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Psychosocial Impact of Powered Wheelchair, Users' Satisfaction and Their Relation to Social Participation

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Abstract: Several studies showed positive effects of assistive technologies on psychosocial impact and participation of adults with mobility impairments. The purpose of this study was to assess the psychosocial and participation impact of powered wheelchairs. Participants were thirty persons with disabilities who use powered wheelchairs with diverse medical conditions. The Quebec User Evaluation of Satisfaction with Assistive Technology, the Psychosocial Impact of Assistive Devices Scale and the Activities and Participation Profile Related to Mobility were used, in addition to demographic, clinical and wheelchair related questions. The participants were satisfied with both the assistive technology and related services, with the lowest satisfaction scores belonging to those who had been using their wheelchairs for a longer period of time. We noticed significant restrictions in participation mostly among persons with longer wheelchair utilization. The most satisfied were the ones with better performance in terms of social participation. Psychosocial scores showed a positive impact with higher adaptability among persons who transitioned from a manual compared to those who already had a powered wheelchair. There was a positive psychosocial impact and therefore an increase in quality of life of its users.

Keywords: assistive technologies; powered wheelchair; psychosocial impact; social participation

1. Introduction

More than one billion people in the world live with some form of disability and its prevalence is steadily growing [1]. It is well recognized, especially after the implementation of the International Classification of Functioning, Disability and Health (ICF), that the end goal of rehabilitation is to preserve or improve participation [2].

Mobility devices reduce the impact of disability and add dignity to the human being enhancing human rights by promoting functionality and social inclusion [3]. The concept of participation in persons using mobility device is also based on several areas of ICF [4]. The 2006 “United Nations Convention on the rights of persons with disabilities” and the “2008 World Health Organization guidelines on the provision of wheelchairs in less resourced settings” respectively express the responsibility of governments to ensure access to personal mobility options as well as the need for mobility device training [3]. Thus, prescribing and using a wheelchair in less resourceful settings is a clinical and civilizational challenge [5,6].

Assistive products and technologies hold promise for partially or completely mitigating the impacts of impairments and enhancing work participation when appropriate products and technologies are available, when they are properly prescribed and fitted, when the person receives proper training in their use and appropriate follow-up, and when societal and environmental barriers are limited [7]. It is important to objectively identify those barriers and facilitators that interact with mobility during social participation [8], as social participation could be linked with morbidity and quality of life [9]. Several studies showed the benefits of the assistive technologies (AT), particularly if they contribute to enhancing participation of adults with mobility problems, as well as on psychosocial condition [10,11].

Getting a wheelchair is a complex event with various repercussions on individuals, particularly on social roles, promoting the possibility of “doing” activities of daily life and increasing interactions with external environments [8,12]. Powered wheelchairs (PW) in particular seem to improve daily routines, ability to engage in mobility related activities and social participation, and increasing peoples’ independence, safety and self-esteem [9,13]. PW improve autonomy in activities of daily living of the persons with disability [14,15]. Moreover, it seems that the transition from a manual wheelchair (MW) to a PW increased the occupational performance, competence, adaptability and self-esteem of persons with severe disabilities [16].

However, a large number of persons with disabilities are reluctant to use the PW, which makes the integration process important in promoting autonomy and significant to their participation [17]. When matching individuals with appropriate assistive technologies, it is important to understand the complexity of factors that must be optimized to enhance their performance and satisfaction, since it can influence its abandonment or underuse [18]. Selecting, designing, or modifying the correct assistive device for an individual and providing training in its use, as well as appropriate follow-up, are complex but necessary elements for maximizing function among users of assistive products and technologies [7].

Thus, we tried to understand the impact of the AT on peoples’ participation profiles, in order to improve the quality of services, based on their needs and preferences. The aim of this study was to analyze the relationship between the psychosocial impact of PW, users’ satisfaction and social participation profiles.

2. Methods

A cross-sectional study was designed, using a convenience sample of 30 persons with disabilities recruited by doctors and physiotherapists external to the study in the outpatient clinic of the Physical and Rehabilitation Medicine Department of the Coimbra University Hospital Centre (CHUC) and in the inpatient and outpatient clinics of two other institutions whose patients were PW users, respectively, the Cerebral Palsy Association of Coimbra and the Occupational Activities Centre of São Silvestre. The study was approved by the CHUC Ethic Commission (number CHUC-054-17).

Inclusion criteria were age between 18 and 64 years old, ability to understand written and spoken Portuguese language and using the current PW for at least one year and four hours per day. All individuals voluntarily gave their informed consent to participate in the study.

Measures adopted to evaluate the impact of assistive devices, namely the PW, regarding the psychosocial factors, satisfaction and social participation profile of a person with disabilities must be suitable for use in a particular cultural and specific language context [19].

Data were collected face to face between May and October of 2017 by a trained junior researcher, who had never been in contact with the patients previously. Participants responded to the Portuguese version of Quebec User Evaluation of Satisfaction with Assistive Technology, version 2.0 (QUEST) [20,21]; the Portuguese version of Psychosocial Impact of Assistive Devices Scale (P-PIADS) [22] and the Activities and Participation Profile Related to Mobility (PAPM) [23], in addition to demographic, clinical and PW related questions.

The QUEST 2.0 is a 12-item questionnaire whose purpose is to evaluate the users’ satisfaction with his/her assistive device (regarding its dimensions, weight, ease of adjustment, safety, durability, ease of

use, comfort and effectiveness) and the related services (specifically, delivery, repairs and servicing, professional services and follow-up services). The participant rates his/her satisfaction regarding each of the 12 items using a scale of 1 to 5 and, afterwards, chooses the 3 items he/she considers to be the most important ones [21].

The PIADS is a 26-item, self-report questionnaire that evaluates the effects of an assistive device on the functional independence, well-being and quality of life. It assesses psychosocial factors which includes both factors within the individual and other factors attributable to the environment that affect the psychological adjustment of persons with disabilities. PIADS comprises 3 subscales, specifically, competence, adaptability and self-esteem. The competence subscale, composed of 12 items, is related to the perceived impact of the AT on the users' competence, performance and productivity. The adaptability subscale, with 6 items, assesses the persons' eagerness to try new challenges and take risks and his/her ability to take advantage of opportunities, thus evaluating the enabling aspects of the AT regarding participation. Finally, the self-esteem subscale, composed of 8 items, measures the perceived impact of the AT on self-confidence and emotional well-being. For each item, a score is attributed ranging from -3 (maximum negative impact) to $+3$ (maximum positive impact). The midpoint, zero, indicates no perceived impact. For every item, the impact of the current AT, which in this specific study is always a PW, is being compared to either the previous AT used by the participant or to not using an AT at all, depending on the participant's previous situation [24].

The PAPH is an 18-item scale designed to measure the social participation of community dwelling adults. It assesses the difficulties experienced by individuals in performing daily life activities that may be conditioned by mobility and related to social interactions and relations, education, employment, money management and social and community life. For each item, the participant attributes a score ranging from zero (no limitation/restriction) to four (complete limitation/restriction), except for the activities that do not apply to the individual's life (NA), which are not rated. As a result, an individual's participation profile is obtained [23].

In addition, the participants replied to a form comprising demographic, clinical and AT related questions. The demographic information consisted of age, gender and occupation (before and after starting to use the current PW). Clinically, the participants were questioned about their medical condition and the time of its onset. Regarding the AT, the questions included time since adoption of the current PW and hours of use per day.

Descriptive and inferential statistics were conducted, using the software "IBM SPSS Statistics for Macintosh, Version 23.0 (IBM Corp., Armonk, NY, USA)". Correlations between QUEST (total and subscales), P-PIADS (total and subscales), PAPH, age, time since onset of medical condition and time since adoption of the current PW were carried out through Pearson's Coefficient. Differences between groups, specifically, between who had a MW as the previous AT compared to those who had a different PW and between who had received training with the PW compared to those who had not, were evaluated using Student's *t*-test for independent samples. Groups were compared in terms of the scores obtained in each of the scales and subscales. Cross-tabulation was used to describe the relationship between the previous AT and whether they had received training with the current PW. Descriptive statistics were used to describe the results of QUEST, P-PIADS and PAPH and respective subscales, as well as other demographic, clinical and AT related data. Testing for normality was executed using a Kolmogorov-Smirnov test. In inferential statistics, the reference *p* value used was < 0.05 .

3. Results

3.1. Descriptive Statistics

From a total of 30 participants, 18 were men (60%). The mean age of was 40.63 years (SD 13.09). Regarding occupation, 22 (73.3%) were unemployed. The number of unemployed participants increased to 28 (93.3%) after the beginning of use of the current PW, with 2 of the participants (6.7%)

remaining employed (one of them changed to a different job). Cerebral palsy was the most prevalent diagnosis (37%). All the data regarding the characteristics of the sample (social, clinical and AT related) is presented in Table 1.

Table 1. Sample characterization.

Participants (n = 30)	Mean (SD)	n=	%
Age	40.63 (13.09)		
Gender			
Male		18	60
Female		12	40
Occupation before starting to use current PW			
Employed		8	26.7
Unemployed		22	73.3
Student		0	0
Occupation after starting to use current PW			
Employed		2	6.7
Unemployed		28	93.3
Student		0	0
Diagnosis			
Cerebral palsy		11	36.7
Muscular dystrophy		6	20
Spinal cord injury		4	13.3
Amputation		3	10
Ataxia		2	6.7
Multiple sclerosis		1	3.3
Stroke		1	3.3
Other		2	6.7
Time since onset of the disease (years)	25.97 (12.21)		
Years using current PW	5.53 (3.87)		
Hours using PW per day	10.10 (3.77)		
Training with current PW			
Yes		6	20
No		24	80
Previous AT			
Different PW		20	66.7
MW		8	26.7
Crutches		1	3.3
None		1	3.3

AT: assistive technology; MW: manual wheelchair; PW: powered wheelchair; SD: standard deviation.

QUEST, P-PIADS and PAPM total and subscales results are presented in Table 2.

Table 2. Satisfaction with AT, psychosocial impact of AT and participation profile.

	Minimum	Maximum	Mean	SD
QUEST AT	3.25	5.00	4.34	0.48
QUEST services	1.50	5.00	4.05	0.66
QUEST total	3.25	4.83	4.24	0.45
P-PIADS competence	0.00	2.50	1.39	0.71
P-PIADS adaptability	0.00	2.83	1.32	0.81
P-PIADS self-esteem	0.00	2.25	1.38	0.57
P-PIADS total	0.04	2.35	1.37	0.63
PAPM	0.58	3.00	1.72	0.69

QUEST: Quebec User Evaluation of Satisfaction with Assistive Technology; P-PIADS: Portuguese version of Psychosocial Impact of Assistive Devices Scale; PAPM: Activities and Participation Profile Related to Mobility; SD: standard deviation.

3.2. Inferential Statistics

3.2.1. Psychosocial Impact, Satisfaction and Participation

As presented in Table 3, the PAMP score was negatively correlated with all QUEST scores (total, AT and services), meaning the most satisfied with the AT and/or the related services, were the ones with the best performance in terms of social participation (lower PAMP scores correspond to a better participation profile). On other hand, there was no correlation between any of the P-PIADS scores and the PAMP score, showing no relation between the psychosocial impact of the PW and the participation profile.

Table 3. Relation between PAMP, P-PIADS and QUEST scores (n = 30).

	PAMP		QUEST Total		QUEST AT		QUEST Services	
	r	p	r	p	r	p	r	p
PAMP	-	-	-0.449	0.013	-0.363	0.049	-0.383	0.037
P-PIADS competence	-0.096	0.615	0.269	0.150	0.335	0.070	0.059	0.758
P-PIADS adaptability	-0.012	0.615	0.143	0.450	0.221	0.240	-0.031	0.872
P-PIADS self-esteem	0.000	1.000	0.203	0.283	0.191	0.313	0.134	0.481
P-PIADS total	-0.053	0.782	0.237	0.207	0.291	0.119	0.058	0.759

QUEST: Quebec User Evaluation of Satisfaction with Assistive Technology; P-PIADS: Portuguese version of Psychosocial Impact of Assistive Devices Scale; PAMP: Activities and Participation Profile Related to Mobility.

3.2.2. Impact of Age, Time of Disease and PW Use

As demonstrated in Table 4, the PAMP score was negatively correlated with age, indicating that older users had a better participation profile compared to younger ones, contrary to what might have been expected. There was a positive correlation between the PAMP score and the amount of time the PW had been used for ($r = 0.409$, $p = 0.025$). There was no correlation between the time since onset of the disease and the PAMP score. The time since the onset of the disease was negatively correlated with PIADS total, competence and adaptability scores ($r = -0.398$, $p = 0.030$; $r = -0.378$, $p = 0.039$; $r = -0.478$, $p = 0.008$).

The QUEST total and AT scores were positively correlated with the age of the participants ($r = 0.519$, $p = 0.003$; $r = 0.481$, $p = 0.007$, respectively), which means older persons were more satisfied with their AT than younger ones. The amount of time the PW had been used for was negatively correlated with all the QUEST scores ($r = -0.444$, $p = 0.014$; $r = -0.370$, $p = 0.044$; $r = -0.363$, $p = 0.048$, respectively), suggesting that participants who had been using their PW for a longer period of time were less satisfied with both the AT and the related services. There was no correlation between the time of onset of the disease and any of the QUEST scores.

Table 4. Relation between PAMP, P-PIADS, QUEST and age, time using PW and time since onset of disease (n = 30).

	Age		Time Using PW		Time Since Onset of Disease	
	r	p	r	p	r	p
PAMP	-0.584	0.001	0.409	0.025	-0.159	0.402
P-PIADS competence	0.217	0.249	0.056	0.768	-0.378	0.039
P-PIADS adaptability	0.157	0.407	0.032	0.865	-0.478	0.008
P-PIADS self-esteem	0.287	0.124	0.090	0.635	-0.225	0.233
P-PIADS total	0.238	0.206	0.064	0.739	-0.398	0.030
QUEST AT	0.481	0.007	-0.370	0.044	0.068	0.720
QUEST services	0.355	0.055	-0.363	0.048	0.219	0.244
QUEST total	0.519	0.003	-0.444	0.014	0.157	0.408

QUEST: Quebec User Evaluation of Satisfaction with Assistive Technology; P-PIADS: Portuguese version of Psychosocial Impact of Assistive Devices Scale; PAMP: Activities and Participation Profile Related to Mobility.

3.2.3. Impact of Training with PW and Previous AT

On a different note, the sample can also be divided in two groups based on having received training oriented by professionals with the current PW or not. From the 6 participants that received training (20% of the total sample), only 2 of them had a MW as their previous AT, whereas the other 4 had a different PW prior to the current one. This means only 25% of the persons with disabilities who transitioned from a MW to a PW received training, while 20% of those who already had a PW previously also received it.

As shown in Table 5, the ones who received training had a higher PAPH score that means worse participation profile and more limitations compared to those who did not receive it (2.25 vs. 1.59, $p = 0.035$). Relative to the QUEST, the services scored higher among who received training compared to those who did not, although there was no statistical significance (4.33 vs. 3.98, $p = 0.245$), suggesting a higher satisfaction with the services in the group of the ones who received training. QUEST scores of the total and AT) were similar among the two groups. Regarding the P-PIADS, the group that received training had a higher score in the adaptability subscale compared to the group that didn't, despite the absence of statistical significance (1.50 vs. 1.27, $p = 0.543$). The remaining P-PIADS scores (total, competence and self-esteem) were similar among the two groups. There were no statistically significant differences between this groups concerning age, time since diagnosis or number of years on the current PW.

Table 5. Comparison of PAPH, P-PIADS and QUEST scores, age, number of years on the current PW and time since diagnosis, according to having or not received training oriented by professionals with the current PW.

	Training with the PW	Mean	SD	p
PAPH	Yes (n = 6)	2.25	0.63	0.035
	No (n = 24)	1.59	0.66	
P-PIADS competence	Yes (n = 6)	1.38	0.60	0.958
	No (n = 24)	1.39	0.74	
P-PIADS adaptability	Yes (n = 6)	1.50	0.84	0.543
	No (n = 24)	1.27	0.81	
P-PIADS self-esteem	Yes (n = 6)	1.40	0.46	0.938
	No (n = 24)	1.38	0.61	
P-PIADS total	Yes (n = 6)	1.41	0.50	0.863
	No (n = 24)	1.36	0.67	
QUEST AT	Yes (n = 6)	4.23	0.68	0.545
	No (n = 24)	4.36	0.43	
QUEST services	Yes (n = 6)	4.33	0.58	0.245
	No (n = 24)	3.98	0.67	
QUEST total	Yes (n = 6)	4.26	0.64	0.894
	No (n = 24)	4.24	0.40	
Age (years)	Yes (n = 6)	37.50	8.80	0.410
	No (n = 24)	41.42	14.00	
Years on current PW	Yes (n = 6)	7.67	5.01	0.133
	No (n = 24)	5.00	3.45	
Time since diagnosis (years)	Yes (n = 6)	22.50	12.39	0.446
	No (n = 24)	26.83	12.27	

PAPH: Activities and Participation Profile Related to Mobility; AT: assistive technology; MW: manual wheelchair; QUEST: Quebec User Evaluation of Satisfaction with Assistive Technology; P-PIADS: Portuguese version of Psychosocial Impact of Assistive Devices Scale; PW: powered wheelchair; SD: standard deviation.

On another matter, taking into consideration the previous AT used by the participants, as previously stated, 8 (26.7%) of the participants used a MW as their prior AT, while 20 (66.7%) used a different PW before starting to use the current one. As demonstrated in Table 6, the individuals who had a MW as their previous AT had a higher score on P-PIADS adaptability subscale compared to those with a previous PW (1.85 vs. 1.10, $p = 0.02$), which demonstrates a higher psychosocial impact of the new wheelchair in terms of adaptability to the ones who transitioned. Regarding the PAPH score, it suggested that there was a better performance in terms of social participation (less limitations)

among who previously had a MW compared to the ones with a previous PW, although this wasn't statistically significant (1.55 vs. 1.85, $p = 0.314$). The QUEST scores (total, AT and services) were very similar between the two groups, with no statistically significant differences (Table 6).

Table 6. Comparison of PAPM, P-PIADS and QUEST scores, age, number of years on the current PW and time since diagnosis, according to previous AT.

	Previous AT	Mean	SD	p
PAPM	MW (n = 8)	1.55	0.76	0.314
	PW (n = 20)	1.85	0.67	
P-PIADS competence	MW (n = 8)	1.72	0.79	0.128
	PW (n = 20)	1.29	0.59	
P-PIADS adaptability	MW (n = 8)	1.85	0.95	0.020
	PW (n = 20)	1.10	0.62	
P-PIADS self-esteem	MW (n = 8)	1.64	0.48	0.110
	PW (n = 20)	1.26	0.58	
P-PIADS total	MW (n = 8)	1.73	0.70	0.053
	PW (n = 20)	1.24	0.53	
QUEST AT	MW (n = 8)	4.25	0.65	0.592
	PW (n = 20)	4.36	0.42	
QUEST services	MW (n = 8)	4.09	0.53	0.712
	PW (n = 20)	3.99	0.73	
QUEST total	MW (n = 8)	4.20	0.59	0.839
	PW (n = 20)	4.24	0.41	
Age (years)	MW (n = 8)	49.00	13.07	0.026
	PW (n = 20)	46.90	11.98	
Years on current PW	MW (n = 8)	4.88	5.06	0.462
	PW (n = 20)	6.10	3.42	
Time since diagnosis (years)	MW (n = 8)	14.25	9.56	0.001
	PW (n = 20)	28.80	9.05	

PAPM: Activities and Participation Profile Related to Mobility; AT: assistive technology; MW: manual wheelchair; QUEST: Quebec User Evaluation of Satisfaction with Assistive Technology; P-PIADS: Portuguese version of Psychosocial Impact of Assistive Devices Scale; PW: powered wheelchair; SD: standard deviation.

Other differences among these groups were the age and the time since diagnosis; the ones who had a previous PW being, in average, younger (36.90 vs. 49.00, $p = 0.026$) and having their diseases for a longer period (28.80 vs. 14.25, $p = 0.001$) compared to the ones with a prior MW. There were no statistically significant differences between the two groups regarding the number of years on the current PW (Table 6).

Considering there was only one participant whose prior AT was crutches and another one who did not use an AT previously, no conclusion should be drawn from the data relative to these two participants.

4. Discussion

According to our findings, social participation does not seem to be associated to the psychosocial impact of the PW, similar to what was demonstrated by Buning, Angelo and Schmeler, who found no significant relationship between the psychosocial impact of powered mobility devices and the users' occupational performance [16]. Contrarily, a study by Martins and collaborators demonstrated a relation between the higher psychosocial impact scores and the better performance in social participation, regarding different types of AT [10]. The fact that there was no correlation between the psychosocial impact and participation profile might mean that they had such severe physical limitations that, despite the positive psychosocial impact of the PW, it is not enough to attenuate these limitations and to improve performance in the activities of the daily living and social roles.

Furthermore, a higher satisfaction was linked to a better participation profile, which had also been previously shown concerning MW users [25,26]. On the other hand, another study did not find any

correlation between wheelchair user's satisfaction and participation [27]. Historically, people with disabilities, as end users, have been missing in product development. At minimum, a knowledge of people with disabilities is needed. Often this means people with disabilities must be directly and pervasively involved in all phases of the product lifecycle, from idea generation to outcomes measurement [28].

In this study, younger individuals had the worst participation profile. This can be explained by the particular characteristics of these participants—they are diagnosed with cerebral palsy, with severe limitations since birth, which also explains why younger users had been using their PW for a longer period of time compared to older ones, which their medical conditions, in general, had a later onset. A previous study had found no relation between age and participation profile [10]. It is important to take into consideration that the PAPM scores may be influenced by the fact that the participants only attribute a score to the activities they consider to be significant to them, choosing “not applicable” for the others [23]. These activities that were considered unimportant may, in fact, be the ones they perform with more difficulties. However, once this questionnaire is a self-reported measure, we interpret the results as the perception of people with disability.

Moreover, our findings suggest a positive psychosocial impact of PW in competence, adaptability and self-esteem, as it was also previously shown by Buning, Angelo and Schmeler regarding PMD [16,29]. Likewise, other studies showed benefits associated with PW use, namely increased independence [16,30], well-being [14] and social participation [11,29]. There was no evidence of negative impact of the AT due to stigmatization, as suggested in other studies [31,32], since the self-esteem level is about the same as competency and adaptability. There was no relationship between the psychosocial impact of the PW and users' age, which indicates that the AT could be beneficial at any age, making sense to be prescribed through the lifespan, also shown by Martins and collaborators [10].

On a different note, the transition from a MW to a PW seems to have a greater psychosocial impact than from a PW to a new one. Buning, Angelo and Schmeler had previously shown that this transition increased the competence, adaptability and self-esteem of severely impaired persons, as well as their occupational performance [16]. Nevertheless, we cannot ignore the fact that, in our study, only eight of the participants had a previous MW whereas more than twice this number (twenty participants) had already a PW, which may have had some influence on the results. This also applies to the comparison of the participation profiles, which suggest that there was a better performance among the first group. This is easily understandable considering that those who only required a PW recently, compared to the participants on the second group who had been handling a transition to a PW long time ago due to stronger limitations and, therefore, exhibit a worse participation profile.

Considering the training with the current PW, it seems it has been provided preferably to the ones who had a worse participation profile, eventually as a possible attempt to improve it. There was a tendency for better adaptability among users who received training, which suggests efficiency and value of the training. A study by Mountain and collaborators demonstrated that stroke patients who received formal PW training improved their PW skills to a significantly greater extent than participants who did not [33]. Nevertheless, a study by Fehr, Langbein and Skaar showed that 10% of the PW users who received training found it impossible or extremely difficult to use their PW for activities of daily living [17], while another study by Martins and collaborators showed no differences in terms of participation profile or psychosocial impact of diverse AT between those who did and did not receive training [10]. Besides this, the ones who benefited from the training seemed to appreciate this help that was provided, considering their satisfaction relative to the services. If a bigger investment was made to provide training to the PW users, there could possibly be a more positive impact of these AT in the long term. Future studies are needed to support or oppose this hypothesis.

Considering this positive psychosocial impact of the PW, and according to the World Health Organization's definition of Quality of Life (QoL)—“[a]n individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. It is a broad ranging concept affected in a complex way

by the person's physical health, psychological state, personal beliefs, social relationships and their relationship to salient features of their environment" [34]—we can infer that the PW increase the QoL of the persons with disabilities, as was also shown by previous studies [15,35]. Accordingly, Chan and Chan demonstrated a relation between wheelchair users' social participation and QoL [27].

Concerning the limitations of this study, most of them were presented earlier in this discussion section and were mainly related with sample selection bias and metric instrument restrains. There were some data access constrains, which did not allow us to obtain a larger sample, more representative of the target population. The sample engaged individuals with complex and heterogeneous impairments which better represents this study target population. However, this obviously represents an expected and controlled evaluation bias. We tried to use simple but more superficial measures of evaluating psychosocial impact, satisfaction and participation, collected by the researcher, in order to include representative patients with mild cognitive impairments.

The present study allows researchers and clinicians to better understand the PW users' opinion about the impact of AT on their lives and, also, about the services provided, which may help to improve the quality of such services and the characteristics of the PW, according to preferences and needs. These improvements may, in turn, lead to a more positive impact of the PW on persons with disabilities' lives, facilitating their interaction with the surrounding environment, promoting their social participation and, consequently, improving their QoL. Successful assistive technology product interventions are complex and include much more than the simple selection of the right product. Assistive technology product use is highly context sensitive in terms of the person with disabilities' environment. As a field, we have much to study and develop around assistive technology product interventions from a global perspective [28].

5. Conclusions

Taking into consideration the main goals of this study, we conclude that:

1. There was an overall positive psychosocial impact of the PW in all three PIADS areas (competence, adaptability and self-esteem) and in the PIADS total score, regardless age, with a potential increase in the QoL.
2. The best participation profiles were noted among the most satisfied users.
3. There was a higher psychosocial impact in terms of adaptability among the ones who transitioned from a MW to a PW compared to those who had already experienced one.

Future research should look for stronger metric instruments and outcome measures client-centered, with focus on the barriers to AT use and accessing to the provisional services, to better choices in the participation of individuals with disabilities in society. We need to highlight the real impact of AT related interventions in a deeper critical analysis in order to advocate for more effective services and, consequently, satisfied clients.

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