

Wheelchair User's Barriers in Physical Activity: Rural VS. Urban Area

Kunjung Ashadi^{1,*}, Mochammad Purnomo¹, Subuh Isnur Haryudo², Sapto Wibowo², Oce Wiriawan²,
Hari Setijono², Soegiyanto³, Sugiharto³, Tri Rustiadi³, Oktia Woro Kasmini Handayani³,
Shamsul Azhar Shah⁴

¹Vocational Faculty, Universitas Negeri Surabaya, Surabaya, 60231, Jawa Timur, Indonesia

²Faculty of Sports Science, Universitas Negeri Surabaya, Surabaya, 60213, Jawa Timur, Indonesia

³Faculty of Sports Science, Universitas Negeri Semarang, Semarang, 19104, Jawa Tengah, Indonesia

⁴Faculty of Medicine, Universiti Kebangsaan Malaysia, Kuala Lumpur, 56000, Kuala Lumpur, Malaysia

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Abstract Individuals with disabilities experience more significant challenges in carrying out physical activity than the general population. Previous studies have identified physical activity and fitness levels without measuring barriers to physical activity. This study examines how wheelchair users assess obstacles to physical activity and looks for the significant factors that hinder the biological activity of wheelchair users in urban and rural areas. The method in this research is a cross-sectional study. An online survey was used to obtain information on physical activity barriers in wheelchair users. A total of 81 respondents consisting of 40 wheelchair users from rural areas and 41 from urban areas, filled out the Barriers Physical Activity Questionnaire Mobility Impairment (BPAQ-MI) with a response rate of 70% during one month of data collection. The analysis data technique is mean, percentage, and an independent sample's T-test to compare physical activity barriers between wheelchair users in urban and rural areas. The chief obstacles to physical activity are friends and family as a support system ($p < 0.05$), lack of public facilities ($p < 0.05$), lack of fitness facilities and infrastructure ($p < 0.05$), staff/program/policy ($p < 0.05$), and community ($p < 0.05$). The conclusion is that wheelchair users in rural

areas have more significant barriers to physical activity than those in urban areas. Improving support from family, friends, environment, social policies, and a disability-friendly physical environment can be critical points in increasing the biological activity of wheelchair users in rural areas.

Keywords Barriers, Disability, Health, Questionnaire, Rural, Sport

1. Introduction

Individuals can obtain physical fitness and competition through sports activities. Regularity in participating in physical activity programs affects lifelong physical fitness as part of the prevention of cardiovascular disease and the role of a healthy lifestyle campaign [1]. To improve their health status, everyone needs to do physical activity, including persons with disabilities [2]. Unfortunately, previous research found that people with disabilities have a low level of participation in physical activity [3].

A sedentary lifestyle in people with lower extremity

disabilities impacts low physical fitness and an increased risk of metabolic syndrome [4]. On the other hand, applying a healthy lifestyle with consistent participation in physical activity positively affects their physical fitness [5]. One of the reasons found in the literature that can justify the fact that these individuals adopt sedentary lifestyles is the existence of barriers/obstacles/constraints that make the practice of physical activity difficult ability (aerobic capacity, strength, balance, and flexibility), cognition, health and quality of life [6]. Studies that some problems are generalized to all societies (e.g., limited time or financial costs) but that there are differences that are more specific to wheelchair users are fear of stereotypes [7]. Especially in young wheelchair users revealed barriers that include attitudes, motivations, existing injuries or fear of developing injuries, limited facilities, and lack of information or knowledge to perform physical activities [8].

Consistency of physical activity is key to general health and well-being. However, approximately 65 million manual wheelchair users do not meet the recommended physical activity, so exercise's health benefits are not optimal [9]. Serious physical and mental health problems are associated with a lack of physical activity and an active lifestyle [10]. Physical activity is known to positively and significantly impact health by reducing the incidence of heart disease, cancer, diabetes, and the risk of death. Adequate physical activity is a crucial factor for individual fitness [11]. However, the number of individuals who have met the adequacy of physical activity is still minimal due to the significant challenges of a largely sedentary lifestyle in the modern era [12].

Persons with disabilities are at a greater risk of health problems, injuries, and chronic diseases than the general population [13]. Physical activity is proven to be harmless and beneficial for people with disabilities. Physical activity correlates with cardiorespiratory fitness, muscle strength, psychosocial well-being, and cardiometabolic health in persons with disabilities [14]. The report showed that based on a systematic review of the implementation of the US and WHO physical activity guidelines, physical activity correlates with improvements in physical function, cognition, and quality of life of people with disabilities [14].

An active lifestyle is essential for everyone, especially wheelchair users [15]. However, previous studies have reported that wheelchair users have problems with physical activity, vitality, and life satisfaction [3]. In addition, a sedentary lifestyle impacts weight gain, which results in new issues, including fatigue and sleep disturbances [3]. Regular physical activity can break this pattern and improve the productivity and health of persons with disabilities [16].

The previous study about physical activity in wheelchair users focused on physical health benefits and individual fitness levels. For this reason, the novelty of the study's systematic review is to contribute to a better understanding

of the perceived barriers to physical activity participation in wheelchair users in urban and rural areas and to have a basis for an ecological health promotion model. Furthermore, it is crucial to discover the determinants of physical activity inhibition to understand the problem of physical inactivity fully and to be able to develop targeted behavior change strategies. Demographics (e.g., age, gender), related health, psychological, social, and environmental factors are possible determinants of physical activity in wheelchair users [17].

However, the habit of doing sports from an early age to adolescence impacts long-term health behavior patterns [18]. Therefore, the change phase from adolescence to adulthood is a vital time to form long-term behavioral patterns of physical activity [19]. In particular, the psychosocial aspect of young people with disabilities is essential because they experience worse mental health than their peers [20]. In contrast, adults with disabilities experience depression, loneliness, isolation from friends, and difficulties developing and maintaining social relationships [2]. Therefore, physical activity provides psychosocial benefits for people with physical disabilities with the ability to get along, feel comfortable and adapt to their friends [21].

2. Methods

The present study is a cross-sectional study using an online-based survey using Google Form to acquire data regarding physical activity obstacles among disabled wheelchair users in rural and urban areas. We define rural areas as districts or small cities, while urban areas are the main big cities in each province in Indonesia. The purpose of the study was to compare physical activity barriers in wheelchair users throughout Indonesia. Due to limited data on wheelchair user contacts in Indonesia and taking into account the ineffectiveness of using random links via email and social media to collect data, we were collaborating with wheelchair user organizations, namely the United Cerebral Palsy Wheels for Humanity (UCPRUK), to distribute the questionnaire in a targeted manner. UCPRUK has committed since 2009 until now to serving people with mobility impairments, especially wheelchair users in Indonesia. UCPRUK helped send a Google Form questionnaire link to a target of 102 wheelchair users via Whatsapp chat, and researchers administered survey data from 81 wheelchair users. It takes one month to get the data with a 70% return response. The questionnaire link was shared twice.

The perceived barriers to physical activity by persons with disabilities are calculated using the Physical Activity Barriers Questionnaire for People with Mobility Disorders (BPAQ-MI). Demographic characteristics questions include age, gender, and city of residence. The BPAQ-MI consists of 61 items consisting of eight subdomains based on a health promotion ecological model, showing how

wheelchair users interact with the environment, describing health and attitudes/beliefs towards physical activity (intrapersonal); friends and family (interpersonal), fitness center environment and staff/programs/policies (organization), and community and safety environment. In general, the BPAQ-MI asks the respondent to indicate whether they have any hurdle that prevents them from doing physical activity entire 41 respondents were from urban areas, and 40 respondents were from rural areas. The data analysis technique used was an independent sample t-test to compare and find significant differences in physical activity barriers between wheelchair users in urban and rural areas. Knowing the main inhibiting factors for physical activity for wheelchair users can be the basis for improvement for policymakers in health promotion and welfare for the unique population.

3. Results

To provide an overview of the characteristics of the 81 respondents in this survey, the data are presented in Table 1.

Table 1. The profile of respondents

The Characteristics of Respondents		Percentage
Gender	Male	57,00%
	Female	43,00%
Age	Less than 25 years old	16,50%
	More than 26 years old	83,50%
Disabled Time	Less than 25 years ago	54,40%
	More than 26 years ago	44,60%

The BPAQ-MI consists of 61 items consisting of eight subdomains based on a health promotion ecological model, showing how wheelchair users interact with the environment, describing health and attitudes/beliefs towards physical activity (intrapersonal); friends and

family (interpersonal), fitness center environment and staff/programs/policies (organization), and community and safety environment. The average data for each subdomain is in Table 2.

Regarding participants, there are differences between wheelchair users who live in urban and rural areas in terms of the fitness level to be physically active (e.g., lack of aerobic ability) ($p < 0,05$). Additionally, they believe physical activity requires too much work/effort/energy and are afraid of getting injured while being physically active. They did not have an appropriate fitness level to be physically active because they felt physical discomfort while being physically active and got tired quickly.

Individual factors such as motivation and self-efficacy affect the participation of persons with disabilities in physical activity. Based on the socio-ecological perspective, other factors outside the individual, such as organizations, groups, and the environment, also impact participation in physical activity. These factors include access to a place to be physically active, safe, comfortable, and within a reasonable distance at free or low cost. Overcoming challenges to physical activity among populations must include addressing affordability and accessibility of opportunities to participate in physical activity. Based on the study results, people with disabilities do not have obstacles in their beliefs/attitudes to physical activities ($p > 0,05$).

Friends, family, and culture, in general, can be interpreted as a shared meaning and thought a group of people follows. However, physical activity attitudes and appearances are shaped by the social-cultural context (e.g., family, environment, institutions, society) in which persons with disabilities live, move, and have activities. Therefore, physical activity should not only target individuals but must include social-cultural concepts related to one's health behavior concerning the surrounding social environment. Based on the study results, wheelchair users who live in rural areas have barriers in their friends, family, and culture to carry out their physical activities ($p < 0,05$).

Table 2. The detail of the barriers to physical activity of respondents

The Barriers Aspect to Physical Activity	p	n		Prevalence Rate (%)	
		Urban	Rural	Urban	Rural
Health	0,389	13,86	20,29	32,00	48,00
Beliefs/Attitudes towards physical activity	0,525	09,37	11,25	23,87	28,12
Friends	0,000	10,67	28,50	25,83	71,50
Family	0,005	06,60	23,00	16,00	57,20
Fitness Centre Built Environment	0,000	11,27	37,82	27,27	94,54
Staff/Program /Policy	0,053	13,10	37,60	32,30	94,20
Community Built Environment	0,000	13,00	36,90	31,80	92,20
Safety	0,252	15,83	09,50	38,20	24,20

Low physical activity of wheelchair users indicates uneven opportunities to be physically active. Differences in inaccessibility to public facilities significantly impact individuals engaged in physical activity ($p < 0.05$). Limited access to comfortable equipment and facilities occurs in rural areas ($p < 0.05$). This fact indicates that wheelchair users in rural areas may have limited ability to control their physical activity behavior in the face of inaccessible environments ($p < 0.05$). The research data have reported that external barriers of factors are the most dominant factor in preventing people in rural areas from doing physical activities ($p < 0.05$). The intended external factor is the completeness of facilities and infrastructure to support physical activity in their environment. Facilities and infrastructure in urban areas are better than in rural areas ($p < 0.05$). The barriers are poor accessibility, poor physical building arrangement, narrow space for activities, and a crowded environment ($p < 0.05$).

4. Discussion

Low physical fitness is strongly associated with increasing all causes of death in the community. Persons with disabilities who are sedentary have a greater risk of developing chronic diseases than the general population. The use of wheelchairs makes people with disabilities focus on using the upper extremities by maintaining adequate physical activity to maintain independence, social function, and quality of life [22].

Potential barriers reflect all levels of the ecological model, including interpersonal factors (e.g., lack of energy, not knowing where to exercise, lack of motivation, insufficient time to exercise, and health problems preventing the disabled from exercising). Intrapersonal factors (e.g., no people who are invited to exercise, no one showing how to exercise), and organizational/community factors (e.g., equipment and fitness centers that are difficult for persons with disabilities to access [23]).

Health factors affect an individual's ability to participate in regular physical activity. Health condition is a barrier to physical activity because those with disabilities feel they have a weak body to carry out physical activities, which are considered difficult [24]. The limited number of limbs makes people with disabilities find it difficult to exercise and fear the risk of injury [3]. It knew that the lower extremities are the foundation of all body movements. The lower extremities play an essential role in maintaining body balance and supporting the body, and the strongest muscles are in the lower extremities [25]. However, this study shows that health is not the dominant barrier to physical activity for wheelchair users in rural and urban areas.

The study results showed that people with disabilities in an urban area do not have barriers in their beliefs/attitudes, and they have a support system from family and friends to do their physical activity. Meanwhile, the people with

disabilities in rural areas have barriers in their support system from family and friends to doing their physical activity. Therefore, family as the closest environment becomes integral to providing social support for persons with disabilities [26]. The importance of family social support for people with disabilities, the family, is the first and closest environment that can be a natural source of support for people with disabilities. Furthermore, family and friend is a support system that can reduce the risk of depression and pressure among people with disabilities [27]. The amount of social support and enjoyable social experiences can outweigh other barriers faced by persons with disabilities [21]. Social support includes the attitudes, beliefs, and behaviors of all relevant stakeholders (family, peers, sports and recreation staff, programs, organizations, and policymakers), having a very positive effect on the abilities, opportunities, and motivation of persons with physical disabilities to be active [28]. This study highlights the importance of increasing the role of family and friends in motivating wheelchair users to make routine physical activity a healthy lifestyle and improving social policies that support promoting an active lifestyle for wheelchair users in rural areas.

The barriers of the disability community for physical activity lie in facilities, fitness facilities and infrastructure, safety aspects, and economic aspects (limitations to paying sports instructors). It highlighted the part most reported to affect the decline in physical participation in this rural community. Previous studies have shown that the physical environment has a meaningful impact. Easily/adaptable or disability-friendly equipment includes a comfortable space and easily accessible bathroom [29]. However, environmental aspects hinder participation when facilities do not meet the needs of persons with disabilities, such as difficult accessibility, poor building layout, narrow movement space, and congested environment [30].

An inclusive physical environment is an opportunity factor for increasing participation in physical activity. Unfortunately, unrepresentative facilities, equipment, and public transportation were reported as barriers to participation [23]. Impacts the decrease in enthusiasm and ability to be physically active and deepening self-isolation in limited physical activity [21].

Previous studies found that transportation costs and expensive entrance tickets to facilities for the community were identified as barriers to participation. The cost of wheelchairs is also a particular barrier to sports participation. It often occurs in adults with disabilities. Although several studies explore this issue in-depth, it is unclear who is responsible for the participation fees or for providing transportation for persons with disabilities [13]. In line with previous findings, this study highlights the importance of disability-friendly public infrastructure and particular population health promotion policies as vital for increasing the physical activity of persons with disabilities in rural areas.

This study's findings have several implications for

practice and researchers seeking further to explore barriers to physical activity among this group. Our findings further confirm that the social and physical environment strongly influences participation in physical activity in young adults with physical disabilities. Participation in physical activity occurs because of these environmental factors. Relationships and the availability of positive social support and a disability-friendly physical environment are essential factors in finding the right balance [24]. These factors indicate the importance of credit in the complexity of abilities, opportunities, and motivations that affect physical activity participation [21]. Our findings suggest that aspects of family support, friends, environment and social policies, and a disability-friendly physical environment can be critical factors in increasing the physical activity of wheelchair users in rural areas.

5. Conclusion

A factor influences a wheelchair user's ability to participate in general physical activity. People who use wheelchairs in rural areas have more physical activity barriers than those in urban areas. The dominant barriers aspect of family and friend support and barriers to external factors: are sports facilities and infrastructure, public facilities, and human resources in sports. Facilities and infrastructure in urban areas are better than those in rural areas. It is due to differences in health promotion policies concerning disability-friendly infrastructure between rural and urban areas. It shows the need to improve health promotion policies and disability-friendly facilities in rural areas. To provide a broader and objective perspective on differences in rural and urban conditions, future research needs to be conducted in several other countries by considering the country's location, economic income, and policies related to persons with disabilities to create a more welcoming disability-friendly environment around the world.

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Conflict of Interest

The authors declare no conflict of interest.

REFERENCES

- [1] Damiot, A. J. Pinto, J. E. Turner, and B. Gualano, "Immunological Implications of Physical Inactivity among Older Adults during the COVID-19 Pandemic," *Gerontology*, vol. 66, no. 5, pp. 431–438, 2020.
- [2] K. A. Ginis et al., "Participation of people living with disabilities in physical activity: a global perspective," *Lancet (London, England)*, vol. 398, no. 10298, pp. 443–455, 2021.
- [3] L. E. van den Akker et al., "Determinants of physical activity in wheelchair users with spinal cord injury or lower limb amputation: perspectives of rehabilitation professionals and wheelchair users," *Disabil. Rehabil.*, vol. 42, no. 14, pp. 1934–1941, 2020.
- [4] L. M. Andriana and K. Ashadi, "The comparison of two types of exercise in the morning and night to the quality of sleep," *J. Sport. J. Penelit. Pembelajaran*, vol. 5, no. 1 SE-Article, pp. 98–112, 2019.
- [5] K. Ashadi, I. Marsudi, A. Rochmania, I. Jayadi, F. Y. Wulandari, and G. Siantoro, "Students Exercise Patterns During the COVID-19 Pandemic BT - Proceedings of the International Joint Conference on Arts and Humanities (IJCAH 2020)," 2020, pp. 1230–1237.
- [6] K. Burnet, S. Higgins, E. Kelsch, J. B. Moore, and L. Stoner, "The effects of manipulation of Frequency, Intensity, Time, and Type (FITT) on exercise adherence: A meta-analysis," *Transl. Sport. Med.*, vol. 3, no. 3, pp. 222–234, 2020.
- [7] L. Mason, K. M. Gerling, P. Dickinson, and A. De Angeli, "Design Goals for Playful Technology to Support Physical Activity Among Wheelchair Users," *Proc. 2019 CHI Conf. Hum. Factors Comput. Syst.*, 2019.
- [8] S. Healy et al., "Brief Report: Perceived Barriers to Physical Activity Among a National Sample of Autistic Adults," *J. Autism Dev. Disord.*, 2021.
- [9] R. K. Hansen, A. Samani, U. Laessoe, R. G. Larsen, and R. E. Cowan, "Sociodemographic characteristics associated with physical activity barrier perception among manual wheelchair users," *Disabil. Health J.*, vol. 14, no. 4, p. 101119, 2021.
- [10] E. A. Willis, S. A. Creasy, J. J. Honas, E. L. Melanson, and J. E. Donnelly, "The effects of exercise session timing on weight loss and components of energy balance: midwest exercise trial 2," *Int. J. Obes. (Lond.)*, vol. 44, no. 1, pp. 114–124, 2020.
- [11] S. Y. M. Teo, J. A. Kanaley, K. J. Guelfi, K. J. Marston, and T. J. Fairchild, "The Effect of Exercise Timing on Glycemic Control: A Randomized Clinical Trial," *Med. Sci. Sports Exerc.*, vol. 52, no. 2, pp. 323–334, 2020.
- [12] J. Jakobsson, C. Malm, M. Furberg, U. Ekelund, and M. Svensson, "Physical Activity During the Coronavirus (COVID-19) Pandemic: Prevention of a Decline in Metabolic and Immunological Functions," *Frontiers in Sports and Active Living*, vol. 2, 2020.
- [13] G. Mckenzie, C. Willis, and N. Shields, "Barriers and facilitators of physical activity participation for young people and adults with childhood-onset physical disability: a mixed methods systematic review," *Dev. Med. Child Neurol.*, vol. 63, no. 8, pp. 914–924, 2021.

- [14] M. Sol, O. Verschuren, H. Horemans, P. Westers, J. Visser-Meily, and J. Groot, "The effects of wheelchair mobility skills and exercise training on physical activity, fitness, skills and confidence in youth using a manual wheelchair," *Disabil. Rehabil.*, pp. 1–10, 2021.
- [15] V. Vasudevan, "Exploration of How People with Mobility Disabilities Rate Community Barriers to Physical Activity," *Californian J. Health Promot.*, vol. 14, pp. 37–43, 2016.
- [16] Bantham, S. E. Taverno Ross, E. Sebastião, and G. Hall, "Overcoming barriers to physical activity in underserved populations," *Prog. Cardiovasc. Dis.*, vol. 64, pp. 64–71, 2021.
- [17] S. Wolf et al., "Is Physical Activity Associated with Less Depression and Anxiety During the COVID-19 Pandemic? A Rapid Systematic Review," *Sports medicine (Auckland, NZ)*, vol. 51, no. 8, pp. 1771–1783, 2021.
- [18] H. Sharon-David, M. Siekańska, and G. Tenenbaum, "Are gyms fit for all? A scoping review of the barriers and facilitators to gym-based exercise participation experienced by people with physical disabilities," *Perform. Enhanc. Heal.*, vol. 9, p. 100170, 2020.
- [19] L. Hassett, N. Shields, J. Cole, K. Owen, and C. Sherrington, "Comparisons of leisure-time physical activity participation by adults with and without a disability: results of an Australian cross-sectional national survey," *BMJ open Sport Exerc. Med.*, vol. 7, no. 1, p. e000991, 2021.
- [20] N. D. Hollis, Q. C. Zhang, A. C. Cyrus, E. Courtney-Long, K. Watson, and D. D. Carroll, "Physical activity types among US adults with mobility disability, Behavioral Risk Factor Surveillance System, 2017," *Disabil. Health J.*, vol. 13, no. 3, p. 100888, 2020.
- [21] F. Steinhardt, A. Ullenhag, R. Jahnsen, and A.-S. Dolva, "Perceived facilitators and barriers for participation in leisure activities in children with disabilities: Perspectives of children, parents and professionals," *Scand. J. Occup. Ther.*, vol. 28, no. 2, pp. 121–135, 2021.
- [22] Almeida, S. Santos, F. Gomes, and A. Marques, "Physical Activity Practice Determinants for People with Motor Disabilities: Inequities in Access and Physical Activity Engagement," 2020, pp. 150–165.
- [23] M. Koontz, S. R. Bass, and H. R. Kulich, "Accessibility facilitators and barriers affecting independent wheelchair transfers in the community," *Disabil. Rehabil. Assist. Technol.*, vol. 16, no. 7, pp. 741–748, Oct. 2021.
- [24] H. Manaf et al., "Barriers to Physical Activity and Exercise Amongst Persons With Physical Disability in a Government-funded Teaching Hospital, Kuala Lumpur," vol. 17, pp. 34–39, 2021.
- [25] K. Riemann-Lorenz, J. Wienert, R. Streber, R. W. Motl, S. Coote, and C. Heesen, "Long-term physical activity in people with multiple sclerosis: exploring expert views on facilitators and barriers," *Disabil. Rehabil.*, vol. 42, no. 21, pp. 3059–3071, 2020.
- [26] H. Michalsen, S. C. Wangberg, A. Anke, G. Hartvigsen, L. Jaccheri, and C. Arntzen, "Family members and health care workers' perspectives on motivational factors of participation in physical activity for people with intellectual disability: A qualitative study," *J. Intellect. Disabil. Res.*, vol. 64, no. 4, pp. 259–270, 2020.
- [27] L. Columna, L. Prieto, G. Elias-Revolledo, and J. A. Haegele, "The perspectives of parents of youth with disabilities toward physical activity: A systematic review," *Disabil. Health J.*, vol. 13, no. 2, p. 100851, 2020.
- [28] J. H. Sutcliffe and P. A. Greenberger, "Identifying Psychological Difficulties in College Athletes," *J. Allergy Clin. Immunol. Pract.*, vol. 8, no. 7, pp. 2216–2219, 2020.
- [29] Walker, G. Colquitt, S. Elliott, M. Emter, and L. Li, "Using participatory action research to examine barriers and facilitators to physical activity among rural adolescents with cerebral palsy," *Disabil. Rehabil.*, vol. 42, no. 26, pp. 3838–3849, 2020.
- [30] M. R. Pedersen, A. F. Hansen, and K. Elmoose-Østerlund, "Motives and Barriers Related to Physical Activity and Sport across Social Backgrounds: Implications for Health Promotion," *International Journal of Environmental Research and Public Health*, vol. 18, no. 11, 2021.