

# Environmental factors: a systematic review of instruments and content analysis using the International Classification of Functioning, Disability and Health.



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## Introduction

- Assessing the impact of environmental factors (EF) on patients' functioning is an important part of the rehabilitation process. Physiotherapists need to know which instruments assess EF, which EF these instruments assess and which methodology of assessment they use, in order to choose the appropriate instrument. The International Classification of Functioning, Disability and Health (ICF) provides a universal framework that can be used to describe and compare the health of patients and that serves as a reference for the documentation in physiotherapy. Therefore it can be used to characterise existing instruments.

## Aim

- This study aims to describe and compare the content of instruments that assess EF using ICF.

## Methods

### Search:

- A systematic search of 3 databases (PubMed, CINAHL and PEDro) was conducted to identify instruments that assess EF. Combinations of the following key words were used without language restriction: environment, factors, components, barriers to participation, facilitators to participation, International Classification of Functioning, Disability and Health, social participation. Two investigators independently screened all instruments identified, which were included if developed for adults, addressed more than one 2nd level category of any of the 5 Chapters on EF and not specific to a health condition.

### Analysis:

- Included instruments had their content examined independently by 2 investigators that identified all meaningful concepts and linked them to the most precise ICF category according to published rules<sup>1</sup>. Percentage agreement between the 2 investigators varied between 84% and 95%. See Table 1 for examples of linking questions to ICF categories.

## Results

- 8 instruments met the inclusion criteria:
  - Community Health Environment Checklist (CHEC)<sup>2</sup>
  - Craig Hospital Inventory of Environmental Factors (CHIEF)<sup>3</sup>
  - Facilitators and Barriers Survey (FABS)<sup>4</sup>
  - Home and Community Environment Instrument (HACE)<sup>5</sup>
  - Individually Prioritized Problem Assessment (IPPA)<sup>6</sup>
  - Measure of the Quality of the Environment (MQE)<sup>7</sup>
  - Neighbourhood Environment Walkability Scale (NEWS)<sup>8</sup>
  - ICF checklist
- The 8 instruments contained 558 meaningful concepts linked to 2nd or 3rd level ICF categories from one of the 5 EF chapters (1. Products and technology, 2. Natural Environment, 3. Support and relationships, 4. Attitudes, 5. Services, systems and policies).
  - 5/8 instruments cover all the 5 chapters;
  - 1/8 instrument covers 4/5 chapters (1, 3-5);
  - 1/8 instrument covers chapters 1 and 2 and 1/8 instrument covers chapter 1 only;
  - 5/8 instruments had between 61% and 100% of their items linked to categories in Chapter 1;
  - the highest percentage of items from one instrument linked to categories in Chapter 2 was 11%, Chapter 3 was 30%, Chapter 4 was 20% and Chapter 5 was 49%;
  - 3/8 instruments assessed whether EF were present or absent in a specific context, 3/8 assessed the intensity of EF' impact and 2/8 assessed the intensity and frequency of the EF' impact.

Table 1 – Examples of linking questions to ICF categories.

Item (Instrument)	Meaningful concepts	ICF category assigned	Observations
How accessible are restrooms in public library? (FABS)	Access to facilities inside buildings for public use	e1501 - Design, construction and building products and technology for gaining access to facilities inside buildings for public use.	One question and one meaningful concept linked directly to one category.
In the past 12 months, how often has the lack of personal equipment or special adapted devices been a problem for you? Examples might include hearing aids, eyeglasses or wheelchairs.(CHIEF)	Personal equipment or special adapted devices (examples: hearing aids, eyeglasses, wheelchairs).	e115 - Products and technology for personal use in daily living;e120 - Products and technology for personal indoor and outdoor mobility and transportation;e125 - Products and technology for communication; (e1201)- Assistive products and technology for personal indoor and outdoor mobility and transportation; (e1251)- Assistive products and technology for communication.	One question with examples and more than one meaningful concept linked to more than one category from the same chapter. Both the concept and the examples were linked.
The streets in my neighbourhood are hilly, making my neighbourhood difficult to walk in. (NEWS)	Hilly, walk.	e2100 - Land forms; d450 - Walking.	One question and 2 meaningful concepts linked to more than one category from different chapters and components.
The attitudes of your service providers (public service agents, salespeople, cashiers,...) toward you. (MQE)	Attitudes of service providers (examples: public service agents, salespeople, cashiers).	e450 - Individual attitudes of health professionals;e455 - Individual attitudes of health-related professionals (e445) - Individual attitudes of strangers (public agents, salesperson, cashiers);	One question and more than one meaningful concept linked to more than one category. The examples are not explicitly named in any ICF category.

## Discussion

- The process of linking instruments to the ICF allows a detailed analysis of the content of instruments and also of their approach to assessment. The ICF-based content analysis provides information that can be very useful when selecting EF instruments for research or clinical practice, not only because it allows insight about the range of domains covered by the instruments, but also the depth of the measurement
- Overall, instruments have been developed for different purposes, and therefore vary in their content (i.e., EF assessed) and approach used to assess EF (i.e., presence and absence of an EF or intensity or frequency of EF impact). This heterogeneity is probably a reflection of the complexity of assessing EF, as there are several aspects of interest depending on what is measured or the purpose of the measurement
- Considering the content of instruments, most (the CHIEF, FABS, MQE, NEWS, and ICF checklists) have items and questions that were linked to all 5 ICF chapters, suggesting that they give a broad perspective on the different EF that can influence functioning of the individual.
- The approach to measuring EF also varied and could be broadly classified into those that assess the presence or absence of EF (the CHEC, HACE, and NEWS), those that assess the intensity of the EF impact (the ICF, MQE, and IPPA), and those that assess the intensity and frequency of the EF impact (the CHIEF and FABS).

## Implications

- The results of this study can guide physiotherapists in clinical practice and research in selecting an appropriate EF instrument for a specific purpose.

## Conclusion

- Instruments assessing EF differ in their content and type of assessment and have several items linked to the same ICF category. Most instruments are designed to assess primarily products and technology (Chapter 1) and only a minority assesses the intensity and frequency of EF' impact, which is of great relevance to rehabilitation. Different instruments are needed that assess the intensity and frequency of EF' impact and that use ICF categories as the items for assessment.

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