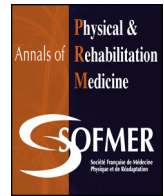




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Original article

## Looking at hospitalized persons throughout the prism of the handicap

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### ABSTRACT

**Objective:** To describe the disability status of non-selected hospitalized persons.

**Methods and findings:** We conducted a cross-sectional survey to assess activity limitations of every person older than 18 years hospitalized in a regional university hospital covering all medical fields. Evaluators rated, on a scale from 0 to 4, 22 selected items of the International Classification of Functioning (ICF), covering the 6 following domains: learning and applying knowledge, general tasks and demands, communication, mobility, self-care, and interpersonal interactions and relationships. Univariate and multivariate analyses were performed to analyze the prevalence, severity and profile of the handicap in terms of sociodemographic characteristics and care pathways.

**Results:** Among 1572 eligible persons, 1267 (81%) were surveyed (mean age  $62.7 \pm 20.4$  years; 655 males [51.7%]). Overall, 82% showed at least one activity limitation. For 52%, disability was severe or total for at least one ICF item. Prevalence of disabilities was higher for mobility (75%) and self-care domains (63%). Disability was strongly related to age: age older than 80 years versus 18 to 44 years (OR = 12.8 95% CI 6.4–27.9);  $P < 0.01$ ). Disability was associated with hospitalization in rehabilitation units (96%; OR = 4.3 [95% CI 2.2–5.3];  $P < 0.01$ ). Severe disability was associated with hospitalization in critical care units (OR = 6.7 [CI 3.2–15.1];  $P < 0.001$ ) and psychiatry units (OR = 5.3 [CI 2.7–11.4];  $P < 0.001$ ).

**Conclusion:** Handicap was common in hospitalized persons, involving all 6 tested ICF activity domains, particularly mobility and self-care. This study alerts care givers, hospital administrators, and in general, people influencing health policies about the need to plan actions to reduce activity limitations of hospitalized persons, whatever the cause of the hospitalization.

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## 1. Background

The 54th World Health Assembly conducted by the World Health Organization (WHO) 15 years ago urged member states to use the International Classification of Functioning and Health (ICF) in their research, surveillance and reporting for evaluating public health. The International Classification of Diseases (ICD) and ICF are therefore complementary to allow for describing the experience

of individuals and populations in terms of health. This common language serves to communicate about functioning regardless of diagnosis. This assessment tool comprises 3 dimensions: body structure and function (impairment), activity (and activity limitations) and participation (and participation restrictions). The classification is applicable to all people in the world regardless of health condition.

The WHO estimates that more than one billion people around the world are living with some kind of disability. The increasing interest of handicap appraisal in health systems is attested by a recent series of papers, 3 recently published in *The Lancet* by the Global Burden of Disease group, bringing the following key messages: most diseases and injuries cause disabilities [1], the number of years lived with disability has increased by 25% in 20 years, reaching 777 million worldwide in 2010 [2], and health life expectancy increased more slowly than did life expectancy

**Abbreviations:** ICF, International Classification of Functioning disability and health; WHO, World Health Organization; ICD, International Classification of Diseases; IQR, Interquartile ranges; GBD, Global Burden of Disease.

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[3]. These results confirm that we must now pay specific attention to handicap in health systems.

The hospital might create conditions for high and extensive disability conditions because of the combination of diseases, inactivity and immobility in frail patients [4,5]. Only a few studies have analyzed disability among hospitalized persons. With the Modified Rankin Scale used to assess 400 unselected patients hospitalized in sub-acute and post-acute care units, Hajjioui et al. [6] found a high prevalence of pain (41.6%), sensory-motor deficits (21.9%) and stiffness (21.4%), whereas activity limitations predominated with gait and balance disorders (25.3%). Grill et al. and Müller et al. [7–9] have validated ICF core sets to assess disability in several hundred hospitalized people referred for rehabilitation from acute care units.

Surprisingly, no study has ever assessed disability in a large sample of non-selected hospitalized persons with an appropriate tool, such as the ICF. Identifying the prevalence, severity and typology of the handicap of disabled persons, regardless of disease and department, should allow for optimizing care pathways and health resource allocations. This was the objective of this cross-sectional survey performed in a representative regional hospital.

## 2. Methods

### 2.1. Participants and setting

The study consisted of a one-day prevalence survey, performed in September 2009, of all persons hospitalized in the Grenoble University Hospital Center (2200 beds), the reference hospital for a population of about 680,000 persons. Inclusion criteria were age > 18 years and conventional hospitalization in one of five paths: emergency care, critical care, medical or surgical acute care, psychiatric care, rehabilitation care (Fig. 1). Persons admitted in long-care units, homecare belonging to the hospital, or day hospital units were not screened.

Data were collected in accordance with the French law; the study was registered at the Commission nationale informatique et libertés (no. 1379666; French equivalent of the Information

Commissioner's Office). Participants gave their informed consent to participate in the study, which did not need approval by an ethics committee given the non-interventional (observational) nature of the survey.

### 2.2. Handicap questionnaire

We a priori extracted from the ICF the 6 most relevant domains for an assessment at the hospital level. Several non-applicable domains were discarded: domestic life, major life areas and community, social and civic life. The 6 ICF domains retained were learning and applying knowledge, general tasks and demands, communication, mobility, self-care, and interpersonal interactions and relationships. Hence, 22 items were evaluated according to the ICF scale from 0 to 4:

- 0, no disability (disability < 4%);
- 1, mild disability (disability 5–24%);
- 2, moderate disability (25–49%);
- 3, severe disability (50–95%);
- 4, complete disability (> 96%).

Sociodemographic characteristics of people were also collected.

### 2.3. Data collection

Data were collected by 28 teams of evaluators, each having 2 members: the healthcare manager of the medical unit and a social worker not involved in the unit. Given the high number of persons to assess (about 50 for each team of evaluators), evaluators were not encouraged to systematically interview or examine persons. Each team of evaluators was instructed to complete the handicap questionnaire via interviews and dialogue with the staff of the unit, after having reviewed the information in patient files. As a last resort, only when necessary, evaluators could interview or examine persons to determine their handicap. Agreement between the 2 team members was required to validate each item of the questionnaire.

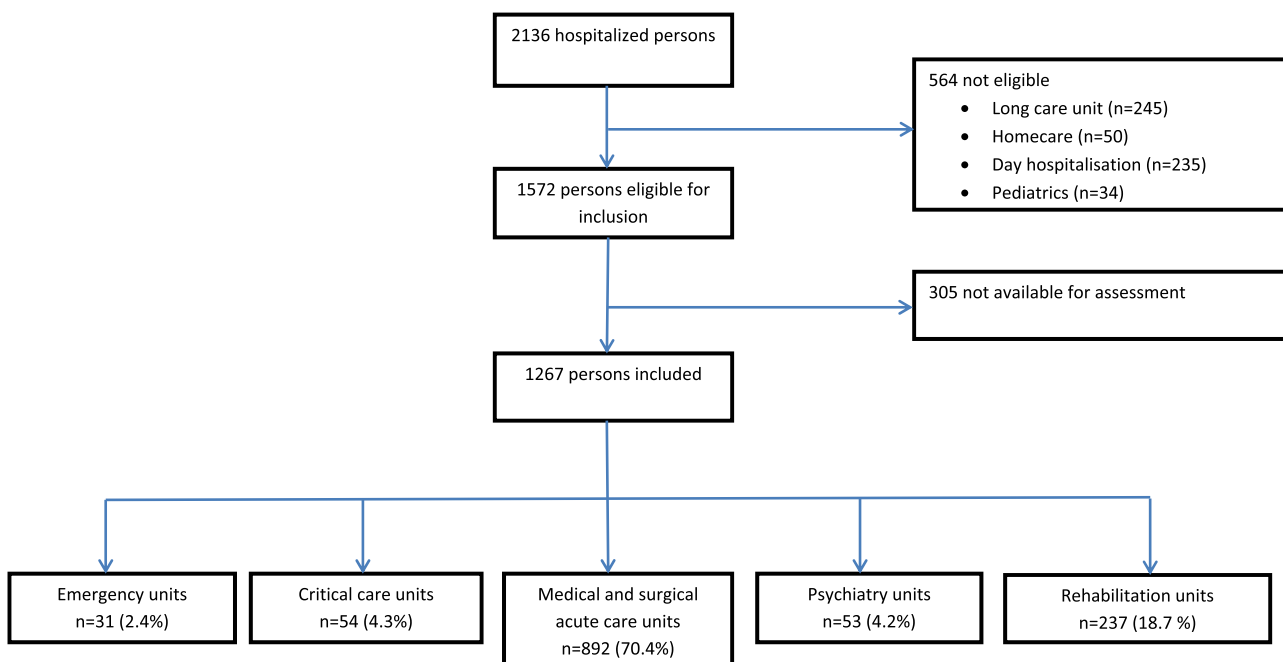


Fig. 1. Flowchart of the study. Rehabilitation units comprise, according to decreasing number of beds, units for cardiovascular rehabilitation (cardiac and peripheral diseases), rehabilitation of older people, neurorehabilitation, and orthopedic rehabilitation.

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