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# Prevalence of impairments, disabilities, handicaps and quality of life in the general population: a review of recent literature

Eric Barbotte,<sup>1</sup> Francis Guillemin,<sup>2</sup> Narkasen Chau,<sup>3</sup> & the Lorhandicap Group<sup>4</sup>

**Objective** To determine the prevalence rates of morbidity in the general population through bibliographic research.

**Methods** Articles relating to impairment, disability, handicap, quality of life and their prevalence in the general population, published between January 1990 and March 1998, were selected on the MEDLINE database.

**Findings** The 20 articles retained out of 433 used 41 different indicators. Indicators of impairment, disability, handicap and low quality of life showed prevalence rates of 0.1–92%, 3.6–66%, 0.6–56% and 1.8–26% respectively, depending on age and the accuracy of indicators. The heterogeneity of the conceptual framework and insufficient recognition of the importance of indicator accuracy, the age factor and the socioeconomic characteristics of the studied populations impede reliable international comparison.

**Conclusion** Further standardization of indicators is therefore required. The revision of the International Classification of Impairments, Disabilities and Handicaps may make it possible to resolve some of the difficulties encountered.

**Keywords** Disabled persons; Prevalence; Quality of life; Review literature (*source: MeSH*).

**Mots clés** Handicapés; Prévalences; Qualité vie; Revue de la littérature (*source: INSERM*).

**Palabras clave** Personas incapacitadas; Prevalencia; Calidad de vida; Literatura de revisión (*fuelle: BIREME*).

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Voir page 1054 le résumé en français. En la página 1054 figura un resumen en español.

## Introduction

Health was defined in the WHO Constitution as “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity”. More recently, the concept has been extended to include health-related quality of life. Today, the *International classification of impairments, disabilities and handicaps* (ICIDH) (1, 2) provides indicators that allow a more structured approach to health disorders. Impairment concerns the physical aspects of health; disability has to do with the loss of functional capacity resulting from an impaired organ;

handicap is a measure of the social and cultural consequences of an impairment or disability; and health-related quality of life means health as assessed by the individual concerned (i.e. self-perceived morbidity). The *International classification of impairments, disabilities and handicaps* (1, 2) defines impairment, disability and handicap as follows.

## Impairment

Any temporary or permanent loss or abnormality of a body structure or function, whether physiological or psychological. An impairment is a disturbance affecting functions that are essentially mental (memory, consciousness) or sensory, internal organs (heart, kidney), the head, the trunk or the limbs.

## Disability

A restriction or inability to perform an activity in the manner or within the range considered normal for a human being, mostly resulting from impairment.

## Handicap

This is the result of an impairment or disability that limits or prevents the fulfilment of one or several roles regarded as normal, depending on age, sex and social and cultural factors.

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The roles so defined must be as universal as possible. They are known as survival strategies and include the capacities to position oneself within one's environment and respond to environmental stimuli, to conduct an independent existence in a normal fashion according to sex, age and culture (employment, household tasks, raising children, and physical activity such as games and other forms of recreation), to maintain social relationships, and to pursue a socioeconomic activity and preserve self-sufficiency.

Handicap thus results from a health condition and is linked to factors such as individual resources and the collective environment. It is made up of circumstances that place individuals at a disadvantage from the standpoint of societal norms.

In 1993, WHO put forward a definition of *quality of life* linked to health (3): the perception by individuals of their position in life, in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns.

This wide-ranging concept is affected by people's social relationships, physical health, psychological state and level of independence, and by their relationship to salient features of their environment. For operational reasons it is often restricted to health-related quality of life or self-perceived health (4). According to WHO (1, 2), these determinants of the quality of life depend on the handicap, i.e. on any impairment or disability, suffered by an individual; the quality of life is therefore a consequence of these concepts. Other models have been put forward (5–9). Pope & Tarlov integrate quality of life into an interactive process (10) and regard it as an independent factor that may result from or constitute the cause of an impairment, disability or handicap as defined by the ICIDH.

A new version of the ICIDH has recently been published (11), but has not yet come into general use, and was therefore not used in our literature review.

Knowledge of the prevalence of impairment, disability, handicap and low quality of life is of interest in assessing the need for prevention policies at the national level (12).

The Lorhandicap study conducted bibliographic research into the prevalence of the above four phenomena. The aim was to determine whether there were any recent and sufficiently reproducible estimates with which to compare the results of a survey undertaken in the late 1990s to establish the prevalence of the same phenomena in the population of France's Lorraine region.

## Method

The bibliographic research was conducted in March 1998, using the MEDLINE database to retrieve articles published during the period January 1990 to March 1998.

The following keywords were selected from the MEDLINE thesaurus (MeSH terms) and the texts (titles and abstracts):

**health care** associated with **quality of life** and **population(s)**; **quality of life** associated with **population(s)**, **survey(s)** and **health**; **activities of daily living** associated with **health surveys**; **disability**; **deficiency**; **impairment**; **handicap**.

The keywords in the titles and abstracts did not highlight more articles relevant to the study than the MeSH terms.

Perusal of the abstracts led to a selection of articles dealing with the prevalence of any one of the following: impairment, disability, handicap (including social limitations) and quality of life. The articles were divided into four groups according to which of these phenomena was principally discussed. They were then analysed in the light of the measured phenomena, the indicator or indicators used and the age category of the surveyed population.

## Results

For the eight-year period covered by the review, automatic search by keyword retrieved 433 articles. Twenty of these, dealing with prevalence studies or surveys, were retained on the basis of a reading of their abstracts. The selected articles referred to 41 different indicators, of which seven were used in more than one article.

Many articles dealt with the prevalence of disability in specific population groups, such as schoolchildren or employees of particular firms, probably because this was comparatively simple for measurement purposes. There were far fewer explorations of this type in the surveys conducted in general populations, i.e. by country or region.

### Impairment indicators

These were used in nine articles covering twelve studies (Table 1). The term 'impairment' was mentioned in seven articles of these articles and defined in one. Two articles did not refer to the concept. Sixteen different indicators were mentioned. Various fields of impairment were explored by means of indicators of diagnosed morbidity (e.g. "Do you suffer from a chronic disease?": yes/no/no response) (13), self-perceived morbidity indicators, such as chronic health conditions reported by the individuals concerned (14), visual disturbances or hearing problems (15, 16), incontinence (16), pain (cervical vertebral, unspecified) (17), and indicators of unspecified impairment (18–20). The prevalences varied from 0.1% to 92%: they were under 2% for children aged below 15 years and ranged from 0.1% to 34% among young adults and from 10% to 92% among adults aged over 72. The countries covered by WHO surveys showed low prevalences (0.1–5%) (18). Country studies (18–20) revealed lower pre-

Table 1. Studies using impairment indicators

Reference	Scope of survey <sup>a</sup>	Population characteristics			Impairment indicators	Reference to measured concept	Prevalence (%)
		Number	Age (years)	Location			
(19)	N	5500	10	16 French Departments	General impairment Movement-related impairment	Defined	1.3 0.3
(20)	R N	Not given	9–14	Isère Register (RHEO) Children covered by the Departmental Committee on Special Education	General impairment Movement-related impairment Major mental impairment Severe hearing impairment Blindness, amblyopia Autism, psychosis	Mentioned	1.5 0.3 0.3 0.1 0.1 0.1
(17)	R	11 800	20–79	Norway (2 counties)	Cervical column pain Vertebral column pain Unspecified pains	Mentioned	15.7 21.3 17.3
(18)	N	Census Census Census		Africa (5 countries) Asia (9 countries) South America (4 countries)	Unspecified impairment	Mentioned	0.3–5 0.3–4 0.1–2.5
(14)	R		16–24 75	Canada (1990 Ontario Health Survey cohort)	Self-perceived chronic health disorders	Mentioned	34 80
(13)	R	2544	73–79	11 European countries	“Do you suffer from a chronic disease?”	Not mentioned	58–92
(15)	R	959	>75	Uppsala city, Sweden	Closed response question – visual disturbances Closed response question – occasional or permanent hearing problems, one speaker	Not mentioned	30.6 10
(16)	R	278	>60	Two areas of Zimbabwe	Visual disturbances Hearing problems Urinary incontinence Faecal incontinence	Mentioned	67 20 9 7
(21)	R	392	>60	Paris area	Musculoskeletal, cardiopulmonary, sensory, digestive or psychoaffective impairments	Mentioned	58

<sup>a</sup> N = countrywide survey; R = regional survey or survey covering a population in a specific area (city, district).

valences than those conducted at the local or regional level (13–17, 20, 21).

### Disability indicators

These were used in 10 articles dealing with 12 studies (Table 2). The term ‘disability’ was mentioned in nine articles and defined in five. One article contained no reference to the concept. Ten disability indicators of three types were applied. *Functional limitation indicators* assessed: movement-related disorders (15, 16); sleep disturbances (15); disability in the sphere of physical self-care, defined as involving at least one difficulty in eating, dressing, washing, using the toilet or cutting one’s toenails (21); and mobility-related disability, defined as involving at least one difficulty in walking on a flat surface or going up or down stairs (21). A

ten-question questionnaire (22) was used to assess intellectual, movement-related, visual and auditory disabilities.

Three studies used *activities of daily living* (ADLs) and *instrumental activities of daily living* (IADLs) as indicators. In two of these studies, disability was defined as the inability to perform at least one ADL or IADL (16, 23); in the third, responses to ADLs were classified as good, acceptable or poor (13).

A *general indicator*, referring to unspecified disability, was mentioned in four articles (14, 18, 24, 25). This sometimes related to a rheumatic (14) or chronic (14, 25) impairment.

Prevalences varied between 3.6% and 66%. Functional limitation indicators showed rates around 10%; the rates pertaining to general indicators ranged

Table 2. **Studies using disability indicators**

Reference	Scope of survey <sup>a</sup>	Population characteristics			Disability indicators	Reference to measured concept	Prevalence (%)
		Number	Age (years)	Location			
(22)	R	22 000	2–9	Bangladesh (children) Jamaica (children) Pakistan (children)	10-question questionnaire (intellectual, movement-related, visual, auditory disabilities)	Mentioned	8.2 15.6 14.7
(25)	N	10 394	19–24	USA, National Health Interview Survey, individuals not cared for by institutions	Disability and generalized activity restriction	Defined	5.7
(24)	R	198 507	>15	Spain (17 regions)	Unspecified disability	Defined	12.9–21.1
(18)	N			Spanish survey Canadian survey Australian survey	Unspecified disability	Mentioned	14 13 12.5
(14)	N	150 000	>15	Canada (representative of entire Canadian population, including individuals cared for by institutions)	Disability attributable to chronic musculoskeletal abnormalities	Not mentioned	4.9
	N	Not mentioned	18–24 >80	USA Interview Survey	Disability (activity restriction) attributable to a chronic impairment	Not mentioned	5.8 58.7
	N	Not mentioned	15–34 >65	Canada	Disability (estimated rate)	Not mentioned	6 46
(21)	R	392	60+	Paris area (persons living at home)	Physical care Mobility	Defined	12.5 20.2
	R	392	>70	Paris area (persons living at home)	Physical care Mobility		58 51
(23)	R	146	>65	Sri Lanka (persons living at home in urban areas)	ADL (disability = inability to perform any one of the activities)	Mentioned	10.3
(13)	R	2544	73–79	Denmark	ADL regarded as poor	Mentioned	23
(15)	R	959	>75	Uppsala city, Sweden	IADL (disability = inability to perform any one of the activities) Movement-related disorders Sleep disturbances	Defined	20.1 46.7 66
(16)	R	278	>60	Two areas of Zimbabwe	ADL (disability = inability to perform any one of the activities) IADL (disability = inability to perform any one of the activities) Movement-related disability	Defined	3.6 28 8.3

<sup>a</sup> N = countrywide survey; R = regional survey or survey covering a population in a specific area (city, district).

between 12% and 58%. Prevalences for country studies were no different from those shown by regional studies.

### Handicap indicators

These were used in six articles dealing with seven studies (Table 3). Reference was made to the term 'handicap' in all six articles but only one defined the concept. Prevalences among people reporting functional limitations in their main social activity were

measured by the nine indicators that were applied (25); they thus reflected the prevalences for handicaps according to the ICIDH definition.

Some indicators combined the concepts of *impairment*, *disability* and *handicap*. Among the questions were: "Does the person have a chronic disease, health condition or handicap restricting his or her daily activity or ability to work (including age-related problems)?" (26); and "Do you suffer from a chronic disease or any form of disability?" (26, 27). The

Table 3. Studies using handicap indicators

Reference	Scope of survey <sup>a</sup>	Population characteristics			Handicap indicators	Reference to measured concept	Prevalence (%)
		Number	Age (years)	Location			
(30)	R	Not mentioned	<20	Loire region, France (children)	Recipients of special education allowance	Mentioned	0.58
	N			France (children)	Recipients of special education allowance		0.57
(25)	N	10 394	19–24	USA, National Health Interview Survey (individuals not cared for by institutions)	Inability to perform customary principal activity	Defined	1.8
					Limitation in performing principal activity		2.2
					Limitations in performing other activities than principal activity		1.7
(27)	N	2000	>16	Great Britain (OPCS Omnibus survey cohort)	Chronic disease or disability	Mentioned	40
(26)	R	6212	>16	Lothian region, Scotland	Limiting long-term illness	Mentioned	36.9
					Limiting long-term illness + limitations in assuming physical role		29.2
(28)	N	21 597		France (people living at home; health survey by National Institute for Statistics and Economic Studies)	“Does your household include a person with disabilities or experiencing difficulties in the conduct of daily life?”	Mentioned	2.6–27.4, depending on age Overall: 9.8
(31)	R	12 903	>60	Japan, rural	Expectation of working life/total life expectancy ratio	Mentioned	38–56

<sup>a</sup> N = countrywide survey; R = regional survey or survey covering a population in a specific area (city, district).

surveys on living and health-related conditions carried out by the French National Institute for Statistics and Economic Studies posed the following question: “Does your household include a person with disabilities or experiencing difficulties in the conduct of daily life?” (28). The first two studies, conducted in the United Kingdom, showed high prevalences (30–40%), whereas the French surveys revealed rates of the order of 10%.

Other studies used more indirect indicators, such as severe undefined handicaps (29), severely disabled children receiving special education allowances in France (30), and the projected ratio of working life to life expectancy at a given age (31).

With the exception of the survey conducted in the United Kingdom, which used a very general indicator (27), and the survey conducted in the Loire region among a very young population (30), regional surveys showed prevalences of the order of 30%. Lower values occurred in the country surveys.

### Quality of life indicators

These were used in five articles dealing with five studies (Table 4). All the articles referred to the term “quality of life” but only one defined the concept. Six indicators were mentioned. The studies differed in two main ways: the type of response expected, and the phenomenon emphasized by the indicator.

Regarding the type of response, one study requested open-ended responses and these were placed in five categories (27). Data were mostly obtained by asking closed questions with two to seven possible responses, e.g. “Do you consider yourself to be in good health?” (yes/no) (32); health assessed as good, poor or fair (27); quality of life classified as being as low as can be, very low, low, normal, high, very high, or as high as can be (27); and self-assessment as being in very good health, rather good health, rather bad health, or very bad health (15).

Regarding the phenomenon emphasized by the indicator, questions about the quality of life are exemplified as follows: “How would you describe your quality of life?” (highly favourable, favourable, neutral, negative, or very negative) (33); “Describe your overall life situation” (as bad as can be, very bad, bad, normal, good, very good, as good as can be) (27). The articles generally referred to quality of life in the narrower sense, i.e. as relating to health from the angle of self-perceived morbidity (13, 15, 27, 32).

One study simultaneously took account of health as observed by professionals and as perceived by patients (32). The results differed considerably from those obtained through the questioning of individuals (78% and 26% of persons in poor health respectively), thus highlighting the difference that may arise between morbidity diagnosed by health professionals and self-perceived morbidity.

Table 4. **Studies using quality-of-life indicators**

Reference	Scope of survey <sup>a</sup>	Population characteristics			Quality-of-life indicators	Reference to measured concept	Prevalence (%)
		Number	Age (years)	Location			
(27)	N	2000	>16	Great Britain (OPCS Omnibus survey cohort)	Poor self-perceived health	Mentioned	Total: 15–24, depending on age
(13)	R	2544	73–79	11 European countries	“How would you assess your current general state of health?” (poor)	Mentioned	2–32
(15)	R	959	>75	Uppsala city, Sweden	Poor self-perceived health (rather poor, poor)		13.3
(32)	R	649	>76	Gothenburg (Intervention Study on Elderly in Gothenburg)	Poor self-perceived health (“Do you consider yourself to be in good health?": yes/no) Health assessed by a health professional (rather good, not very good, poor)	Mentioned	26 78
(33)	R	68	>85	South-east England	“How would you describe your quality of life?” (low)	Defined	26
		136	65–85				6

<sup>a</sup> N = countrywide survey; R = regional survey or survey covering a population in a specific area (city, district).

Detailed results for self-perceived health showed around 13% of individuals assessing their health as poor or their quality of life as low, the range being 1.8–26% (33). Local surveys showed higher prevalences of low quality of life than the country survey covering a young population (27).

## Discussion

The prevalences of the indicators differed considerably. This variability may reflect an actual difference in the prevalence of impairments, disabilities and handicaps, or may be caused by factors such as those discussed below.

### Accuracy of measurement in using the impairment indicator

An impairment refers to a disorder at the level of an organ or function. A systemic disease may be made up of a multiplicity of impairments, depending on its clinical form. Whether made by health professionals or by patients, the distinction between organic impairment and chronic disease was relatively unclear in the articles that sought to determine the prevalence of impairment in populations. These articles were therefore assembled in one group.

The tables show that prevalences rose as indicators became more general and generic (e.g. exploring the presence of a chronic disease) (13, 14, 26, 27). The rates underwent a corresponding drop as the focus of the indicators became more specific (13, 15, 17).

A basic indicator exploring a single aspect of morbidity identifies it among fewer individuals than a more general indicator (investigating multiple aspects of the impairment phenomenon and likely to cover a larger number of individuals), which shows higher prevalences. On the other hand, a more precise definition of the basic indicator may allow investigators to detect an impairment more easily and comprehensively, while a more general indicator may prove less sensitive, even though it explores several fields of impairment.

### Age

Studies covering older sections of populations (13–15, 32, 33) showed high prevalences, whereas those investigating younger population groups (19, 20, 22, 25, 27, 28, 30) yielded low rates. A cohort study measuring rates of prevalence of disability among individuals over 60 years of age revealed an increase from 12% to 58% after 10 years (21).

### Type of survey

Countrywide surveys appeared to show lower prevalence rates for impairment and lower quality of life than surveys conducted on a local or regional scale. This was not the case with handicap indicators; however, the studies selected included only one country study, covering individuals under 20 years of age.

### Health system and cultural context

These two factors may lead to significant differences in measurement. Indeed, prevalences varied from

country to country. The explanation could lie in the diversity of data collection methods, definitions of the term 'disability', and the types of response received, depending on the social connotations of disability or ways of dealing with the problem of impairment. In France, for example, both the individuals concerned and the health professionals were apparently prompted to take comparatively active steps in investigating, declaring and treating impairments resulting in disabilities. This is reflected in a variety of measures such as the General Policy Act on persons with impairments; the Act promoting their employment; the recognition of disorders entitling individuals to more favourable compensation for personal health-related expenditure; the provision of allowances for adults with disabilities; and special education allowances.

The disability situation thus appears to be in some ways less critical here, although cases are more widely reported in some countries than in others and this leads to differences in measurement in prevalence surveys.

### Socioeconomic factors

These appeared to play a fairly significant role in some studies in which individual socioeconomic status (34) and membership of an ethnic minority (35, 36) had an impact on health.

### Prevalence of handicap indicators

Some indicators combined disability and handicap in the general sense in a single question, as happened in the survey on living and health-related conditions conducted by France's National Institute for Statistics and Economic Studies.

Other indicators reflected limitations in a person's main activity. To constitute a handicap, limitations have to affect the independence of individuals in the conduct of their lives, their capacity to position themselves in their environment and their social relationships. Although the experience of limitation does not automatically imply that a handicap exists, indicators assessing functional limitations closely resembled disability indicators in the articles under review.

Extensive work has previously been published on prevalences of disability in the sensory and psychiatric fields, which were not selected by the keywords used in the present study.

Although the ICIDH provides a new conceptual model and definitions applicable at the international level, it contains the following weak points. First, impairment, disability and handicap are considered as distinct events in time, whereas in

practice it is sometimes difficult to determine clearly at what point one condition leads to another (5, 8). In fact, an impairment may be revealed by the onset of a disability. Second, no account is taken of the impact of environmental factors in the broad sense, i.e. social and physical factors (5-8); only personal experience of ill-health plays a part in establishing the existence of an impairment, disability or handicap. Fougeyrollas (7, 8), Badley (9) and Minaire (5) propose different models, in which environmental factors interact with individual experience in the determination of these conditions. Third, the concept of disability is used in a number of classifications but the variety of ways in which it is defined (6) has led to confusion about its meaning.

The new WHO International Classification of Functioning, Disability and Health fully integrates environmental factors into its conceptualization of functioning and disability.

## Conclusions

It is difficult to quantify the many factors known to influence rates of prevalence of morbidity in the general population. In order to be able to compare prevalence rates of impairment, disability and handicap in the general sense, or indicators of quality of life measured in a given study with those noted in existing work, it is necessary to take into account firstly that high rates appear to be age-related; secondly that recent literature points to the heterogeneity of the concepts and indicators of morbidity and quality of life, notwithstanding a trend towards their standardization, and this largely impedes any comparison between them; and thirdly that the role apparently played by socioeconomic factors is hard to quantify because of the heterogeneity of age among surveyed populations and the morbidity indicators used.

The measurement of morbidity prevalence rates provides valuable information for optimizing the way in which health and social welfare bodies deal with health disorders. The difficulty of ensuring the reliability of comparisons over time and between different geographical contexts highlights the need for greater homogeneity in the taxonomy of health conditions and quality of life and in data collection methods. The new WHO classification (11), which integrates the impact of the environment on impairments, disabilities and handicaps, provides a homogeneous tool for defining the concepts measured. ■

**Conflicts of interest:** none declared.

## Résumé

### Prévalence des déficiences, incapacités, handicaps et de la faible qualité de vie dans la population générale : revue des publications récentes

**Objectif** Déterminer les taux de prévalence de la morbidité dans la population générale au moyen de recherches bibliographiques.

**Méthodes** Les articles traitant des déficiences, des incapacités, des handicaps, de la faible qualité de vie et de leur prévalence dans la population générale, publiés entre janvier 1990 et mars 1998, ont été sélectionnés dans la base de données MEDLINE.

**Résultats** Les 20 articles retenus sur les 443 trouvés utilisaient 41 indicateurs différents. Les indicateurs de déficience, d'incapacité, de handicap et de faible qualité de vie montraient des taux de prévalence de 0,1-92 %,

3,6-66 %, 0,6-56 % et 1,8-26 %, respectivement, selon l'âge et l'exactitude de l'indicateur. L'hétérogénéité du cadre conceptuel de l'étude et une prise en compte insuffisante de l'importance de l'exactitude de l'indicateur, du facteur âge et des caractéristiques socio-économiques des populations étudiées empêchent toute comparaison internationale fiable.

**Conclusion** Une standardisation plus poussée des indicateurs est nécessaire. La révision de la Classification internationale des handicaps (déficiences, incapacités et désavantages) pourrait permettre de résoudre certains des problèmes rencontrés.

## Resumen

### Prevalencia de las deficiencias, discapacidades y minusvalías y de la baja calidad de vida en la población general: revisión de la bibliografía reciente

**Objetivo** Determinar las tasas de prevalencia de la morbilidad en la población general mediante investigaciones bibliográficas.

**Métodos** Se seleccionaron en la base de datos MEDLINE artículos publicados entre enero de 1990 y marzo de 1998 sobre las deficiencias, discapacidades y minusvalías y la calidad de vida y sobre su prevalencia en la población general.

**Resultados** En los 20 artículos elegidos de entre los 433 encontrados se utilizaban 41 indicadores distintos. Los indicadores de deficiencia, discapacidad, minusvalía y baja calidad de vida revelaron tasas de prevalencia

de 0,1-92 %, 3,6-66 %, 0,6-56 % y 1,8-26 %, respectivamente, según la edad y la exactitud de los indicadores. La heterogeneidad del marco conceptual y el escaso reconocimiento de la importancia de la exactitud de los indicadores, del factor edad y de las características socioeconómicas de las poblaciones estudiadas impidieron realizar una comparación internacional fiable.

**Conclusión** Es necesario estandarizar más los indicadores. La revisión de la Clasificación Internacional de Deficiencias, Discapacidades y Minusvalías podría permitir superar algunas de las dificultades surgidas.

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