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Quality of Work Incapacity Assessment in the Swiss Disability Insurance System

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Quality of medical assessment of work incapacity has been poorly investigated, despite the enormous costs engendered by transient incapacity of work and permanent disability. This study examined some indices of quality from a stratified, random sample ($n = 120$) of assessments performed by expert assessors of the Swiss disability insurance. The distribution of work incapacity (WI) percentages over a 100% scale showed a clustering around key values significantly associated with financial disability benefits. The precision of WI, expressed as the level of quantitative exactness, was found to be high in 74% (95% CI: 66–82%) of current WI assessments, and in 62% (95% CI: 53–71%) of maximal WI assessments. Disagreement was observed in 17% of cases when comparing two ways of expressing WI by the same physician (95% CI: 10–23%). This exploratory study is limited by the general lack of objective criteria and standards. Further theoretical and empirical developments are needed to determine standardized criteria and clear guidelines for medical assessments of WI, as well as for evaluating their quality. Copyright © 1996 Elsevier Science Ltd.

Key words: Incapacity for work, disability, sickness certification, quality assurance, precision, Switzerland.

INTRODUCTION

In Switzerland, as elsewhere, the determination of disability and the subsequent allocation of a pension is based on both non-medical and medical components. However, the sickness certificate and the grading of the individual extent of work incapacity play a central role. If a resident suffers from a health problem, causing substantial long-term reduction in earning capacity, he/she can file a claim for disability benefit. Twenty-six local offices of the disability insurance system (DIS) are responsible for evaluating each case and determining the degree of disability. In the first instance, medical examinations and assessment of the work incapacity are carried out by general practitioners or by specialists. For particularly complicated cases (mixed or unclear diagnoses), the DIS relies on expert assessors who work in medical observation centers (MOCs), where the patients are hospitalized for 3–4 days and undergo a multidisciplinary evaluation. About twenty physician assessors are employed in the six regional MOCs: one in southern Switzerland (Italian speaking), one in western Switzerland (French speaking) and four in northern/eastern Switzerland (German speaking). The degree of disability and the amount of the disability pension in Switzerland do not depend on the nature or cause of impairment, but rather depend on the decreased earning capacity, which in turn is directly related to degree of work incapacity. Indeed, the same impairment (e.g. leg amputation) can lead to different

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percentages of disability for different persons in different jobs. The grading of the patient's work incapacity, performed by the expert assessors, will have a major influence on the decision regarding the degree of disability and therefore on the allocation of a pension. Thus, the benefits for disability pensions are directly related to specific threshold values of disability (<40% = no pension; 40–49%, quarter pension; 50–66%, half pension; >66%, full pension). However, objective criteria for the assessment of work incapacity are lacking in the literature [1–5]. The difficult task of evaluating the work incapacity places the physician in a critical position, requiring him/her to play different and sometimes conflicting roles (patient's advocate, insurance expert, public servant) [6–10].

Administrative regulations in Swtzerland emphasize "the importance of a precise evaluation of disability" (Federal Law on Disability Insurance, 1959, RS 318.500 and RS 831.201), indicating that the notion of precision is of particular importance. In fact, degree of disability is directly derived from a mathematical formula that yields an exact percentage of disability. For this reason we undertook this study to see if and how precision (i.e. the level of quantitative exactness expressed by the assessors) is measurable, and which other elements can be studied in order to assess the quality of a medical assessment of work incapacity.

BACKGROUND INFORMATION

Switzerland, a small country in central Europe with 7 million inhabitants, spends an average $2068 per capita each year on health. This represents, in 1993, the second highest per capita expenditure in the world, after the USA ($3094)[11]. In relation to the gross national product, the Swiss Health System is fifth in international ranking with 9.3%, preceded by the USA, Canada, France and Finland. Obviously, the interpretation of these results must take into account the relative material wealth of a country. With an average annual per capita income of $36,410, Switzerland was considered in 1993 the "richest" country in the world [12]. According to a report published in 1994 by the United Nations Program for Development, even taking into account other parameters of wealth such as purchasing power, life expectancy and level of education, Switzerland sits very high, immediately after Canada, in international ranking of standard of life [13].

Social security in Switzerland is based on three different pillars (state social insurance, professional-based pension plans, individuals' savings): the first pillar is compulsory for all citizens; the second pillar only for employees; the third pillar is discretionary. Financing of the first pillar is assured by employers, employees and public funds. The health care system, which is outside the three-pillar system, is financed by both public funds and individuals. Disability insurance is part and parcel of the first pillar in social security and its first aim is to finance professional rehabilitation of the individual and, if this is not possible, to provide a disability pension. Approximately 180,000 people received a disability pension in 1994, for a total cost to the disability insurance of 3.9 billion SFr ($3.5 billion) [14]. Total expenditure for disability insurance was 6 billion SF in 1994, representing about 1.5% of the GNP. By comparison, in the USA about 93.1 million workers were covered under workers' compensation laws in 1988 for a total amount of benefit of $30.7 billion. Of the total payments made under the workers' compensation program, $17.6 billion went to disabled workers, $1.6 billion to their survivors and $17.6 billion for medical care [15]. Although figures are only provided for the USA and Swiss systems, every society should be deeply interested in the quality of the methods used for evaluating work incapacity.

METHODS

For this retrospective study, we drew an MOC-stratified 10% random sample ($n=120$) of all assessments done by the expert physician assessors in 1993 ($n=1296$). For each assessment, two sources of information were available: (1) a statistical summary sheet; and (2) a lengthy narrative assessment document. Incapacity for work was expressed as a percentage. A distinction is made between the current work incapa-

TABLE 1. Numeric precision (exactness) of work incapacity percentages

Degree of precision	Numeric value in narrative document	Example
High	Value ± 2.5%	"the patient has a work incapacity of 40%"
Intermediate	Value ± 10%	"the patient has a work incapacity of 40–50%"
Low	Value ± 20%	"the patient has a work incapacity of 50–70%"
None	Value ± > 20%	"the patient has a work incapacity greater than 50%"

TABLE 2. Verbal certitude of the work incapacity percentages in the narrative text

Degree of verbal certitude	Use of the verb	Example
Certain	Indicative mode	"the patient has a work incapacity of 50%"
Moderately uncertain	Conditional mode	"the work incapacity of the patient would be 50%"
Very uncertain	Conditional mode + adverb	"the patient would have a work incapacity of approximately 50%"

city (inability to work in current position considering current health state) and the maximal work incapacity (hypothetical potential activity in same or another position after appropriate rehabilitative measures). Work capacity and work incapacity are complementary; for the purpose of this study, assessments were evaluated using the concept of work incapacity.

The variables and criteria selected to study the precision of work incapacity assessment were the numerical precision of these percentages (i.e. the level of quantitative exactness) and the verbal certitude in their formulation. We further considered as quality indices the agreement between the percentages expressed by the same assessor in the narrative document and on the statistical summary sheet (intra-observer variability), and the statistical distribution of the work incapacity percentage over a 0–100% scale. Criteria used to define precision and verbal certitude are included in Tables 1 and 2.

RESULTS

The sex ratio and age of our 120 patients (61% male, average age 46) are not significantly different from the total population of multidisciplinary expert assessments in 1993 ($n = 1296$; male 62%, average age 45).

The distribution of the work incapacity percentages over a 100% scale is not uniform, but rather shows a clustering around certain key values (Fig. 1). More than 40% of the assessments corresponded to 100% work incapacity.

Numerical precision

The numerical precision was high for 74% of current work incapacity assessments (95% confidence interval: 66–82%), whereas this percentage dropped to 62% for maximal work incapacity (95% confidence interval: 53–71%). Percentage of maximal work incapacity was absent in more than one quarter of reports. Table 3 shows the distribution of the numerical precision for the two classes of work incapacity assessments.

Higher precision-point estimates were noted in assessments from southern Switzerland. For current work incapacity, the Italian speaking center (south) had a 100% (20/20) rate of high precision; this dropped to 85% (17/20) for the French speaking center (west) and to 65% (52/80) for the four German speaking centers (east and north) ($\chi^2 = 11.7$, df = 2, $p = 0.003$). No geographical difference was observed in the distribution of high precision for the maximal work incapacity (Table 4).

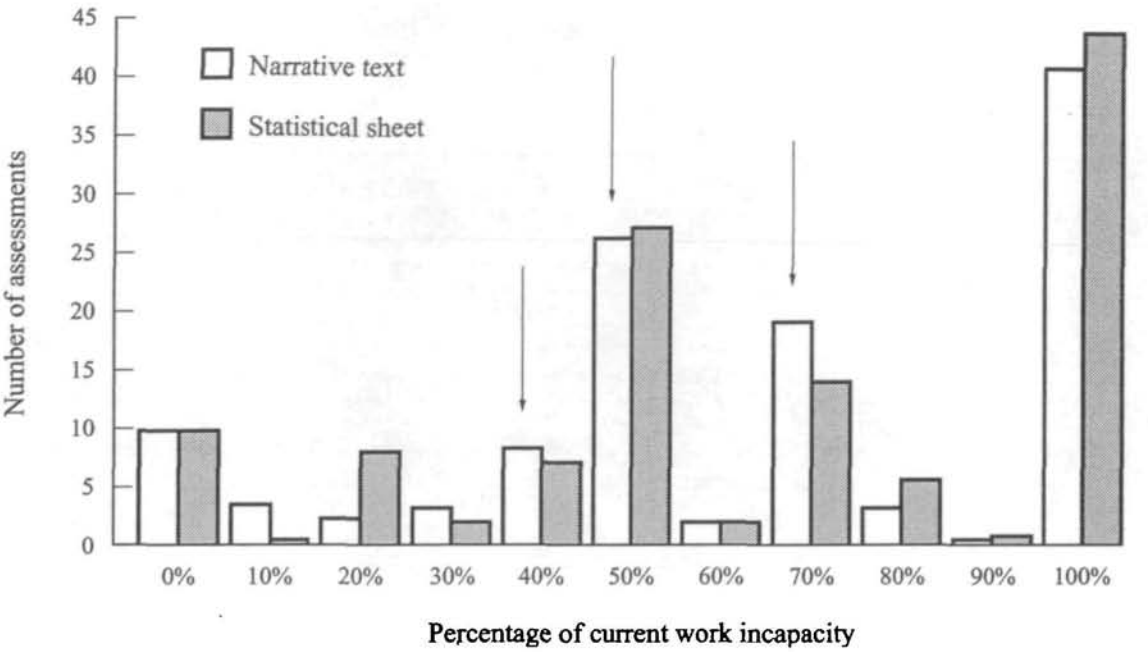

FIGURE 1. Assessment distribution of current work incapacity. Because the percentage of work incapacity usually correlates with the degree of disability and hence with the granting of a disability pension, the clustering of assessments around the values of 40%, 50% and 70% (indicated by arrows) must be interpreted with respect to economical repercussions.

The numerical precision was slightly higher for those percentages of work incapacity whose economic consequences for the insured are clear-cut, i.e. 0% disability (no pension) and 100% (full pension), as is indicated in Fig. 2. The lowest precision was observed for the 60–70% range of current work incapacity.

Verbal certitude

Certainty in the formulation of work incapacity was higher for current work incapacity than for maximal work incapacity (82% versus 51%). The verbal certitude was rarely rated "very uncertain", with the exception of a few cases describing maximal work capacity (Table 5).

Geographical distribution of verbal certitude in formulation was similar to numerical precision, i.e. a higher level of certainty in southern Switzerland compared to northern Switzerland. Again, for maximal work incapacity, there was no difference in geographic distribution.

TABLE 3. Distribution of numerical precision in current/maximal work incapacity assessments ($n = 120$)

Numeric precision	For current work incapacity	For maximal work capacity
High	89 (74%)	74 (62%)
Intermediate	15 (14%)	7 (6%)
Low	4 (3%)	3 (2%)
None	7 (6%)	3 (2%)
Missing	4 (3%)	33 (28%)

TABLE 4. Regional distribution of high precision ($n = 120$)

Region of Switzerland	Number of assessements	High precision for current work incapacity	High precision for maximal work incapacity
Italian speaking	20	20 (100%)	11 (55%)
French speaking	20	17 (85%)	14 (70%)
German speaking	80	52 (65%)	49 (61%)

Agreement between statistical summary sheet and narrative text

Information from the statistical sheet and narrative text originate from the same physician, even if not strictly at the same time. Between these two sources of data, we observed discordant percentages of current work incapacity in 20 out of 120 cases (17% with 95% CI: 10–23%). Table 6 shows the extent of the inconsistency. Admitting a direct connection between percentage of work incapacity and degree of disability, this disagreement would have financial consequences in 9 patients: in 5 patients (4%), the disability pension would be larger if final judgment was based on the text, whereas in 4 patients (3%), the pension would be larger if the indications on the statistical sheet were predominantly taken into consideration.

In 4 patients, the current work incapacity

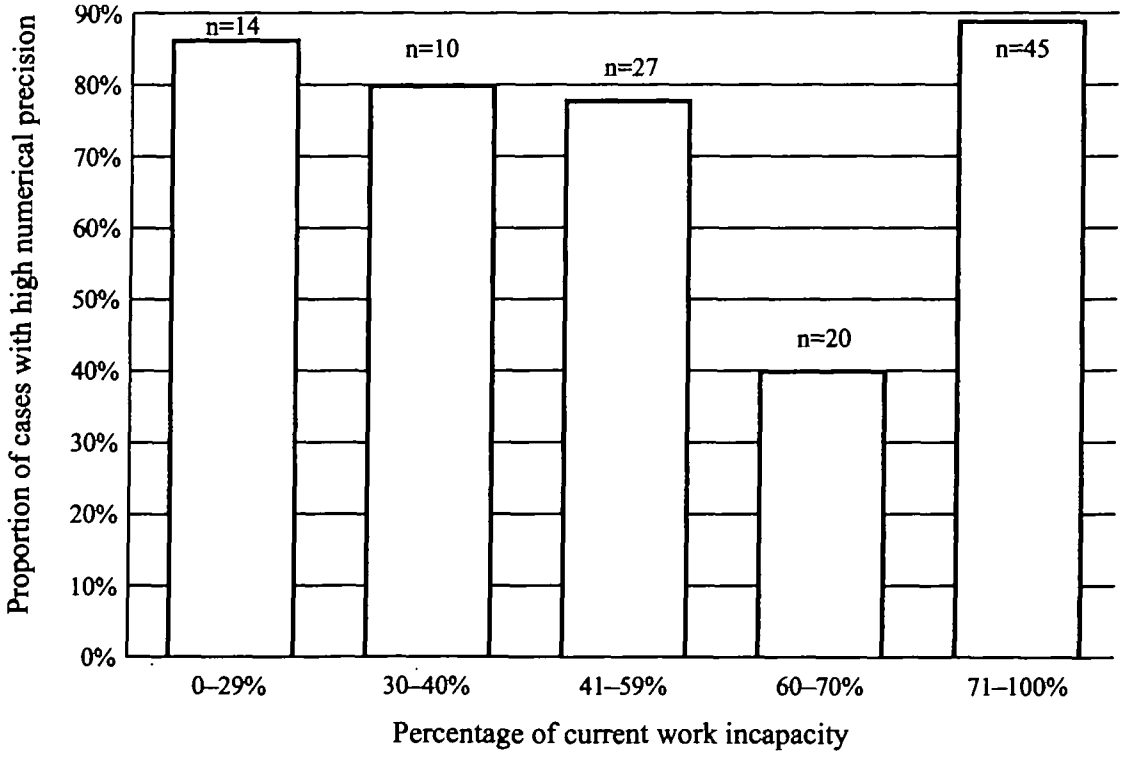

FIGURE 2. Numerical precision according to the percentage of work incapacity. The figures on the x-axis have been grouped to work incapacity percentages, which are closely associated with threshold levels of disability degrees and pension benefits. Incapacities for work of 0% and 100% usually engender a clear disability of 0% and 100%. Incapacities of 30–40%, 50% and 60–70% are closely linked to the threshold levels between quarter pension – half pension – full pension. Four values are missing.

TABLE 5. Distribution of verbal certitude in current/maximal work incapacity assessments ($n = 120$)

Degree of verbal certitude	For current work incapacity	For maximal work incapacity
Certain	98 (82%)	61 (51%)
Moderately uncertain	18 (15%)	23 (19%)
Very uncertain	0 (0%)	4 (3%)
Missing	4 (3%)	32 (27%)

TABLE 6. Extent of the discordant percentages between narrative text and satistical sheet

Difference between text and statistical sheet	Text > statistical sheet	Statistical sheet > text
10%	2	4
11–30%	4	3
> 30%	5	2
Total cases	11	9

percentage was lacking in the text, whereas it was mentioned on the statistical sheet. The maximal work incapacity percentage was more frequently absent: in 31 narrative texts (26%) and in 11 statistical sheets (9%).

DISCUSSION

The main results of this study are first, the distribution of work incapacity percentages over a 100% scale is not uniform, but rather shows a concentration of cases around certain key values related to threshold levels for different disability benefits; second, the high precision required by current legal instructions for the medical assessment of the work incapacity, which appear to be generally met, is in contrast to the complexity of the question (the attempt to quantify the degree of precision and hence the quality of work incapacity assessment by the level of its numerical exactness does not appear to be a valid method, because of the inherent imprecision of the assessment); and third, a disagreement between the percentage of work incapacity in the narrative text and in the statistical sheet is seen in about one out of six cases.

Ideally, the medical assessment of work incapacity should be objective, independent of any economical considerations and based upon purely medical criteria. In such a situation, one could imagine an ideal distribution of cases more or less evenly distributed along a scale of different percentages of work incapacity. This was not the case for our study group, nor is it the case in the population from which our samples are drawn ($n = 1296$) (J. P. Vader, unpublished observations), where we see a concentration of percentages around the key threshold values (40%, 50%, 66%) that determine differential benefits for disability pensions. The absence in the international literature of a model of theoretical distribution of the work incapacity percentages over a 100% scale is an important obstacle too and prevents us from drawing definitive conclusions. Our assumption of a homogeneous distribution of work incapacity percentages on a scale from 0 to 100% requires validation by further studies and theoretical considerations.

The measurement of working incapacity is complex and must take into account the discrepancy between social legislation and medical practice, as well as the difficulty in extrapolating medical assessments into the future (as indicated by the lower precision and certainty of assessments of maximal work incapacity). The results of this study are compatible with the hypothesis that the medical assessors, being aware of the different benefits that could result from their assessment, anticipate, in their medical decision, what the financial consequences would be for the claimant, even though a sound decision should be made independently of such considerations. This mixing of economic considerations and medical criteria is in contrast with current administrative instructions that require the assessor to base his/her evaluation solely on medical considerations.

Even if the precision measured in this study appears to be good, we must question the validity of our model (numerical precision and verbal certitude), since the evaluation of work incapacity is inherently an imprecise endeavor. The expert medical assessor, who is in charge of certifying disease and grading the reduction in the capacity to work, is subjected to both structural and procedural obstacles, and often finds himself in a delicate position, realizing that his/her decision will directly or indirectly deter-

mine economic consequences for the insured. In order to increase the validity and the equity of the assessments, he/she should be able to appropriately interpret the different modes of communication of the patient. Moreover, he/she should know the personal attitude of the patient towards work and towards his/her former or potential employers (in the last resort it is the individual motivation that determines, to a large extent, whether or not the patient will work) and be well informed of the particular situation and role the insured plays at work. In addition, he/she should be informed of the global situation of the labor market in order to evaluate the maximum attainable work capacity in different professions. Finally, he/she should also be able to transpose disease and work incapacity from a medical to a legal or administrative meaning. Such qualifications are clearly unrealistic and explain to an important extent the inter-doctor variation in certifying disesase and assessing work incapacity [10].

This situation is aggravated by other constraints, such as the lack of clear definitions of health and illness (as reported by the patient), of disease (as medically diagnosed) and of sickness (as socially defined). Furthermore, in Switzerland as elsewhere, the social insurance is still grounded on a biomedical concept, despite the evolution of social factors (unemployment) as a source of disability and resultant benefits. Finally, physician-training remains essentially based on a biomedical model, which seldom if ever addresses the specific question of grading work incapacity. There is a yawning gap between the role of medical diagnosis in the health system and its role in the social insurance system.

In the absence of more standardized assessment methods and procedures, of a common concept between social insurance and the health care system and of more targeted physician-training, each expert assessor has a high degree of freedom and subjectivity. The physician must therefore achieve a delicate balance between being the patient's advocate, a gate-keeper serving society and its institutions, an expert assessor serving social and private insurance systems, and often indirectly the judge and jury of the economic situation of his patient.

In the context of these different roles, it is arduous to judge the physician's level of precision in his assessment of work incapacity. As a result of such considerations, the question of the overall quality of medical assessments can be addressed as can the factors that overtly or covertly influence that assessment and the need to change the mechanisms leading to final judgment of work incapacity. Given the dearth of scientific evaluation of the quality of medical assessments of work incapacity, we are not in a position to compare our results with others. Because Switzerland is known to produce watches, drugs and machinery of high quality, the same quality is usually expected from other professionals. Our results, however, point to a lack of objective criteria and training in assessing work incapacity and add to the growing literature on the uncertainty and difficulty of assessing work incapacity and disability [15–20] and to the large body of publications about the general uncertainty of medical decisions [21,22].

Since precision and reproducibility are only two of a number of indices of the quality of a measure [23], we are not in a position to give definitive conclusions concerning the overall quality of the work incapacity assessment in the Swiss DIS. The modest number of cases, the heterogeneity of diagnostic categories involved and the selection of special, difficult cases (those of the MOC) are all limiting factors for a global judgment of the assessment quality and for extrapolating our data to the entire system.

The lack of agreement between two data sources originating from the same person is puzzling and raises questions about the intra-observer reproducibility of the assessments. Further analyses of reproducibility of work incapacity assessments, inter- and intra-observer, should be performed. The validity of the measure of work incapacity is an element which could hardly be examined in the absence of an infallible gold standard criteria for determining incapacity for work. It is doubtful whether a universal concept can be formulated at this time because incapacity for work is in part culturally determined and is also very much dependent on actual current work opportunities.

CONCLUSIONS

The present study further documents the degree to which uncertainty permeates the medical profession. It underscores the unrealis-

tic expectations that physicians – and society – hold regarding the role of the physician.

The study focuses on current practice of work incapacity assessment by the Swiss disability insurance system and underscores the limitations of such research in the absence of a routine information system. The administrative requirements of high precision in grading the incapacity to work is in contrast to the uncertainty inherent in such assessments.

Both structural and procedural changes are needed:

- harmonization of the concept of disease certification and grading of work incapacity should be aimed for between the health care and social security systems;
- intra- and inter-observer variability should be further examined and means for improvement sought;
- standardized assessment methodologies (guidelines) should be developed through a multidisciplinary approach;
- regular evaluations of the effectiveness and quality of the procedures of the disability insurance system should be systematically undertaken; and
- assessment of work incapacity should be considered an important topic in physician-training.

As the federal authorities plan reforms of the Swiss disability insurance system for the next millenium, it would do well to weigh up and implement such considerations.

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