



ACTIVITIES OF DAILY LIVING IN OCCUPATIONAL THERAPY RESEARCH- A REVIEW

Dr. Aishwarya Swaminathan

MOTh (Developmental Disabilities), Assistant Professor, School of Occupational Therapy, D. Y. Patil University, Nerul, Mumbai

ABSTRACT **AIM, OBJECTIVES:** To review Activities of Daily Living (ADL) evaluation and treatment practices in Occupational Therapy (OT) researches.

METHODS: The MeSH terms "Activities of Daily Living (ADL)" were used to procure articles pertaining to the ADL evaluation and treatment practices in OT researches from online databases. The articles published in Indian Journal of Occupational Therapy (IJOT) over the years 2004-2014 were collected from the ICMR-NIC Centre's IndMED database.

RESULTS : In IJOT 13 articles dealt with ADL in last 10 years. The number of articles dealing with ADL in IJOT, in comparison with other international journals is small.

CONCLUSION: More research studies are required in India in this area as it is one of the core areas of the domain of OT. Having more documented research in this area shall help in differentiating OT research from the researches from other fields and in enhancing credibility on a global platform.

KEYWORDS : Activities of Daily Living, Occupational Therapy, Evaluation, Treatment, Review.

INTRODUCTION

There are an array of professions with similar and overlapping ideologies which are at the same time trying to maintain a hold on their identity. This entails all of us in the Occupational Therapy field to contribute in the overall growth of the profession by making the core areas of the profession the mainstay for both clinical practice and research, thus building on the professions identity and evidence base.

Activities of Daily Living (ADL) is one of the core distinguishing areas of our profession which needs to be researched and documented. ADL is being widely used in the evaluations and interventions in the clinical practice by Occupational Therapists in India. However very little is documented about concerted ADL practices in Occupational Therapy research in India as presented in Indian Journal of Occupational Therapy (IJOT). IJOT is the official publication of the All India Occupational Therapy Association(AIOTA). Hence, the purpose of this study was to systematically review the articles on Activities of Daily Living (ADL) evaluation and treatment practices in the Occupational Therapy Research published in the Indian Journal of Occupational Therapy (IJOT).

METHODS

A manual search of all issues of IJOT from April 2004 to April 2014 was done from the online MedInd database at medind.nic.in. The studies which had used the MeSH term "Activities of Daily Living (ADL)" in the Title, Abstract, Keywords and Full Text were included. The studies which had used ADL outcome measures and ADL focused

intervention were included. And the studies which did not do so were excluded. The included studies were studied in detail. Data abstraction was done using information related to the nature of study design, participant population, outcome measures and intervention areas. Level of evidence were also decided.

This review helped in understanding the broad question 'What is the status of research evidence related to Activities of Daily Living (ADL) evaluation and treatment practices in India as published in the Indian Journal of Occupational Therapy (IJOT)?

RESULTS

A total of 113 articles were published in IJOT during the 10-year period from April 2004 to April 2014. Out of these, only 15 articles (13.2%) were found to have used ADL outcome measures and ADL intervention practices.

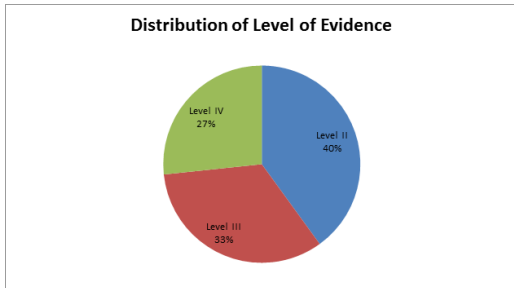
Levels of Evidence: The reviewed studies were assigned levels of evidence based on the classification adapted from Sackett, D.L. et al. As per this review there were no studies of Level I and V evidence. There were six studies (n=6) of Level II evidence, they were two group control trials but as the randomization process was not specified they could not be accorded a higher level of evidence. There were five studies (n=5) studies of Level III evidence, they were single group pre post studies. There were three studies (n=3) of Level IV, they were descriptive case series and single case studies. The summary of the studies included have been mentioned below.

Table 1: Summary of studies included in the review

Authors	Research Topic	Sample	Study Design	Level
Segal, Nagar 2004	Construction of photographic questionnaire to assess Joint protection techniques in ADL in RA	Mean Age(41.3) N=30 30F	Single group Pre-post	III
Shah, Kale 2004	Efficacy vestibular rehabilitation program in peripheral vestibular dysfunctions	MeanAge(45) N=20 11M, 9F	Single group Pre-post	III
Monakshi 2005	Relationship between cognitive deficits and ADL in Stroke patients	MeanAge(43) N=17 12M, 5F	Descriptive Correlational	IV
Batra , Batra 2006	Comparison between Forward chaining and Backward Chaining techniques in MR children	Mean Age(~12) N=42 26M, 14F	Two group comparison	II
Batra , Batra 2006	Comparison of efficacy of Biofeedback over Tenodesis splint in SCI	MeanAge(~27) N=30 M,F-not spf	Two group comparison	II
Milton, George 2008	Multimodal Treatment Approach of Functional Independence in SCI	Age(~30) N=1 F	Single Case Study	IV
Jojode, Sams, 2009	Efficacy of proprioceptive training in osteoarthritic knee wearing elastic bandages	Mean Age(~52) N=28 28 F	Two group comparison	II
Bajpai, Mandal 2009	Efficacy of Arm Ergometer Training on Cardiac Endurance and Functional status in Adult Traumatic Tetraplegics.	Mean Age(36) N=30 M,F-not spf	Two group comparison	II
Mandal, Monakshi 2009	Efficacy of Task Oriented Approach on Recovery of Upper-Extremity Motor Function and ADL in Stroke.	Age (Adult-not specified) N=26 M,F-not specified	Two group comparison	II
D.Shetty, 2011	Relationship of "Contraversive Pushing and Ipsilateral Tilt" to motor, balance and functional recovery post stroke.	Age(55,66) N=2 1 M, 1 F	Two case Studies	IV

S.Jayawant 2011	Home based program for elderly disabled	Mean Age(70) N=40 12M,28F	Single group pre post	III
Sachdeva, Rao,2012	Community participation activities involving money handling skills of children with learning disability.	Mean Age(~12) N=170 90M,78F	Two group comparison	II
Desai, Jayawant, Varshaney 2013	Efficacy of wheelchair skill training program (WSTP) on participation in SCI.	Mean Age-Not Specified N=13 Both M&F	Single group pre post	III
Swaminathan, Jahagirdar, Kulkarni 2014	Client Centred Care in Neurodegenerative Conditions.	Age(27,33,73) N=3 3 F	Descriptive Case series	IV
Shenai, Wadia 2014	Development of self care skills scale for children with developmental disorders	MeanAge(4) N=220 150M,70F	Two group comparison	III

Graph 1: Distribution of studies as per the Level of Evidence.



CLIENT POPULATION

Age

There were three studies (n=3) that had included the pediatric population, age range 2 to 18 years, three studies (n=3) included geriatric population, age range 60 to 80 years and the other studies included adult age range 20 to 50 years as seen from Table 1. These studies have thrown light on the various presentations of the area of ADL in different times of the developmental cycle. Shenai & Wadia (2014) mentioned that the development of self care skills in children depends on two factors i.e. ability and opportunity. This reinstates the childhood period as "Learning Phase" for ADL. They also described that the independence in self care is important in children to develop self concept and self esteem. Batra & Batra (2006), Sachdeva & Rao (2012) have included the adolescent age group in their studies and thus reinstated this phase as "Transition Phase" of ADL moving towards community participation activities. Many studies as mentioned above in table 1 have studied the ADL in the adult age group. Here various disabilities have caused the patients to be unable to perform various ADL activities which they were previously performing, and this reinstates adult phase as "Restoration Phase" for ADL. Studies by S.Jayawant (2011), Jijode & Sams (2009), Swaminathan, Jahagirdar & Kulkarni (2014) have described the role of maintaining the ADL in the elderly thus reinstating this elderly phase as the "Maintenance Phase" of ADL.

Gender

All the studies have good distribution of male and female participants. Some studies which need a special mention are the ones which have included all female participants. Jijode, Sams (2009) and Sehgal, Nagar (2004) have studied ADL in females with orthopedic conditions i.e. RA and OA respectively. Incidence of ADL difficulties in this population is high. Swaminathan et al (2014) have studied ADL in females with neurodegenerative conditions. Since instrumental ADL like cooking, home management and caregiver responsibilities are a mainstay of a majority of female population, it is very essential to consider these in evaluations and interventions.

Diagnosis

It is seen from table 1 that the diagnosis which have been majorly studied in terms of ADL are

- 1) Neurological Conditions i.e. Spinal cord Injury (4 studies), Stroke (3 studies), Neurodegenerative Conditions (Fredrich's Ataxia, Dementia, Multiple Sclerosis) (1 study), Vestibular Dysfunction (1 study).
- 2) Orthopedic Conditions i.e. RA (1 study), OA (1 study)
- 3) Developmental Disabilities (1 study) MR (1 study), LD (1 study)

OUTCOME MEASURES

In children and adolescents (n=3 studies)

Two studies have developed their own questionnaire for community living skills & scale for self care skills evaluation. The third study used direct observation of the ADL tasks namely wearing shoes and shoe lace tying for evaluation. Prompts, errors and number of unprompted steps were used as outcome measures.

In Adults and Geriatrics (n=12 studies)

Only one study focused on developing a photographic scale to improve joint protection techniques and ADL in patients with RA for Indian women. Scales that have been used as outcome measures are Functional Independence Measure (FIM) (n=6), Functional Independence Measure plus Functional Assessment Measure (FIM + FAM) (n=1), Spinal Cord Independence Measure (SCIM) (n=2), Vestibular Disorders Activities of Daily Living Scale (VADL) (n=1) and Canadian Occupational Performance Measure (COPM) (n=1).

Thus, it was FIM has been found to be maximally used scale to evaluate the treatment effectiveness in terms of ADL. Correlations have been studied between FIM- SCIM, FIM – LOTCA and a good correlation was found. D. Shetty (2011) has mentioned that FIM was originally developed for the inpatient settings and the ceiling effects were found when it is used in outpatient settings, thus the result related to FIM may not reflect a true change. During the review, it was seen that this limitation was not considered when it was used even in outpatient setting.

Norms and Disease Specificity

The scales that were used do not have Indian norms. Diagnosis specific scales that were used were Vestibular Activities of Daily Living Scale (VADL) and Spinal Cord Injury Measure (SCIM). Thus, only two diagnosis specific scales were used to document change in ADL; clearly representing an insufficiency in documentation of ADL outcomes. Also, it was noted that none of the studies mentioned evaluation as per the Uniform Terminology

Therapist vs Client Perceived Outcomes

Most of the scales used therapist perceived change in ADL post intervention. Of all the studies two studies (n=2) have mentioned about patients self perceived levels of performance, satisfaction and independence in terms of ADL using VADL and COPM. COPM is based on the principles of client centered goal setting and intervention for improving occupational performance wherein ADL is one of the core components. Usage of meaningful prioritization of goals and client centered outcomes represent a more holistic and complete picture of recuperation and progress.

INTERVENTION

AREAS

In the Occupational Therapy Practice Framework (OTPF), AOTA defines ADL as "activities that are oriented towards taking care of one's own body" and IADL are "activities that are oriented towards interacting with environment and that are complex in nature".

Basic ADL

BADL make up areas which include bathing/ showering, bowel and bladder management, dressing, eating, feeding, functional mobility, personal device care, personal hygiene and grooming, sexual activity, sleep/ rest, toilet hygiene.

Instrumental ADL

IADL make up 11 activity categories as mentioned in AOTA: care of others, care of pets, child rearing, communication device use, community mobility, financial management, health and maintenance, home establishment and management, meal preparation and clean up, safety procedures and emergency responses, shopping. Majority of the studies focussed on self care skills and only three studies (n=3) attempted to study the effects of intervention of instrumental ADL as well which is very less.

APPROACHES

Remediation

Most of the studies focused only on remediation of physical components. The study by Desai, Jayawant (2013), attempted to study the effectiveness of wheelchair skills training program on community

mobility which is a very integral aspect of social participation. Only one study by SP Mokashi (2005) studied the relationship between cognitive deficits and the ability to perform ADL in stroke patients. It was also mentioned that the presence of cognitive impairment in patients with stroke has important functional consequences, independent of the effect of physical impairment (Tatemichi et al 1994) and that cognitive functions and motivation are strong predictors of functional outcomes in terms of ADL (Kathleen 1998). It was also mentioned that cognition has a significant relation to the motoric functional independence by studying correlations of FIM, cognitive FAM, LOTCA and MMSE, and awareness of the same 'would lead to more precise clinical intervention that uses each patients' relative cognitive strengths to remediate specific functional deficits.

Compensation

Out of the 15 studies, only two studies (n=2) by Milton et al (2008) and Swaminathan et al (2014) were found pertaining to usage of adaptive devices to facilitate participation in ADL. Only two studies (n=2) by Batra et al (2006) and Jaywant.S (2011) studied the effectiveness of splintage on ADL. Jaywant.S (2011) and Swaminathan, et al (2014) had included energy conservation and work simplification techniques and also mentioned physical, socio- cultural barriers to access. Swaminathan, et al (2014) had used reminders, cue cards for ADL retraining in a case of Dementia. Mobility aids like canes, walkers, crutches and wheelchairs have been used for mobility training in two studies (n=2) by Jaywant S (2011) and Desai et al (2013). Only one study by Swaminathan et al (2014) attempted to study the client's acceptance for mobility aids, thus respecting client's views and beliefs.

Top down or Bottom up

Few studies which focused on the effectiveness of a particular intervention method (Vestibular Training, Proprioceptive Training, Wheelchair Training, Arm Ergometer, Biofeedback, Tenodesis splint,) in a particular condition or diagnosis (Vestibular conditions, OA, SCI) and then measured if the treatment effects generalized to ADL skills by using ADL outcome measures. This indicates that the interventions were mainly component based rather than function based. There are a few studies which used direct ADL training for BADL & IADL through interventions.

Environment

The ADL interventions were provided in hospital, home and community settings. Home based and community based modifications have also been mentioned in a few studies, but the number is very small.

DISCUSSION ISSUES

Considering the fewer number of articles published on ADL in the last 10 years, it is a reflection of fewer number of studies being conducted and documented. Being a core area of Occupational Therapy, ADL evaluations and interventions may routinely focus in clinical practice; but do not actually represent in documented research practice. One of the reasons could be attributed to financial implications involved in conducting research with very minimally funded research programs available in India.

FUTURE IMPLICATIONS

ADL Education

Educational opportunities focusing on ADL in the form of certified courses, Continued Occupational Therapy Education (COTE) Programs, Integrated Programs, Dedicated Masters Programs shall facilitate capacity building in this field. This shall also help in keeping abreast with the latest developments in this area across the globe so as to open new avenues for developing interest in research amongst students as well as better prospects for funded research.

ADL Evaluations and Interventions

Normative data for scales for Indian population would help in better documentation as also normative data diagnosis wise which would present a clear picture. Use of appropriate client and culture centered outcome measures would be hugely helpful. Video based and simulated lab ADL evaluations can act as an additional/alternative to traditional questionnaire based evaluations and assessments. Also, more qualitative evaluations to understand clients perspective in their own words, along with contextual evaluation would also represent a more holistic view of ADL deficits.

Task oriented, video based demonstrations (video modeling), home program, development of smart phone apps, simulated labs for training, use of robotic assistive technology would also go a long way to enhance function based outcomes to keep pace with the ever developing technological globalization.

ADL Research

Documented clinical and research practices should be encouraged. This will help to develop evidence in ADL as one of the core areas of Occupational Therapy to develop credibility in a global arena. More comprehensive research of role of OT in ADL evaluations and intervention in various ages, gender and diagnosis should be emphasized to assert the role of Occupational Therapy in a multi-disciplinary rehabilitation team. Study designs incorporating quantitative and qualitative ADL evaluations and interventions should be used to gauge a better insight. More number of studies with a higher Level of Evidences (Randomized Controlled Trials and Systematic Reviews) would help in building a strong evidence and knowledge base, thus also improving the impact factor of the journal which is now indexed/ listed for its availability on many significant databases.

CONCLUSION

More research studies are required in India on ADL, as it is one of the core areas of the domain of Occupational Therapy. Having more documented research, shall help in differentiating OT researches from the researches in other fields and also help in enhancing credibility on a global platform.

REFERENCES

- Batra, M., Batra V.(2006). Comparison between forward chaining and backward chaining techniques in children with mental retardation. Indian Journal of Occupational Therapy, XXXVII(3).
- Batra, V., Batra, M.(2008). To compare the efficacy of biofeedback over tenodesis splint for functional tenodesis training in S.C.I patients with level C5-6. Indian Journal of Occupational Therapy, XL(3).
- Bajpai, P., Mandal, A.(2009). Effects of arm ergometer training on cardiac endurance and functional status in adult traumatic tetraplegics (C6-T1). Indian Journal of Occupational Therapy, XLI(1).
- Desai, R., Jayawant, S., Varshneya H.(2013). To investigate the immediate and short term effects of wheelchair skill training program (WSTP) on participation in patients with spinal cord involvement. Indian Journal of Occupational Therapy, 45(2).
- Jaywant, S.(2011). Home based program for elderly disabled, evaluation & intervention at community based centre. Indian Journal of Occupational Therapy, 43(3).
- Jojode, S., Sams, S.(2009). A study on effect of proprioceptive training in patients with Osteoarthritic knee wearing elastic bandages. Indian Journal of Occupational Therapy, XLI(2).
- Mandal, A., Mokashi, S.(2009). Effect of occupational therapy task oriented approach on recovery of upper extremity motor function and activities of daily living in stroke patients. Indian Journal of Occupational Therapy, XLI(2).
- Milton, S., Milton, G. (2008).Multimedial treatment approach of functional independence in spinal cord injury- A single case study. Indian Journal of Occupational Therapy, XL(3).
- Mokashi, S.P. (2005).Relationship between cognitive deficits and the ability to perform the activities of daily living in stroke patients. Indian Journal of Occupational Therapy, XXXVII(1).
- Murphy, S.L., Robinson, J.C., Lin, S.H. (2009).Conducting systematic reviews to inform Occupational Therapy practice. Am J Occup Ther, 63(3), 363-368.
- Rosenberg, W.M., Muir Gray, J.A., Haynes, R.B., Richardson, W.S. (1996) Evidence-based medicine: What it is and what it isn't. British Medical Journal, 312, 71-72.
- Sachdeva, R., Rao, S. (2012).Community participation activities involving money handling skills of children with learning disability as compared to children with typical development aged 10-14 years. Indian Journal of Occupational Therapy, 44(2).
- Sehgal, S., Nagar, R.(2004). To construct a reliable IJOT and valid patient-administered photographic questionnaire to determine the efficacy of patient education program in joint protection in patients of rheumatoid arthritis. Indian Journal of Occupational Therapy, XXXVI(1).
- Shah, P., Kale, J.S.(2004).A study of the effects of a vestibular rehabilitation program on patients with peripheral vestibular dysfunctions. Indian Journal of Occupational Therapy, XXXVI(1).
- Shenai, N., Wadia, D. (2014). Development of a self care skills scale for children with developmental disorders: A pilot study. Indian Journal of Occupational Therapy, 46(1).
- Shetty, D.(2011). Post stroke "contraversive pushing and ipsilateral tilt": Relationship to motor, balance and functional recovery- A case report. Indian Journal of Occupational Therapy, 43(2).
- Swaminathan, A., Jahagirdar, S., Kulkarni, C.(2014). Client centred care- Looking through the lens of qualitative and qualitative measures- case studies. Indian Journal of Occupational Therapy, 46(1).