

There is insufficient evidence to prove that assistive devices (ADs) have a positive psychological impact on adults with physical disability.

Prepared By: Rebecca Lovett

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CLINICAL SCENARIO

Occupational therapists often issue adaptive equipment to clients with a view to increasing occupational functioning (Hocking, 1999). However, research has shown high levels of abandonment of such devices (Hocking, 1999). McMillen & Soderberg, 2002, suggest that adjustment to use of ADs involves emotional adaptation and acceptance of new self image in addition to pragmatic and environmental adaptation. Häggblom-Kronlöf & Sonn (2007) report the utilisation of ADs to be influenced by person, occupation and environment. However, little research attention has focused specifically on the person and the psychological impact of ADs. Therefore the focus of this CAT will be on research articles addressing psychological issues in relation to ADs. Evaluation of this evidence has clinical implications for occupational therapy practice, where the person, occupation and environment fit is fundamental to intervention options (Tse, Blackwood & Penman, 2000).

FOCUSED CLINICAL QUESTION

What evidence is there that ADs have a positive psychological impact on adults with physical disability?

SUMMARY OF SEARCH, 'BEST EVIDENCE' APPRAISED, AND KEY FINDINGS

6 studies were found that were relevant to the clinical question and fitted the inclusion / exclusion criteria.

2 studies were selected for appraisal.

Larsson Lund & Nygard (2003) researched the role of ADs in achieving a desired occupational self through a qualitative methodology. The study indirectly addressed psychological impact of ADs and the findings demonstrated that users of ADs had mixed feelings towards them, sometimes positive, sometimes negative and sometimes both. The study incorporated limited measures to ensure trustworthiness.

Veehof, Rasker & Lohmann (2006) researched the relationship between the possession of ADs and psychological well-being, using a cross-sectional design study. The results of the multivariate analysis showed a significant positive correlation, but not the cause and effect of the variables. Thus, further research is required to understand the nature of the relationship.

CLINICAL BOTTOM LINE

There is insufficient evidence that the use of ADs has a positive psychological impact on adults with physical disability.

LIMITATION OF THIS CAT:

This critical appraisal has been peer reviewed by one lecturer as part of an assignment.

SEARCH STRATEGY - Databases searched and search terms used:

“Quotation marks” – Database recognised subject heading (MeSH, Cinahl headings)

Database	Person	Intervention	Outcome	Relevant articles
Cinahl	-“disabled”	-“assistive technology devices” -assist* devices -adaptive equipment	-“psychosocial factors” -“patient satisfaction” -“patient compliance” -psychology -quality of life -wellbeing	12
PubMed Limited search by type of article, English and 19+ age	-“disabled persons”	-“self-help devices”	-“personal satisfaction” -psychology	2
OT seeker	-disability	-“assistive device / adaptive equipment”	-psycholog*	1
The Cochrane Library	-“disabled persons”	-“self-help devices” -technology		0
Google Scholar	-disab*	-ADs	-psychology	6

Hand searching journal "Disability and Rehabilitation: Assistive Technology". Years 2007 – 2009 only available in library – Relevant articles - 3

INCLUSION AND EXCLUSION CRITERIA

Inclusion criteria:

- Studies relating ADs to a psychological effect in terms of personal experience, personal satisfaction or perception of self.
- Systematic reviews, quantitative studies and qualitative studies
- Majority of ADs issued by an occupational therapist (e.g. bath boards, hand reachers etc)
- Chronic or permanent physical disability

Exclusion criteria:

- Studies based on computer / electronic ADs / mobility related ADs only.
- Subjects under 18 yrs
- Expert opinion pieces or literature reviews
- Non-english

RESULTS OF THE SEARCH:

The clinical question focuses on outcomes for subjects that are psychosocial and experiential; therefore all studies were quantitative cross sectional design or qualitative. No systematic reviews were found relating to ADs.

Study Design/ Methodology of Articles Retrieved	Level	Author (Year)
Qualitative research study	Descriptive studies	Larsson Lund & Nygard (2003)
Cross sectional design	Non-experimental study	Veehof, Rasker & Lohmann (2006)
Cross sectional and retrospective longitudinal design. Qualitative methods used to study reasons for use.	Non-experimental study + Descriptive studies	Hägglom-Kronlöf & Sonn (2007)
Qualitative research study	Descriptive studies	McMillen & Soderberg (2002)

Study Design/ Methodology of Articles Retrieved	Level	Author (Year)
Descriptive statistics and Qualitative research study	Non-experimental study & Descriptive studies	Schweitzer, Mann, Nochajski & Tomita (1999)
Qualitative case studies	Descriptive studies	Bell & Hinojosa (1995)

BEST EVIDENCE

Two studies were selected for appraisal. Veehof, Rasker & Lohmann (2006) & Larsson Lund & Nygard (2003) were selected because these studies most closely reflected the clinical question.

SUMMARY OF BEST EVIDENCE

Title of article:

Incorporative or Resisting ADs: Different approaches to achieving a desired occupational self-image. Larsson Lund & Nygard (2003)

Aim/Objective of the Study: “To enhance the understanding of how people with disabilities experience the meaning of their ADs in their occupations and how they act on this experience” (p.68)

Study Design: “Qualitative and explorative approach” (p.68)

Setting: Participants living in their own homes in two boroughs in the north of Sweden.

Participants: Participants (n=17) - identified by health care providers and disability associations. Purposive sampling was used and a heterogeneous sample was sought to maximise range of experiences. Selection of participants continued throughout data analysis and was terminated when redundancy in data was reached.

Criterion for selection of participants: Living in their own home, have some ADs, have a physical disability and be able to positively engage in the interview.

Information about participants: Mean age = 50 yrs. Diagnoses – spinal cord injury, rheumatoid arthritis, traumatic brain injury, multiple sclerosis, muscular dystrophy, osteoarthritis and fractures. The sample used between 4 – 20 ADs each and the majority had used them for over 5 years. All participants received support from others in their daily life. 8 participants lived alone.

Method: Non-standardised, open-ended interviews were used and conducted by the 1st author in the homes of participants. An interview guide was used with broadly defined questions to allow participants the opportunity to freely express their experiences with ADs. The Ethical approval was attained from the local ethical committee at Umea University.

All participants engaged in a first interview for 45 – 120 minutes. 8 participants were interviewed twice for clarification and deeper exploration of themes, with the second interview lasting between 25 – 45 minutes. All interviews were tape recorded and transcribed verbatim.

Data analysis: A constant comparative method was used. Data was coded reflecting the meaning of ADs using a line by line analysis. Codes were compared, discussed and reviewed by both authors and grouped into higher order concepts. How participants acted on these consequences were further categorised into three groups. A hermeneutic approach was used to understand the reasons why users acted in different ways. Discussion of themes took place in peer debriefing sessions.

Findings: Mixed feelings toward ADs lead to the higher order concepts around the meaning of ADs. These concepts were that ADs had either desirable or undesirable consequences for occupations. How participants acted on these consequences were further categorised into pragmatic, ambivalent and reluctant users. It was suggested that the reason why participants responded in different ways was related to their self image as occupational beings. The different actions in relation to ADs were means of attaining the desired occupational self image.

Original Authors' Conclusions: The reason for using or resisting ADs is more complex than occupational success; it depends on the perceived image of self as disabled / able in society. Different approaches to achieve the desired occupational self image were suggested to be "related to the meaning they ascribed to their disability" (p.73). Implications for practice were that prescription of ADs requires clients to adapt their occupational self image, therefore supporting them through this process is important to compliance with ADs. Further study was recommended to understand how self image can be enhanced for people with similar attitudes towards their disability.

Critical Appraisal

The study purpose was stated clearly. A review of the relevant background literature noted gaps in evidence which provided clear justification for the study and clinical importance for healthcare professionals. The qualitative design was appropriate for understanding subjective experiences and non-standardised interviews with open ended questions were

used to elicit maximum information possible. Through using only interviews, the data was limited to verbal information and question framing may have skewed responses. The method of sampling was appropriate to the study purpose. Informed consent was not addressed in the study. The information regarding the setting was limited and background participant information included major details but gender and social economic circumstances were omitted. Any assumptions or biases held by the researcher were not made explicit. Procedural and analytical rigour was evident in data collection and analysis strategies. Limited raw data (4 quotes in total) made it difficult to appraise whether the findings reflected the raw data accurately. The data analysis methods were described but an audit trail was not articulated.

Validity / Trustworthiness:

Credibility is the measure of how well the study reflects the phenomenon being investigated (Taylor, 2007). This study had limited credibility. The data collection through one off interview did not reflect stability over time. Using interviews alone to gather information meant the study lacked triangulation (whereby the researcher gathers information from a variety of sources). However, both researchers reviewed and discussed themes in the data analysis phase and the themes were also presented to other researchers in the field to enhance credibility. Member checking, to ensure their perceptions were correctly interpreted, was only evident where a 2nd interview was conducted for clarification.

Transferability refers to the whether the findings can be applied to other settings (Taylor, 2007). The setting was not described in depth, only that the participants lived in their own home in two regions in the North of Sweden. Background information on participants, their diagnoses and other information was given, thus the findings could tentatively be applied to other populations. Purposive sampling was used; participants were hand selected to ensure a heterogeneous sample leading to a broad range of data. Data saturation was used to ensure all relevant concepts were explored. Overall the transferability of this study was adequate and the findings could be transferred to other populations with caution.

Dependability relates to the congruence between the findings and the data (Taylor, 2007). Limited raw data was presented. The data analysis process was described clearly, but no audit trail was used. Both researchers checked emerging themes and these were peer reviewed by other researchers during presentations.

Confirmability relates to the neutrality of the data and lack of biases (Taylor, 2007). Researcher bias or theoretical preconceptions were not recorded through reflective

practice methods, thus the findings derived from the data analysis may have been swayed by partiality on the part of the researcher. Member checking was limited, however both researchers analysed the data and peer reviewing of themes was sought.

Summary / Conclusion:

The conclusions were congruent with findings, and were related back to existing literature and knowledge. The overall rigour of the study is limited. Future research directions and implications for occupational therapy practice were identified.

Title of article:

Possession of ADs is related to improved psychological wellbeing in patients with rheumatic conditions. Veehof, Rasker & Lohmann (2006)

Aim/Objective of the Study: “To investigate the relationship between the possession of ADs and psychological well-being in patients with rheumatic conditions” (p.108)

Study Design: Cross sectional study

Setting: Community – 3 districts in Germany and 1 in The Netherlands

Participants: n = 327 randomly selected from 2 outpatient archives in Germany and The Netherlands. All participants were diagnosed with either rheumatoid arthritis or psoriatic arthritis.

Method: Ethical approval was obtained from the Ethics Committee of Medisch Spectrum Twente Hospital. Participants were informed of the study by mail. An informed consent form and Modified Health Assessment Questionnaire (MHAQ) were included. 218 participants responded. 53 participants with scores of 0 on the MHAQ were excluded from the study due to a lack of functional limitations. Self administered questionnaires were sent to the remaining 165 participants; 142 participants returned the questionnaires completed. Data was collected on psychological well-being, ownership of ADs, socio-demographics, clinical status and health status (including functional status, pain and fatigue).

A standardised assessment was used to assess psychological well-being (Arthritis Impact measurement Scales 2 (AIMS2)). Through averaging the combined scores of the mood and tension scale on the AIMS2, psychological well-being scores were obtained, in compliance with standard procedure. Pain was also measured using the AIMS2.

The number of ADs owned by participants was calculated through asking participants to indicate which ADs they possessed out of a questionnaire of 17 common ADs mostly derived from the HAQ.

Questions on age, sex, living status, net yearly income, educational level and country of residence provided data on socio-demographics. A co-morbidity questionnaire was used to provide information on clinical status. Rheumatological diagnosis and disease duration were obtained from patient archives.

Functional status was assessed using the HAQ and the results used to calculate the Alternative Disability Index. A 100mm visual analog scale (VAS) was used to measure fatigue.

Data analysis: The univariate relationship between possession of ADs and psychological well-being was measured through correlation analysis (Pearson's correlation analyses and Spearman's correlation analyses dependent on distribution of variables, and for dichotomous variables, independent t-tests and Mann Whitney U tests). Univariate relationships between ADs and each of socio-demographic data, clinical status and health status were calculated, as were the relationships between psychological well-being and each of the other variables.

"Hierarchical multiple linear regression analyses with backward elimination of potential confounding variables was used to identify the unique association between the possession of ADs and psychological well-being" (p.112).

Results: 78% of participants did not possess ADs. 3-4 ADs were average for participants. A significant negative univariate correlation was found between psychological well-being and possession of ADs ($r = -0.18$; $p = 0.03$). Functional status was identified as a confounding variable. The results of the hierarchical multiple linear regression analysis showed that the number of ADs owned was significantly positively related to psychological well-being ($r_{\text{partial}} = 0.22$; $p = 0.009$)

Original Authors' Conclusions: "the possession of ADs was positively related to psychological well-being of patients suffering from rheumatic diseases, after controlling for differences in functional status" (p.108)

Critical Appraisal

Validity / Trustworthiness:

Study purpose and literature: The study purpose was clearly stated; however the

background literature was poorly reviewed. Studies were mentioned but findings omitted. The authors made assumptions that psychological well-being is related to functional status without providing evidence. The justification for the study was a lack of attention around how ADs affect people with arthritis psychologically and socially.

Study Design: A cross sectional study was used which suited the lack of knowledge around the subject matter. The study focused on whether a relationship existed between two variables and not cause and effect. Self administered questionnaires allowed for a large amount of data collection to be done at one point in time. Seasonal bias may have occurred with this study design; the time of year that the study was completed is not mentioned.

Sample: The initial number of selected participants (327) was not justified. Inclusion criteria were stated. Comprehensive information on participants were obtained and summarised in tabular format (Table 1), however the labelling in the table was incomplete, making usability limited.

Outcomes: Standardised assessments were used as outcome measures where possible. The validity and reliability of the assessments were not mentioned, but were referenced. A limitation of the AIMS2 was that it was not designed to measure effectiveness of interventions therefore it may not be sensitive enough to detect small effects. (All assessments are documented as being reliable and valid for people with rheumatoid conditions, Linde, Sørensen, Ostergaard, Hørslev-Petersen, Hetland, 2008; Evers, Taal, Kraaimaat, Jacobs, Abdel-Nesser, Rasker, & Bijlsma, 1998).

Results: Data analysis methods were appropriate (Spicer, 2005), although unless readers have prior knowledge of multivariate analyses they were hard to follow. Statistical significance was stated but clinical importance of the results was not addressed. Possible theories for the cause of results were given although it was admitted were not the focus of the study and not possible to deduce from a cross-sectional study. Limitations of the study were addressed and future research areas identified.

Summary / Conclusion: This study was limited in background literature; however the research methods were fitting to the study objective. Multivariate analysis was appropriate for data interpretation. The results were not clinically significant.

IMPLICATIONS FOR PRACTICE, EDUCATION and FUTURE RESEARCH

Critical summary

The clinical question asked whether there was evidence that ADs had a positive psychological impact on adults with physical disability. The two articles addressed this issue directly (Veehof et al. 2006) and indirectly (Larsson Lund & Nygard, 2003) using different methodologies, different populations and different aims.

The Larsson Lund & Nygard (2003) study demonstrated clearly that ADs do have a psychological impact on users, raising mixed feelings in users, sometimes positive, sometimes negative, sometimes both depending on the individual and the adaptive approaches they use to achieve occupational self image. This study raised some interesting points but limitations in terms of trustworthiness meant that the evidence is insufficient to justify a change in occupational therapy practice. Further more rigorous studies are necessary to back up the findings of this study.

The Veehof et al. (2006) study directly addressed the relationship between possession of ADs and psychological well-being and found that ADs were positively related to psychological well-being. However, the study focused on possession of ADs rather than utilization. In addition, the cross-sectional design means that cause-effect relationships could not be verified. Therefore this study has little use clinically. Further research is recommended to confirm the results of this study.

In conclusion, this appraisal has highlighted evidence that shows ADs have a psychological impact upon the consumer; however precise nature of the relationship is unknown. Further research is required so that the psychological impact of ADs can be understood and translated into clinical practice. Some potential areas of research are: The cause of the positive relationship between possession (also utilization) of ADs and psychological well-being, the acceptance of permanent physical disability and the relationship this has to use of ADs, psychological well-being and social stigma of using ADs, the effect of particular ADs on psychological well-being and the users perceptions of ADs and how they affect psychological well-being. Research conducted in New Zealand would heighten cultural transferability.

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