




## Perceived barriers to physical activity among Malaysian adults during COVID-19 pandemic: a cross-sectional study

### Barreiras à atividade física percebidas entre adultos da Malásia durante a pandemia de COVID-19: um estudo transversal

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**ABSTRACT | INTRODUCTION:** The COVID-19 pandemic has had a relatively significant impact on the world. Malaysia implemented a countrywide social isolation strategy to flatten the epidemic curve. As limits on movement and social interaction have come into force, more individuals appear less physically active. **OBJECTIVE:** To determine the perceived barriers to physical activity among Malaysian young adults during the COVID-19 Pandemic. **METHODS AND MATERIALS:** A total of 217 participants included with age group from 18-40 years old voluntarily participated in this study. Participants were excluded if they were non-Malaysian and had any psychological problems and physical impairment that hindered physical activity. The barrier to Being Active quiz (BBAQ) questionnaire was circulated through various social media platforms from January 2021 to May 2021. Categorical data were presented using simple and absolute frequency on the distribution of sociodemographic profiles and BBAQ responses. Pearson Chi-square with 95% confidence level,  $p < 0.05$ , was used as the significant level to analyze the association between gender and barriers. **RESULTS:** The barrier reported by the participants was "lack of willpower" 136 (62.7%), followed by "lack of energy" 117 (53.9%), "lack of resource" 113 (52.1%), "Lack of time," 109 (50.2%), "social influence" 100 (46.1%), "lack of skill" 48 (22.1%) and "fear of injury" 40 (18.4%). There was no significant relationship between gender and Barrier to Physical Activity among Malaysian young adults. **CONCLUSION:** The "lack of energy," "lack of willpower," and "lack of resource" were the most perceived barriers to physical activity among Malaysian young adults during COVID-19 lockdown, and there was no significant association between physical activity barriers and gender.

**KEYWORDS:** Barriers. COVID-19. Exercise. Malaysian adults.

**RESUMO | INTRODUÇÃO:** A pandemia COVID-19 trouxe um impacto relativamente significativo no mundo. A Malásia implementou uma estratégia de isolamento social em todo o país para nivelar a curva da epidemia. À medida que os limites ao movimento e à interação social entraram em vigor, mais indivíduos parecem menos ativos fisicamente. **OBJETIVO:** determinar as barreiras percebidas para a atividade física entre jovens adultos da Malásia durante a pandemia de COVID-19. **MÉTODOS E MATERIAIS:** Total de 217 participantes incluídos na faixa etária de 18 a 40 anos participaram voluntariamente deste estudo. Os participantes foram excluídos se não fossem malaios e apresentassem quaisquer problemas psicológicos e deficiência física que impedissem a atividade física. O questionário Barrier to Being Active (BBAQ) foi distribuído por várias plataformas de mídia social de janeiro de 2021 a maio de 2021. Os dados categóricos foram apresentados usando frequência simples e absoluta na distribuição de perfis sociodemográficos e respostas do BBAQ. Qui-quadrado de Pearson com nível de confiança de 95%,  $p < 0,05$  foi utilizado como nível de significância para analisar a associação entre gênero e barreiras. **RESULTADOS:** A barreira relatada pelos participantes foi "falta de força de vontade" 136 (62,7%), seguida de "falta de energia" 117 (53,9%), "falta de recursos" 113 (52,1%), "falta de tempo", 109 (50,2%), "influência social" 100 (46,1%), "falta de habilidade" 48 (22,1%) e "medo de se machucar" 40 (18,4%). Não houve relação significativa entre gênero e barreira à atividade física entre jovens adultos da Malásia. **CONCLUSÃO:** A "falta de energia", "falta de força de vontade" e "falta de recursos" foram as barreiras mais percebidas para a atividade física entre jovens adultos da Malásia durante o confinamento por causa da COVID-19. Não houve associação significativa entre as barreiras de atividade física e o gênero.

**PALAVRAS-CHAVE:** Barreiras. COVID-19. Exercício. Adultos da Malásia.

## Introduction

The outburst of the COVID-19 pandemic has brought a relatively significant impact globally, and approximately half of the world's population had been locked up, with more than 90 countries around the globe being asked or instructed to stay at home by their governments.<sup>1</sup> There were 1,786,004 confirmed cases of COVID-19 in Malaysia until 3 September 2021. As a result, a countrywide social isolation strategy - Movement Control Order (MCO) was implemented in Malaysia to flatten the pandemic curve.<sup>1</sup>

As limits on movement and social interaction have come into force, travel inside major cities has halted. Emerging modifications in job practices like working from home and online business have changed people's physical behavior. While students were no longer eligible to access physical activities in school, such as face-to-face classes, practical classes, recess, and walking to and from school.<sup>2</sup> Online education and business have undoubtedly raised the amount of time people spend on digital devices daily. Not commuting between places has made people stationary in front of their screens for hours and hours.<sup>2</sup> While these social distancing measures were necessary to slow the spread of COVID-19, the opportunities for young adults to participate in physical activity (PA) to maintain health and prevent disease are limited. Stay-at-home orders also affected other forms of physical activity engagement reduction, such as sports participation.

Despite enforcing these restrictions, governments continued to encourage their people to keep active, promoting (indoor) physical exercise. World Health Organization (WHO) defines physical activity (PA) as "any bodily movement produced by skeletal muscles that require energy expenditure." Adults who are between 18 years old to 40 years old should either carry out at least 150 to 300 minutes of moderate-intensity physical exercise or 75 to 150 minutes of vigorous-intensity exercise per week, with muscle

strengthening exercises that activate all major muscle groups for two or more days per week. When individuals do not fulfill these physical activity requirements, they are considered inadequately active or inactive.<sup>3</sup>

Promoting sufficient levels of physical activity in young adults is a critical public health concern. Researchers point out Malaysia as one of the least physically active countries globally, with more than 60% of sedentary adults.<sup>4</sup> A study<sup>5</sup> showed that sedentary was associated with an increased risk of disability and significant conditions such as cardiovascular disease and impaired metabolic health. According to a study<sup>6</sup>, the residential isolation of COVID-19 has been shown to increase the number of people who are physically inactive by 15.2%, consume an unhealthy diet by 10%, and have psychological and emotional problems by 10% to 16%, respectively, as well as poor sleep quality by 12.8%. The abrupt suspension of all services and activities caused a minor change in people's lifestyle, except for a few essential services. The study also shows that COVID-19 residential isolation resulted in a reduction in physical activity levels, increased daily time by 28%, and unhealthy food consumption patterns.<sup>6</sup>

Inadequate physical exercise causes the body to maladapt rapidly, resulting in significant reductions in total and quality years of life, and overall, research shows that inactivity is a substantial contributor to most chronic diseases. Furthermore, physical activity primarily prevents or delays chronic conditions, meaning that chronic disease is not an unavoidable consequence of living.<sup>7</sup> Staying at home and self-isolating during this period has dramatically affected the physical behaviors of people due to limited space and equipment for exercise. Therefore, overcoming the barriers to staying physically active at home is essential to reducing a sedentary lifestyle's negative impact. Despite these evident and dramatic changes, there is currently little statistical research into how people have changed their behavior to physical

activity due to the specific lockdown situation in Malaysia. Furthermore, the rules and regulations implemented during lockdown might become barriers that affect people for obtaining sufficient physical exercise. Compared to other countries, currently, there are no studies or analyses about perceived barriers to physical activity among Malaysian during the lockdown.

As study<sup>4</sup> has shown, Malaysia seems to depreciate the importance of physical activity. Therefore, the objective of the research is to determine the perceived barriers to physical activity among Malaysian young adults from a COVID-19 pandemic perspective. Further analysis was performed to identify any association between barriers to Physical activity and gender.

## Materials and Methods

### Study design, Settings and Participants

A total of 217 Malaysian participants with an age group ranging from 18-40 years old voluntarily participated in this study. Participants were excluded if they were non-Malaysian and had any psychological problems and Physical impairment that hindered physical activity. Before participating in this survey, all respondents read and signed an informed consent approved by the Institutional Ethical Committee (INTI-IU/FHLS-RC/BPHTI/7NY12020/017) to conduct the research. A sociodemographic questionnaire that included: gender, ethnicity, education level, occupation type, and mode of work or study was collected through the online questionnaire. The Barrier to being active quiz (BBAQ)<sup>8</sup>, a validated questionnaire converted into a google form, was distributed using social media platforms from January 2021 to May 2021 to the respondents, and this study was reported based on STROBE guidelines.

### Outcomes

The Barrier to being active quiz (BBAQ) is a 21-item self-evaluation scale that assesses the seven barriers: lack of time, resources, skills, lack of willpower, social influence, lack of energy, and fear of injury. Each domain contains three items, with a total score range of 0 to 63. Individuals utilize a four-point scale to determine whether they would agree or disagree that any of the statements are valid for them, with 0 being "very unlikely," 1 being "somewhat unlikely," 2 being "somewhat likely," and 4 being "very likely." According to the instructions, the scores of three items from each Barrier were added up. A score of higher than 5 in any barrier suggests that this particular Barrier may be a significant barrier to overcome for the individual. However, item 21, "If we had exercise facilities and showers at work, then I would be more likely to exercise," under the Barrier of lack of resource, was removed from the questionnaire in this study because the item was unfit for lockdown situations as people are suggested to be working from home.

### Study Size

The total sample size 384 was derived by setting a 95% confidence level, 5% margin of error, and 50% expected frequency using Epi-info software version 7.2.2.6. Final sample 217 participants.

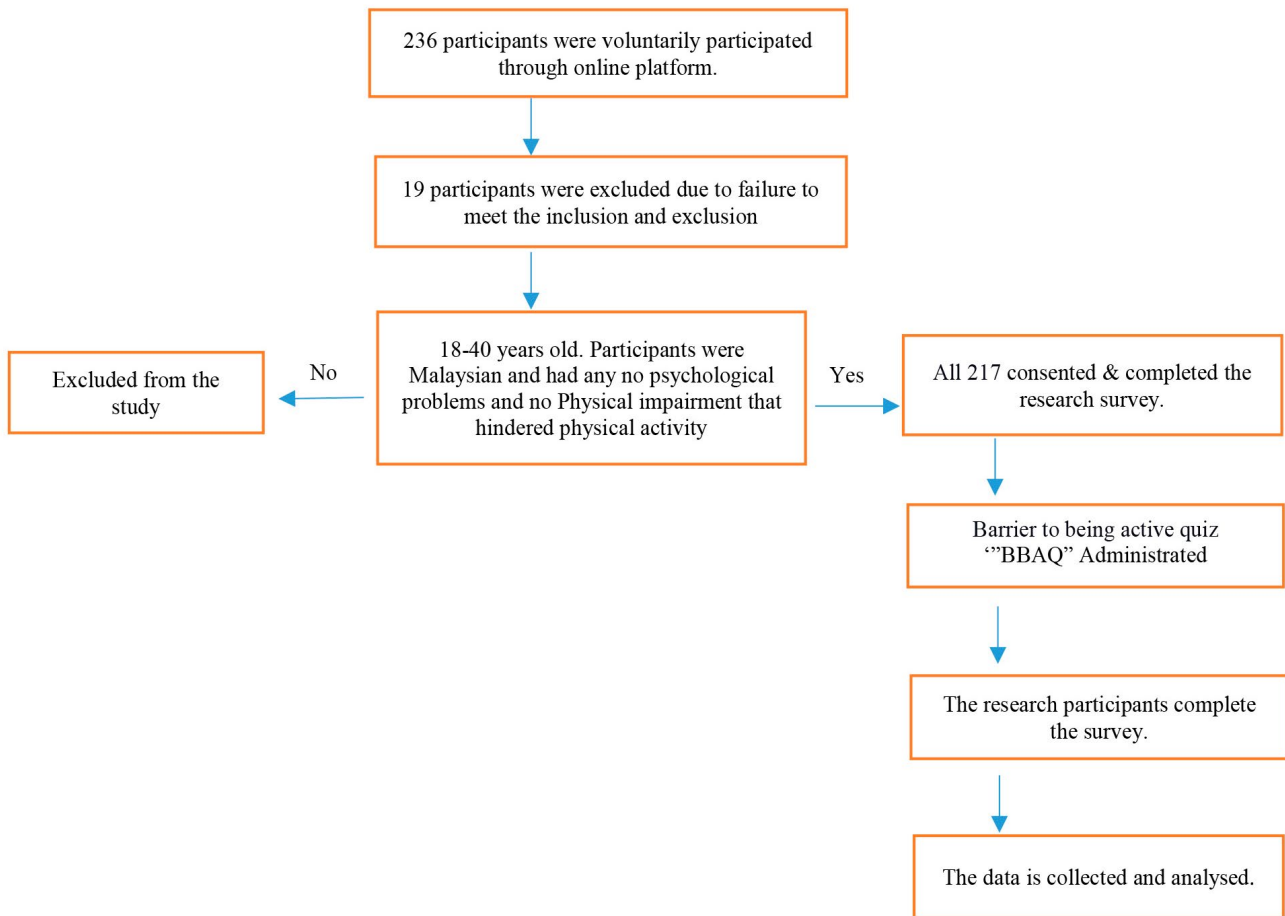
### Statistical methods

Analyzed the collected data by using IBM Statistical Package for Social Science (SPSS) version 25. Gender, age, race, education, work method, study, and BBAQ were analyzed using simple and absolute frequencies. The association of gender and barriers to physical activity with settings of confidence level at 95% and significant level ( $p < 0.05$ ) was investigated using Pearson Chi-square.

## Results

There was a total of 217 participants participated in this study out of 236. 19 participants were excluded from the study as they failed to meet the inclusion and exclusion criteria.

**Figure 1.** Flow chart for the process and procedure of data collection



The majority of the participants are Chinese (80.6%), are male (57.1%), aged between 21 to 25 years old (77.5%), 78.3% were who undergoing degree level studies, Table 1.

**Table 1.** Demographic profile of the participants among young Malaysian adults in the COVID-19 pandemic

Demographic	Variables	n	%
Gender	Female	93	42.9
	Male	124	57.1
Age	18 – 20	12	5.5
	21 – 25	168	77.5
	26 – 30	25	11.5
	31 – 40	12	5.5
Race*	Bidayuh	1	0.5
	Chinese	175	80.6
	Iban	1	0.5
	Indian	7	3.2
	Kadazan	1	0.5
	Malay	30	13.82
	Mixed	1	0.5
Qualification	Sarawakian	1	0.5
	Bachelor	19	8.8
	Postgraduate	24	11.1
	SPM/ UEC*	4	1.8
Job	Undergraduate	170	78.3
	Blue collar	44	20.3
	Student	123	56.7
Mode of study/Work	White collar	50	23.0
	Full-time	202	93.1
	Part-time	15	6.9

\*SPM - Sijil Pelajaran Malaysia (Malaysian Certificate of Education), UEC – Unified Examination Certificate. Race - Represent the different ethnicity as Malaysian citizen.

The main barrier agreed by the participants was "lack of willpower", 136 (62.7%), followed by "lack of energy", 117(53.9%), "lack of resource", 113(52.1%), "Lack of time" 109(50.2%), "social influence", 100(46.1%), "lack of skill", 48 (22.1%), and "fear of injury", 40 (18.4%), Table 2.

**Table 2.** Perceived barriers to the participants' physical activity among young Malaysian adults in the COVID-19 pandemic

BBAQ	Variables	n	%
Lack of time	Disagree	108	49.8
	Agree	109	50.2
Social influence	Disagree	117	53.9
	Agree	100	46.1
Lack of energy	Disagree	100	46.1
	Agree	117	53.9
Lack of willpower	Disagree	81	37.3
	Agree	136	62.7
Fear of injury	Disagree	177	81.6
	Agree	40	18.4
Lack of skill	Disagree	169	77.9
	Agree	48	22.1
Lack of resource	Disagree	104	47.9
	Agree	113	52.1

A Pearson's chi-square test of contingencies (with  $\alpha = 0.05$ ) was used to evaluate the association between perceived barrier to Physical Activity and gender, which was statistically not significant, Table 3.

**Table 3.** Association between Genders with Barrier to Physical Activity of the participants among young Malaysian adults in the COVID-19 pandemic

BBAQ	Gender	Disagree n (%)	Agree n (%)	p-value*
Lack of time	Male	62 (57.4)	62 (56.9)	0.938
	Female	46 (42.6)	47 (43.1)	
	Total	108 (100)	109 (100)	
Social influence	Male	70 (59.8)	54 (54.0)	0.387
	Female	47 (40.2)	46 (46.0)	
	Total	117 (100)	100 (100)	
Lack of energy	Male	56 (56.0)	68 (58.1)	0.753
	Female	44 (44.0)	49 (41.9)	
	Total	100 (100)	117 (100)	
Lack of willpower	Male	50 (61.7)	74 (54.4)	0.292
	Female	31 (38.3)	62 (45.6)	
	Total	81 (100)	136 (100)	
Fear of injury	Male	101 (57.1)	23 (57.5)	0.960
	Female	76 (42.9)	17 (42.5)	
	Total	177 (100)	40 (100)	
Lack of skill	Male	97 (57.4)	27 (56.3)	0.887
	Female	72 (42.6)	21 (43.8)	
	Total	169 (100)	48 (100)	
Lack of resource	Male	57 (54.8)	67 (59.3)	0.505
	Female	47 (45.2)	46 (40.7)	
	Total	104 (100)	113 (100)	

\*Value  $p > 0.05$  (Pearson's Chi-square test)

## Discussion

The study aims to determine the perceived barriers to physical activity among Malaysian young adults during the COVID-19 Pandemic. There was no statistical significance when associated with physical activity barriers and the sex of the analysed sample.

The participants reported most common barriers to PA during lockdown were personal barriers such as "lack of energy" and "lack of willpower." In this study, "Lack of willpower" 136 (62.7%) has been reported as the highest barrier to PA during COVID-19 lockdown. Farah B et al.<sup>9</sup> analyzed the perceived barrier to physical activity among 1570 Brazilian adults, and the results show that 31.2% of the participants reported a "lack of motivation" barrier during the COVID-19 pandemic. The study also revealed that low physical activity levels during the COVID-19 pandemic were most commonly linked with a "lack of willpower" (OR = 1.49; 95% CI = 1.19–1.86). In this case, "lack of motivation" had most likely increased the impact on physical activity level during the COVID-19 lockdown by 49%. Considering that "lack of willpower" has been seen as a significant barrier to physical exercise, promoting physical activity's advantages and recommending tips for staying active at home during this pandemic is critical. However, these personal barriers have been highly identified among adults even before the lockdown happens.<sup>10</sup>

Further analysis revealed that "Lack of energy" was the second most perceived barrier in this study as 117(53.9%). However, individuals expected to be socially isolated, "lack of time" and "lack of energy" were not predicted to be the most common personal barriers. According to researchers<sup>11</sup>, this outcome might be due to the impression of energy referring to physical exercise as very difficult, strenuous, and heavy. A study shows that many Malaysians perceive physical activity as too challenging, unsatisfying, unpleasant, harmful, or simply uninteresting.<sup>12</sup> Performing physical exercise is seen as a great effort. It is an activity that requires energy expenditure<sup>13</sup>; individuals may prefer to engage in activities that involve less effort, such as watching television, reading books, or drawing.

The study showed that the environmental barrier the most reported for physical activity was "lack of resources," it was associated with physical activity levels in the period of COVID-19. In our study, this barrier did not reveal a significant association.<sup>14</sup> However, "Lack of resources" 113 (52.1%) was reported as the third most prevalent barrier to physical activity during the COVID-19 blockade. As a result, it is reasonable to assume that socially isolated people do not perceive their homes as favorable environments for exercise. People find it more difficult to practice physical activities when they close trails, parks, beaches, and gyms, lacking equipment, space, facilities. Health professionals should be responsible for providing information to the population about the categories of exercises that can be performed at home.<sup>15</sup>

Furthermore, in our study, the results revealed that "Lack of time," "social influence," and "lack of willpower" are frequently reported barriers to regular participation in physical activities. It was revealed that "Lack of time" 109 (50.2%) was the fifth, and poor time management related to significant obstacles to participating in all exercise categories.<sup>18</sup>

The perception of "lack of time" as a barrier to regular physical activity engagement may have reflected "lack of self-motivation" rather than a real obstacle.<sup>19</sup> A study also found "lack of time" as an obstacle to physical activity, and many people only have free time at night to work or study in the morning. Consequently, they do not perceive this time as adequate for physical exercise.<sup>19</sup>

The barrier "Social influence" 100(46.1%) was reported as the fourth major barrier to physical activity during the COVID-19 blockade. A previous study encouraged the practice of vigorous-intensity physical exercise by parents and peers, the participation of college students in physical activity increased.<sup>16</sup> These findings suggest the need for support from parents and partners. For individuals with a lower level of education (primary or high school), social influence used to be perceived as a barrier to physical activity.<sup>17</sup>

Lastly, among the lowest barriers reported were "lack of skill" 48(22.1%) and "fear of injury" 40(18.4%), the participants perceived both the barriers more or less equally. This finding could be due to the frequency (77.5%) of the age group between 21 and 25. The study from university students in the Philippines during COVID-19 community quarantine has also shown similar results of "lack of skills" and "fear of injury" reported lower than other barriers. Similar results also have been presented in this study before lockdown.<sup>20</sup>

Our findings show that male 67 (59.3%) tend to perceive "lack of resource" more than female 46 (40.7%), which has been contrasting with this study 9 that shows women more often reported, "lack of resource" ( $p = 0.007$ ) as a barrier to participating in Physical Activity during lockdown compared to men. This can be due to heterogeneity of the analyzed population related to mainly gender. However, the association between genders with the barriers to Physical Activity during lockdown is not statistically significant as  $p > 0.05$  for each barrier analyzed using chi-square.

This study can be a valuable reference for future researchers, practitioners, or developers to design plans and infrastructure to overcome these barriers for Malaysians to achieve basic physical activity needs and prevent sedentary lifestyles during future lockdowns. From a future perspective, it is necessary to overcome barriers and make Malaysians aware of the importance of being physically active in preparation for any future pandemic.

The limitations of our study were the heterogeneity of the analyzed population related to sociodemographic data, mainly gender. Therefore, the results reported from a sample population (217) cannot represent the entire Malaysian adult population. Another limitation was the possible memory bias, which can affect the collected results, as participants may not remember their previous experiences accurately after almost a year of blocking. New future research, a prospective cohort study, may minimize the risk of recall bias.

## Conclusion

The “lack of energy,” “lack of willpower,” and “lack of resource” were the most prevalent barriers to physical activity among Malaysian young adults during COVID-19 lockdown, and there was no significant association between physical activity barriers and gender.

## Author contributions

Yao LE planned the study, collected and analyzed the data, and wrote the manuscript. Vasanthi RK designed the study, evaluated the questionnaire, analyzed the data, and wrote the manuscript. Reshma Praveen, Praveen J Surendran participated in the planning of the study, analyzed the data, and reviewed the manuscript. Nadzalan AM analyzed the data, helped in writing the manuscript, and reviewed the manuscript. Thus, all authors have had full access to study data and supported the publication, read the final version of this manuscript, and agreed to submit it to this journal for possible publication.

## Competing interests

No financial, legal or political competing interests with third parties (government, commercial, private foundation, etc.) were disclosed for any aspect of the submitted work (including but not limited to grants, data monitoring board, study design, manuscript preparation, statistical analysis, etc.).

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