in Turkey (2023), quality of life in the hospital was positively associated with workload ($\beta = 0.98$, $p = 0.001$), and high competence alone is insufficient when demands are unbalanced. The discovered association might have been amplified if workload factors had been studied as a mediator (Koca et al., 2024).

On the other hand, a study in Indonesia found no association between workload and QOL among health workers in Jember, suggesting high motivation and strong ethical work ($p = 0.372$). For instance, the job strain model by Karasek (1979) highlights control and support, in which intrinsic (person) and environmental ('buffers') factors—such as social networks and levels of work satisfaction—can protect against strain. (Bal Tastan, 2016; Banwo, Du, & Onokala, 2015; Fujiyanti, Wuryaningsih, & Hadi K, 2019).

These findings imply that cadre potential and QoL are intertwined but mediated by context-specific buffers. Policies for disability support roles need to combine competence development with adequate workload provision, stress reduction, and strong psychosocial and/or organizational support. Interventions at a systems level—in addition to particular skills—are more likely to be effective in maintaining care welfare within health systems (Bal Tastan, 2016; Naghibi et al., 2017; Niu et al., 2023)

The cross-sectional nature of this study limits inference about the causal relationship between potential and Quality of life (QoL) of cadres. The significant association found can only show that better potential increases QoL, or vice versa. Unobserved confounders—e.g., workload, psychological stress, and working conditions—may mediate or moderate this relationship, which explains the rather low level of association found. Cross-sectional methods are appropriate for a basic examination of cadre welfare complemented by factor identification; however, there is a paucity of longitudinal evidence on such temporal dynamics. Despite these limitations, the design was a good fit for the study's aim of creating a map of current cadre potential and QoL trends. Future prospective or intervention designs are needed to investigate how potential, workload, and social support impact QoL development over time, so that stronger causal conclusions can be drawn and more targeted policy interventions can be designed.

4. CONCLUSION

This study finds that the majority of health cadres in Bandung have adequate potential and generally good quality of life to perform supportive and complementary roles for persons with disabilities. Nevertheless, the weak positive association between potential and QoL ($r = 0.164$) indicates that improving cadres' well-being requires not only competence-building but also better workload management and psychosocial support. In light of these findings, intensified targeted education, practical hands-on training, and workload protection are now an

important, evidence-based health priority to enhance their enormously valuable contributions further.

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