

Comparing the short and the long disease list in the Work Ability Index questionnaire

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This analysis has been made possible within the German WAI-Network programme funded by the Federal Institute of Occupational Safety and Health, BAuA

09 2004

Introduction

The Work Ability Index (WAI) as an assessment instrument of work ability is increasingly being used in epidemiological studies with self report questionnaires. In the original WAI, one of the 7 WAI components (see Fig. 1) consists of a

- 51 item disease list in 15 (or 14) subgroups (long version, LV).

This WAI-3 component contributes with 1 ("5 or more diseases") to 7 points ("no disease") to the total WAI-Score (ranging from 7 to 49). Recently, short WAI-3 components have been developed by researchers in Finland and Sweden

- containing only 14 (or 15) disease items (=LV subgroups) (short version, SV) (Fig. 2).

The aim of this study is

- a) to investigate the effect which the use of the SV has on the WAI score and
- b) to calibrate the SV in order to make the WAI score comparable to that of the LV.

Methods

A Finnish data set of 915 nurses (1981/2) with the LV was used for calculating the values of an "as-if-SV" by aggregating the LV to 15 disease groups: "1 and more" diseases in a disease subgroup of the LV (e.g. cardiovascular diseases) became "1" disease in the SV. Means of diseases in the SV according the disease - categories of the LV were used as the estimation for the calibration.

Results

a) effect of use of SV on WAI

Aggregation reduced the mean number of reported diseases (physician diagnosed) (LV: 1.8, SV: 1.38) and increased the mean for the total WAI by .28 points.

Logically, the reduction of the number of disease items presented, reduced the reported diseases: groups of individuals with 0 diseases in the LV had also 0 diseases (mean) in the SV, the group of individuals with 1LV=1SV, 2LV=1.71SV (group mean), 3LV=2.41SV, 4LV=2.85, 5+LV (value = 6.66) =4.44SV.

b) calibration of SV

Using the above results for calculation of the WAI score, individuals should in theory receive the scores as indicated in the middle column (SV, *theor.*). In order to keep the application of the WAI easy, we propose to use integer numbers only and propose an algorithm for calibration for the SV as proposed in the right column.

people with diseases	WAI3 points		
	LV	SV, <i>theor.</i>	SV <i>calib. proposed</i>
0	7	7	7
1	5	5	5
2	4	3.4	3 ←
3	3	2.4	3 ←
4	2	1.4	1 ←
5+	1	0.67	1

With this proposed calibration the mean total WAI score differs only by .07 points between LV and SV (uncalibrated SV: .28 points) (see Fig. 3 and 4). Identical analyses with another data set of 570 people confirmed the findings.

Conclusions

The use of the SV of the WAI-questionnaire yields to very similar results as the LV when the calibration proposed is applied. Advantages are: a shorter questionnaire and comparability of results from data sets with the LV and SV. However, before proposing the SV calibration for widespread use, the analyses should be repeated with more samples (with already existing LV data) to ascertain the findings and to investigate interactions with potentially relevant factors such as gender, age, profession and degree of disease burden.

Work Ability Index (WAI)

7 components (WAI 1 – WAI 7)

- 1: work ability vs. best ever
- 2: work ability vs demands
- 3: number of diagnosed diseases
- 4: work impairment due to diseases
- 5: sickness absence last 12 months
- 6: estimation of future work ability (2 years)
- 7: mental resources

Fig. 1: WAI components

WAI Category 3: Current diseases (short list)			
In the following list, mark your current diseases or injuries. Also indicate whether a physician has diagnosed or treated these diseases.			
	No	Yes, own opinion	Yes, physician's diagnosis
1 Injury due to an accident (e.g. in back or limbs, or burns)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 Musculoskeletal disease in back, limbs or other part of the body (e.g. repeated pain in joint or muscle, sciatica, rheumatism, arthritis)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3 Cardiovascular disease (e.g. hypertension, coronary heart disease)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 Respiratory disease (e.g. repeated infections of the respiratory tract, bronchial asthma, emphysema)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5 Mental disorder (e.g. depression, "burn-out", anxiety or insomnia)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6 Neurological or sensory disease (e.g. hearing or visual disease, migraine, epilepsy)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7 Digestive disease / condition (e.g. gastritis, gall stones, liver or pancreatic disease, repeated constipation)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8 Genitourinary disease (e.g. infection in urinary tract, gynecological disease or prostate)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9 Skin disease (e.g. allergy or other rash, varicose veins)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10 Tumor or cancer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11 Endocrine or metabolic disease (e.g. diabetes, severe obesity or goit)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12 Blood diseases (e.g. anemia, other blood disorder or defect)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13 Birth defects	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14 Other disorder or disease, what?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Fig. 2: WAI 3, short disease list (SV)

	Work Ability Index (WAI) categories (short version)				total
	1 poor (7-27 points)	2 moderate (28-36)	3 good (37-43)	4 excellent (44-49)	
Work Ability Index (WAI) grouped (long version)	94	295	371	134	915
total	94	306	379	136	915

	Work Ability Index (WAI) categories with calibrated short V.				total
	1 poor (7-27 points)	2 moderate (28-36)	3 good (37-43)	4 excellent (44-49)	
Work Ability Index (WAI) grouped (long version)	101	297	363	134	915
total	101	310	369	135	915

Fig. 3: WAI classification: misclassification when using short versions (SV).

- uncalibrated SV (above): only overestimation of work ability
- calibrated SV (below): both over- and underestimation of work ability.

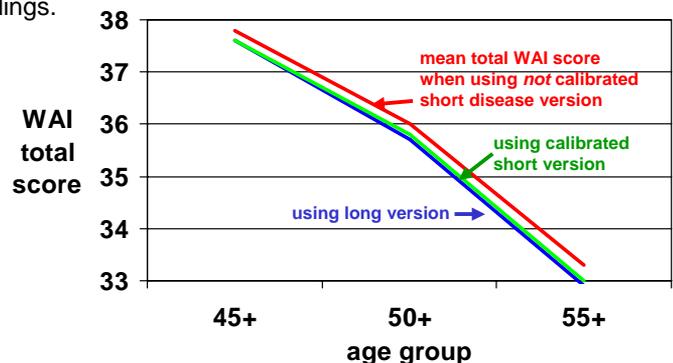


Fig. 4: Mean total WAI score when long disease version is used (blue) and when short disease version without calibration (red) and with calibration (green) is used (n=915).