



# Comparison between two different ways to calculate disability scores using WHODAS 2.0 and ICF: impact on the disability prevalence.

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Frattura L., Morassutto C.

Central Health Directorate, Classification Area – Friuli Venezia Giulia Region  
Italian WHOFIC CC

**Abstract** To compare two different ways to calculate disability scores and to group assessed persons for decision-making purposes using WHODAS 2.0 and ICF.

## Introduction

The aim is to compare two different ways to calculate disability scores and to group assessed persons for decision-making purposes using WHODAS 2.0 and ICF.

## Methods & Materials

- 36 questions of WHODAS 2.0 were mapped to ICF second-level categories; an ICF core set with 27 Activities and Participation (AP) categories was created, related to 27 WHODAS questions.
- A web application was created (VilmaFABER system) to code the 27 ICF-mapped WHODAS 2.0 questions/answers into ICF (AP category.performance qualifier).
- Disability scores were calculated using the syntax provided by the WHODAS 2.0 Manual and a new syntax developed by one of the Author (CM); five disability classes were defined following the ICF severity ranges (no disability, 0-4; mild disability, 5-24; moderate disability, 25-49; severe disability, 50-95; extreme disability, 96-100) (1).
- For each question, EFs were explored by adding four specific questions to each ICF-mapped WHODAS question. The four additional questions asked about the facilitator/barrier role of (i) support and relationships, (ii) products and technology used by the person, (iii) social and welfare services and (iv) health services used by the person in the previous 30 days.
- Disability scores were automatically calculated using algorithms which took into account the presence of EFs and the performance qualifier value.
- A new disability indicator, Cumulative Disability Ratio (CDR), was developed (Figure 1) (2).
- Eight classes of disability were created according to the CDR value.
- To each CDR class corresponded a specific VilmaFABER EcoLabel.
- A field test was carried out in a sample of 109 outpatients.
- The agreement between the WHODAS-based ICF core set score and CDR was quantified by using the Altman and Bland analysis.

11. The distribution of the sample according to the two different ways to calculate disability scores was analysed.

## Results

The two scores had a high degree of agreement (Fig 1, 2). 41% per cent of the sample showed moderate disability according the WHODAS-based ICF core set score; 36% of the sample showed very few problems in interaction with the EFs (from no problems to mild problems in interaction with the EFs) according to CDR (Table 1). The CDR score allowed a greater differentiation of the disability levels. The outpatients that fell into the moderate disability class with the WHODAS-based ICF core set score were distributed over 6 different disability classes when using the CDR value score.

Figure 1: Functioning Ratio and Disability Ratio for ICF Activities and Participation component: an example

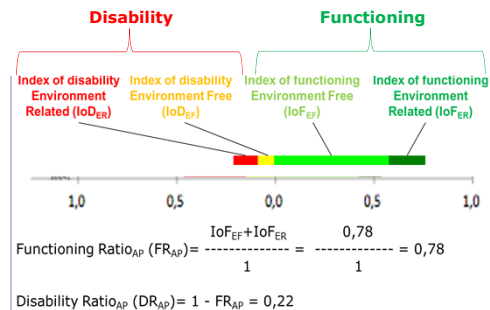


Table 1: Distribution of the sample by CDR and disability classes

CDR	Ecolabel VilmaFABER	WHODAS based ICF core set, 27 items					Total
		No disability (0 – 4)	Mild (5 – 24)	Moderate (25 – 49)	Severe (50 - 95)	Complete (96 – 100)	
0	🌱🌱🌱🌱	1	2	0	0	0	3
1 - 14	🌱🌱🌱	1	28	4	0	0	33
15 - 29	🌱🌱	0	7	13	0	0	20
30 - 45	🌱	0	0	9	0	0	9
46 - 60	🌱🚫	0	0	16	6	0	22
61 - 75	🌱🚫🚫	0	0	2	13	0	15
76 - 90	🌱🚫🚫🚫	0	0	1	5	0	6
91 - 100	🌱🚫🚫🚫🚫	0	0	0	1	2	3
<b>Total</b>		<b>2</b>	<b>37</b>	<b>45</b>	<b>25</b>	<b>2</b>	<b>111</b>

## Conclusions

Different ways to investigate disability and to calculate disability impact on the disability prevalence and on the eligibility criteria. WHODAS-based ICF scores seem less specific than CDR.

## References

- Frattura L., Morassutto C. Disability determination using WHODAS and ICF: first results. WHOFIC Network annual meeting 2017
- Frattura L., Simoncello A., Castelpietra G., Bassi G. The infographic Family of Functioning Indicators (FaFI). WHOFIC Network Annual meeting booklet 2015

Figure 2: Spearman's rank correlation

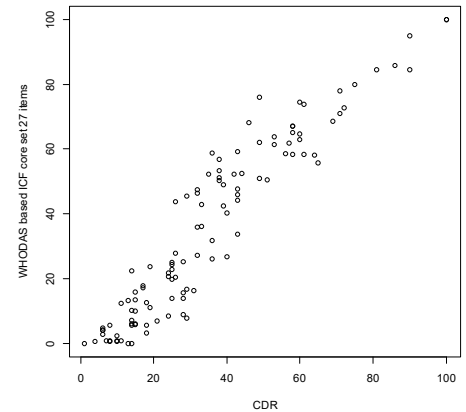


Figure 3: Bland Altman plot

