

Physical Activity Levels of Adults During Covid-19 Quarantine in Indonesia: A Cross-Sectional Descriptive Study

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ABSTRACT

People all over the world are required to practice social distancing and undergoing self-quarantine and home-isolation during the Covid-19 pandemic. Despite social distancing can slow down the widespread of COVID-19, it means people will spend much of their time at home and will be physically inactive. Therefore, the study aims to identify the levels of physical activity of Indonesian people during the Covid-19 pandemic. Using a cross-sectional design, 90 participants completed online questionnaires. Assessment of physical activity was made using the International Physical Activity Questionnaire Short Form (IPAQ-SF). Data were collected from June to July 2020 during the implementation of Large-Scale Social Restrictions amid COVID-19 in Indonesia. It was found that nearly half of the participants engage in a low level of physical activity. Furthermore, a gender-based disparity in physical activity is demonstrated in the current study. Females were more likely to engage in low-intensity physical activity, while males involved in high-intensity physical activity. The current study also suggests that the majority of participants spent 4 to 6 hours of working and sitting every day during stay-at-home order. As a result, those people may have fewer opportunities for participating in physical activity. In conclusion, the implementation of Large-Scale Social Restrictions Regulation may increase the risk of physical inactivity and sedentary behaviors.

Keywords: *Physical activity, sedentary, Covid-19 pandemic, Large-Scale Social Restrictions*

1. INTRODUCTION

Physical activity is an integral component of successful health promotion and disease prevention for individuals and communities [1]. Based on the Physical Activity Guidelines Advisory Committee, the regular physical activity is associated with a reduced risk of many conditions that impact physical and mental well-being, such as stroke, type 2 diabetes, hypertension, coronary heart disease, metabolic syndrome, colon and breast cancer, as well as depression. Moreover, physical activity is beneficial to improve muscular and cardiovascular fitness and has a positive effect on sleep patterns and bone strength [2].

World Health Organization (WHO) describes physical activity as any bodily movement produced by skeletal muscles that requires energy expenditure, including activities undertaken while playing, working, doing household chores, traveling, and house chores and recreational activities [3]. Forms of physical activity that are often carried out by people on their daily basis, including all forms of active recreation, sports (cycling, running, walking), and not necessarily sports (gardening, cleaning houses, dancing) are also included in physical activity. "Physical activity" and "exercise" are *terms* that describe *different* concepts. Exercise is a subcategory of physical

activity that is planned, structured, repetitive, intentional movement and aims to improve or maintain physical fitness [3].

Although the beneficial effects of physical activity have been clearly reported in many literatures, most people in the world still living a sedentary lifestyle as an impact of modernization and urbanization. A sedentary lifestyle is described as no physical activity or little energy expenditure, such as sitting, reclining, or lying down [4,5]. The measurement for energy expenditure is metabolic equivalents (METs) and sedentary behavior characterized by an energy expenditure ≤ 1.5 metabolic equivalents (METs) [6,7].

Sedentary lifestyles or physical inactivity has a major health effect worldwide. Physical inactivity is the fourth leading risk factor for death in the world, followed by high blood pressure (13%), tobacco use (9%), and high blood glucose (6%) [8,9]. According to the WHO, physical inactivity kills some 5.3 million people every year. Furthermore, by the increasing of aging population, these lifestyles will become increasingly common, especially in low- and middle-income countries [10].

In Indonesian, the number of people who less active has increased in the last 5 years. The results of Indonesian Basic

Health Research (RISKESDAS) in 2018 showed that Indonesians who lack physical activity increased from 26.1% in 2013 to 33.5% in 2018 [11]. It was found that DKI Jakarta is the province with the higher case. There were 44.2% people who were reported being less active [12]. In addition, a study conducted by Abadini and Wuryaningsih in 2019 found that 59% of office workers in Jakarta had lack physical activity. The workers spent 471 minutes per day or eight hours per day of sedentary activities [13].

Since the World Health Organization (WHO) declared novel coronavirus (2019-nCoV) as a pandemic, many countries have implemented massive social restriction in order to limit the spread and reduce morbidity and mortality. While social distancing and staying at home can limit the spread of the virus, they are also potential to reduce daily physical activity which may cause other health problems. Moreover, lack of physical activity can suppress the immune system and make a person more vulnerable to infection [14].

Indonesia is one of the countries that must face and overcome health problems caused by Covid-19 which spreads rapidly from person to person and is easily infected if there is physical contact with sufferers. In responses to the Covid-19 outbreaks, the Regulations on Large-Scale Social Restrictions was applied in Indonesia [15]. The government policy stipulates that people are asked to work from home, study from home, worship at home and limit activities outside the home [16]. People are required to practice social distancing and undergoing self-quarantine as actions to control and prevent the widespread of the Covid-19. However, home isolation due to coronavirus will change people's daily activities which are likely to trigger a profound decrease in moderate-to-vigorous physical activity levels and increase in sedentary behavior [17]. Therefore, this research aims to identify the levels of physical activity of people in Indonesia during the Covid-19 pandemic.

2. METHODS

A cross-sectional design was employed to assess physical activity participation during the novel 2019 coronavirus outbreak. Participants living in Indonesia were recruited randomly through social media to respond to online questionnaires. The survey contained questions about age, gender, marital status, and education. In addition, The International Physical Activity Questionnaire Short-Form (IPAQ-SF) was used to measure health-related physical activity (PA) in participants. Data collected with IPAQ was reported as continuous and categorical scores. The continuous score is expressed as MET-min per week (MET level x minutes of activity/day x days per week). Moreover, the categorical score is classified as 'low', 'moderate', and 'high'. The participants then self-report physical activity from the previous seven days. Data were collected from June to July 2020 during the government regulation implementation of Limitation of Large-Scale Social Interaction to Expedite Countermeasures against Covid-19

in Indonesia. All participants signed an online informed consent form. Participant in this study was voluntary and responses remained confidential. All statistical analyses were performed using software package IBM SPSS Statistics version 22.0 for Windows.

3. RESULTS

A total of 90 participants (33 males and 57 females) were included in this study (mean age \pm SD = 30.27 \pm 7.54 years). All participants stayed and worked at home as an impact of the COVID-19 pandemic. The participants reported that their average time of stayed at home during the implementation of health quarantine regulation was 2.57 months (2 months and 57 days), with a standard deviation of 0.87.

A descriptive analysis was conducted to examine the mean, median, and standard deviation of physical activity. The continuous score of physical activity using the IPAQ form presented as MET (metabolic equivalents of task)-minutes/week. The mean (SD) score of MET-minutes/week was 1530.39 (2065.47), while the median score was 720.

Table 1 displays the demographic characteristics and type of physical activity of the participants. The age of the participants ranged from 18 to more than 55 years old. Chi-Squared analysis showed that there were no significant differences between the levels of physical activity across all of the demographic variables except gender ($p < 0.05$). It was found that males were much more likely to do vigorous-intensity physical activities rather than females. Females tended to perform low-intensity activities.

The levels of physical activity, in general, are demonstrated in Figure 1. Results showed that there were 41 (45.6%) participants included in the low level of physical activity participation category, 20 (22.2%) participants in the moderate category, and 29 (32.2%) participants in the high category.

Table 2 shows the working and sitting hours of participants per day by physical activity levels. The results showed that most participants (42.2%) spent 4 – 6 hours to work, excluding total break time. Furthermore, those participants are more likely to engage in low-intensity activities. Different from that group, the participants who worked 1 – 3 hours a day tend to perform moderate (30.3%) to high (39.4%) levels of physical activity.

The sitting hour of participants was measured based on the IPAQ question. It is an additional indicator variable of time spent in sedentary activity. The question is not included as part of any summary score of physical activity. The results showed that the participants spent 4 to more than 6 hours sitting every day. No significant association was found between sitting hours per day and physical activity levels ($p > 0.05$).

Table 1. Demographic Characteristics and Type of Physical Activity Participation

Characteristic	Physical Activity						Total	p-value
	Low (n = 41)		Moderate (n = 20)		High (n = 29)			
	n	%	n	%	n	%		
Age Range								
18-35	34	44.7	18	23.7	24	31.6	76 (84.4%)	0.613
36-55	7	53.8	2	15.4	4	30.8	13 (14.4%)	
> 55	0	0	0	0	1	100	1 (1.1%)	
Gender								
Male	7	21.2	9	27.3	17	51.5	33 (36.7%)	0.001*
Female	34	59.6	11	19.3	29	21.1	57 (63.3%)	
Marital Status								
Single	24	49.0	9	18.4	16	32.7	49 (54.4%)	0.606
Married	17	41.5	11	26.8	13	31.7	41 (45.6%)	
Education								
Senior High School	5	71.4	0	0	2	28.6	7 (7.8%)	0.278
Diploma	0	0	0	0	1	100	1 (1.1%)	
Bachelor	21	48.8	7	16.3	15	34.9	43 (47.8%)	
Master	14	37.8	13	35.1	10	27.0	37 (41.1%)	
Doctor/PhD	1	50.0	0	0	1	50.0	2 (2.2%)	

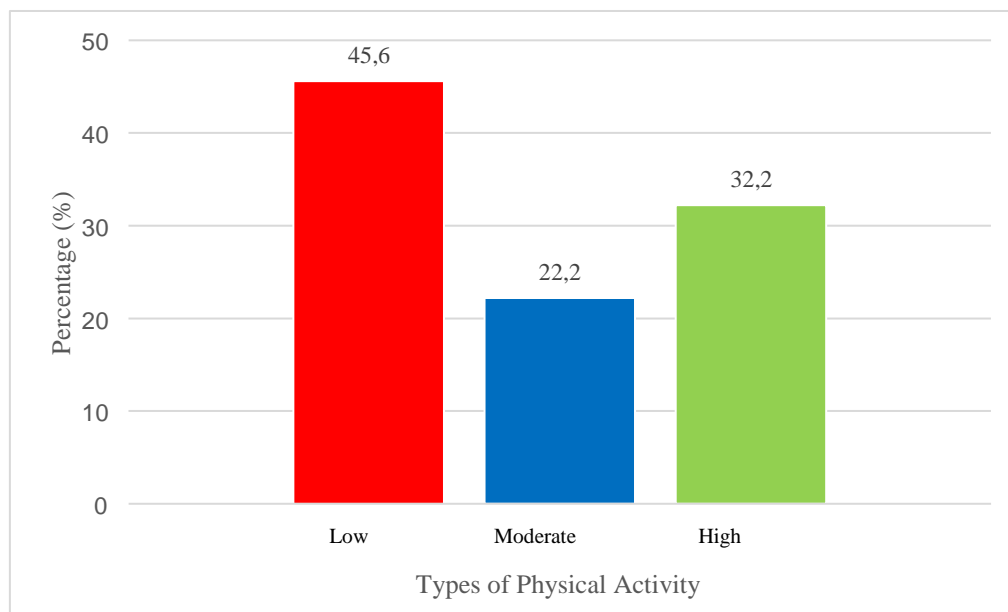


Figure 1. Physical Activity Participation Measured by IPAQ

Table 2. Working and Sitting Hours Per-Day and Type of Physical Activity Participation

Characteristic	Physical Activity						Total	p-value
	Low (n = 41)		Moderate (n = 20)		High (n = 29)			
	n	%	n	%	n	%		
Working hours/day								
1 – 3	10	30.3	10	30.3	13	39.4	33 (36.7%)	0.081
4 – 6	22	57.9	4	10.5	12	31.6	38 (42.2%)	
> 6	9	47.4	6	31.6	4	21.1	19 (21.1%)	
Sitting hours/day								
1 – 3	3	21.4	5	35.7	6	42.9	14 (15.6%)	0.060
4 – 6	8	32.0	7	28.0	10	40.0	25 (27.8%)	
> 6	11	47.8	6	26.1	6	26.1	23 (25.6%)	
not sure	19	67.9	2	7.1	7	25.0	28 (31.1%)	

4. DISCUSSIONS

The current study aimed to describe the levels of physical activity of Indonesian people during the Covid-19 pandemic. Participants were categorized by age into young adults (ages 18-35 years), middle-aged adults (36-55), and older adults (aged older than 55 years). A higher proportion of participants were young adults (84.4%). There were considerably more females participating in this study than males. The results showed that nearly half of the participants engage in a low level of physical activity. Nevertheless, it was also found that some participants were involved in a moderate level (22.2%) and high level (32.2%) of physical activities.

Based on the International Physical Activity Questionnaire (IPAQ) short form result, it was revealed that the participants' average score of MET–minutes/week was 1530.39. The participants in this study spent 92 minutes/week of moderate-intensity physical activity and 101 minutes/week of vigorous-intensity physical activity. The World Health Organization (WHO) recommends that people should engage in at least 600 MET minutes or equivalent 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity physical activity per week, or a combination of both [18,19]. However, a previous study indicated that most health gains occurred when conduct 3000 to 4000 MET minutes/week [20]. The result suggested that total physical activity needs to be higher than the recommended minimum level of 600 MET minutes/week for reducing the risk of breast cancer, colon cancer, ischemic heart disease, ischemic stroke, and diabetes [20].

Even though the participants were involved in moderate and high-intensity physical activities, the majority of participants were still included in the low level of physical activity category. This might be related to the implementation of the Large-Scale Social Restrictions Regulation in Indonesia as the impact of the COVID-19 pandemic. The COVID-19 global pandemic has restricted physical activity in people of all ages since fewer opportunities to be physically active, especially activities such as walking or cycling as transportation, or taking part in a leisurely activity [21]. On one side, social and physical distancing practical helped to limit the transmission of the virus, but on the other hand, it can directly influence overall physical activity in populations. A study by Damir Sekulic et al, 2020 conducted in Croatia found that adolescents reduced their physical activity levels as a result of social distancing imposed due to the COVID-19 pandemic [22]. However, a study examining the levels of physical activity during COVID-19 social distancing in a sample of the UK adults suggested that 75% of the respondents met the physical activity guidelines [23]. This finding differs from the current study. One of the possible reasons might be the differences in physical literacy between Indonesian and UK societies. Physical literacy is defined as 'the motivation, confidence, physical competence, knowledge, and understanding to value and take responsibility for engaging in physical activities for life' [24].

The current study did not identify significant differences in all of the demographic variables, except gender. Men were more likely than women to participate in vigorous physical activity levels. In contrast, women tend to engage in low physical activity levels. Many studies have reported a gender-based disparity in physical activity, whereby

females were significantly less likely to start or sustain physical activity than males [25]. Females are consistently categorized as 6 to 10% less physically active compared to males and are not meeting the recommended guidelines for physical activity [26]. Previous research points to several possible explanations of factors underlying gender differences in physical activity, such as the socio-ecological factors at the individual, family, school and environmental levels [27]. According to WHO, women are less physically active due to their lack of time participating in physical activity. Women often have a workload in the home and care-giving roles for other family members [28].

In regards to work hours, most participants spent 4 to 6 hours of working from home (WFH) each day, excluding total break time during the Covid-19 pandemic. The result suggested that participants in that group are more likely to engage in the low-level physical activity, while participants who worked 1 to 3 hours a day tend to engage in moderate to high levels of physical activity [29]. It is believed that employees who work overtime hours are at greater risk of physical inactivity [30]. Longer work hours may reduce opportunities for physical activity, particularly for persons in sedentary jobs.

Furthermore, the current findings indicated that the participants spent 4 to more than 6 hours sitting every day. There is increasing evidence that prolonged sitting brings many adverse health outcomes, such as hypertension, hyperlipidemia, and musculoskeletal disorder symptoms [31]. Sitting is the most common sedentary behavior of adults and is associated with higher all-cause mortality (ACM) and cardiovascular disease (CVD) mortality risk among the physically inactive adults [32].

The findings of this study have to be seen in light of some limitations. The first is the response rates of this online survey were might insufficient because of the time constraints of collecting data during the duration of implementation of Large-Scale Social Restrictions Regulation in Indonesia. Secondly, as we used the IPAQ self-reported questionnaire to measure physical activity of participants, the answers may be prone to exaggeration or understatement. Since this study relied on participant self-reported, the study is also prone to recall bias – the participants probably do not really remember the activities they did and how frequent it was. However, IPAQ-SF is a commonly used questionnaire and proved to be valid for assessing the physical activity level [33, 34]. Future studies with a larger sample size and a longer period of time are therefore needed in order to further investigate the physical activity of Indonesian people during the COVID-19 pandemic.

5. CONCLUSION

The results of the current study indicate that most Indonesians engage in low-intensity physical activity during the Large-Scale Social Restrictions amid COVID-19. Moreover, females are generally more physically inactive than males. Thus, they should be encouraged to

increase their participation in physical activity. With regard to work and sitting hours, the current study demonstrates that people tend to live a sedentary lifestyle during self-quarantine and stay-at-home-order.

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