Performance evaluation for prescription of assistive technology devices

Uso de avaliação do desempenho para prescrição de dispositivos de tecnologia assistiva

ORIGINAL ARTICLE

Claudiene Aline Fonsêca de Souza[1], Marcos Ferreira Calixto[2], Marianne Pinheiro Marques[3], Ana Cláudia Barroso de Sá Oliveira[4], Ana Cristina de Jesus Alves[5]

http://dx.doi.org/10.11606/issn.2238-6149.v29i1p34-40

Souza CAF, Calixto MF, Marques MP, Sá Oliveira ACB, Alves ACJ. Performance evaluation for prescription of assistive technology devices. Rev Ter Ocup Univ São Paulo. 2018 Jan.-Apr.;29(1):34-40.

ABSTRACT: *Introduction:* The prescription and implementation of Assistive Technology (AT), when done correctly, can alleviate the impact functional limitations have on physically disabled individuals, providing them with greater participation in everyday activities. *Objective:* To verify the contributions of using the Canadian Occupational Performance Measure (COPM), which is focused on the client's performance, when prescribing the use of AT. *Methods:* This is a research of descriptive transversal character, carried out with 31 patients from a public hospital in the Federal District. Data collection was carried out through the application of the COPM evaluation, and the study of the most compromised performance areas was useful for the categorization of the Assistive Technology devices. *Results:* From the total of participants, 51.6% (n=16) asked for indication and/or production of an AT device. The self-care area was the most compromised (96.7%), and also had the most requests for AT devices. *Conclusion:* This study can contribute to studies that investigate the use of evaluations for the prescription of devices. We hope that new researches can give this process continuity, prioritizing an active participation of the client when evaluating the need for an AT device.

KEYWORDS: Activities of daily living; Self-help devices; Disabled persons; Rehabilitation; Outcome assessment (Health care).

Souza CAF, Calixto MF, Marques MP, Sá Oliveira ACB, Alves ACJ. Uso de avaliação do desempenho para prescrição de dispositivos de tecnologia assistiva. Rev Ter Ocup Univ São Paulo. 2018 jan.-abr.;29(1):34-40.

RESUMO: *Introdução:* A indicação e implementação da Tecnologia Assistiva (TA), quando realizada de forma integrada, pode auxiliar na prescrição de dispositivos que favoreçam a maior participação nas atividades cotidianas, atenuando o impacto imposto pelas limitações funcionais de indivíduos com deficiências físicas. *Objetivo:* verificar as contribuições do uso da Medida Canadense de Desempenho Ocupacional (COPM), fundamentada na prática centrada no cliente, no momento da indicação de TA. *Procedimentos metodológicos:* Trata-se de um estudo descritivo transversal realizado com 31 indivíduos com deficiência física de um hospital público do Distrito Federal. A coleta de dados ocorreu por meio da aplicação da avaliação COPM, sendo realizada a categorização das TA a partir do levantamento das áreas de desempenho mais comprometidas. *Resultados:* Do total de participantes, 51,6 % (n=16) solicitaram alguma indicação e/ou confecção de TA. A área de autocuidado foi apontada como a mais comprometida (96,7%), concentrando também, maior número de solicitações de TA. *Conclusão:* Este estudo pode contribuir com as pesquisas que investigam o uso de avaliações para a indicação de dispositivos e, espera-se que novas pesquisas possam dar continuidade a este processo, priorizando a participação ativa do indivíduo no momento de avaliar as necessidades do uso da TA.

DESCRITORES: Atividades cotidianas; Equipamentos de autoajuda; Pessoas com deficiência; Reabilitação; Avaliação de resultados (cuidados de saúde).

This article is part of the Undergraduate Thesis of the first author presented at Universidade de Brasília – Faculdade de Ceilândia, as a requirement for obtaining a Bachelor's Degree in Occupational Therapy – advisor Dr. Ana Cristina de Jesus Alves.

1. Occupational Therapist, Brasília, DF, BR. ORCID: https://orcid.org/0000-0002-1055-7633. E-mail: claudienealine@gmail.com
2. Occupational Therapist of the State Health Secretariat of the Federal District, SES/DF, Brasília, DF, BR. ORCID: https://orcid.org/0000-0003-4876-0909. E-mail: marcos.calixto.to@gmail.com
3. Occupational Therapist, Graduate Student in the Rehabilitation Sciences Program of Faculdade de Ceilândia – UnB/FCE, Brasília, DF, BR. ORCID: https://orcid.org/0000-0001-9508-3096. E-mail: marianne_pc@hotmail.com
4. Occupational Therapist of the State Health Secretariat of the Federal District, SES/DF, Brasília, DF, BR. Cognitive Rehabilitation Specialist at NEPNEURO/Goiânia, GO. ORCID: https://orcid.org/0000-0003-1029-8296. E-mail: claubarroso.7@gmail.com
5. Professor of the Graduate Program in Rehabilitation Sciences and of Occupational Therapy course at Universidade de Brasília – Faculdade de Ceilândia. ORCID: https://orcid.org/0000-0003-4361-1365. E-mail: crisjalves@hotmail.com

Corresponding address: Claudiene Aline Fonsêca de Souza. CCSW 05, Bl A, Apt. 244. Edifício Ômega Center, Sudoeste. Brasília, DF, BR. CEP: 70.680-550.

INTRODUCTION

Individuals with motor, cognitive and/or sensory limitations can often experience difficulties or need help from third parties when performing activities of daily living. These limitations end up compromising their occupational performance, thus contributing to the decline of their quality of life and to social exclusion[1].

In this sense, the new model of the International Classification of Functioning, Disability and Health (ICF) describes disability as not only a health condition/disease, but also as a situation associated with the subject's participation in their environmental and social context. This model can guide the expanded offer of health services, in addition to the creation of guidelines that are sensitive to the subject's functional condition[2].

Considering context as an important component, Assistive Technologies (AT) are indicated in the ICF as environmental factors that can act as facilitators of better performance for individuals with some sort of disability. Thus, the use of AT devices tries to mitigate the impact of functional limitations, providing the greater participation of these subjects in everyday activities[1].

The ICF classifies ATs as environmental components that can be employed for personal use in daily living, for mobility and transportation, communication, education, work, cultural and religious activities, and architectural projects[2].

The Client-Centered Practice[3] places subjects as essential elements in the process of evaluation and intervention, taking into account their expectations for intervention and respecting their independence while co-participants in the process. When using the client-centered practice, rehabilitation professionals should consider what customers want and need in the short, medium and long term, including them as active subjects in the therapeutic process[4].

Following this approach, the Matching Person and Technology (MPT) model suggests to professionals who indicate ATs that they identify the most suitable device for each individual and align interventions with the subject's priorities[5]. This model describes three aspects to be considered when assigning a device: a) psychosocial factors; b) environmental factors; and c) specific factors of the devices.

Based on the client-centered practice, Tam et al.[6] presented the Canadian Occupational Performance Measure (COPM) as a potential instrument in the indication and implementation of AT devices. The use of the instrument allows considering aspects associated with functional performance and satisfaction, comparing results of interventions and, where applicable, determining significant changes in daily activities after the use of AT devices[6].

However, scientific production in the area is scarce in developing countries, generating several questions from professionals about forms of indication and real benefits derived from the indication of these technologies[7]. In addition, the absence of a baseline to guide professionals in the evaluation process makes it difficult to establish priorities for the indication of ATs according to the real needs of clients[7].

According to Garcia and Galvão-Filho[7], this lack of knowledge can also contribute negatively in the definition of public policies, as well as in the proper configuration of support initiatives and in the promotion of projects about the theme.

Thus, the objective of this study was to verify the contributions of the use of the COPM evaluation in the indication of ATs for people with physical disabilities. This instrument has been translated and validated in Brazil and in developed countries, and is based on the client-centered practice. The research also seeks to gather information about the main functional demands of individuals with physical disabilities and about the indication of ATs for this population.

METHODOLOGICAL PROCEDURES

This work is a descriptive cross-sectional study, part of a broader research entitled *Indicação e implementação de tecnologia assistiva com indivíduos com deficiência física* [Indication and implementation of assistive technologies for individuals with physical disabilities]. The research was approved by the Ethics and Research Committee of Fundação de Ensino e Pesquisa (FEPECS), under opinion No. 417,214/13.

In this research, the terms of Resolution No. 466/12 of the National Health Council were followed, which determines the regulatory standards for research involving human beings. The individuals who agreed to participate signed an Informed Consent Form (TFCC), having been informed about the objectives and procedures of the research.

Convenience sampling, as conducted in this work, relates to the use of a specific sampling group[8]. Participants in the research included young people and adults with neurological damages who were being followed-up in the rehabilitation program of a public hospital in the Federal District (DF). This hospital is considered a reference in the Brazilian Midwest region in the treatment and early rehabilitation of individuals with central and peripheral neurological lesions, serving the entire (DF) and the Unified Health System, which accounts for approximately ten thousand individuals in rehabilitation per year.

The collection period was from August to November 2014, and in May 2015. As inclusion criteria, the participants should have had been undergoing treatment in the rehabilitation sector while accompanied by an occupational therapist from the hospital; in addition, they should have had some sort of physical disability, and their ability of intelligible verbal communication and self-judgement should have had been preserved. Individuals with unstable clinical aspects or who had had their discharge scheduled for the next few days were excluded.

Data collection was conducted once a week in the occupational therapy room, and characterization of the sample was carried out through questionnaires that sought to identify age, sex, and clinical diagnosis.

For the investigation of demands associated with the use of ATs, the COPM evaluation was applied to all indicated participants. The evaluation has the character of an individualized, semi-structured instrument, in which subjects assign scores to activities they consider to be more important in their everyday lives, highlighting difficulties in their realization[9]. The evaluation covers three areas of occupational performance: self-care, productivity and leisure activities[9,10].

In relation to guidance for the indication of ATs, researcher and client identified, among the five main daily activities, those that would benefit from the use of the AT device for the improvement of performance and satisfaction in its realization.

Once the interest in the acquisition of the AT device had been identified, customers received guidance on its purchase or manufacturing from the project's support group, composed of researchers and graduate students in Occupational Therapy. Practice for use of the device was conducted throughout the study under the responsibility of the researchers involved.

Occupational demands unrelated to the process of nomination and/or fabrication of devices were followed-up by the occupational therapist of the service using other resources, giving continuity to the rehabilitation process.

The data obtained in the COPM evaluation were used for analysis of data related to the areas of occupational performance and to the need for ATs, and Excel 2010 spreadsheets were used for the patients' and the ATs' categorization, for use in further discussions.

RESULTS

Thirty-one individuals participated, 54.8% (n = 17) participants having been male and 45.2% (n = 14) female, with the average age being 39 years old. With regard to the diagnosis registered in the medical records, most of the participants had traumatic brain injury 29.0% (n = 9) and stroke 29.0% (n = 9), followed by spinal cord injury 19.3% (n = 6), Guillian-Barré syndrome 9.6% (n = 3), myelopathy 6.4% (n = 2) and appendicular ataxia 6.4% (n = 2).

In relation to data obtained in the application of the COPM evaluation instrument, it was observed that of the 31 participants, 93.5% (n = 29) reported some sort of limitation to occupational performance. Of these, 51.6% (n = 16) participants had requested the indication and/or preparation of ATs.

All participants (n = 31) reported damages to their occupational performance. Of these, 96.7% (n = 30) participants reported limitations to self-care activities in the following categories, in order of priority for the customer: self-care, 83.8% (n = 26); functional mobility, 64.5% (n = 20); and oral and written communication, 9.6% (n = 3).

Limitations in the area of leisure were indicated by 16.1% (n = 5) of the participants, who prioritized socialization and recreation activities. Only 3.1% (n = 1) of the participants highlighted the area of productivity, emphasizing work activities. Considering the identification of functional limitations by all participants, only 51.6% (n = 16) of them had requested some sort of AT. In total, 17 AT devices were nominated, some participants having received more than one device. In this way, 11 different types of AT devices were indicated, concentrated mainly in the area of self-care, followed by productivity and leisure.

Chart 1 presents the TA devices indicated and manufactured for each participant.

Chart 1 – Assistive Technologies indicated and manufactured according to functional demands

Area of occupational performance	Assistive technology	Manufactured and/or indicated	Participant
Self-Care	Bath sponge gripper	Manufactured	P1, P3, P16
	Long-handled bath sponge	Indicated for purchase	P18
	Cutlery grip thickener with gripper	Manufactured	P1, P3, P7
	Spoon with weights	Manufactured	P8
	Wheelchair back support	Manufactured	P1
	Wheelchair leg rest	Manufactured	P1
	Wheelchair lap tray	Manufactured	P6
	Bed positioning wedge	Manufactured	P20
	Wrist and hand positioning orthosis	Indication of prosthesis and orthosis manufacturer	P19, P25
Productivity	Bracelet with weights	Manufactured	P4, P8
Leisure	Alternative means of communication	Indicated	P30

Source: Elaborated by the authors.

Among the 11 types of devices listed, Chart 1 shows that the most requested were bath grippers and cutlery grip thickeners with gripper, followed by bracelet with weights and positioning orthosis.

Of the total number of devices, it is worth mentioning that 88.2% (n = 15) of the ATs were developed by the researchers of this study, and only 11.8% (n = 2) of the devices were referred for purchase or acquisition.

DISCUSSION

The data showed that 48.4% (n = 15) of the participants had traumatic injuries such as traumatic brain injury 29.0% (n = 9) and spinal cord injury 19.4% (n = 6). The data on the cause of disability may be related to the high levels of violence in the region. The evolution of the DF's federated unit may be delineated according to data from the Map of Violence of 2012, with emphasis on the accelerated growth of violence in the region and on the growth rate which progressively distances the DF from the national homicide rates[11].

In this sense, public policies that ensure satisfactory social and health conditions are important and should continue to be implemented, enabling and encouraging the participation of people with some sort of limitation[2].

The results also showed that 100% of participants with neurological injuries reported limitations to one or more areas of occupational performance. This finding corroborates the literature when indicating that activities of occupational performance are identified as an essential part of the life of any subject[12]. However, occupational activities are directly related to the various functions of individuals, and therefore their physical skills, intellectual condition, self-maintenance ability, social activities, self-knowledge and emotional level are important elements to consider[2,13,14].

In this sense, the study proves these findings when showing that 96.8% (n = 30) of the participants with neurological lesions reported occupational demands in the area of self-care, which corresponds to self-care activities, functional mobility and independence outside the home environment. Among the areas of occupational performance that are most often mentioned, those related to personal care accounted for 80.6% (n = 25) of the cases, and functional mobility was indicated by 61.3% (n = 19) of the participants.

Caring for one's own body possibly had prominence for being fundamental to social conviviality, in addition to enabling basic survival and welfare[15,16]. With regard to the demand for mobility, the researchers attribute the lower number to the fact participants already had some kind of mobility, either by acquiring a wheelchair prior to this study, or due to their bedridden state.

As noted above, limitations in areas related to leisure and productivity were reported less frequently. Martinelli[12] pointed out in his study that leisure activities are directly related to possibilities of self-realization, personal choices and interests[17,18]. The area of productivity is related to the meaning of work for the individual and how that person can be established as a subject, ensuring their identity and social recognition[19].

Thus, considering that the institution researched caters to individuals with acute neurological sequelae and in a context of hospitalization, the hypothesis that can be raised is that the individuals' priorities were focused on the performance of self-care activities, and that the perception and interests related to productivity and leisure had been compromised or had little relevance at the time of hospitalization[17,20].

In the target population researched, only 51.6% (n = 16) of the participants requested the indication and/or manufacturing of ATs. The literature indicates that the initial phase of rehabilitation, although crucial, is characterized by conditions of changes that generate fear and/or distress and difficulty in expressing themselves spontaneously, possibly causing individuals to have a passive attitude towards the care received[17,18].

The context in which the participants of this research were inserted – in this case, the hospitalization process – can hinder the recognition of functional difficulties, priorities of occupational acquisitions and indication of need for assistance, adaptation or even the search for solutions to their new condition. The authors[2] reinforced this idea, saying that the acceptance or refusal of ATs is directly related to the individual's functional level, and their self-judgement in relation to the limitations and expectations of return to a routine that was disrupted after the lesion[16].

Among the requests for ATs, 11 types of devices were indicated, adaptations for feeding, bathing and for the wheelchair being the most common. Although there are policies that determine the financing and acquisition of ATs in Brazil, most of the devices requested by the participants of this study are not covered by them. Only mobility (wheelchairs, orthoses, prostheses, automobiles) and communication (computers, tablets) devices are supported, namely, high-cost devices that were already in possession of the participants of this survey. Even so, data show that the mobility devices present in this study, such as wheelchair, needed adjustments and adaptations for better positioning and functional mobility.

As noted, 88.2% (n = 15) of the devices were manufactured by the researchers. This may indicate the difficulty of individuals with disabilities in acquiring all the ATs that promote their better performance in basic activities, such as self-care, work and leisure, which are not yet included in the law and configured as a right.

Regarding the use of COPM as evaluation instrument for indication of ATs, a research has shown that it can guide the indication of the devices based on the identification of the performance areas that have been compromised and on the individual's satisfaction in performing them.

Although it is not a specific evaluation for indicating ATs, COPM assisted the researchers by providing quantitative and qualitative data. Studies in developed countries have been using this evaluation in customer-centric practice for indication and measurement of the impact of AT devices on the everyday life of people with disabilities, reinforcing the results found in this study[7,21].

According to some authors[6], there are very few researches that present the systematization of the indication of AT devices in developing countries, and/or that investigate the real impact of this device on the participation of subjects. This is necessary due to the amount and cost of devices that are not supported, and to the continuous increase of public policies that subsidize the purchase of ATs in Brazil.

Another important factor that should be noted about the use of the COPM evaluation instrument is the fact that it considers the self-perception of individuals in relation to their occupational activities and satisfaction, so that based on this, clients can be the protagonists of their own therapeutic process, identifying along with therapists their priorities, and the therapeutic resources to be used[22].

However, for individuals who are in a restricted social context – in this case, hospitalized and in a situation of insecurity – opportunities to express their will can also be limited most of the time. When considered to be incapable or as having limitations, the individuals understand their power of choice as restricted, which represents a barrier to their freedom of leading their own lives[12].

More recent theoretical models that reference rehabilitation and the use of ATs have been advocating the individuals' participation in the entire process, which comprises evaluation, definition of objectives, selection of resources, training and measurement of results[5,21]. Thus, the process of evaluation of needs and indication of ATs in hospitals should not consider noticeable characteristics of functional limitations only, but also personal and contextual features, including those that go beyond the hospital environment.

Another point to be noted in the use of COPM is that the instrument enables evaluating changes in the individual's self-perception in relation to their performance in a given period of time. In this sense, not using it to verify changes in performance, from the use of ATs that could encourage the individual's functional performance, is a limitation of this study.

However, studies[23-25] that sought theoretical models and evaluation instruments for indication of ATs showed that, among the references that are not specific to ATs, the conceptual health model described by the ICF and the COPM evaluation are among the three instruments most widely used in the world for guiding the indication of ATs. Like the findings of this study, these data reinforce the use of references that focus on participation and environmental factors, such as those proposed by the ICF, and client-centered practice, as contemplated by COPM, which has become relevant to the process of evaluation, rehabilitation and inclusion of people with disabilities. The findings of this study showed, as did the ICF, that concepts of health and functionality must extrapolate the condition of disease and/or disability, and also encompass the subject's participation and environmental and social context, as great demand for these areas has been proven.

Currently, specific evaluations for the indication of ATs already exist in Brazil, such as *Avaliação de Tecnologia Assistiva – Predisposição ao Uso* (ATD PA Br)[21] and the Quebec User Evaluation of Satisfaction with Assistive Technology (QUEST 2.0). They were not available during the period of this study. These evaluations are based on the multidirectional relationship between health components established by the ICF, and the first evaluation follows the specific theoretical model for ATs, the MPT model, which was also based on the model of functionality proposed by the World Health Organization[5,21,23]. Thus, it is suggested that further studies are conducted to give continuity to the investigations about the employment of evaluation, prescription, preparation, training, effectiveness and satisfaction in the use of these devices, with the possibility of associating evaluations of performance and satisfaction of ATs that are already available in Brazil.

CONCLUSION

It is considered that this study achieved the objectives proposed based on the fundamentals of client-centered practice and occupational performance. As has been identified, the variables investigated by the instrument might provide subsidies for the indication of ATs.

This study was able to identify the contributions and barriers of the use of COPM in the prescription of ATs in a population of hospitalized young people and adults with physical disabilities.

The importance given by the participants to the limitations to activities of occupational performance must also be taken into account, especially those related to self-care, which is the main area for which the ATs were indicated.

It is suggested that the theme presented here continues being discussed, and that more researches are conducted to investigate the use of the longitudinal process in the indication of ATs, outside the hospital environment and with specific evaluations for ATs.

Authorship and Indication of Responsibility: *Claudiene Aline Fonsêca de Souza, Marcos Ferreira Calixto, Marianne Pinheiro Marques, Ana Cláudia Barroso de Sá Oliveira e Ana Cristina de Jesus Alves* – participated in the conception and design of the research. *Claudiene Aline Fonsêca de Souza, Marcos Ferreira Calixto, Marianne Pinheiro Marques* – participated in data collection and analysis. All researchers participated in the drafting and proofreading of the article. *Claudiene Aline Fonsêca de Souza and Ana Cristina de Jesus Alves* – participated in the approval of the version to be published.

REFERENCES

1. Braccialli LMP. Tecnologia Assistiva: Perspectiva de qualidade de vida para pessoas com deficiência. In: Vilarta R, Gutierrez GL, Carvalho TH, Gonçalves A, editor. Qualidade de vida e novas tecnologias. Campinas; 2007. p.105-13.
2. Castaneda L, Bergmann A, Bahia L. A Classificação Internacional de Funcionalidade, Incapacidade e Saúde: uma revisão sistemática de estudos observacionais. Rev Bras Epedemiol. 2014;17(2):437-51. doi: 10.1590/1809-4503201400020012.
3. Sumsion T. Prática baseada no cliente na terapia ocupacional - guia para implementação. São Paulo: Roca; 2003.
4. Carleto DGS, Souza AC, Silva M, Cruz DMC, Andrade VS. Estrutura da prática da terapia ocupacional: domínio e processo. Rev Triang. 2010;3(2):57-147 [citado 10 abr. 2015]. Disponível em: http://www.uftm.edu.br/revistaeletronica/index.php/revistatriangulo/article/view/150/177.

5. Scherer MJ. Assessing the benefits of using assistive technologies and other supports for thinking, remembering and learning. Disabil Rehabil. 2005;27(13):731-9. doi: 10.1080/09638280400014816.

6. Tam C, Archer J, Mays J, Skidmore G. Measuring the outcomes of word cueing technology. Can J Occup Ther. 2005;72(5):301-8. doi: 10.1177/000841740507200507.

7. Garcia JC, Galvão Filho TA. Pesquisa Nacional de Tecnologia Assistiva. Instituto de Tecnologia Social. São Paulo: ITS BRASIL/MCTI-SECIS, 2012 [citado 10 abr. 2015]. Disponível em: http://www.santoandre.sp.gov.br/pesquisa/ebooks/368505.PDF.

8. Creswell J. Projeto de pesquisa: métodos qualitativo, quantitativo e misto. 3a ed. Porto Alegre: Artmed; 2010.

9. Pollock N, McColl MA, Carswell A. Medida de Performance Ocupacional Canadense. In: Sunsion T, editor. Prática baseada no cliente na terapia ocupacional: guia para implementação. São Paulo: Roca; 2003. p.183-204.

10. Magalhães LC, Magalhães LV, Cardoso AA, organizadores. Medida Canadense de Desempenho Ocupacional (COPM) - Versão brasileira. Belo Horizonte: UFMG; 2009.

11. Waiselfisz JJ. Mapa da violência 2012. Os novos padrões da violência homicida no Brasil. São Paulo: Instituto Sangari; 2012. p.115-6 [citado 11 jun. 2016]. Disponível em: http://www.mapadaviolencia.org.br/pdf2012/mapa2012_df.pdf.

12. Martinelli SA. A importância de atividades de lazer na terapia ocupacional. Cad Ter Ocup UFSCar (São Carlos). 2011;19(1):111-8. Disponível em: http://www.cadernosdeterapiaocupacional.ufscar.br/index.php/cadernos/article/view/429/31.

13. Pereira DC, Ruzzi Pereira A, Pereira PE, Trevisan ER. Desempenho ocupacional de adolescentes de um Centro de Atenção Psicossocial Infanto-Juvenil (CAPSI). Rev Ter Ocup São Paulo. 2014;25(1):11-7. doi: http://dx.doi.org/10.11606/issn.2238-6149.v25i1p11-17.

14. Perlini NMOG, Mancussi e Faro AC. Cuidar de pessoa incapacitada por acidente vascular cerebral no domicílio: o fazer do cuidador familiar. Rev Esc Enferm USP. 2005;39(2):154-63. doi: http://dx.doi.org/10.1590/S0080-62342005000200005.

15. Machado WCA, Scramin AP. Cuidado multidimensional para e com pessoas tetraplégicas: re-pensando o cuidar em enfermagem. Ciên Cuidado Saúde. 2005;4(2):189-97. doi: http://dx.doi.org/10.4025/cienccuidsaude.v4i2.5248.

16. Mello MAF, Mancini MC. Métodos e técnicas de avaliação nas áreas de desempenho ocupacional. In: Cavalcanti A, Galvão C, editor. Terapia ocupacional: fundamentos e prática. São Paulo: Guanabara; 2007. p.49-54.

17. Machado WCA, Scramin AP. (In)dependência funcional na dependente relação de homens tetraplégicos com seus (in)substituíveis pais/cuidadores. Rev Esc Enferm USP. 2010;44(1):53-60. doi: http://dx.doi.org/10.1590/S0080-62342010000100008.

18. Diogo MJD. A dinâmica dependência-autonomia em idosos submetidos à amputação de membros inferiores. Rev Latino-am Enfermagem (Ribeirão Preto). 1997;5(1):59-64. doi: http://dx.doi.org/10.1590/S0104-11691997000100007.

19. Oliveira BRG; Murofuse NT. Acidentes de trabalho e doença ocupacional: estudo sobre o conhecimento do trabalhador hospitalar dos riscos à saúde de seu trabalho. Rev. Latino-Am. Enfermagem (Ribeirão Preto). 2001;9(1):109-15. doi: http://dx.doi.org/10.1590/S0104-11692001000100016.

20. Delsim JC. Análises de mesas auxiliares (de refeição) para indivíduos utilizadas no ambiente hospitalar e proposta de requisitos de projeto para um novo modelo [Dissertação]. São Carlos: Universidade de São Paulo; 2011.

21. Alves ACJ. Avaliação de tecnologia assistiva predisposição ao uso: ATD PA Br: versão brasileira. Brasília: Editora Universidade de Brasília; 2017 [citado 13 jun. 2018]. Disponível em: http://repositorio.unb.br/bitstream/10482/31065/1/RELATORIO_AvaliacaodetecnologiaassistivaATDPA.pdf.

22. Eyssen ICJM, Steultjens MPM, Oud TAM, Bolt M, Maasdan A, Dekker J. Responsiveness of the Canadian Occupational Performance Measure. J Rehabil Respons Dev. 2011;48(5):517-28. doi: 10.1682/JRRD.2010.06.0110.

23. Scherer MJ; Sax CL. Measures of assistive technology predisposition and use. In: Mpofu E; Oakland T. editors. Rehabilitation and health assessment: applying ICF guidelines. EUA: Springer Publishing Company; 2010. p.229-54.

24. Alves ACJ, Matsukura TS. Theoretic models for indication and implementation of assistive technology. Cad Ter Ocup UFSCar (São Carlos). 2016;24(3):591-9. doi: http://dx.doi.org/10.4322/0104-4931.ctoAO1078.

25. Alves ACJ, Matsukura TS. Review about assessments for indication of assistive technology. Rev Ter Ocup Univ São Paulo. 2014;25(2):199-207. doi: http://dx.doi.org/10.11606/issn.2238-6149.v25i2p199-207.

Received: 06.15.2017
Accepted: 06.05.2018