

Physical inactivity and chronic diseases among disabled adults in Indonesia

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Abstract

Physical activity is a recognized determinant in preventing non-communicable diseases. However, people with disabilities have more barriers to do physical activity. This study was conducted to assess the physical activity level of disabled adults in Indonesia and its association with chronic diseases. This cross-sectional study used secondary data from the Indonesian Family Life Survey (IFLS) wave 5. As many as 2927 adults with disabilities involved in this study. The International Physical Activity Questionnaires (IPAQ) was used to measure physical activity. Chronic diseases were assessed based on the diagnosed disease records. Univariate, bivariate, and multiple logistic regression were performed to analyse the data. The proportion of low physical activity among adults with disabilities reached 36.2%. The number of persons with disabilities who suffer from chronic diseases was 10.8%. Disabled adults with low physical activity had higher odds of getting chronic diseases than those with moderate-high physical activity (p-value = 0.04; aOR 1.43; 95% CI 1.12-1.84) after being controlled by other covariates. Engaging disabled persons according to the appropriate types of physical activity may reduce the risk of chronic diseases.

Introduction

Globally, the trend of chronic diseases continues to increase, not only in terms of morbidity but also in mortality. Every year, more than 40 million people died from chronic diseases.¹ Cardiovascular diseases, cancer, and diabetes are the leading cause of premature death from chronic diseases.¹ As a middle-income country, Indonesia is also

facing these health problems. Indonesia Basic Health Research 2018 reported that the number of cases from chronic diseases increased compared to the previous survey.^{2,3} The prevalence of heart diseases reached 1.5%, diabetes was 2%, stroke was 1.09%, and cancer increased to 0.18%.² In Indonesia, chronic diseases contributed to 73% of all deaths.⁴

People living with disability are one of the vulnerable population to experience a greater risk of suffering from chronic diseases. In Indonesia, it is estimated to range between 2.5% to 5%.⁵ They usually experience significant difficulties and limitations in functioning and often require health care services. However, they are often faced with various barriers, stigmatization, and discrimination that result in their health deteriorating. The odds of having chronic diseases, such as diabetes, cardiovascular diseases, and cancer among adults living with disabilities are 2-3 times more likely compared to those living without disabilities.^{6,7}

It has been recognized that one of the modifiable risk factors to prevent chronic disease is physical activity.⁸⁻¹⁰ Based on the PURE study, a prospective cohort study that was conducted in 17 countries representing countries by economic level, being physically active was associated with lower risk for getting chronic diseases and also dying from chronic diseases.¹¹ Moderate and high physical activity reduced the risk by nearly 20%.¹¹ For people with disabilities, doing physical activity according to the recommendations is certainly a challenge. One in two people with disabilities do not do adequate physical activity.⁷ This needs to be pointed out considering that physical activity is an important health behavior to help prevent this chronic diseases.

Generally, previous studies examine the association between physical activity and chronic diseases in the general population, but only a few studies have examined those associations with people with disabilities, especially in middle-income countries. Therefore, this study aimed to describe the physical activity level of disabled adults in Indonesia and examine its association with chronic diseases. By using national survey data from the Indonesian Family Life Survey (IFLS) wave 5, it is hoped that this study can contribute to designing physical activity guidelines for disabled adults as a form of prevention against chronic diseases.

Materials and Methods

This study was conducted by analyzing the secondary data from the fifth Indonesian

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Family Life Survey wave (IFLS 5). IFLS was a longitudinal survey started in 1993 to collect data representing the Indonesian population in terms of health and socioeconomics.¹² Data of IFLS 5 were collected from October 2014 to April 2015.¹² The population of this study was all adults with disabilities who took part in IFLS 5 (n=2927).

The outcome variable of this study was chronic diseases. Data were collected by self-report. Respondents were asked to report whether they ever been diagnosed

with diabetes, heart attack or heart problems, stroke, or cancer by a doctor.¹² They were classified as having chronic diseases if they suffered from one or more of them. Data were extracted from Book 3B, module CD.¹² Physical activity was the primary exposure that this study examined. It was assessed by the International Physical Activity Questionnaires (IPAQ). Respondents reported how much time they spent in the last 7 days doing some physical activities.^{12–14} Physical activity was grouped into low and medium to high levels. Physical activity was classified as moderate-high if their activities were equivalent to at least half an hour of moderate intensity at most of the day.¹³ Data were extracted from Book 3B, module KK2.¹⁵

Potential confounding variables that were included were demographic (sex, marital status, and age), body mass index, and subjective welfare (life satisfaction and happiness).¹⁶ Sex was classified into male or female. Respondents were asked about their current marital status and then classified into single, married, or widowed. Age was calculated based on the last birthday.¹⁴ It was grouped ≤ 65 years old or > 65 years old. Those variables were self-reported. Demographic data were extracted from Book 3B, section COV.¹⁵ Body mass index was calculated based on the height and weight measurement results. It was classified according to the WHO classification and then categorized into two groups, namely < 25.0 kg/m² or ≥ 25.0 kg/m².¹⁷ Life satisfaction was measured by self-rated item. Respondents described how satisfied they are with their whole life.¹² Respondents assessed their happiness by rating how they feel these days.¹²

Statistical analyses that were presented in this study included descriptive, bivariate, and multivariate analyses. All variables were described using descriptive statistics to determine the frequency and percentage. Crude associations between physical activity and potential confounders with chronic diseases were tested by the Chi-Square test. The association between physical activity and chronic diseases that was adjusted by demographic variables, body mass index, life satisfaction, and happiness was analysed by multiple logistic regression test. P-value < 0.05 was used as the significant level with a 95% Confidence Interval. IBM SPSS Statistics version 23 was used to perform analysis data. The IFLS survey has been approved by RAND's International Review Boards (United States) and Universitas Gajah Mada (Indonesia). The ethics approval number was s0064-06-01-CR01.¹²

Results

The total of study participants was 2927 disabled adults. Most of them were female (58.5%). The majority were married (70.5%) and ≤ 65 years of age (92.4%). As many as 7.6% of the participants were elderly (> 65 years old). More than one-third of participants (37.8%) had BMI over 25 kg/m² which categorized as overweight and obese. Characteristics of participants based on subjective well-being were described as life satisfaction and happiness. Over 85% of the participants reported that they were satisfied with their whole life (86.3%). Participants who reported their general feelings of being happy were more than 90% (91.1%) (Table 1).

Table 2 showed the distribution frequency of study participants according to their physical activity level and chronic diseases status. The proportion of disabled adults who had low physical activity was 36.2%. About 1 of 10 adults with disabilities had chronic diseases, such as diabetes, cardiovascular diseases, stroke, or cancer (10.8%).

In bivariate analysis, we found that among adult living with disabilities, having lower physical activity increased the crude risk of suffering chronic diseases by 1.31-fold than those who had moderate-high physical activity. Control variables that had a significant association with developed chronic diseases among disabled adults were marital status, age, and body mass index (p-value < 0.05) (Table 3).

From multiple logistic regression results, we found that the risk of developing chronic diseases among disabled adults who had low physical activity was 1.32-fold than those with moderate-high physical activity (adjusted OR 1.32; 95% CI 1.04-1.69; p-value < 0.0005) after adjusting for those variables (Table 4).

Discussion

This study reported that approximately one out of three people living with disabilities in Indonesia had low physical activity. How much time they spent doing physical activity on most days did not meet the recommendation. This finding is in line with a series of paper that overviews the global perspective on the participation of people with disabilities in physical activity.¹⁸ This report showed that people with disabilities were less likely to meet the criteria for recommended physical activity.^{18,19} The proportion of disabled adults that meet the criteria of physical activity recommendation range from 16% to 62%.^{18–20} A systematic

review that was conducted in China also found a similar result. The proportion of disabled adults who have met the national recommendation for physical activity was only 12.7%.²⁰ The types of physical activity that were most common performed by disabled adults were walking, jogging, and playing ball games, such as basketball, table tennis, and badminton.²⁰

Based on WHO guidelines, adults living with disabilities were recommended to do aerobic physical activity every week with moderate intensity for a minimum 150 minutes.²¹ Regular physical activity should be undertaken. They can start doing physical activity little by little and then increase the intensity, frequency, and also duration gradually following the recommendations.²² To optimize the health benefit, sedentary lifestyles should be reduced. Adults living with disabilities were also better to do some activities that can strengthen their muscles so the skeletal muscle strength, endurance, and mass increase.^{21,22}

In this study, we also found a significant association between physical activity level

Table 1. Distribution of respondent characteristics.

Variables	n	%
Sex		
Male	1216	41.5
Female	1711	58.5
Marital status		
Single	549	18.8
Married	2063	70.5
Widowed	315	10.8
Age		
≤ 65 years	2706	92.4
> 65 years	221	7.6
Body mass index		
< 25 kg/m ²	1821	62.2
≥ 25 kg/m ²	1106	37.8
Life satisfaction		
Satisfied	2527	86.3
Unsatisfied	400	13.7
Happiness		
Happy	2666	91.1
Unhappy	261	8.9

Table 2. Distribution of study participants according to physical activity level and chronic diseases status.

Variables	n	%
Physical activity		
Moderate-high	1868	63.8
Low	1059	36.2
Chronic diseases		
No	2612	89.2
Yes	315	10.8

Table 3. Crude odds ratio of chronic diseases in disabled adults according to physical activity and covariates.

Variables	Chronic diseases		Odds ratio (95% CI)		p-value
	Yes	No			
	n	%	n	%	
Physical activity					
Low	132	12.5	927	87.5	1.31 (1.03-1.67)
Moderate-high	183	9.8	1685	90.2	
Sex					
Female	198	11.6	1513	88.4	1.23 (0.97 – 1.57)
Male	117	9.6	1099	90.4	
Marital status					
Single	14	2.6	535	97.4	Ref
Married	245	11.9	1818	88.1	5.15 (2.98 – 8.90)
Widowed	56	17.8	259	82.2	8.26 (4.52 – 15.12)
Age					
> 65 years old	53	24.0	168	76.0	2.94 (2.11 – 4.11)
≤ 65 years old	262	9.7	2444	90.3	
Body Mass Index					
≥ 25 kg/m ²	141	12.7	965	87.3	1.38 (1.09 – 1.75)
< 25 kg/m ²	174	9.6	1647	90.4	
Life satisfaction					
Unsatisfied	48	12.0	352	88.0	1.15 (0.83 – 1.60)
Satisfied	267	10.6	2260	89.4	
Happiness					
Unhappy	32	12.3	229	87.7	1.18 (0.79 – 1.74)
Happy	283	10.6	2383	89.4	

and chronic diseases. Compared to disabled adults who have moderate to high physical activity, disabled adults with low physical activity levels had a higher risk of suffering chronic diseases. It is consistent with other studies that reported an increased risk of developing chronic diseases among inactive adults with disabilities.⁷ Nearly half of inactive disabled adults were more likely to report one chronic disease or more, such as heart attack, heart problems, diabetes, stroke, and cancer than disabled adults who have medium-high levels of physical activity.^{7,22} National Health Survey in the US reported a similar result.⁷ The proportion of disabled adults who reported suffering from chronic diseases was 40.5%.⁷ This proportion was higher among disabled adults with physical inactivity (46.3%), whereas in disabled adults with adequate physical activity, about 31.1% of them reported having chronic diseases.⁷ Physical activity has been known to have an important role in improving health and well-being, both in populations with or without disabilities.^{10,23,24} Physical activity contributes to reducing the risk of getting any diseases, especially non-communicable diseases. Being physically active would help increase stamina, endurance, flexibility, balance, control weight, and improve quality of life.¹⁰ Regular physical activity has a greater impact on the body, such as increasing blood circulation to meet the oxygen demand in tissues or organs. It also helps

Table 4. Adjusted odds ratio of chronic diseases in disabled adults according to physical activity and covariates.

Variables	Adjusted OR (95% CI)	p-value
Physical activity		
Moderate-high	Ref	0.000*
Low	1.32 (1.04 – 1.69)	
Marital status		
Single	Ref	0.000*
Married	4.74 (2.73 – 8.24)	
Widowed	6.00 (3.21 – 11.25)	
Age		
≤65 years old	Ref	0.000*
>65 years old	2.27 (1.58 – 3.26)	
Body Mass Index		
<25 kg/m ²	Ref	0.049*
≥25 kg/m ²	1.28 (1.00 – 1.63)	

change the composition of lipoproteins and blood lipids which are known as the risk factor for cardiovascular diseases.⁹

The results of this study may have implications for raising awareness of the importance of physical activity among adults living with disabilities. Adequate physical activity should be promoted to persons with disabilities. The provision of guidelines and physical activity programs for persons with disabilities based on their abilities is necessary. Engaging persons with disabilities according to the appropriate type of physical activity can increase their daily physical activity. Thus, the risk of suffering from chronic diseases can be prevented.

Conclusions

This study found an association between physical activity and chronic diseases among disabled persons. Disabled persons with low physical activity levels had a higher risk to have chronic diseases than those who had moderate-high physical activity levels. Adequate physical activity should be promoted to disabled persons. Providing physical activity guidelines and programmes for disabled persons based on their abilities is necessary.

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