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연구논문

Indonesia's National Health Insurance Policy Reform and Enhanced Physical Abilities in People with Physical Disabilities: A Policy Analysis

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Abstract

Indonesia, confronting a significant population grappling with disabilities, has witnessed a surge in disability prevalence, prompting a call for comprehensive health solutions. The 2014 initiation of the Social Security Agency on

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Health, or Badan Penyelenggara Jaminan Sosial Kesehatan (BPJS) program, aims to alleviate financial burdens and enhance overall health, specifically targeting persons with disabilities (PwD). Health insurance reforms, with a focus on expanding coverage for rehabilitation services and assistive devices, harbor the potential to ameliorate the physical abilities of PwD in daily life activities. However, the specific impact of these reforms on the functional abilities of individuals with disabilities, particularly in Activities of Daily Living (ADL) and Instrumental Activities of Daily Living (IADL), remains under-explored. This study investigates outcomes related to physical abilities before and after the implementation of the National Health Insurance policy by utilizing secondary data from the Indonesian Family Life Survey (IFLS). The analysis focuses on 2,296 disabled individuals from IFLS4 (pre-reform) and 3,463 from IFLS5. Physical abilities were measured through ADL and IADL exercises, employing logistic regression models to assess the impact of Jaminan Kesehatan Nasional implementation on the abilities of PwDs, adjusting for potential confounders. In 2015, a higher percentage of participants reported good physical ability compared to 2008, signifying a potential improvement following the reform. Observations included shifts in education levels, marital status, and residence, with an inclination toward higher education, diverse marital statuses, and a reduction in rural participants in 2015. A noteworthy increase in participants with health insurance in 2015 compared to 2008 was observed. The distribution of health conditions changed, indicating an increase in healthy participants and a decrease in unhealthy participants in 2015 (adjusted odds ratio [aOR]: ADL 6.16, 95% confidence interval [CI]: 4.41–8.63; IADL 3.39, 95% CI: 2.71–4.25). The implementation of the BPJS program positively impacted the physical abilities and overall conditions of individuals with disabilities. Emphasis was placed on the role of accessible healthcare services, the importance of insurance coverage, and the necessity for evidence-based policies promoting inclusivity and equity. Policymakers were urged to prioritize initiatives supporting the well-being of individuals with disabilities in Indonesia. The study also outlined limitations and suggested future research directions for a more comprehensive understanding of factors influencing physical abilities in this population.

Key words: Disability, Inclusivity and Equity, Health Insurance Reforms, Badan Penyelenggara Jaminan Sosial Kesehatan (BPJS), Indonesia

Ⅰ. INTRODUCTION

Indonesia, home to approximately 30.38 million people grappling with disabilities, as reported in a study conducted by Ismandari (2019), stands at a crossroads in addressing the diverse challenges faced by this significant demographic group. The 2010 Population Census, highlighted by Cameron & Contreras (2017), revealed a 4.74% increase in disability prevalence over the decade. Insights from The National Socioeconomic Survey (Susenas) and Indonesian Basic Health Research (Riskesdas) data in 2012 and 2013 further underscored the high prevalence of disability with increasing age, emphasizing the importance of comprehensive health service solutions (Cameron & Contreras, 2017). Many people with disabilities face barriers to full participation and integration in society, as documented by BPS (2017).

Recognizing the critical role of health in determining one's ability to perform daily tasks, the Indonesian government introduced the National Health Insurance, or Jaminan Kesehatan Nasional (JKN), managed by the Social Security Agency on Health, or Badan Penyelenggara Jaminan Sosial Kesehatan (BPJS). Operational since January 1, 2014, the BPJS program aims not only to alleviate financial burdens but also to enhance overall health and well-being.

Health insurance reforms, when designed to expand coverage and reduce financial barriers, hold the promise of increased access to healthcare services for Persons with Disabilities (PwD). This expanded access encompasses rehabilitation services and assistive devices, contributing to an overall improvement in their ability to perform daily activities. Coster et al. (2007) revealed that the inclusion of comprehensive coverage for rehabilitation services not only ensures improved access to various therapies and interventions but also positively impacts the physical abilities and functional independence of PwD, directly influencing their proficiency in Activities of Daily Living (ADL) and Instrumental Activities of Daily Living (IADL).

Furthermore, if insurance reforms include coverage for assistive devices, such as mobility aids (e.g., prosthetics and orthotics), the functional capabilities of PwD in performing daily tasks can experience significant enhancement. This approach goes beyond mere accessibility, directly contributing to improved outcomes in

both ADL and IADL. Aligning health insurance reforms with inclusive healthcare policies is pivotal in dismantling barriers to access and participation for PwD (Dean, 2018). By prioritizing the specific needs of this demographic, these reforms ensure that healthcare services are tailor-made to address their unique challenges, thereby positively impacting their ADL and IADL.

Following those references, understanding the potential impact of health insurance reform on the physical abilities of individuals with disabilities is critical, especially concerning ADLs and IADLs. This intersection between health policy reform and its impact on demographics has major implications for public health and social well-being. Although the primary goal of this policy is to revolutionize the accessibility and affordability of healthcare services across the country, its specific impact on the functional abilities of individuals with disabilities remains underexplored.

This study aims to bridge this gap by conducting a comprehensive investigation of outcomes related to daily life activities and overall body function before the implementation of BPJS and one year after the implementation of health insurance policy changes. By understanding the impact of health insurance reform on the physical abilities of individuals with disabilities, particularly in the context of ADL and IADL, we aim to contribute valuable insights that can inform evidence-based policies and hopefully encourage the creation of more inclusive programs and equitable access to health for PwD in Indonesia.

Ⅱ. LITERATURE REVIEW

1. Disability Prevalence in Indonesia

Ismandari's (2019) study serves as a foundational piece, revealing that approximately 30.38 million people in Indonesia grapple with disabilities. This significant revelation provides a current snapshot of the disability landscape in the country, offering essential insights into the scope and scale of the challenges faced by individuals with disabilities.

Ismandari's research not only establishes the current prevalence but also provides a basis for understanding the trajectory of disability in Indonesia. By delving

into historical data, we find corroboration in the 2010 Population Census (Cameron & Contreras, 2017), which unveils a 4.74% increase in disability prevalence over the preceding decade. This upward trend indicates a growing demographic of individuals facing disabilities, setting the stage for a more comprehensive examination of the subsequent implications on healthcare policy and disability inclusion.

2. Challenges Faced by Persons with Disabilities (PwD)

The revelation of an increasing prevalence of disabilities in Indonesia, as highlighted by the 2010 Population Census, is not merely a statistical shift but underscores the multifaceted challenges faced by PwD. Cameron & Contreras's (2017) insights further emphasize the gravity of these challenges, setting the stage for understanding the pressing need for comprehensive health service solutions.

Cameron's work illuminates the various barriers hindering the full participation and integration of PwD into societal structures. This background information accentuates the urgency for transformative healthcare initiatives, such as the National Health Insurance program (JKN), to address the unique needs of this significant demographic group.

3. National Health Insurance in Indonesia

The Indonesian government's introduction of the National Health Insurance, JKN, represents a pivotal milestone in the nation's healthcare landscape. Cameron & Contreras's (2017) insights underscore the transformative nature of this initiative. Implemented on January 1, 2014, the JKN program, managed by the Social Security Agency on Health (BPJS), holds a dual objective: alleviating financial burdens and enhancing overall health and well-being.

Trisnantoro (2018) mentioned that one of the primary goals of JKN is to address the economic challenges associated with healthcare. The program seeks to ensure that all Indonesian citizens, including those with disabilities, have access to necessary health services without incurring significant financial hardships. By pooling

resources and providing comprehensive coverage, JKN aims to create an inclusive healthcare system that considers the diverse needs of the population.

The JKN program encompasses a spectrum of health services, ranging from promotive and preventive to curative, rehabilitative, and palliative care. This comprehensive coverage is designed to cater to the diverse health requirements of individuals, including those with disabilities. Understanding the scope and nature of services offered by JKN is crucial in evaluating its potential impact on the health and well-being of PwD.

In line with broader inclusive healthcare policies, JKN strives to break down barriers to access and participation. By prioritizing the specific needs of PwD, the program ensures that healthcare services are tailored to address their unique challenges. This alignment with inclusive policies is integral to understanding how national health insurance can be a driving force in promoting the rights and well-being of individuals with disabilities.

Various studies, including those by Cameron & Contreras (2017), may offer insights into the initial years of JKN implementation, evaluating its impact on accessibility to healthcare services. Understanding the challenges faced and improvements made during the early phases of the program is essential for gauging its effectiveness, especially in catering to the healthcare needs of individuals with disabilities.

Preliminary assessments and public perceptions of JKN can provide additional context to its role in transforming the healthcare landscape. Examining how the introduction of national health insurance has been received by the general population, including PwD, contributes to a more nuanced understanding of its impact on health outcomes and overall well-being.

Exploring the challenges encountered and opportunities created by JKN in addressing the needs of PwD is vital for a comprehensive literature review. Identifying gaps or limitations in the program's current structure and implementation can inform recommendations for optimizing its effectiveness in promoting disability inclusion.

4. Health Insurance Reforms and Accessibility for Persons with Disabilities (PwD)

Coster et al.'s (2007) groundbreaking study delves into the intricate relationship between health insurance reforms and the accessibility of healthcare services for PwD. The research primarily focuses on the impact of reforms crafted to broaden coverage and alleviate financial barriers. The findings present a compelling case for the transformative effects of comprehensive coverage, encompassing crucial elements such as rehabilitation services and assistive devices. By expanding the spectrum of services available, health insurance reforms contribute significantly to enhancing the overall ability of PwD to engage in daily activities. The positive outcomes observed in ADL and IADL underscore the profound impact of strategic health insurance reforms on the lives of individuals with disabilities.

5. Inclusive Healthcare Policies and Disability Inclusion

Dean's (2018) seminal work further enriches the understanding of the nexus between health insurance reforms and disability inclusion by emphasizing the importance of aligning these reforms with inclusive healthcare policies. The research posits that this alignment serves as a linchpin in dismantling persistent barriers obstructing the access and active participation of PwD in healthcare services. Dean's insights illuminate the significance of tailoring healthcare services to meet the unique challenges faced by individuals with disabilities. By prioritizing inclusivity, these reforms positively affect both ADL and IADL, fostering an environment where healthcare is not only accessible but also attuned to the specific needs of this demographic. This holistic approach, as advocated by inclusive healthcare policies, is pivotal in ensuring that health insurance reforms translate into tangible improvements in the daily lives and functional abilities of PwD.

6. Research Gaps and the Need for Investigation

Despite these advancements, a gap in the literature remains concerning the specific impact of health system reforms, particularly national health insurance policies, on the physical abilities of PwD in Indonesia. While existing research touches upon the broader aspects of disability prevalence and the transformative initiatives

in healthcare, there is a lack of focused exploration into the nuanced effects on daily living activities and overall body functions.

Ⅲ. METHODS

1. Case Selection

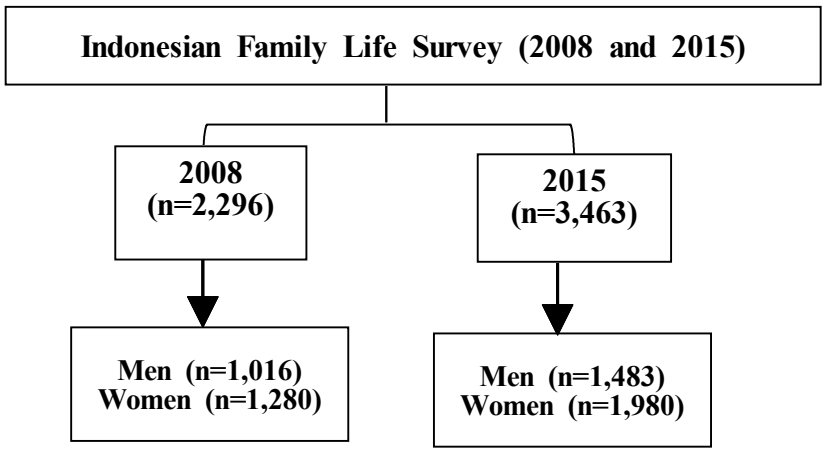
This study was using secondary data taken from the Indonesian Family Life Survey (IFLS). IFLS is an ongoing socio-economic and health survey with a longitudinal structure. It is based on a sample of households, representing approximately 83% of the Indonesian population. This comprehensive survey gathers data on each respondent, their families, households, the communities they reside in, and the health and education facilities they utilize. The initial wave (IFLS1) was administered in 1993 to individuals living in 7,224 households. IFLS2 aimed to re-interview the same respondents four years later. Following this, a follow-up survey (IFLS2+) was conducted in 1998 with 25% of the sample, measuring the direct impact of the economic and political crisis on Indonesia. Subsequently, IFLS3 was included in the full sample in 2000.

For this study, we utilized the latest available data, which closely corresponds to the period before the implementation of BPJS. This data is derived from IFLS4, conducted at the end of 2007 and early 2008. Additionally, data from IFLS5 (collected at the end of 2014 and the beginning of 2015) was employed for analysis. Both sets of households and IFLS splits were included, totaling 16,204 households and 50,148 individuals interviewed. However, to focus on individuals with physical disabilities, the researchers refined the data, selecting 2,296 disabled individuals from IFLS4 and 3,463 disabled individuals from IFLS5 (〈Figure 1〉).

2. Measurement of Physical Abilities

The dependent variable in the study is physical abilities, characterized by the capability to perform ADL and IADL. Meanwhile, the independent variables in-

〈Figure 1〉 Participants



clude General Characteristics (age, gender, marital status, education level, and living residence) and Health Status (health condition, insurance status). These variables are instrumental in representing demographic and socioeconomic characteristics.

3. Activities of Daily Living (ADL) Exercises Encompass the Following 12 Activities

1) To convey a weighty burden for 20 m
2) To draw a bucket of water from a well
3) To stroll for 1-5 km
4) To clear the house floor yard
5) To bow, squat, bow
6) To stroll across the room
7) To stand up from sitting on the floor without assistance
8) To stand up from sitting situation in a seat without assistance
9) To reach or extend the arms above shoulder level
10) To get a small coin from a table
11) To dress without assistance
12) To wash
13) To get up
14) To eat (eating food without anyone else when it is prepared)

4. Instrumental Activities of Daily Living (IADL) Exercises Consist of 6 Activities

1) To look for personal requirements
2) To prepare hot meals (preparing ingredients, cooking, and serving food)
3) To take medication (taking the right dose at the right time)
4) To do household tasks (housekeeping, doing dishes, making the bed, and organizing the house
5) To shop for food (choosing what to buy and paying for it)
6) To manage money (handling bills, keeping track of expenses, or managing assets)

For each ADL and IADL exercise, respondents were classified as either '0' if they were unable to perform the activity or '1' if they were able to perform it. This binary classification allowed for a clear distinction between those who could and could not independently carry out each activity.

5. Statistical Analysis

Descriptive statistics were used to summarize the characteristics of the study participants in both the pre-reform and post-reform periods. Chi-squared tests were employed to assess the differences in demographic and socioeconomic characteristics between the two groups (pre-reform and post-reform periods). Logistic regression models were used to analyze the impact of JKN implementation on PwDs' physical abilities, specifically their ability to perform ADL and IADL. Adjusted odds ratios (aORs) were calculated to account for potential confounding factors, including insurance status and socioeconomic variables.

The logistic regression model is used because the dependent variable is binary, with respondents classified as either '0' (unable to perform the activity) or '1' (able to perform the activity). For each ADL and IADL exercise, respondents were categorized as either '0' or '1' based on their ability to independently carry out the activity. This binary coding is essential for logistic regression, as it models the

probability of an event occurring (in this case, the ability to perform the activity) given a set of independent variables.

The independent variables in the study include age, gender, education, marital status, residence, and health insurance status. These variables are considered as potential predictors or determinants of the ability to perform ADL and IADL. The logistic regression model estimates the relationship between these independent variables and the log odds of the respondent being able to perform each specific activity. The logistic regression analysis will estimate the values of these coefficients, providing insights into the strength and direction of the relationship between each independent variable and the log odds of being able to perform the ADL and IADL activities.

Interpreting the coefficients involves considering the odds ratio, which represents the change in odds of being able to perform the activity associated with a one-unit change in the independent variable. Odds ratios greater than 1 indicate a positive association, while odds ratios less than 1 indicate a negative association. Statistical significance of the coefficients is also important in determining the reliability of the associations observed in the analysis.

6. Ethical Statement

This study utilized publicly available de-identified data obtained from the IFLS surveys. The research procedures involving the use of this dataset were subjected to review and approval by the Institutional Review Boards (IRBs) at RAND in the United States and at the University of Gadjah Mada (UGM) in Indonesia. Prior to data collection, written informed consent was obtained from all participants.

Ⅳ. RESULTS

〈Table 1〉 presented the characteristics of study participants in 2008 (pre-reform) and 2015 (post-reform) following the implementation of BPJS. The variables encompassed Physical Ability (ADL and IADL), Age, Gender, Education, Marital Status, Residence, Health Insurance, and Health Condition.

〈Table 1〉 Characteristics of study participants in 2008 and 2015

Variables	2008 (Pre-reform)		2015 (Post-reform)	
	N=2,296		N=3,463	
	N	%	N	%
Physical ability (ADL)				
Good	2,046	89.1	3,281	94.7
Bad	250	10.9	182	5.3
Physical ability (IADL)				
Good	2,000	87.1	3,109	89.8
Bad	296	12.9	354	10.2
Age (yr)				
18-29	556	24.2	859	24.8
30-39	418	18.2	715	20.6
≥40	1,322	57.6	1,889	54.5
Gender				
Male	1,016	44.3	1,483	42.8
Female	1,280	55.7	1,980	57.2
Education				
Elementary school	690	30.1	972	28.1
Middle school	465	20.3	461	13.3
High school	669	29.1	1,014	29.3
University and above	472	20.6	1,016	29.3
Marital status				
Married	1,604	69.9	2,317	66.9
Others[1)]	692	30.1	1,146	33.1
Residence				
Urban	2,050	89.3	3,400	98.2
Rural	246	10.7	63	1.8
Health insurance				
Yes	870	37.9	1,918	55.4
No	1,426	62.1	1,545	44.6
Health condition				
Healthy	1,690	73.6	2,327	67.2
Unhealthy	606	26.4	1,136	32.8

Note: 1) Separated, single, divorced, widow/er, cohabitate.
2) ADL, Activities of Daily Living; IADL, Instrumental Activities of Daily Living.

In both 2008 and 2015, a higher percentage of participants reported good physical ability (ADL and IADL) in the post-reform period compared to the pre-reform era. This implies a potential improvement in physical abilities following the reform. The distribution of age groups appeared similar between the two time periods. Most participants in both 2008 and 2015 fell into the age category of ≥40 years. The gender distribution was quite similar between the two periods, with slightly more females in both 2008 and 2015.

The distribution of education levels underwent changes. In 2015, there was a higher percentage of participants with university and above education compared to 2008, coupled with a decrease in participants with elementary school and middle school education. The proportion of married participants decreased slightly in 2015, while the percentage of participants with other marital statuses increased.

Most participants in both 2008 and 2015 resided in urban areas. However, there was a notable decrease in rural participants in 2015. A significant increase was observed in the percentage of participants with health insurance in 2015 compared to 2008.

The distribution of health conditions changed, with a decrease in the percentage of healthy participants and an increase in the percentage of unhealthy participants in 2015. The changes observed in education, marital status, residence, health insurance, and health condition suggested potential impacts of the reform.

〈Table 2〉 revealed significant associations between demographic and socioeconomic factors and physical ability levels among the study participants in 2008. The data indicated a substantial association between age groups and physical ability levels. Notably, individuals aged 40 and older exhibited higher levels of both ADL and IADL abilities compared to younger age groups.

There was a statistically significant association between age and both ADL and IADL abilities ($p<0.001$). The percentage of individuals with below-average ADL and IADL abilities tended to increase with age.

Marital status showed a significant association with both ADL ($p=0.032$) and IADL ($p=0.007$) abilities. Individuals categorized as 'Others' (separated, single, divorced, widow/er, cohabitate) had a higher percentage of below-average abilities in both ADL and IADL compared to the married group.

Gender was significantly associated with ADL abilities ($p=0.009$), but not with IADL abilities ($p=0.618$). The percentage of males with below-average ADL abilities

〈Table 2〉 Comparison analysis of association between physical ability and general characteristics in 2008 (N=2,296)

Variables 2008	ADL					IADL				
	-Average		+Average		p-value[1)]	-Average		+Average		p-value[1)]
	N	%	N	%		N	%	N	%	
Age (yr)										
18-29	100	18.0	456	82.0	〈.001	141	25.4	415	74.6	〈.001
30-39	78	18.7	340	81.3		93	22.2	325	77.8	
≥40	72	5.4	1,250	94.6		62	4.7	1,260	95.3	
Marital status										
Married	160	10.0	1,444	90.0	0.032	187	11.7	1,417	88.3	0.007
Others[2)]	90	13.0	602	87.0		109	15.8	583	84.2	
Gender										
Male	130	12.8	886	87.2	0.009	127	12.5	889	87.5	0.618
Female	120	9.4	1,160	90.6		169	13.2	1,111	86.8	
Health condition										
Unhealthy	60	9.9	546	90.1	0.363	84	13.9	522	86.1	0.407
Healthy	190	11.2	1,500	88.8		212	12.5	1,478	87.5	
Insurance status										
No insurance	182	12.8	1,244	87.2	〈.001	196	13.7	1,230	86.3	0.119
Have insurance	68	7.8	802	92.2		100	11.5	770	88.5	
Education										
Elementary	74	10.7	616	89.3		86	12.5	604	87.5	
Junior high school	26	5.6	439	94.4	〈.001	51	11.0	414	89.0	0.431
Senior high school	101	15.1	568	84.9		93	13.9	576	86.1	
College/University	49	10.4	423	89.6		66	14.0	406	86.0	
Residence										
Urban	217	10.6	1,833	89.4	0.178	286	14.0	1,764	86.0	〈.001
Rural	33	13.4	213	86.6		10	4.1	236	95.9	

Note: 1) Chi-square test.
2) Separated, single, divorced, widow/er, cohabitate.
3) ADL, Activities of Daily Living; IADL, Instrumental Activities of Daily Living.

was higher compared to females.

There was no significant association between health condition and both ADL (p=0.363) and IADL (p=0.407) abilities. Insurance status was significantly associated

with both ADL and IADL abilities ($p<0.001$ for ADL, $p=0.119$ for IADL).

Individuals with no insurance had a higher percentage of below-average abilities in both ADL and IADL compared to those with insurance. Education level was significantly associated with both ADL and IADL abilities ($p<0.001$ for ADL, $p=0.431$ for IADL). Individuals with lower education levels tended to have a higher percentage of below-average abilities in both ADL and IADL.

Residence was significantly associated with IADL abilities ($p<0.001$) but not with ADL abilities ($p=0.178$). Individuals in rural areas had a higher percentage of below-average IADL abilities compared to those in urban areas.

〈Table 3〉 indicated that the p-values for both ADL and IADL were less than 0.001, signifying a statistically significant association between age and physical ability. Notably, as individuals advanced in age, there was a corresponding decrease in the percentage of those with above-average physical ability. Similarly, in the case of marital status, the p-values for both ADL and IADL were less than 0.001, revealing a significant association. Married individuals consistently exhibited a higher percentage of above-average physical ability compared to their unmarried counterparts.

For gender and IADL, the p-value was 0.031, indicating a statistically significant association. Specifically, females demonstrated a higher percentage of above-average physical ability compared to males in the context of IADL. However, this association was not observed in the context of ADL. The p-values for both ADL and IADL were less than 0.001 when assessing the association with health condition. Healthy individuals presented a notably higher percentage of above-average physical ability compared to those with reported health issues.

In the examination of insurance status, both ADL and IADL exhibited p-values less than 0.001, signifying a significant association. Individuals with insurance consistently demonstrated a higher percentage of above-average physical ability compared to those without insurance coverage. The p-values for both ADL and IADL were less than 0.001 when considering the association with education. As education level increased, there was a corresponding rise in the percentage of individuals with above-average physical ability.

In contrast, the p-value for Residence in the context of IADL was 0.135, suggesting a non-significant association. It appears that there is no statistically sig-

〈Table 3〉 Comparison analysis of association between physical ability and general characteristics in 2015 (N=3,463)

2015	ADL (n=3,463)					IADL (n=3,463)				
	-Average		+Average		p-value[1)]	-Average		+Average		p-value[1)]
	N	%	N	%		N	%	N	%	
Age (yr)										
18-29	13	1.5	846	98.5	〈.001	65	7.6	794	92.4	〈.001
30-39	9	1.3	706	98.7		28	3.9	687	96.1	
≥40	160	8.5	1,729	91.5		261	13.8	1,628	86.2	
Marital status										
Married	83	3.6	2,234	96.4	〈.001	165	7.1	2,152	92.9	〈.001
Others[2)]	99	8.6	1,047	91.4		189	16.5	957	83.5	
Gender		0.0								
Male	64	4.3	1,420	95.7	0.031	157	10.6	1,327	89.4	0.548
Female	118	6.0	1,861	94.0		197	10.0	1,782	90.0	
Health condition										
Unhealthy	133	11.7	1,003	88.3	〈.001	209	18.4	927	81.6	〈.001
Healthy	49	2.1	2,278	97.9		145	6.2	2,182	93.8	
Insurance status										
No insurance	138	8.9	1,407	91.1		246	15.9	1,299	84.1	〈.001
Have insurance	44	2.3	1,874	97.7		108	5.6	1,810	94.4	
Education										
Elementary	95	9.8	877	90.2		171	17.6	801	82.4	
Junior high school	18	3.9	443	96.1	〈.001	41	8.9	420	91.1	〈.001
Senior high school	55	5.4	959	94.6		113	11.1	901	88.9	
College/University	14	1.4	1,002	98.6		29	2.9	987	97.1	
Residence										
Urban	175	5.1	3,225	94.9		344	10.1	3,056	89.9	0.135
Rural	7	11.1	56	88.9		10	15.9	53	84.1	

Note: 1) Chi-square test.
2) Separated, single, divorced, widow/er, cohabitate.
3) ADL, Activities of Daily Living; IADL, Instrumental Activities of Daily Living.

nificant difference in the percentage of individuals with above-average physical ability between urban and rural residences.

1. Examining Changes in Physical Abilities among Individuals with Disabilities: A Comparative Analysis before and after the Implementation of BPJS

The examination of the relationship between socioeconomic factors and the physical abilities of individuals with physical disabilities, as indicated by the multivariable logistic model in 〈Table 4〉, was a focal point of this study. The primary

〈Table 4〉 Associations between sociodemographic factors and the ability to perform ADL and IADL in pre- (2008) and post-reform (2015) periods

Variables	2008					
	ADL			IADL		
	OR	95% CI	p-value	OR	95% CI	p-value
Age (yr)						
18-29	0.27	0.19-0.39	〈.001	1.19	0.88-1.60	0.261
30-39	0.24	0.17-0.35	〈.001	6.91	5.02-9.49	〈.001
≥40	1.00			1.00		
Marital status						
Married	1.00			1.00		
Others[1)]	1.35	1.03-1.77	0.033	1.42	1.09-1.83	0.007
Gender						
Male	1.00			1.00		
Female	0.71	0.54-0.91	0.009	1.06	0.83-1.36	0.618
Health condition						
Unhealthy	1.00			1.00		
Healthy	0.87	0.64-1.18	0.363	1.12	0.86-1.47	0.407
Insurance status						
No insurance	1.00			1.00		
Have insurance	1.73	1.29-2.31	〈.001	1.23	0.95-1.59	0.119
Education						
Elementary	2.03	1.28-3.22	0.003	1.16	0.80-1.67	0.441
Junior high school	0.68	0.49-0.93	0.017	0.88	0.64-1.21	0.434
Senior high school	1.04	0.71-1.52	0.852	0.88	0.62-1.24	0.451
College/University	1.00			1.00		
Residence						
Urban	1.00			1.00		
Rural	1.31	0.88-1.94	0.179	0.26	0.14-0.49	〈.001

〈Table 4〉 Continued

Variables	2015					
	ADL			IADL		
	OR	95% CI	p-value	OR	95% CI	p-value
Age (yr)						
18-29	6.02	3.40-10.66	〈.001	1.96	1.47-2.60	〈.001
30-39	7.25	3.68-14.28	〈.001	3.93	2.64-5.87	〈.001
≥40	1.00			1.00		
Marital status						
Married	1.00			1.00		
Others[1)]	2.55	1.88-3.44	〈.001	2.58	2.06-3.22	〈.001
Gender						
Male	1.00			1.00		
Female	1.41	1.03-1.92	0.032	0.93	0.75-1.17	0.548
Health condition						
Unhealthy	1.00			1.00		
Healthy	6.17	4.41-8.63	〈.001	3.39	2.71-4.25	〈.001
Insurance status						
No insurance	1.00			1.00		
Have insurance	4.18	2.96-5.91	〈.001	3.17	2.50-4.02	〈.001
Education						
Elementary	0.13	0.07-0.22	〈.001	0.14	0.92-0.21	〈.001
Junior high school	0.34	0.17-0.69	0.003	0.30	0.19-0.49	〈.001
Senior high school	0.24	0.13-0.44	〈.001	0.23	0.15-0.35	〈.001
College/University	1.00			1.00		
Residence						
Urban	1.00			1.00		
Rural	2.30	1.04-5.13	0.041	1.67	0.85-3.33	0.14

Note: 1) Separated, single, divorced, widow/er, cohabitate.
2) ADL, Activities of Daily Living; IADL, Instrumental Activities of Daily Living; CI, Confidence Interval.

objective was to assess whether there was an enhancement in the performance of ADL and IADL before and after the implementation of BPJS.

2. Age Demographics

Significant improvements in physical abilities for both ADL and IADL were observed among individuals aged 18-29 and 30-39 in 2015 compared to 2008. Notably, participants aged 40 and above exhibited stable physical abilities across both periods.

3. Marital Status

Individuals categorized under "Others" marital status (including separated, single, divorced, widow/er, cohabitate) displayed enhanced physical abilities for both ADL and IADL in 2015, suggesting a positive correlation between diverse marital statuses and improved functional capabilities.

4. Gender Disparities

Females exhibited improved ADL abilities in 2015, although no significant change was noted in IADL abilities, emphasizing gender-specific variations in the impact of the BPJS program.

5. Health Condition

In 2015, individuals classified as unhealthy demonstrated significantly improved ADL and IADL abilities compared to 2008, highlighting the program's potential in positively influencing the functional capabilities of those with pre-existing health conditions.

6. Insurance Coverage

Possession of health insurance was associated with enhanced ADL and IADL abilities in 2015, underscoring the pivotal role of insurance coverage in augmenting the physical capacities of individuals with disabilities.

7. Educational Attainment

Participants with elementary and junior high school education levels exhibited improved physical abilities in 2015 for both ADL and IADL, while those with college/university education levels maintained stable physical capacities.

8. Residential Disparities

Rural residents experienced increased ADL abilities in 2015, accompanied by a decrease in IADL abilities, whereas urban residents sustained consistent physical capacities, indicating potential regional nuances in the program's impact.

V. DISCUSSION

In this study, we investigated the relationship between socioeconomic factors and the physical abilities of individuals with disabilities, focusing on the performance of ADL and IADL before and after the implementation of BPJS. Summarizing the research results, the findings reveal intriguing shifts in the associations between various demographic and socioeconomic variables and the ability to perform ADL and IADL over the years.

Our analysis indicated a noteworthy change in the age dynamics influencing physical abilities. In 2008, individuals aged 18–29 and 30–39 exhibited significantly lower odds of performing ADL and IADL compared to those aged 40 or older. However, by 2015, the trend had reversed, with younger age groups now demonstrating significantly higher odds of performing both ADL and IADL compared to their older counterparts. While the specific reasons for the observed shift in age dynamics influencing physical abilities between 2008 and 2015 are not explicitly provided in the data, we can propose potential explanations based on general trends and considerations in health and disability research. Over the years, there may have been increased awareness of health and lifestyle choices among younger age groups. Younger individuals might have adopted healthier behaviors, contributing to improved physical abilities compared to their older counterparts

(Raghupathi & Raghupathi, 2020).

Technological advancements and increased accessibility to assistive devices might have played a role in enhancing the physical abilities of younger individuals with disabilities. Improved access to tools and devices that aid in daily activities could explain the reversal in trends. Rehabilitation practices and interventions may have evolved over time (Viner, 2020). Younger individuals might have benefited more from progressive rehabilitation methods, leading to enhanced physical capabilities. Changes in societal attitudes toward disability and policy shifts supporting inclusive practices could have positively impacted younger individuals. Greater emphasis on accessibility and inclusivity in society might contribute to improved physical abilities among the younger age groups (Kohl & Cook, 2013).

Consistently, individuals with insurance demonstrated significantly higher odds of performing ADL and IADL in both 2008 and 2015. This emphasizes the critical role of insurance coverage in facilitating better physical abilities among individuals with disabilities. Individuals with insurance coverage are more likely to have regular access to healthcare services, including preventive care, rehabilitation, and assistive devices. Access to these services can contribute to maintaining and improving physical abilities among individuals with disabilities. Insurance coverage facilitates timely access to medical interventions and treatments. Timely medical care can prevent or manage health conditions that may affect physical abilities, ensuring individuals receive necessary support when needed. Insurance often covers rehabilitative services such as physical therapy, occupational therapy, and mobility aids. These services play a crucial role in enhancing and maintaining physical abilities for individuals with disabilities (Abdi et al., 2019). Insurance coverage may enable individuals to acquire assistive devices and adaptive technologies that enhance their independence and functionality in performing daily activities. Insurance encourages individuals to seek preventive care, manage chronic conditions, and prioritize their overall health. This focus on preventive measures can contribute to better overall physical well-being (Coster et al., 2007; Edemekong et al., 2021; Soltani et al., 2019).

A notable reversal was observed in the association between education levels and physical abilities. In 2008, individuals with elementary education had higher odds of performing ADL and IADL compared to those with college/university education.

However, by 2015, individuals with elementary education exhibited significantly lower odds of performing ADL and IADL compared to their more highly educated counterparts. This unexpected shift raises questions about the evolving role of education in shaping the physical capabilities of individuals with disabilities. Over time, there may have been improvements in access to education, particularly higher education. If more individuals with physical disabilities gained access to college/university education in 2015 compared to 2008, this could contribute to the observed shift. There may have been changes in health awareness and education campaigns between 2008 and 2015. Individuals with higher education might have become more proactive in managing their health and adopting healthier lifestyles, influencing their ability to perform ADL and IADL. Higher education often opens up opportunities for more sedentary or desk-based jobs. Individuals with college/university education may be more likely to work in environments that do not require strenuous physical activities, potentially influencing their ability to perform ADL and IADL differently compared to those with elementary education. Changes in socioeconomic factors over the years, not explicitly mentioned in the data, could have contributed to the observed differences. Socioeconomic status often intersects with education, and alterations in income, living conditions, or access to healthcare might impact physical abilities differently across educational levels. There could have been advancements in healthcare interventions and assistive technologies between 2008 and 2015. Individuals with higher education might have been more likely to access and benefit from these interventions, influencing their ability to perform ADL and IADL (Breiman et al., 2015; Dean et al., 2018; King et al., 2017).

Throughout both periods, individuals with marital status categorized as "Others" (separated, single, divorced, widow/er, cohabitate) consistently showed higher odds of being able to perform ADL and IADL compared to their married counterparts. This finding suggests that non-traditional marital statuses may play a role in shaping the physical abilities of individuals with disabilities (Dean et al., 2018).

In 2008, females exhibited lower odds of performing ADL compared to males, while no significant association was found for IADL. However, in 2015, females had higher odds of performing ADL, though no significant association was ob-

served for IADL. The evolving gender disparities in the ability to perform daily activities warrant further exploration and may reflect changing societal norms and roles. Changes in healthcare access and utilization between 2008 and 2015 might have contributed to the shifting gender disparities. If there were improvements in women's access to healthcare, including rehabilitation services and preventive measures, this could lead to better ADL outcomes. Evolving societal norms and roles may play a crucial role in shaping the observed gender disparities. Changes in cultural expectations, the recognition of women's roles in caregiving, and shifting perceptions of gender roles could influence how women engage with and adapt to activities of daily living. Alterations in occupational patterns and employment opportunities for women may have influenced their ability to perform ADL and IADL. If there were changes in the types of occupations or employment conditions available to women, this could impact their physical capabilities in different aspects of daily life. Increased awareness and targeted health education initiatives for women might have contributed to the observed improvements in ADL. If there were campaigns emphasizing women's health and well-being, including aspects related to daily activities, this could result in positive outcomes over time. Longitudinal health trends and improvements in overall health for women over the years might contribute to the observed changes. If there were advancements in healthcare, preventive measures, and treatments that particularly benefited women, this could lead to improved physical abilities (Jones & Sinclair, 2008; Pratiwi et al., 2021; Soltani et al., 2019).

While no significant association was found between residence and ADL/IADL in 2008, a notable change emerged by 2015. Individuals residing in rural areas displayed significantly higher odds of performing ADL and lower odds of performing IADL compared to those in urban areas. This shift suggests that geographical factors may have an increasingly significant impact on the physical abilities of individuals with disabilities in later years (Viner et al., 2020).

1. Limitation and Future Directions

These studies were limited by the ability to establish causal relationships or track changes over an extended period. The studies also relied solely on data from

a specific source (IFLS data), and the accuracy and comprehensiveness of the information may have been contingent on the quality and methodology of the data collection process. Moreover, the analyses focused on certain socioeconomic factors, such as education and marital status, but did not delve into more nuanced aspects, potentially overlooking relevant variables influencing physical abilities. Although insurance coverage was explored, the studies did not extensively investigate the nuances of healthcare access, utilization patterns, or the quality of care received, which could have been crucial determinants of physical abilities. The studies only considered changes over a seven-year period (2008 to 2015), and broader societal shifts or policy changes occurring outside this timeframe might have impacted the observed associations. The studies' focus on Indonesia may have limited the generalizability of findings to other cultural or healthcare contexts.

Future research should employ longitudinal studies to comprehensively track changes in physical abilities over an extended period, providing a deeper understanding of trends and potential causal relationships. Supplementing quantitative findings with qualitative research also can offer richer insights into the lived experiences of individuals with disabilities, providing a more nuanced understanding of the multifaceted aspects of physical abilities. A detailed analysis of the healthcare system, considering factors like quality, accessibility, and rehabilitation service availability, is needed to uncover additional determinants contributing to the physical abilities of individuals with disabilities.

A more in-depth investigation into the influence of particular healthcare and social policies on the physical capabilities of individuals with disabilities, assessing the efficacy of interventions aimed at enhancing healthcare accessibility and support services would be valuable. Lastly, investigating broader issues related to the inclusivity of individuals with disabilities in global health initiatives is vital to ensure that policies address their diverse needs, promoting equitable access to healthcare and support services on a global scale.

Ⅵ. CONCLUSION

The implementation of Indonesia's National Health Insurance Program (JKN)

following the health system reform was associated with enhanced physical abilities and general conditions among individuals with disabilities (PwDs). The findings of this study highlight the importance of accessible and inclusive healthcare services for PwDs and the positive impact of health insurance policy changes in addressing their specific needs.

Insurance status played a crucial role in determining the physical abilities of PwDs, emphasizing the importance of equitable access to healthcare coverage. Policymakers and stakeholders should continue to prioritize policies and initiatives that promote the well-being and quality of life of PwDs in Indonesia.

These study findings contribute to the understanding of the impact of health system reforms on vulnerable populations and underscore the need for evidence-based policies that promote inclusivity and equity in healthcare.

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