Research Article
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Developing wheelchair training program for rehabilitation and occupational therapy students

Abstract

Background: There is a critical need for trained wheelchair service provision professionals. Wheelchair service provision is underdeveloped across the world. People in developing countries often depend on the donation of wheelchairs, which are frequently of poor quality and neither suitable nor customized either for the users or their environment. Health and rehabilitation professionals are not always trained adequately to ensure people with disabilities get a quality and custom-fitted wheelchair. Furthermore, there is a great variability and inconsistency in what and how wheelchair-related content is taught and evaluated. Therefore, in 2015 until 2017 standardized training packages were developed by a team of experts around the world by the World Health Organization (WHO) in partnership with the United States Agency for International Development (USAID). There is a lack of comprehensive wheelchair service provision training in Jordan, and the clinical applications of wheeled mobility and seating interventions are not well-integrated into rehabilitation curricula at many clinical and academic institutions. In response to the need of more competent wheelchair professionals and to enhance the quality of service delivery to wheelchair users, a team of researchers in the Department of Occupational Therapy at the University of Jordan developed The Wheelchair Training Program (WTP).

Keywords: wheelchair, wheelchair user, training program, occupational therapy

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Hassan Izzeddin Sarsak
Department of Occupational Therapy, University of Jordan, Jordan

Correspondence: Hassan Izzeddin Sarsak (PhD, OT), Department of Occupational Therapy, School of Rehabilitation Sciences, University of Jordan, Amman, Jordan, Email h.sarsak@ju.edu.jo, sarsakhassan@gmail.com

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Introduction

Assistive Technology devices enable persons with disabilities to function in variety of contexts and activities.[1] The wheelchair is viewed as one of the most common and most important assistive technology devices used in rehabilitation.[2] Wheelchairs, both manual and power, are enablers of community participation and are used to enhance function, to improve independence, and to enable a person to successfully live at home and in the community.[3] Wheelchair evaluation is a continuous process requiring re-assessment of wheelchair fit as users age and their functional conditions change.[4] Research has shown that during this thorough process, clinicians need to take factors into consideration that are associated with functional performance, such as wheelchair characteristics and client demographics. It is the dynamic interactions between these factors that pose the challenge for clinicians and wheelchair users as they decide on the best wheeled mobility interventions.[5] Although clients seeking a wheeled mobility device are assessed before a device is prescribed, research has not focused on the everyday functional performance of the clients with their wheelchairs. Rather, instead of focusing on the ability of the device to enable activities and participation, research has focused on a wheelchair skills, propulsion, abandonment, cost, policy, and wheelchair design.[6] There is a need for wheelchair personnel and the lack of trained wheelchair service provision professionals is universal. The Convention on the Rights of Persons with Disabilities (CRPD) highlights the responsibility of states to ensure personal mobility and to promote the availability of and access to such devices. It is estimated that 70 million people require wheelchairs worldwide, yet only 5-15% of people have access. Wheelchair service provision is very underdeveloped across the world. People in developing countries often depend on the donation of wheelchairs, which are frequently of poor quality and neither suitable nor customized either for the users or their environment. Health and rehabilitation professionals are not always trained adequately to ensure people with disabilities get a quality wheelchair.[6] There is great variability and inconsistency in what and how wheelchair related content is taught and evaluated. A need for global standardization of wheelchair service provision education is crucial. Therefore, and after extensive expert consultations, field trials and an expert review, the World Health Organization (WHO) in partnership with the United States Agency for International Development (USAID), developed the Wheelchair Service Training Packages - Basic level (WSTP-b) and Intermediate Level (WSTP-I) during the period from 2015 until 2017.[7] WHO training packages serve as guides for wheelchair service provision education worldwide. However, they are not yet taught in all countries, especially in low-resourced countries.[8]

There is a lack of comprehensive wheelchair service provision training in Jordan, and the clinical applications of wheeled mobility and seating interventions are not well-integrated into rehabilitation curricula at many clinical and academic institutions. In response to the need of more competent wheelchair professionals and to enhance the quality of service delivery to wheelchair users who are the first benefactors and the real motivation behind all of our work, a team of researchers in the Department of Occupational Therapy at the University of Jordan has developed The Wheelchair Training Program (WTP). The objectives of this study were to develop the minimum skills and knowledge required by personnel involved in wheelchair service delivery, and to integrate the WTP into the regular rehabilitation curricula and training programs, such as occupational therapy.

Methods

This study was a quasi-experiment pre-post quantitative research study design, often described as nonrandomized, which is common in medical informatics literature. Based on the hierarchy developed by Moore, McQuay and Gray (1995) as described by Holm (2001), a well-designed quasi-experimental study can be almost as accurate as randomized controlled trial for showing causation.[9]

The purpose of the WTP was for occupational therapy students to develop knowledge and hands-on skill in the process of identifying

and providing wheeled mobility and seating interventions to people of all ages and disability type. The WTP builds on previous coursework in the rehabilitation programs and is based on the WHO Wheelchair Service Training Packages: Basic Level (WSTP-b) and Intermediate Level (WSTP-I) as well as other educational resources. The WTP benefits clinicians and professionals who are involved or interested in wheelchair service provision. It is appropriate for those with introductory knowledge in wheelchair service provision, and it provides fundamentals of wheeled mobility and seating interventions. The WTP consists of four sessions with a total of 20 theoretical and practical contact hours (5 hours / session). Sessions are conducted once a week for four consecutive weeks. The WTP covers a variety of topics related to wheelchair service provision (Table 1). The WTP was carried out using evidence-based practice learning and a clinical case-study approach. Interactive PowerPoint presentations, handouts, group work, exercises, and other reading materials/educational resources were provided.

The WTP study was approved by the academic and research committee of the department of occupational therapy at the University of Jordan. The WTP study included three phases; pre-test phase, the WTP phase, and finally the post-test phase. These phases were conducted in a safe educational and practice environment. In this study, participants were asked to complete a paper-based test at two phases: a pre-test (before attending the WTP) and a post-test (after attending the WTP) to measure knowledge improvement and to ensure that the WTP provides a successful learning experience (Figure 1). Both pre-test and post-test were the same but the participants didn't know this until they took the post-test. The WTP test is composed of 20 multiple choice questions with a total mark of ten (0.5 mark/question) and takes approximately 30 minutes to complete. There was no cost for participants to take the test, and those who passed at the end of the WTP were acknowledged with a certificate of competency and participation. In this study, the potential participants identified were 45 students from the Department of Occupational Therapy at the University of Jordan (Figure 2).

Table 1 Topics of the Wheelchair Training Program "WTP"

Topic
1. Seating biomechanics
2. Postural supports
3. Manual, power wheelchairs
4. Seat functions
5. Wheelchair functional outcomes
6. Clinical implications and special cases
7. Occupational therapist role in wheelchair provision process
8. Accessibility issues
9. Wheelchair skills training
10. Wheelchair adjustments

The inclusion criteria for participants recruited for this study were: existing undergraduate occupational therapy students who had only introductory knowledge in wheeled mobility and seating interventions, were 18 years of age or older, and had adequate cognitive and language status. Students with cognitive and language impairments were excluded. Also students with poor handwriting skills due to any medical condition such as Carpal Tunnel Syndrome were also excluded (pre-posttest required good handwriting skills in order to fill in the bubble answer sheets).

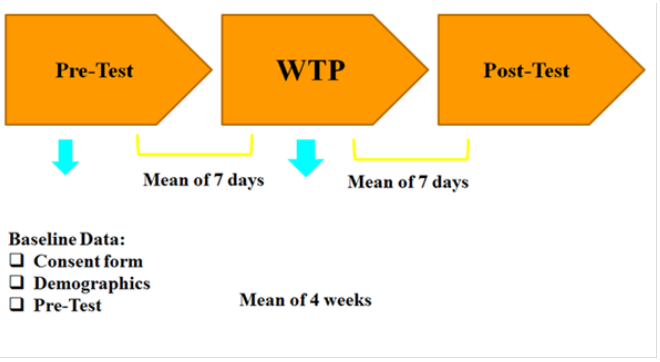

Figure 1 Procedure of the Wheelchair Training Program "WTP".

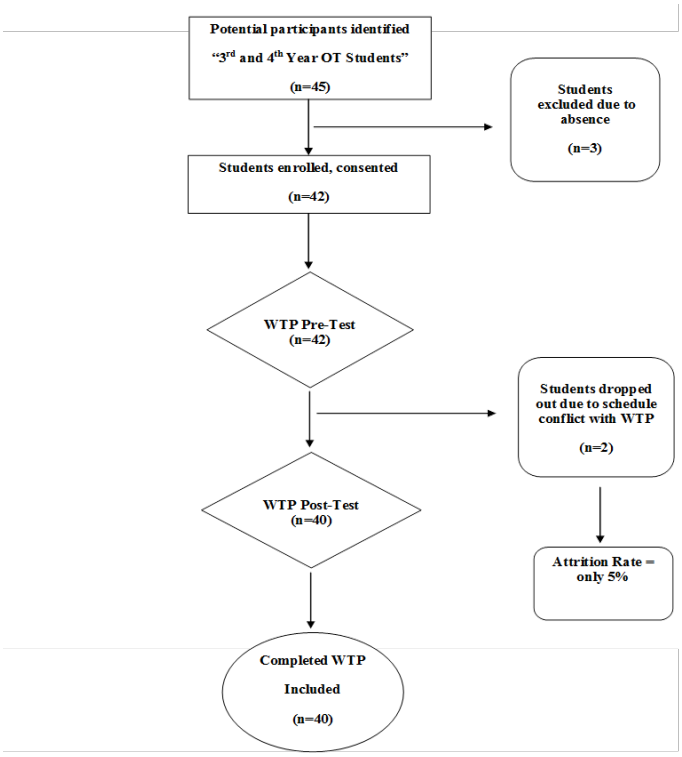

Figure 2 Flow Diagram of WTP Study Participants.

Results

Microsoft Office Excel and SPSS programs were used in the data entry and data analysis. SPSS also represents the results in graphs.[10]

Demographics of participants

Our study sample consisted of 40 students. Female students comprised most of the sample: 5 were male and 35 were female. The average participant was 20.8 years old. Students were mostly Jordanians and independent. All students at baseline had less than 1 year of experience related to wheeled mobility and seating interventions (Table 2).

Citation: Sarsak HI. Developing wheelchair training program for rehabilitation and occupational therapy students. *MOJ Yoga Physical Ther.* 2018;3(3):79–83. DOI: 10.15406/mojypt.2018.03.00049

Table 2 Study Participants' Demographics (N=40)

Demographics	Mean (SD) [range]	n
Age (mean, SD)	20.83 (±1.49)	
[range]	[19.10–27.70]	
Gender		
Male (n)		5
Female (n)		35
Race		
Jordanian (n)		36
Non-Jordanian (n)		4
Years of education (mean, SD)	16.125 (±1.36)	
[range]	[14–22]	
Independence in everyday life activities		
Independent (n)		39
Needs assistance (n)		1
Experience in wheeled mobility and seating interventions?		
Yes (n)		40
No (n)		0
If yes, how many years of experience do you have?		
< 1 year (n)		40
1–2 years (n)		0
2–3 years (n)		0

Descriptive Statistics (Pre-WTP and Post-WTP Test)

Descriptive statistics of students total mean WTP test scores were calculated at pretest and posttest. Table 3 shows the Pre-WTP and Post-WTP test results for all occupational therapy students (N=40). At pretest, the mean pre-WTP test score was 2.92 with the minimum average score of 1/10 and the maximum average score of 4/10; however, at posttest, the mean post-WTP test score was 7.32 with the minimum average score of 4/10, and the maximum average score of 10/10. Wilcoxon signed ranks test showed that there was a significant difference between pretest and posttest WTP results for all students ($p<0.001$) (Table 3) (Figure 3).

Average scores and percent correct were calculated at pretest and posttest. Table 4 shows the Pre-WTP and Post-WTP test results for third and fourth year occupational therapy students (N=40). At pretest, the percent of correct answers was only 28.3% and 32.2% for third and fourth year students respectively. However, at posttest, the percent of correct answers was significantly higher (71.6% and 80.5% for third and fourth year students respectively). Wilcoxon signed ranks test showed that there was a significant difference between pretest and posttest WTP results for both third and fourth year students (Table 4).

This study showed a significant improvement of the knowledge and skills of all participants concerning wheeled mobility and seating interventions (Figure 4).

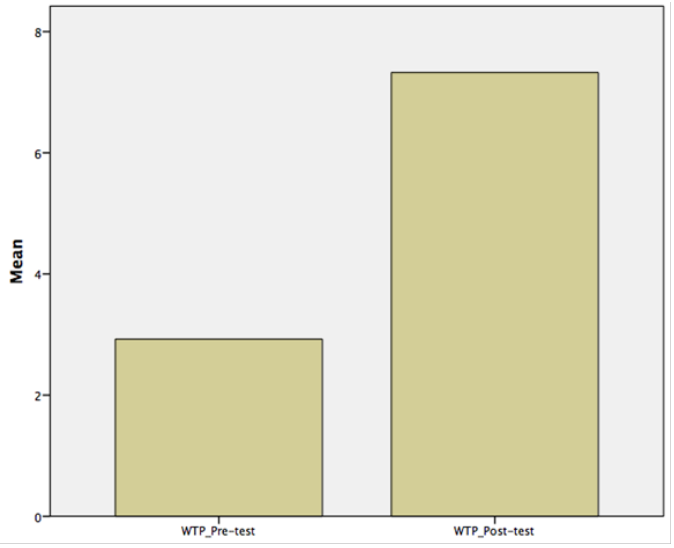

Figure 3 WTP Test Mean Scores at Pretest and Posttest (N=40).

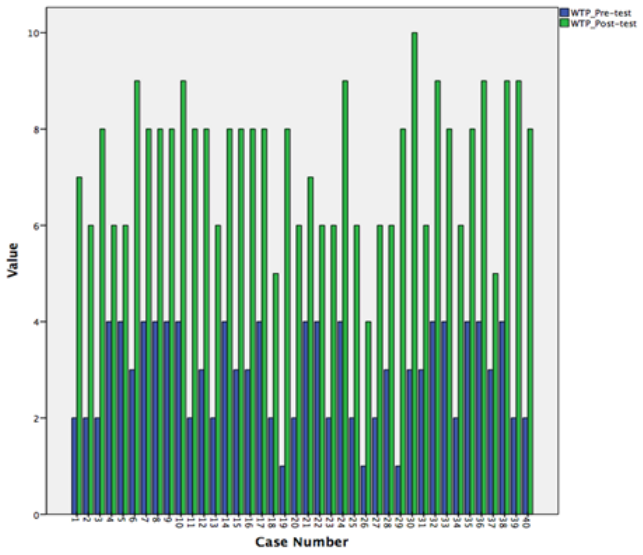

Figure 4 WTP Test Scores at Pretest and Posttest for all Students (N=40).

Table 3 Pre-WTP and Post-WTP Test Results for all OT Students (N=40)

	N	Mean	SD	Minimum	Maximum	p Value
Pre-WTP Test	40	2.92	1.023	1	4	< 0.001
Post-WTP Test	40	7.32	1.403	4	10	

WTP, Wheelchair Training Program; Pre, Pretest; Post, Posttest

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Table 4 Pre-WTP and Post-WTP Test Results for 3rd and 4th year OT Students (N=40)

OT students	Average Pre-WTP Score (% correct)	Average Post-WTP Score (% correct)	p Value
3rd year (n=31)	2.83	7.16	< 0.001
	28.30%	71.60%	
4th year (n=9)	3.22	8.05	< 0.001
	32.20%	80.50%	

WTP, Wheelchair Training Program; Pre, Pretest; Post, Posttest

Discussion

Our hypothesis that the WTP would enhance fundamental knowledge and clinical skills for occupational therapy students was confirmed. Overall, 100% of the students in the WTP showed significant improvement in WTP Post-test ($p<0.001$). The majority of students indicated an interest in integrating the WTP into their curricula which was offered on an extracurricular basis. This interest aligns with students' enthusiasm for wheelchair education. Furthermore, this interest may also reflect the importance of wheelchair service provision education as perceived by students in health professions programs. From our findings, students received training through WTP, acquired the basic knowledge and skills necessary to provide wheelchair service, and benefitted from the program. This promising finding suggests an opportunity for WTP to initiate partnerships for the integration of wheelchair service provision education into curricula of other universities in Jordan. As a contribution and as an effort to get involved into the global wheelchair community, the developer of the WTP, Dr. Hassan Sarsak (PhD, OT) presented at the International Society of Wheelchair Professionals (ISWP) wheelchair curriculum integration pilot sites meeting on Tuesday March 13, 2018. Dr. Sarsak presented the development of the WTP for rehabilitation and occupational therapy students at the University of Jordan, Jordan. After the successful experience in Jordan, he presented his plan to get the WTP integrated into the curriculum of the Department of Rehabilitation and Occupational Therapy at Batterjee Medical College in Saudi Arabia. Dr. Sarsak shared the study data and described what has happened in Jordan and what is currently happening within the new program in Saudi Arabia, and talked about challenges they faced, how they have overcome them, as well as opportunities and action plan for future development. In recognition to the contributions and evident efforts and expertise of Dr. Sarsak in training wheelchair service providers to provide appropriate manual wheelchairs for people with mobility impairments, and as part of the ToT (Training of Trainers) program, in May, 2018 he received a Trainer Recognition Certificate from the ISWP which is accredited and recognized internationally from the WHO and USAID. Dr. Sarsak has been also nominated as a potential mentor in the ISWP upcoming mentoring and training worldwide programs. The ISWP was launched in February 2015. The organization's mission is to serve as a global resource for wheelchair service standards and provision through advocacy, education, evidence-based practice, innovation and a platform for information exchange. ISWP's vision is that all people who need wheeled mobility devices receive the appropriate products and services with dignity. To address this need, ISWP helps to professionalize wheelchair services around the world, benefitting both wheelchair users and those who provide them services. This is accomplished by promoting the WHO Guidelines on providing wheelchairs, promoting training and research activities, improving wheelchair design and manufacturing, and coordinating services.[11]

This study had some limitations. We have used a convenience sample from a single university and we included students from one department only. This was a pilot study with limited training and educational materials and resources available for students due to lack of funding. We had time limitations and had to conduct the WTP within a month with 20 hours of training due to other curricular demands and university workloads. For future studies, a larger sample through the inclusion of more universities and students from other rehabilitation programs (i.e., Physical Therapy, and Orthopedics and Prosthetics) is recommended. Development of more advanced levels and funding resources through grant proposal applications would provide students with more training resources. In addition, extended future continuing education programs and the expansion of number of training hours are recommended as the commonly reported recommended duration of wheelchair-related education is 35 to 40 hours to teach the WHO basic and advanced levels that were developed by a team of experts around the world and represent the standard from the perspective of WHO. Furthermore, conducting satisfaction surveys for students, launching outreach campaigns to raise local awareness about quality wheelchair services and about the availability of the WTP, and the inclusion of wheelchair users by having training on the use of their wheelchairs to better understand and meet their needs and conducting focus groups are highly recommended.

Conclusion

To date, the WTP is the only readily available basic wheelchair educational program that focuses on developing skills and integrating wheelchair training into rehabilitation curricula at universities in Jordan. Furthermore, this study was the first to apply the WTP for this purpose among occupational therapy students in Jordan. The WTP yielded successful learning experiences, is useful and helpful to clinicians, and could bring unique information to wheeled mobility and seating assessments and interventions. WTP is a key component of a comprehensive wheelchair basic training program and helps professionals in prescribing properly fitted wheelchairs which may enhance users' satisfaction and functional independence. WTP may also suggest priorities and focus areas of wheeled mobility and seating interventions. Additionally, the WTP could complement the WHO training packages and serve as a guide for wheelchair service provision education in Jordan which we hope will have a positive impact on wheelchair users who are the real motivation for this program. Results of this study support the integration of wheelchair education in rehabilitative educational curricula development, with the ultimate goal of improving the quality of wheelchair service provision in Jordan.

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Conflict of interests

Author declares that there is no conflict of interest.

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