



# Disability determination using WHODAS 2.0 and ICF: first results

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**Abstract** WHO has developed ICF and WHODAS 2.0 in order to describe and measure functioning and disability. No agreement exists on how group persons according to the WHODAS 2.0 score and the WHODAS does not correspond to an ICF core set. The aim was to verify the consistency of the scores calculated by using WHODAS 2.0,36 items and a derived WHODAS-based ICF core set in a sample population useful in disability determination.

## Introduction

WHODAS 2.0 domains refer to the Activity and Participation (AP) component of ICF, but do not make explicit that the questions are about the performance.

No agreement exists on how group persons according to the WHODAS 2.0 score.

The WHODAS does not correspond to an ICF core set; it is not an ICF database and it does not produce a functioning profile.

The aim was to verify the consistency of the scores calculated by using WHODAS 2.0, 36 items and a derived WHODAS-based ICF core set in a sample population.

## Methods & Materials

- 36 questions of WHODAS 2.0 were mapped to ICF second-level categories; an ICF core set with 27 AP categories was created, corresponding to 27 WHODAS questions (Table 1).
- A web application was created to code the 27 ICF-mapped WHODAS 2.0 questions/answers into ICF (AP category.performance qualifier).
- The WHODAS syntax for automatic computation of overall score using SPSS was used.
- A syntax for automatic computation of overall ICF score using SPSS was created.
- Five severity ranges were created following the ICF (no disability, 0 to 4; mild disability, 5 to 24; moderate disability, 25 to 49; severe, 50 to 95; and extreme disability, 96 to 100).
- 109 persons were recruited: 62.4% were males, 15.6% were less than 18 years old, 65.1% had a mental disorder (ICD 9-CM codes 290-319).
- Spearman's rank correlation rho was calculated.
- The agreement between the WHODAS score and the WHODAS-based ICF core set score was quantified by using Altman and Bland analysis.<sup>2,3</sup>

Table 1: WHODAS 2.0, 36 items over six domains with the corresponding ICF codes

WHODAS 2.0 DOMAIN	WHODAS 2.0 QUESTION	ICF CODE ACCORDING TO WHO (1)	ICF CODE ACCORDING TO THE ITALIAN WHO/FIC CC
<b>1: Cognition</b>	<b>In the last 30 days, how much difficulty did you have in:</b>		
1.1	Concentrating on doing something for 30 minutes	d160 focusing attention; b140 attention functions; d110-d129 purposeful sensory experiences	d161 directing attention
1.2	Remembering to do important things	b144 memory functions	d230 carrying out daily routine
1.3	Analysing and finding solutions to problems in day to day life	d175 solving problems; d130-d159 basic learning	d175 solving problems
1.4	Learning a new task, for example, learning how to get to a new place	d1553 acquiring complex skills	d155 acquiring skills
1.5	Generally understanding what people say	d310 communicating with - receiving - spoken messages	d310 communicating with - receiving - spoken messages
1.6	Starting and maintaining a conversation	d3500 starting a conversation; d3501 sustaining a conversation	d350 conversation
<b>2: Mobility</b>	<b>In the last 30 days, how much difficulty did you have in:</b>		
2.1	Standing for long periods, such as 30 minutes	d4154 maintaining a standing position	d415 maintaining a body position
2.2	Standing up from sitting down	d4104 standing	d410 changing basic body position
2.3	Moving around inside your home	d4600 moving around within the home	d460 moving around in different locations
2.4	Getting out your home	d4602 moving around outside the home and other buildings	
2.5	Walking a long distance such as a kilometer (or equivalent)	d4501 walking long distances	d450 walking
<b>3: Self-care</b>	<b>In the last 30 days, how much difficulty did you have in:</b>		
3.1	Washing your whole body	d5100 washing whole body	d510 washing oneself
3.2	Getting dressed	d540 dressing	d540 dressing
3.3	Eating	d550 eating	d550 eating; d560 drinking
3.4	Staying by yourself for a few days	d510-d550 combination of multiple self - care and domestic life tasks	d571 looking after one's safety
<b>4: Getting along</b>	<b>In the last 30 days, how much difficulty did you have in:</b>		
4.1	Dealing with people you do not know	d730 relating with strangers	d730 relating with strangers
4.2	Maintaining a friendship	d7500 informal relationship with friends	d750 informal social relationships
4.3	Getting along with people who are close to you	d760 family relationships; d770 intimate relationships; d750 informal social relationships	d760 family relationships
4.4	Making new friends	d7500 informal relationships with friends; d7200 forming relationships	d750 informal social relationships
4.5	Sexual activities	d7702 sexual relationships	d770 intimate relationships
<b>5: Life activities</b>	<b>In the last 30 days, how much difficulty did you have in:</b>		
5.1	Taking care of your household responsibilities	d6 domestic life	d650 caring for household objects; d660 assisting others
5.2	Doing most important household tasks well	d640 doing household work; d210 undertaking a single task; d220 undertaking multiple tasks	d640 doing household work
5.3	Getting all the household work done that you needed to do	d640 doing household work; d210 undertaking a single task; d220 undertaking multiple tasks	
5.4	Getting household work done as quickly as needed	d640 doing household work; d210 undertaking a single task; d220 undertaking multiple tasks	
5.5	Your day-to-day work/school	d850 remunerative employment; d830 higher education; d825 vocational training; d830 school education	d815 preschool education; d820 school education; d825 vocational training; d830 higher education; d850 remunerative employment
5.6	Doing your most important work/school tasks well	d850 remunerative employment; d830 higher education; d825 vocational training; d830 school education; d210 undertaking a single task; d220 undertaking multiple tasks	
5.7	Getting done all the work that you needed to do	d850 remunerative employment; d830 higher education; d825 vocational training; d830 school education; d210 undertaking a single task; d220 undertaking multiple tasks	
5.8	Getting your work done as quickly as needed	d850 remunerative employment; d830 higher education; d825 vocational training; d830 school education; d210 undertaking a single task; d220 undertaking multiple tasks	
<b>6: Participation</b>	<b>How much of a problem do you have</b>		
6.1	Joining in community activities	d910 community life	d910 community life
6.2	Because of barriers or hindrances in the world	d9 community, social and civic life	
6.3	Living with dignity	d940 human rights	d940 human rights
6.4	From time spent on health condition	Not applicable (Impact question)	d570 looking after one's health
6.5	Feeling emotionally affected	b152 emotional functions	
6.6	Because health is a drain on your financial resources	d8700 personal economic resources	d870 economic self-sufficiency
6.7	With your family facing difficulties due to your health	Not applicable (Impact question)	
6.8	Doing things for relaxation or pleasure by yourself	d920 recreation and leisure	d920 recreation and leisure

Figure 1: Spearman's rank correlation

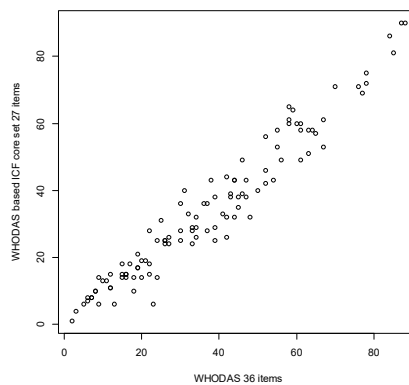
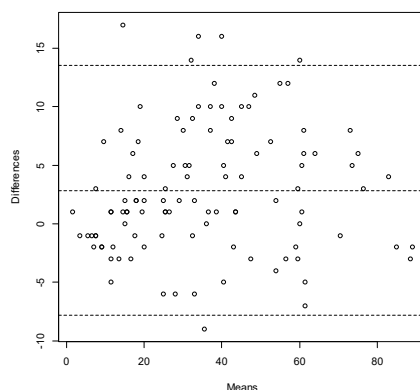


Figure 2: Bland Altman plot



## Results

The correlation between the two scores was very strong ( $\rho=0.96188$ ,  $p\text{-value}<2.2e-16$ ) (Figure 1). The level of the agreement between the two scores was very high (Figure 2).

## Conclusions

The WHODAS 2.0, 36 items score and the WHODAS-based ICF core set, 27 items score provide the same information. 27 WHODAS questions mapped to ICF AP categories seem sufficient to generate a valid score useful to distinguish five severity classes. This new WHODAS-ICF method may be useful in the disability determination process.

## References

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- J. Martin Bland, Douglas G. Altman. Lancet 1986; 1(8476):307-10
- Gavin Andrews et al., PLoS One. 2009; 4(12):e8343