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Psychosocial impact of wheelchair usage on individuals with mobility disability in Ibadan, Nigeria

TK Hamzat, OA Olaleye and OT Agbomeji
Department of Physiotherapy, College of Medicine, University of Ibadan, Nigeria

Abstract

Background: Wheelchairs provide individuals with mobility impairments opportunity for independent living within their environment. However, using this device may have psychosocial impacts with consequent influence on the quality of life of the users. The psychosocial impact of wheelchair usage among individuals with mobility disability in a Nigerian community was investigated.

Methods: The study is a descriptive cross-sectional survey. People who have been independent users of wheelchair for a minimum of six months prior to the study were recruited from centres for people with disabilities in Ibadan, Nigeria into the study. A profile of their use of the device was documented and the psychosocial impact of wheelchair was assessed using the Psychosocial Impact of Assistive Devices Scale. Data were analysed using descriptive and inferential statistics at $p = 0.05$.

Results: Sixty consenting individuals with mobility disability participated in this study. Their mean age was 38.7±14.1 years. Majority (90%) were manual wheelchair users and two-thirds (63.3%) had been using the wheelchair for ≤ five years. Approximately a third of the participants use their wheelchairs occasionally. There was no significant difference ($p=0.26$) in the psychosocial impact of wheelchair usage between male and female users.

Conclusion: The psychosocial impact of wheelchair was similar between male and female users. However, the impact was higher on the self-esteem of male than female users and lower on their competence than that of their female counterparts. This may be due to stigmatization or a culturally-related unwillingness of men in our environment to be dependent on others.

Keywords: *Disability, Wheelchair, Psychosocial impact, Quality of life*

Résumé

Contexte: Les fauteuils roulants fournissent aux individus à mobilité réduite l'opportunité pour une vie indépendante au sein de leur environnement. Cependant, utilisation cet appareil peut avoir des impacts psychosociaux ayant une influence conséquente sur la qualité de vie des utilisateurs. L'impact psychosocial de l'utilisation du fauteuil roulant chez les personnes à mobilité handicap dans une communauté nigériane était étudié.

Méthodes: L'étude est une enquête transversale descriptive. Les personnes qui ont été utilisateurs indépendants de fauteuil roulant pour un minimum de six mois avant l'étude ont été recrutées dans l'étude parmi les centres pour les personnes handicapées à Ibadan, Nigeria. Un profil de leur utilisation de l'appareil a été documenté et l'impact psychosocial du fauteuil roulant a été évalué en utilisant l'échelle fonctionnelle d'impact psychosocial des appareils et accessoires. Les données ont été analysées à l'aide de statistiques descriptives et déductives à $p = 0,05$.

Résultats: Soixante personnes, consentantes, à mobilité handicap ont participé à cette étude. Leur âge moyen était de 38,7 ± 14,1 années. La majorité (90%) était utilisateurs de fauteuils roulants manuels et deux tiers (63,3%) avaient utilisé le fauteuil roulant pour cinq ans. Environ un tiers des participants utilisent leur fauteuil roulant occasionnellement. Il n'y avait pas de différence significative ($p = 0,26$) dans l'impact psychosocial d'utilisation de fauteuil roulant entre les utilisateurs masculins et féminins.

Conclusion: L'impact psychosocial du fauteuil roulant était similaire entre les utilisateurs masculins et féminins. Cependant, l'impact était plus élevé sur l'estime-propre des hommes utilisateurs que les femmes utilisatrices et plus bas sur leur compétence que celle de leurs homologues féminins. Cela peut être dû à la stigmatisation ou au refus culturellement-lié des hommes dans notre environnement à être dépendant des autres.

Mots-clés: *Personnes handicapées, fauteuil roulant, impact psychosocial, Qualité de vie*

Introduction

Mobility is an essential aspect of health status and a major predictor of social participation [1,2]. Thus, loss of mobility or decreased mobility function negatively impacts health status, limits independence, restricts activity and social participation. Impaired mobility is associated with diabetes and obesity; anxiety and depression, and contributes to overall poor quality of life [3-5]. When the ability to walk is compromised by physical impairments, a wheelchair may serve as

Correspondence: Prof. T.K. Hamzat, Department of Physiotherapy, College of Medicine, University of Ibadan, Nigeria. E-mail: tkhamzat@comui.edu.ng or talkzat@yahoo.com

a means to maintain mobility [6]. Wheelchair enables people with disabilities to live independently, take care of their basic needs, participate in community activities and social engagement, and engage in gainful employment [7,8]. Higher level of independence and social integration resulting from the use of wheelchair for mobility [6,9,10], contributes to a higher level of life satisfaction [11,12].

Many users reportedly find the wheelchair more limiting than their own physical and functional condition with regards to community participation [13,14]. It has been suggested that lack of social participation and home confinement; misuse and abandonment may result from having an inappropriate wheelchair [15]. Utilization of wheeled mobility devices depends on factors such as the user's demographics, health factors, wheelchair characteristics and environmental factors, as well as the quality of service and delivery [16]. Limitations to using the device may result from environmental barriers. Studies conducted in Nigeria showed that many public buildings are inaccessible to wheelchair users [17,18], whereas access has been identified as a factor that could limit community integration of wheelchair users [17].

The key to independence and better QOL for wheelchair users lies in having an appropriate wheelchair [9]. Although, it has been reported that the primary reason for the use of inadequate or inappropriate wheelchair is a lack of funds [19] the psychosocial impact of these devices on the users may also be a significant determinant of usage. Psychological factors associated with inadequate or inappropriate mobility devices may include loss of self-esteem, depression, diminished quality of life, and social isolation [20]. Investigating the psychosocial impact of an Assistive Technology on its users may shed more light on the actual reasons for its use and abandonment [21]. Yet, little attention has apparently been directed towards understanding the issues relating to the psychosocial impact of wheelchair usage on the users particularly in Nigeria. We therefore examined the pattern of use and the psychosocial impact of wheelchair usage on people with mobility disability in Ibadan, Nigeria.

Materials and methods

This cross-sectional study investigated the psychosocial impact of wheelchair usage on individuals with mobility disability in Ibadan, South-Western Nigeria. Important eligibility criterion was regular ambulation with the aid of a wheelchair for a minimum of six months prior to this study. Ethical approval was obtained from the local Research Ethics Committee (UI/EC/12/0123). Participants were recruited from two private physiotherapy clinics in Ibadan, physiotherapy clinics of the University College Hospital and Ring Road State Hospital, Ibadan, Oluyole Cheshire Home, Ibadan, Ministry of Social Welfare, Ibadan and the Special People Association, University of Ibadan. The nature and purpose of the study were explained to each participant after which their informed consents were obtained.

Socio-demographic data as well as the diagnoses of the participants and information on the pattern of their wheelchair usage were obtained via oral interview and documented using a researcher-designed data gathering form. The impact of wheelchair usage was assessed using the Psychosocial Impact of Assistive Devices Scale (PIADS) [21]. The PIADS is a 26-item, self-rating scale designed to measure users' perception of how assistive devices (in this case, a wheelchair) affect quality of life. It is a generic measure that describes users' perceptions around 3 constructs namely: adaptability, self-esteem and competence [22]. Adaptability is the enabling and liberating effects of a device, self-esteem relates to the extent to which the device has affected self confidence, self-esteem and emotional wellbeing while competence is the impact of the device on functional independence, performance and productivity. Each item is measured along a dimension ranging from -3 (maximum negative impact) through 0 (no perceived impact) to +3 (maximum positive impact). The PIADS is a good measure of how a device impacts on the user's life experience [23].

Copies of the PIADS were hand-distributed to the participants and retrieved immediately. Those who were unable to complete the questionnaire on the spot returned theirs at a later date. Data collection spanned 4 Months.

Data analysis

Data were analysed using SPSS version 11.0. Descriptive statistics of mean and percentages was used to summarise data. Inferential statistics of chi-square test was used to examine the difference in impact of wheelchair usage between genders and as well as the difference in level of utilization between old and new users of wheelchair. The level of significance was set at 0.05.

Results

Seventy-one individuals with mobility disability who ambulate with the aid of wheelchairs were approached, out of which 60 (84.5%) gave consent to participate in the study. The participants were aged

Table 1: Socio-demographic characteristics and wheelchair profile of respondents

Variables	Frequency n = 60	Percentage %
Age(yrs)		
15-24	5	8.3
25-34	27	45.0
35-44	12	20.0
45-54	8	13.3
>54	8	13.3
Mean age(yrs)	38.7±14.1	
Gender		
Male	30	50.0
Female	30	50.0
Type of Wheelchair		
Manual wheelchair (MWC)	54	90.0
Powered wheelchair (PWC)	6	10.0
Means of procurement		
Self-Funded	17	28
Family/Friend Funded	31	51.7
Charitable Organisations	12	20.0
Duration of use of wheelchair		
New (≤5 years)	38	63.3
Experienced (>5 years)	22	36.7
Frequency of Use (hrs/day)		
≤7	21	35
>7	39	65.0

between 18 and 80 years (38.7±14.1years). Both genders were equally (50%) represented in the study. Majority of the participants 49(81.7%) had a diagnosis of tetraplegia and paraplegia secondary to traumatic spinal cord injury, 7(11.7%) had paralytic polio during childhood, 3(5.0%) of the participants had stroke while only 1(1.6%) had advanced Parkinson's disease. Nearly all the participants (90%) were manual wheelchair users and about two thirds (63.3%) were new users, defined as those who have been using the device for less than 5 years preceding their participation in this study. None of the participants were fitted for their wheelchair and none received specialized wheelchair skills training though they were taught transfer in and out of wheelchair. Thirty nine (65.0%) participants utilized their wheelchairs for more than seven hours per day and for more than five days per week (Table 1). Majority of the participants (83.2%) in this study used their wheelchair outside of their homes to transport themselves from one place to the other.

Out of the three constructs measured by the PIADS, adaptability to wheelchair impacted the quality of life of the users the most (38.3%). Female users reported a higher (65.0%) negative impact of wheelchair usage on competence than their male counterparts (35%). The negative impact of wheelchair usage on self-esteem was higher (58.8%) among male participants (Table 2). There was no statistically significant difference in the overall psychosocial impact of wheelchairs usage between male and female users ($p = 0.26$). The frequency of utilisation of wheelchair in terms of hours/day and days/week was significantly higher ($p < 0.05$) among the new wheelchair users (Table 3).

Table 2: Comparison of Psychological Impact of wheelchairs usage between male and female users

Variable	Male n (%)	Female n (%)	Chi square	P–Value
Competence	7 (35.0)	13 (65.0)	2.72	0.26
Self esteem	10 (58.8)	7 (41.2)		
Adaptability	13 (56.5)	10 (43.5)		

Table 3: Comparison of level of utilization of wheelchair between new and experienced users

Variable	New n (%)	Experienced n (%)	Chi square	P-Value
Utilization (hrs/day)				
≤7	17 (44.7)	4 (18.2)	4.32	0.03*
> 7	21 (55.3)	18 (81.8)		
Utilization days/week				
≤5	18 (47.4)	3 (13.6)	6.97	0.01*
>5	20 (52.6)	19 (86.4)		

**significant at $p \leq 0.05$*

Discussion

Majority of the individuals approached for this study consented to participate. Those who refused participation cited lack of interest for declining. The age of our participants ranged between young adults to geriatrics indicating that mobility disabilities can occur at any time over the lifespan. However, wheelchair utilization pattern appears similar across different age groups. This implies that age has no influence on wheelchair usage among the participants. This concurs with the findings of earlier investigators that age had no influence on overall level of assistive technology usage [7]. This may suggest that usage of an assistive technology would be influenced by factors such as needs and availability rather than the age of the user.

Only a small proportion (10%) of the participants in this study utilised electric powered wheelchair as against manually operated type. This observation may be a reflection of affordability pattern of wheelchair by type among those needing the device in our study location. Choice of type of wheelchair to be used tends to depend on availability and affordability in a low-income society, like ours. Eighty percent of people with disabilities, particularly children with disabilities, live in less-resourced countries where access to appropriate wheelchairs is limited [24]. Assistive devices for mobility or for enhancement of functional independence constitute expensive components of rehabilitation [19] and government funding for wheelchair procurement is hardly available in Nigeria. Motorised wheelchairs cost and weigh more and are difficult to transport [13]. Manual wheelchairs have limitations such as the difficulty of propelling uphill and the risk of toppling over, causing the user to fall down and difficulty of moving around for relatively long distances which may result in fatigue and discomfort [13]. The manually operated wheelchair therefore may not ensure full independence of the users, yet it is a cheaper alternative to total dependence for people with mobility disability in our environment. However, such wheelchairs can only be considered beneficial if other requirements of health, safety and function are met [25].

Irrespective of the type, majority of the participants (71.7%) got their wheelchair through financial assistance from family and friends as well as charitable organizations. This is in congruence with the report of Pearlman *et al* [26] that in recent years, the primary means of procuring wheelchairs in low-resourced countries has been through charitable programmes. This may be a reflection of the socio-economic status of most physically challenged individuals in low and middle income countries [27]. Charitable programmes make wheelchairs available on a cost-free or low cost basis to mobility challenged individuals who may normally be unable to afford one [26]. Unfortunately, it had been observed that many of these donated wheelchairs do not meet international standards and that the recipients' lifestyle remains unchanged despite the presumed effect of the donation [27].

Nearly three-quarters of the participants in this study used their wheelchairs for mobility and about $4/5^{th}$ used their wheelchairs as a means of transportation outside the house. Similar trend was reported by Brandt *et al* [6] in a cohort of 111 Danish wheelchair users over age 65 where nearly all their participants reported a significant increase in their level of independence, activity and participation. As an assistive technology, the wheelchair aims to improve locomotion and promote functional independence, allowing the user to perform his/her activities of daily living [28] and appears to be serving that purpose in this population. Users also tend to use their wheelchairs selectively depending on their physical needs and environmental constraints [29].

Psychosocial impact of wheelchair usage appears not to be significantly different between male and female users ($p = 0.26$) though the usage seems to affect both genders differently. Wheelchair usage impacts more on the self-esteem of the males than their female counterparts in this study. Perhaps because men are more affected by the stigma associated with using devices like walkers or manual wheelchairs, and therefore avoid using them, possibly taking advantage of the greater availability of personal assistance as a substitute for assistive devices [7]. Consequently, men tend to have a lower usage level of assistive devices.

Participants in our study spent a substantial time (7.00 ± 4.05 hours per day) in their wheelchair and used the device for an average of 5.7 ± 1.7 days per week. This is comparable with the findings of Tolerico *et al* [30] who reported that a group of manual wheelchair users were using the devise for 7.1 ± 4.9 hours a day in their home environments and actively for 12.0 ± 3.6 hours a day at the National Veterans Wheelchair Games. In our study, frequency of use in days/week and duration of use in hours per day was higher among new wheelchair users, that is those that have been using the wheelchair for ≤ 5 years, compared with experienced users. According to Phillips and Zhao [31], abandonment rates for assistive technology were highest during the first year and after five years. Reasons such as improved physical functioning or use of alternative mobility devices have been adduced as causes of the discontinued use [19]. It has also been shown that

the utilization of wheeled mobility devices depends on factors such as the user's demographics, health factors, wheelchair characteristics and environmental factors, and the quality of service and delivery [16].

The involvement of the user in the selection process and the satisfaction related to the mobility device similarly play a significant role in the use or the abandonment of the device [32]. Our findings of decreased rate of utilization among old users may suggest improved physical functioning over time. Reliance on family members for personal and mobility assistance, though fraught with safety risks, could lead to reduce rate of utilization of wheelchair. Factors relating to a lack of user opinion in selection and changes in user's need or priorities have also been associated with non-use of assistive devices [31]. No statistically significant difference was found in the pattern of utilization of wheelchair between male and female users.

Limitations

Participants for the study consisted of a convenience sample recruited from physiotherapy clinics in Ibadan, homes for special people and at the meeting of Special People Association, University of Ibadan. The pattern of utilization obtained may not be truly representative of wheelchair users in Ibadan, Nigeria. Considering the small sample size for the study and its inherent low power, the outcome of the study needs to be interpreted with caution. The PIADS has not been validated for used in Nigeria and this may reduce the internal validity of the results. Factors other than age and gender have been identified in literature as having implications on the psychosocial impact of wheelchair usage. For instance, Day and Jutai [33] suggested that the longer an assistive device is used, the more it may contribute to feelings of competence. Pousada *et al* [34] also reported differences scores of competence and adaptability in relation to the presence of adaptations and/or architectural barriers. These factors were neither investigated nor controlled for in this study. This may be a limitation to the application of our findings. Another possible limitation of the study is the fact that information obtained about diagnosis and rate of utilization is self-reported and may not be entirely accurate.

Conclusion

This study investigated the psychosocial impact of wheelchair usage on people with disability in Ibadan, Nigeria. The findings of this study showed that majority of the participants were manual wheelchair users. This type of wheelchair limits full independence as users most times require the assistance of others to propel the wheelchair. This limitation may account for the tendency of some of the wheelchair users to use the device less frequently with time. The psychosocial impact of wheelchair usage is similar between both genders but affects different psychosocial constructs between both genders.

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