ORIGINAL ARTICLE

Barriers to Physical Activity and Exercise Amongst Persons With Physical Disability in a Government-funded Teaching Hospital, Kuala Lumpur

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ABSTRACT

Introduction: Physical inactivity is common among persons with disabilities (PWDs), thereby leading to harmful secondary complications. Therefore, this cross-sectional study aimed to identify the barriers to physical activity and exercise amongst PWDs in Malaysia. **Methods:** A total of 102 adults (age 15–65 years) with physical disabilities were recruited from a government-funded hospital. The participants completed the 'Barriers to Physical Exercise and Disability' questionnaire via interview by telephone calls or a one-to-one approach. **Results:** Most participants (90.2%) were interested in engaging in exercise programs. However, the mean concern index score was 2.83 ± 1.35. The majority of the respondents identified five major barriers. These barriers include health concerns (36.3%), transport barriers (36.3%), lack of energy and motivation (36.3%, 31.4%), and exercise program costs (23.54%). **Conclusion:** Many participants were interested in beginning an exercise program despite the barriers. This observation shows that if the barrier is eliminated, then, this community would be able to participate in an exercise program regularly. Results from the study can inspire health care providers to devise strategies for the promotion of physical activity participation and long-term adherence between PWDs.

Keywords: Barriers, Disabled people, Exercise, Physical activity, Physical disabilities

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INTRODUCTION

Engagement in physical activities and exercises may potentially promote overall physical and psychological benefits for the person with disabilities (PWDs). An increase in physical activity is associated with a reduction in cardiovascular risk as compared to physically inactive adults. (1). Amongst individuals with spinal cord injury (SCI), physical activity helps to improve upper limb muscle strength and bone mineral density, physical fitness, functional performance and psychological well-being and reduce stress and pain (2). In stroke survivors, significant improvements were observed in cardiorespiratory responses, blood pressure, cognitive function, and aerobic exercise capacity (3-4). Therefore, poor adherence to physical activities after being disabled might negatively affect the recovery gained from rehabilitation, whist being sedentary may further worsen an individual's physical function.

The Behavioral Risk Factor Surveillance System (2009) reported that the prevalence of physical inactivity in PWDs is 22% than 10% of adults without disability (5). As PWDs remain inactive, it may further lead to physical deconditioning and increase the risk of secondary complications (6). Previous studies have demonstrated that physical inactivity is a modifiable risk factor for cardiovascular and non-communicable diseases, including hypertension, diabetes mellitus and obesity, as well as for PWDs (7–10). Environmental and personal factors could influence the barriers to participation in physical activity and exercise amongst PWDs. Structural and environmental barriers include lack of ramps, inaccessible parking spaces, inaccessible gym equipment and unavailability of transportation services

(11). Personal barriers related to thought and feelings of the individual are related to psychological and emotional barriers such as lack of energy, too lazy to exercise, feeling ashamed, lack of information on how to perform the exercise, health concern, unmotivated with a feeling that exercise is boring (12,13). These barriers are further aggravated by the leading consequence of disability, which is the awareness of the need for conserving energy to avoid fatigue, the use of assistive mobility devices that may minimise daily energy expenditure and inadequate knowledge of the risks of inactivity that may remain to fuel the overprotectiveness of family members and personal assistants (14).

The first step to optimize the rehabilitation programme and after discharge with respect to a health outcome in PWDs, it is important to identify the physical activity and exercise barriers after their discharge. The impact of understanding the barriers to exercise participation may become a forerunner to developing guidelines for physical activity and exercises for PWDs, provision of exercise facilities and input for designs of environment and public facilities, which are friendly for physically challenged people. In contrast to the numerous studies regarding the barriers of physical activity and in the general population, little is known about the barriers that limit the level of everyday physical activity in persons with disabilities. In Malaysia, studies on physical activity and exercise barriers among PWDs are still lacking. Most studies have been reported in developed countries and within a western sociocultural perspective. Studies from developing regions are warranted since this population often experiences significant socioeconomic limitations and cultural differences. Therefore, this study aimed to identify the barriers to physical activity and exercise in person with physical disabilities.

MATERIALS AND METHODS

A total of 102 PWDs participated in this cross-sectional study. Participants were recruited from a government-funded teaching hospital, Kuala Lumpur, by using purposive sampling. A total of 130 PWDs attending outpatient rehabilitation clinics over a period of two months. Based on Krejcie & Morgan (1970) table, the minimum sample size was determined as 97 PWDs. The inclusion and exclusion criteria were examined based on the medical record and clinical assessment performed by a qualified rehabilitation medical physician. The following are the inclusion criteria of this study: (1) physically disabled for more than six months, (2) moderate physically active or sedentary (above the resting level 1.0–1.5 METs), and (3) can understand and follow verbal and written instructions in English. Participants were excluded if they have cognitive dysfunction, which would limit the ability to complete written surveys based on the Mini-Mental State Examination (< 24 scores). All participants were briefed about the purpose and procedure of the study. They were assured regarding confidentiality and told that such a survey has no right or wrong answers. Next, participants signed the informed consent forms and completed the demographic information, health status and 'Barriers to Physical Exercise and Disability' (B-PED) questionnaire. The physiotherapist in charge of the hospital was informed about the inclusion and exclusion criteria of the participants. The physiotherapist chose the available patients based on the criteria for selection as participants in this study.

The barriers to physical exercise were determined using the B-PED questionnaire developed by Rimmer et al. (2000) (15). The B-PED consists of 34 items, 31 of which are trichotomous questions with three response choices, namely, yes, no or does not know. Fourteen items are related to the availability of exercise facilities, participation in an exercise and financial and transportation resources related to exercise programmes. Fourteen items are related to concerns, such as the expense of physical activity and exercise programme, lack of motivation or energy and lack of interest, which may limit involvement in exercises. A concern index was created by summing "yes" responses (scored as a 1) to the 14 items related to concerns surrounding exercise such that higher scores indicated a greater number of concerns. The other items are an open-ended type of questions. B-PED is a reliable questionnaire with the interrater reliability of .86 and test-retest stability for the 31 categorical items was .76 (15).

The interview began by asking the demographic information consisting of the type of disability, duration of injuries, educational level, occupation and work status. The participants were also asked about their comorbid information. The B-PED questionnaire was completed via a one-to-one interview or telephone call to identify the barriers to participation in exercise. The researcher made the telephone calls after the physiotherapist in charge provided the list of participants' phone numbers.

Ethical approvals were obtained through the Research Ethics Committee, Universiti Teknologi MARA (REC/424/16) and Medical Ethics Committee, University Malaya Medical Centre (20161-1996).

Statistics

Data analysis was performed using the SPSS 21. Analysis from the B-PED questionnaire consisted of descriptive statistics to describe the results in terms of percentages and frequencies due to the heterogeneity of the cohort. Therefore, it would be insufficient to perform any type of multivariate with our data. The participants' demographic data and questionnaire responses as the means and percentages were computed and presented in Tables and Figures.

A concern index was calculated by summing up the total number of concerns and a student's t-test was done to

determine if there was a difference in the mean concern index score for persons with spinal cord injury and other disabilities (physical weakness, amputee, cerebral palsy, poliomyelitis and spinal bifida).

RESULTS

Demographic disability characteristics

Table I shows the demographic and disability characteristics of participants. Fifty-seven participants were classified as SCI according to the Neurologic Classification of SCI (American Spinal Injury Associations). Eighteen of the participants presented with physical weakness, whist another 17 manifested with lower limb amputation. The rest of the participants presented with either cerebral palsy, poliomyelitis or spinal bifida. The majority of the participants were aged between 15 to 25 years and 26 to 35 years, which are 36.3% and 35.3%, respectively. The major conditions were SCI (55.9%), physical weakness (17.6%) and amputated limb (16.7%). The majority of their education levels were at secondary school (65.7%), and most of them were employed full time (62.7%).

Table 1: Demographic and disability characteristics of participants

	n	%
Age		
15-25	37	36.3
26-35	36	35.3
36-45	20	19.6
46-55	3	2.9
56-65	6	5.9
Type of disability		
Spinal cord injury	57	55.9
Physical weakness	18	17.6
Amputee	17	16.7
Cerebral palsy	6	5.9
Polio	3	2.9
Spinal Bifida	1	1
Educational level		
Primary school	8	7.8
Secondary school	67	65.7
Diploma	14	13.7
Degree	11	10.8
Post graduate	2	2
Work status		
Employed, full-time	64	62.7
Employed, part-time	4	3.9
Unemployed	24	23.5
Retired	4	3.9
Homemaker	1	1
Student	5	4.9

Regarding participants' response to a question about barriers to exercise question (Figure 1), the majority of the participants responded that they preferred to exercise (93.1%) and would like to start an exercise program (90.2%). About 97.1% of participants reported that they had experienced in an exercise programme, and most of them exercised more after they became disabled (68.6%). Majority of the participants said

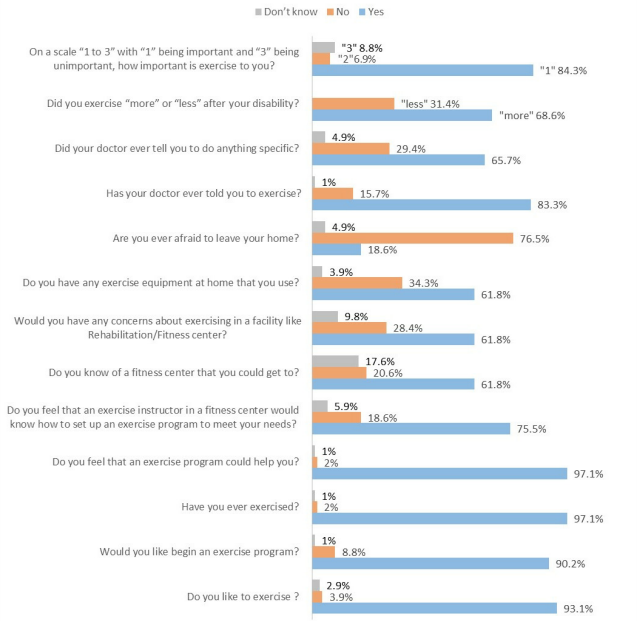

Figure 1: Participants responses to questions about barriers to exercise

exercise is important (84.3%) and believed it could help them (97.1%). They were told by their doctors to exercise (83.3%), and more than half reported that they were told to perform specific physical activities.

One-third of the participants indicated that they do not have exercise equipment at home (34.3%). Some of the participants did not know the type of fitness centre that would be right for them (20.6%). They believed that the exercise instructor in a fitness centre would not know how to design and set up an exercise programme to meet their needs (18.6%). In contrast, 28.4% of the participants would not have issues with exercising in a fitness centre.

Exercise preferences

General exercise interests have shown large variation between participants. When asked where, when and with whom they would like to exercise, participants indicated varying rates of interest. Most participants preferred to exercise in a rehabilitation centre (33.3%), fitness centre (27.5%), home (11.8%) and irrespective of where they trained, 7.8% at home or a rehabilitation centre, 5.9% in a fitness centre or rehabilitation centre and 2% at home or in a fitness centre. The second question asked of the participants was about whether they would prefer to exercise alone, in a group, both or does not matter. About 35.3% of participants said that they would like to exercise in a group, exercise in both settings (18.6%) and preferred exercising alone (10.8%). They would prefer to exercise in the morning (38.2), afternoon (2%), evening (9.8%) and half of the participants said that it did not matter.

Barriers to exercise rank order

Figure 2 indicates the different barriers in the order of

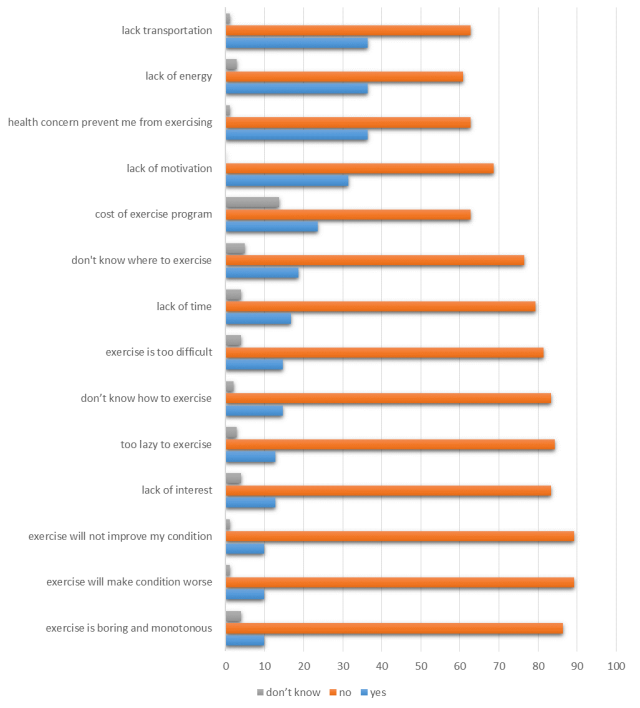

Figure 2: Barriers to exercise rank order

rank. The four main obstacles faced by the PWDs who participated in the current study were lack of time, transport obstacles, health issues that stopped them from exercising, and lack of motivation to exercise. The majority of participants claimed that the exercise would 'improve one's health.' Approximately about 9.8% of the respondents believed that exercise would worsen their condition. 'Lack of time, a major barrier in the general population, was commonly viewed (79.4%) as not a barrier between participants. However, exercise as a boring activity and laziness and interest were not considered barriers to exercise amongst majority of the participants. The mean concern index score was 2.83 ± 1.35. Persons with spinal cord injuries were noted to have a higher mean concern index score (2.95 ± 1.45) compared to those with other disabilities (2.72 ± 1.32), however, this was not statistically significant (p = 0.38).

DISCUSSION

The present study was designed to identify potential barriers to physical activity and exercise among PWDs. The findings in this study revealed that most participants indicated that they wish to participate in an exercise programme and feel that it could help them. In this study, no prominent barrier stood out as being the major one for the participant to engage in physical exercises. This condition could be due to the different backgrounds of the participants, such as different types of disabilities and environmental settings or locations. The persistent barriers encountered by the participants and access to the many community resources may not seem to be a major problem owing to the different settings. Many causes, such as lack of time and too tired to workout, have been reported as one of the major obstacles faced by PWDs. In addition, access to the community is not highly problematic for the participants. Such outcomes might be attributed to the rehabilitation programme that the participants have undergone, and some of them are still attending one. Therefore, the participants seemed to be disciplined and motivated to engage and participate in physical exercises.

The top five common barriers to physical activity and exercise among PWDs are health issues, transport barriers, energy and motivation reduction, and the cost of the exercise programme. The three top common barriers identified are the cost of exercise programme (23.54% vs 84% vs 54%), lack of motivation (31.4% vs 41% vs 54%) and lack of energy (36.3% vs 60% vs 42%) compared with a study by Rimmer et al. (2000) (15), which is amongst the African-American women, and Scelza et al. (2005) (2) in which they studied the perceived barrier amongst individuals with SCI. Approximately 36.3 % of the participants responded to the 'transport barriers' as an obstacle to exercise, ranking second out of the 14 items requested. Meanwhile, in Rimmer et al. (2000), transport barriers barrier was the third highest out of the 14 items asked (61%) (15). The statements 'exercise is boring or monotonous', 'exercise will worsen my condition' and 'exercise will not improve my condition' ranked as the lowest in the current study because these scores presented with 9.8% for each response.

Most participants indicated that their physicians had recommended exercise to them, and more than half answered 'yes' when asked if their physician told them to perform a specific exercise. Physical therapists and other rehabilitation professionals should play a crucial role in engaging community health promotion in an evolving paradigm change from illness to disability prevention to the prevention of secondary conditions for PWDs. (16). Rimmer and Lai (2015) suggested that the transformative exercise aims to facilitate individual transitions along the continuum from patient care settings to involvement in lifelong physical activity (9). The goals are to improve the various functions of the underperforming system such as neuromotor, cardiovascular, musculoskeletal, mental and metabolic functions. Therefore, this target will eventually allow the participants to participate along with the community and lifelong physical activities actively.

'Afraid to leave home' was an environmental barrier reported in 18.6% of the current sample. This finding is significantly different from that of Scelza et al. in a population with SCI in which 6.9% of the sample said that they were reluctant to go out alone (2). Surprisingly, the majority of the participants who answered 'yes' were from an age range of 15–25 years. This phenomenon might be attributed to the low self-esteem because participants prefer to isolate themselves at home owing to feelings of shame they harboured from their disability

they had at a young age. In addition, the lack of help from family and friends, access to and involvement in physical activity, and need and request for assistance also contribute to the factors that lead them to experience fear of leaving their homes. The reluctance of a PWDs to use fitness and recreational facilities was because of the unfriendly environment and the negative attitude and behaviour of people without disabilities who use the facilities (13). A fitness or recreational team should set up facilities that are disability-friendly to reduce emotional and psychological obstacles to participation (13). Rimmer and colleagues pointed out that peer support, facility guidance and assistance from rehabilitation professionals with transfers from rehabilitation to community-based programs can reduce the lack of willingness to engage in physical activity and exercise programs.

Health issues and lack of energy have been listed as the first and third highest barriers in the current report. The lack of motivation also poses a major concern as a barrier amongst the participants. Similarly, "I am fatigued by exercise" is a primary barrier response in PWDs (17). Several participants may have low self-esteem and maybe worried that their health would be negatively affected by being physically active. Such participants may feel that they have inadequate energy to exercise, which would lead them to experience fatigue or become weak when performing an exercise (12).

Lack of transportation is the second most common barrier. Rimmer et al. (2004) concluded that fitness and recreational programmes for PWDs, especially in rural areas, are scarce (13). Such authors proposed that communities should slough their resources with restricted funds to provide accessible facilities and programmes, which provide goods for PWDs in both communities (13). Conforming to, Malaysia government have taken serious action in anticipating the optimal accessibility in the aspects of facilities and transportation for PwDs as align with the adoption of Core Strategic 1 which is to improve accessibility towards mobility in the Malaysian Plan of Action for People with Disabilities 2016-2022 (18). Thus, issues on fully utilizing the providence facilities by PWDs are questionable. Hence, Malaysia government are urged to provide good communication medium in transference of the learning of these facilities among PWDs.

Rehabilitation or fitness teams should incorporate home-based exercise programs to improve their involvement and commitment to, or a community-based exercise program if they are equipped with fitness equipment (13). This alternative plan would reduce the cost of membership fees while at the same time saving on the cost of transport initially intended for travel to the exercise site.

Several limitations in the present study need to be considered in the interpretation of the results presented. First, this study used an English version of the Barriers to Physical Exercise and Disability questionnaire. Hence, only participants that able to understand and follow verbal instructions in English have included this study. Second, the study only recruited participants from a government-funded teaching hospital, and the results cannot be generalized to the entire PWDs population in Malaysia. Therefore, further research is recommended.

CONCLUSION

In conclusion, this study has identified several barriers to physical activity and exercise in PWDs that can affect health and wellness. This undertaking may assist in developing effective interventions or may serve an alternative to engage this population in physical exercise programs. The information gained from this study may enable healthcare providers to assist the society leaders and rehabilitation clinicians in generating or constructing fitting programs and infrastructure. The findings from this research could increase awareness amongst the community about the potential barriers of PWDs to engage in long-term physical activities and exercises. Future research should be sensible in terms of the sample size, area of the settings, and background of the PWDs.

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