

Original Article

A Feasibility Assessment of International Classification of Functioning, Disability and Health (ICF) Tool for Locomotion in Rural Community of Northern India

Dinesh Kumar¹, Bansal P² Bhardwaj Ashok Kumar³

Abstract

Background: ICF is a valid tool to assess the degree and extent of disability, functioning, and health among patients. Its use in population to assess the disability is often limited.

Aim: To assess the feasibility of ICF tool in community settings among patients with any signs and symptoms of locomotion.

Design: Community based survey was carried out to assess the disability.

Setting: The studied individuals were assessed during house to house survey in a rural area of Himachal Pradesh, India. Any individual with any signs and symptoms of disability associated to locomotion was interviewed by the trained medical social worker at their home.

Population: Total 82 individuals were interviewed to study the degree and extent of disability related to locomotion.

Methods: An ICF tool version 2.1a as recommended by World Health Organisation was used for assessment.

Results: A total 82 people whom 58.5% were assessed using ICF tool and 40.0% of males and 50.0% of females observed with no problem of impairment for locomotion. Among those who reported, moderate level of impairment related to joints was observed among 32.4% females and 31.3% males. Mild impairment for muscle power was present among 31.3% males and 29.4% of females. Assessment of extent of impairment observed that the lower limb was most commonly (about 40.0%) involved in both males and females. Both males and females were mostly observed with restricted performance for daily activities like using transportation, lifting/carrying of objects, walking and moving around using assisted equipment. About 47.9% and 31.3% of males responded that the design of building and technology for public use, as mild and moderate barrier respectively. Design of building for public use was observed as severe barrier among 38.2% of females.

Conclusions: Disability related to locomotor system involving lower extremities is most common form of disability. Mild to moderate level of impairment was observed among individuals with locomotor disability to carry out day to day activities.

Rehabilitation impact: ICF tool can be used to study the degree and extent of disability. A standard pattern of analysis and reporting the results would help to assess the effect of rehabilitative interventions in community settings.

Key words: ICF, feasibility, locomotion, community.

Author's affiliations:

¹ MD, Assistant professor

² MD, Associate professor

³ MD, Professor & HOD

Department of Community Medicine, Dr. Rajendra Prasad Government Medical College, Kangra, Himachal Pradesh, India.

Cite as:

Dinesh Kumar, Bansal P, Bhardwaj Ashok Kumar. A Feasibility Assessment of International Classification of Functioning, Disability and Health (ICF) Tool for Locomotion in Rural Community of Northern India. *IJPMR* June 2015; Vol 26(2): 38-42.

Correspondence:

Dr. Dinesh Kumar, Assistant Professor, Department of Community Medicine, Dr. Rajendra Prasad Government Medical College, Kangra, Himachal Pradesh, India. Email: dinesh9809@gmail.com

Received on 05/04/2013, Revised on 16/07/2014

Accepted on 29/06/2015

Introduction:

International Classification of Functioning, Disability and Health (ICF) is a valuable tool for assessing individual health status comprehensively. It constitutes complete spectrum of health and its functioning in various environmental conditions. It was approved in 54th assembly of World Health Organisation (WHO) and accepted as a valid reference standard for classification and documentation of functioning state of an individual and populations¹. The ICF Core Sets have been developed as a reference standard for reporting of functioning. These sets provide a list of ICF categories relevant to specific health conditions². It is a tool that categorises the factors influencing the health and helps to tailor the

social and clinical rehabilitative interventions to improve the individual functioning. Its value for patient care has been anticipated and studied in clinical and rehabilitative medicine³⁻⁵. Its feasibility assessment in community settings is limited. So, possible challenges in translating the ICF to map the disability and functioning status of individuals in community setting needs to be studied and documented. Therefore, the present study was planned to assess the feasibility while administering the ICF study tool among individuals self reported with problems related to locomotion in community settings of northern India.

Materials and Methods:

A community based survey was carried out in selected villages of Shahpur block of district Kangra of Himachal Pradesh State from October to December 2012. As per census 2011, the state has population of 68,56,509. The Shahpur block has population of 2,11,147 and almost 95.0% of population reside in rural area. A house to house survey was carried out by a medical social worker in town population of about 2000. A member of household was interviewed only if observed or reported with any signs and symptoms related to limitation of function or change in body structure related to locomotion. Then the International Classification of Functioning, Disability and Health (Version 2.1a)⁶ questionnaire was used to collect the information about locomotor functioning and disability of an individual.

The study tool consists of three main components. First, body functions and structures, which refer to physiologic functions and anatomical parts, respectively. Any loss or deviations from normal body structures is referred as impairments. Second component is activity, which refers to execution of task by the individual. Third component is participation referring involvement in life situations. An additional component studies the environmental status of a disabled individual. These components of body functions and structures, activities and participation, and environmental factors are classified based on ICF categories. The categories are denoted by the alpha numeric codes to classify functioning and disability. In each category of ICF, there are two levels of codes, and first level code shares attributes of next level of codes; for example: “b7 neuromuscular and movement related functions” which is first level and then “b710 mobility of joint” as a second level. The following part of activities were assessed as a core set;

Part 1a: Impairments of body functions

Impairments are problems in body function as a significant deviation or loss.

s730: Upper extremity (arm, hand), s740: Pelvis, s750: Lower extremity (leg, foot), s760 Trunk

First qualifier: extent of impairments

0=No impairment means the person has no problem, 1=Mild impairment means a problem that is present less than 25% of the time, with an intensity a person can tolerate and which happens rarely over the last 30 days, 2=Moderate impairment means that a problem that is present less than 50% of the time, with an intensity, which is interfering in the person’s day to day life and which happens occasionally over the last 30 days, 3=Severe impairment means that a problem that is present more than 50% of the time, with an intensity, which is partially disrupting the persons day to day life and which happens frequently over the last 30 days, 4=Complete impairment means that a problem that is present more than 95% of the time, with an intensity, which is totally disrupting the persons day to day life and which happens every day over the last 30 days, 8=Not specified means there is insufficient information to specify the severity of the impairment, 9=Not applicable means it is inappropriate to apply a particular code (e.g. b650 menstruation functions for woman in pre-menarche or post-menopause age).

Part 1 b: Impairments of body structures

- Body structures are anatomical parts of the body such as organs, limbs and their components.
- Impairments are problems in structure as a significant deviation or loss.

b710: Mobility of joint, b730: Muscle power, b765: Involuntary movements

First qualifier: extent of impairment (codes are the same as Part 1a)

Second qualifier: nature of the change

0=No change in structure, 1=Total absence, 2=Partial absence, 3=Additional part, 4=Aberrant dimensions, 5=Discontinuity, 6=Deviating position, 7=Qualitative changes in structure, including accumulation of fluid, 8=Not specified, 9=Not applicable

Part 2: Activity limitations and participation restriction

Respondent’s actual performance of a task or action in the person’s actual situation or surroundings, and elicits information about the effects of environmental barriers or facilitators. It is important to emphasise that you are only interested in the extent of difficulty the respondent has in doing things, assuming that they want to do them. Not doing something is irrelevant if the person chooses not to do it.

- In your present surroundings, how much of a problem do you actually have in walking long distances (such as a kilometre or more)?
- Is this problem walking made worse, or better, by your actual surroundings?
- Is your capacity to walk long distances without assistance more or less than what you actually do in your present surroundings?

Respondent focuses on his or her capacity to do a task or action, and in particular to focus on limitations in capacity that are inherent. These limitations should be direct manifestations of the respondent's health state, without the assistance (modified home, accessories or person etc). The level of capacity should be judged relative to that normally expected of the person, or the person's capacity before they acquired their health condition.

- In your present state of health, how much difficulty do you have walking long distances (such as a kilometre or more) without assistance?
- How does this compare with someone, just like yourself only without your health condition? (Or: "...than you had before you developed your health problem or had the accident?")

First qualifier: performance

Extent of participation restriction

Second qualifier: capacity (without assistance)

Extent of activity limitation

(For both the codes are the same as Part1a)

The enlisted codes were studied:

d430: Lifting and carrying objects, d440: Fine hand use (picking up, grasping), d450: Walking, d465: Moving around using equipment (wheelchair, skates, etc), d470: Using transportation (car, bus, train, plane, etc), d510: Washing oneself (bathing, drying, washing hands, etc), d520: Caring for body parts (brushing teeth, shaving, etc), d530: Toileting, d540: Dressing, d550: Eating, d560: Drinking, d570: Looking after one's health

Part 3: Environmental factors

Environmental factors make up the physical, social and attitudinal environment in which people live and conduct their lives.

Barrier: 0=No, 1=Mild, 2=Moderate, 3=Severe, 4=Complete

Facilitator: 0=No, 11=Mild, 12=Moderate, 13=Severe, 14=Complete

The enlisted codes were studied:

e110: For personal consumption (food, medicines), e115: For personal use in daily living, e120: For personal indoor and outdoor mobility and transportation, e125: Products for communication, e150: Design, construction and building products and technology of buildings for public use, e155: Design, construction and building products and technology of buildings for private use

For assessment of categories, the questions were asked in local language and assessment was done to ascertain the presence or absence of ICF codes relevant to locomotion. Once ascertained presence or absence of codes, and if present, the grade of response was filled immediately by the medical social worker. While assessing the response of the person, comprehensive assessment of environmental factors and interview of the family member was also done simultaneously. Prior ethical approval was obtained from Institutional Ethics Committee (IEC) and informed consent was also sought before administering the questionnaire. Descriptive analysis was done to report the survey findings.

Results:

Total 82 (58.5% males) people were assessed using ICF tool and it was observed that males reported more with impairment of body function related to locomotion. About 40.0% of males and 50.0% of females observed with no problem of impairment for locomotion. Moderate level of impairment related to joints was observed among 32.4% females and 31.3 % males. When assessed for muscle power, mild impairment was present among 31.3% males and 29.4% of females. Assessment of extent of impairment observed that the lower limb was most commonly (about 40.0%) involved in both males and females. Upper limb was involved in about 20.0% of males and 10.0% of females. In males, mild to severe level of impairment of lower extremities were observed among 10.0% to 12.0% of studied individuals. Whereas, moderate level of lower limb impairment was observed more among females (26.5%) as compared to males (12.5%). When assessed for nature of change, as compared to males, more females were observed with aberrant dimensions (20.6% *versus* 8.3%) and partial absence (11.8% *versus* 9.0%) of lower extremities. As compare to females, more (12.5%) of males reported with severe level of impairment for upper extremities and none of studied males and females were observed with change of structure for upper extremities, pelvis and trunk.

All individuals were assessed for limitation and

participation restriction in day to day activity. Both males and females were mostly observed with restricted performance for daily activities like using transportation, lifting/carrying of objects, walking and moving around using assisted equipment. Restriction in lifting/carrying of objects was of moderate level among 37.5% of males and 17.6% of females. When asked for walking, moderate level of performance was observed more in females (32.4%) than of males (14.6%). Complete impairment was observed for transportation use among 25.0% of males and 17.6% of females. Fine hand use was impaired completely among 18.8% of males and 14.7% of females. More than three-fourths of individuals did not observe with any limitation of performance for activities related to self care. Severe impairment of toileting was observed among 10.4% of males as compared to 2.9% of females.

When assessed for capacity to carry the works, male observed with more capacity limitation as compared to females. Among males, complete impairment of capacity was observed for using transportation (39.6%), fine hand use (33.3%) and walking (25.0%). Whereas, among females complete impairment was up to 23.6% for fine hand use and 20.6% for transportation use. Among males, moderate and severe impairment was observed as 22.9% and 25.0% for moving around while using equipment, 22.9% and 22.5% for lifting/carrying the objects, 14.6% and 18.8% for walking, and 16.7% and 12.5% for using transportation respectively. Mild to severe impairment in capacity was observed for lifting/carrying objects and transportation use among females.

Limitation in performance and capacity was observed less for activities related to self care. Among males, performance was severely impaired for toileting (10.4%), mild to moderate limitation was observed for dressing (12.5% and 16.7%), eating (16.7% and 8.3%), drinking (16.7% and 6.3%), toileting (10.4% and 6.3%) and washing oneself (12.5% and 2.3%). Capacity limitation was also observed more for dressing, eating, drinking and washing one self. Among females the performance and capacity impairment for self care activities were observed to be less as compared to males. In females, the impairment of performance and capacity was observed more for dressing and toileting.

Among males, assessment for environmental factors observed that product and technology use was observed more as a barrier than as facilitator. About 47.9% and 31.3% of males responded that the design of building and technology for public use, as mild and moderate barrier respectively. For private use of building, 48.3%

and 31.3% of males said as mild and moderate barrier respectively. Mild and moderate extent of barrier was observed respectively as, 29.2% and 37.5% for personal indoor and outdoor mobility, 31.3% and 20.8% for personal use in daily living, 35.4% and 12.5% for personal consumption of food and medicines. Similar pattern was observed among females, most of them responded products and technology in daily use as a barrier than the facilitator. Design of building for public use was observed as severe barrier among 38.2% of females. Mild and moderate extent of barrier was observed for personal indoor and outdoor mobility (44.1% and 38.2%), design of building for private use (35.5% and 26.5%), for products of communication (23.5% and 26.5%), personal use in daily living (35.3% and 11.8%) and personal use for food and medicines (14.7% and 17.6%).

Discussion:

In India, prevalence of disability has been reported as 2.0% in rural settings. State specific variation in disability is from 3.0% in Jammu and Kashmir to 1.6% in Maharashtra. Burden assessment of disability depends upon sensitivity and specificity of the measuring instrument. Study from rural setting observed prevalence of disability upto 6.0%⁷. In addition to assess the disability burden in population, the extent and factors influencing the functioning and disability also need to be studied in order to plan the rehabilitative measures.

The WHO has developed a consensus based valid ICF tool to measure functioning, disability and health. It has been considered as universally accepted model and taxonomy in human functioning³. So far, its use in extraction of relevant patient specific information for patient oriented management has been studied. However, its use in reporting the extent and type of limitations of functioning and disability in populations has not being studied. As locomotor system related disability is observed as most common form of disability⁸. In present survey, a feasibility assessment of using ICF tool was made among individuals reported with any signs and symptoms associated with locomotion. A trained medical social worker interviewed the individuals at their homes and recorded their responses. Once comprehend the rationale and interview technique it become easy to interpret and record the individual responses.

The locomotor assessment showed that the limitation of functions was more for movement (b710) and muscle power (b730). Limitation was observed to be more among males as compared to females. For both genders, the extent of impairment was observed mostly in lower

extremities (s750). Among studied females, partial absence and aberrant dimensions of lower extremities were reported as most common nature of change. The performance was observed to be restricted for moving around using equipment (d470), transportation use (d470), and walking (d450). Performance was also observed to be restricted for fine hand use (d440), lifting and carrying objects (d430). In addition to performance, the reduction in capacity to carry the above mentioned tasks associated to lower and upper extremities was found to be restricted. Both the limited performance and capacity to carry daily activities were found to be more among males than of females. Limited performance and capacity for activities related to self care was not observed among majority of studied individuals. Studied for environmental factors found that, most of males reported current design of buildings for public (e150) and private (e155) use as a barrier than the facilitator. As compared to females, more males reported the use of product and technology for personal consumption (e110) and personal use in daily living (e115) as a facilitator.

Disability related to locomotor system involving lower extremities is most common form of disability. Mild to moderate level of impairment was observed among individuals with locomotor disability to carry out day to day activities. Studied population considered insignificant outdoor environmental modifications (buildings for public and private use) which were serving as a barrier to impart the daily activities. Effective use of product and technology for daily activities serve as a facilitator and help to reduce the extent of disability.

This study provides an information that how ICF study tool can be use to assess the degree and extent of disability in group of individuals. Assessment of disability using ICF tool in community settings provides an opportunity to assess the individual health comprehensively. However, it becomes very important for an interviewer to well worse with the objective and methodology of assessment. The way of asking the questions and ascertaining the code to

qualify for extent of disability requires training. Being a valid tool for assessing the health and disability, a standard method of reporting the results-especially for group level data- is also vital. It will serve as a foundation to initiate or reorient the rehabilitative policies for disabled persons. Effective evaluation of the rehabilitative policies can also be studied in community settings using the ICF tool. Formulation of standard method of analysis and reporting would certainly help to communicate the findings to the policy makers and programme managers to formulate the healthy public policy.

Conclusions:

It is feasible to administer the ICF tool to assess the degree and disability in community settings. Being a valid tool, a standard method of analysis and reporting of findings from community based assessment helps to assess the effect of the rehabilitative measures.

References:

1. Cieza A, Stucki G. The International Classification of Functioning Disability and Health: its development process and content validity. *Eur J Phys Rehabil Med* 2008; **44**: 303-13.
2. Stucki G, Kostanjsek N, Ustün B, Cieza A. ICF-based classification and measurement of functioning. *Eur J Phys Rehabil Med* 2008; **44**: 315-28.
3. Stucki G, Ewert T, Cieza A. Value and application of the ICF in rehabilitation medicine. *Disabil Rehabil* 2002; **24**: 932-8.
4. Rauch A, Cieza A, Stucki G. How to apply the International Classification of Functioning, Disability and Health (ICF) for rehabilitation management in clinical practice. *Eur J Phys Rehabil Med* 2008; **44**: 329-42.
5. Boonen A, Maksymowych WP. Measurement: function and mobility (focussing on the ICF framework). *Best Pract Res Clin Rheumatol* 2010; **24**: 605-24.
6. Ganesh KS, Das A, Shashi JS. Epidemiology of disability in a rural community of Karnataka. *Indian J Public Health* 2008; **52**: 125-9.
7. World Health Organization. International Classification of Functioning, Disability and Health: ICF. Geneva: WHO, 2001.
8. National sample Survey Organization. A report in disabled persons. Department of Statistics. New Delhi: Government of India 2002.