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The World Health Organization Short Disability Assessment Schedule (WHO DAS-S): a tool for the assessment of difficulties in selected areas of functioning of patients with mental disorders

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Abstract The World Health Organization Short Disability Assessment Schedule (WHO DAS-S) is an instrument for clinicians' assessment and rating of difficulties in maintaining personal care, in performing occupational tasks and in functioning in relation to the family and the broader social context due to mental disorders. The WHO DAS-S was developed and underwent preliminary testing in the context of two international field trials of the multiaxial presentation of ICD-10 for use in adult psychiatry. The instrument was found to be useful, user-friendly and reasonably reliable for use by clinicians belonging to different schools of psychiatry and psychiatric traditions. Further work on the WHO DAS-S should include development of national adaptations of the instrument, studies of concurrent validity of the instrument and modification of the instrument to accommodate changes in the next edition of the International Classification of Impairments, Disabilities and Handicaps (ICIDH).

After several years of development and testing, the World Health Organization (WHO) has recently completed work on a multiaxial presentation of the tenth revision of the *International statistical classification of diseases and related health problems* (ICD-10) [1]. The multiaxial presentation of ICD-10 is intended for use in adult psychiatry and aims to provide clinicians with a tool for the systematic assessment and comprehensive diagnostic formulation of different aspects of the psychiatric patient's clinical condition [2]. ICD-10 as presented in the multiaxial format uses three axes: Axis I – clinical diagnoses (of both mental and physical disorders); Axis II – disabilities; Axis III – contextual factors that influence occurrence, presentation, course or outcome of disorders recorded on Axis I or that are of relevance for their management [3–6].

In order to enable clinicians to assess and rate consequences of mental disorders recorded on Axis I, the WHO Short Disability Assessment Schedule (WHO DAS-S) was produced and tested. This paper describes the development and characteristics of the new instrument and its preliminary field test results obtained in the framework of the international field trials of the Multiaxial Presentation of ICD-10 for Use in Adult Psychiatry (hereafter ICD-10 multiaxial system) [7].

The draft version of the WHO DAS-S (originally named WHO Disability Diagnostic Schedule or WHO DDS) was produced by an international expert advisory group in the context of the development of protocols and instruments for the field trials of the ICD-10 multiaxial system. Axis II (disabilities) of the ICD-10 multiaxial system was conceptualized in accordance with the principles embedded in the *International classification of impairments, disabilities and handicaps* (ICIDH) [8]. According to ICIDH, in the context of health experience, an impairment represents any loss or abnormality of psychological, physiological or anatomical structure or function, a disability is any restriction or lack (resulting from an impairment) of ability to

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perform an activity in the manner or within the range considered normal for an individual in his or her sociocultural setting and a handicap is a disadvantage for a given individual resulting from an impairment or a disability that limits or prevents the fulfillment of a role that is normal (depending on age, sex, social and cultural factors) for that individual.

Together with other ICD-10 multi-axial field trial documents, the draft version of the instrument was circulated for comments to a large number of experts from different parts of the world, including participants in the development of different versions of ICD-10, heads of WHO training and reference centres, and the WHO Expert Panel members. Valuable suggestions were also obtained through the World Psychiatric Association and from consultations with a number of national psychiatric societies. These suggestions emphasized the need for a simple system accompanied by tools that would be easy to test, adapt and use in different cultures and settings. Following such suggestions, a short and simple-to-use disability rating instrument was derived from the WHO Psychiatric Disability Assessment Schedule (WHO DAS) [9] – a semi-structured interview schedule designed for the comprehensive evaluation of the social functioning of patients with mental and, in particular, psychotic disorders. The WHO DAS was tested and used in the WHO Collaborative Study on the Assessment and Reduction of Psychiatric Disability and found to be a reliable and valid tool for the assessment and cross-cultural comparison of psychiatric disability [10].

The short version of the WHO DAS, i.e., the WHO DAS-S, is intended for recording the clinician's assessment of disabilities in patients with mental disorders regarding: (1) maintenance of personal care, which refers to personal hygiene, dressing, feeding, etc.; (2) performance of tasks usual in one's occupation, which refers to expected functioning in paid activities, studying, homemaking, etc.; (3) functioning in relation to family and household members, which refers to expected interaction with spouse, parents, children, etc.; (4) functioning in a broader social context, which refers to expected performance in relation to community members, participation in leisure and other social activities, etc. In the application of the WHO DAS-S, the clinician is expected to make ratings on a 6-point scale for each of these specific areas of functioning of the patient. The anchor points of the scale are as follows: 0 = no disability at any time; 1 = deviation from the norms in the performance of one or more of the tasks or roles expected to be carried out by the patient in his or her cultural setting; 2 = deviation from the norms is conspicuous and dysfunctions interfere with social adjustment (i.e. slightly disabled most of the time or moderately disabled some of the time); 3 = deviation from the norms in most of the expected tasks and roles; 4 = deviation from the norms in all of the expected tasks and roles; 5 = deviation from the norms has

reached a crisis point (i.e. the patient is severely disabled all of the time).

According to the WHO DAS-S rating instructions, in assessing the disability the clinician should take into account the severity or intensity of the dysfunction (i.e. the number of expected tasks and roles that have been affected), as well as its duration (i.e. the proportion of time in the past during which the dysfunction was manifest). In other words, if a disability was severe but of a brief duration, it can be rated at the same level as a less severe manifestation occupying a greater proportion of time.

In the assessment of disability in the specific areas of functioning of the patient, the clinician should decide upon the period of time covered by the rating. The time period options offered by the instrument are: current (i.e. at the moment of the assessment), last month, last year and other (specify). The patient's difficulties in performing in specific areas of functioning in the chosen time period should be evaluated against the presumed "average" or "normal" functioning of a person of the same sex and of comparable age and sociocultural background. If the patient was supported by someone (e.g. family, health worker, etc.) and therefore performed some of his or her tasks, the actual disability should be rated and the box "functioning with assistance" ticked in each of the specific areas of functioning covered by the WHO DAS-S.

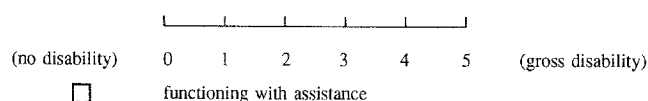
Clinical experience and previous research have shown that some patients may have significant difficulties in the performance of tasks and social roles but remain in the community and continue to be relatively independent because they have specific assets and abilities. At the end of the assessment, the WHO DAS-S provides the clinician with an opportunity to rate and describe such specific abilities of the patient.

The format of the WHO DAS-S is semi-structured, and the ratings should be based on the clinician's judgement of the information obtained from the patient, key informants such as family members, case notes or other written records, and observation of the patient. The decision to opt for a semi-structured rather than a fully structured instrument was prompted by experience obtained in previous cross-cultural comparative research, which showed the difficulties of describing levels of abnormalities in different cultures using standardized anchor points. Semi-structured instruments use experienced raters as the measurement tool, adjusted and familiar with cultural norms and expectations. The WHO DAS-S can be administered by a psychiatrist, clinical psychologist or other health professional (e.g. general practitioner or social worker) who has had previous experience in rating behaviour, is familiar with the use of the instrument and is fully aware of the cultural setting in which the patient lives. The WHO DAS-S is accompanied by a set of instructions for its use, including brief definitions of the contents of specific areas of functioning, a list of

SPECIFIC AREAS OF FUNCTIONING

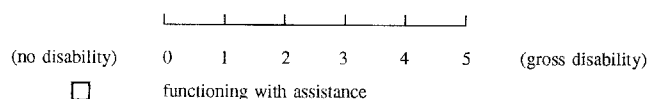
A. Personal care

Refers to personal hygiene, dressing, feeding, etc.



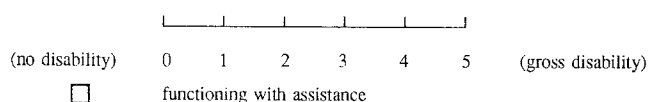
B. Occupation

Refers to functioning in paid activities, studying, homemaking, etc.



C. Family and household

Refers to interaction with spouse, parents, children and other relatives, participation in household activities, etc.



D. Broader social context

Refers to performance in relation to community members, participation in leisure and other social activities, etc.

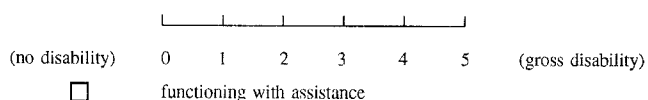


Fig. 1 WHO Short Disability Assessment Schedule – part of the rating section

particularly important aspects of specific disabilities that have to be taken into account in the assessment and rating and a few guiding questions for the exploration of the disabilities in each of the specific areas of functioning. A sample page of the WHO DAS-S, presenting a part of the rating section, is given in Fig. 1.

Methods

The cross-cultural applicability of the WHO DAS-S was explored in two international field trials of the ICD-10 multi-axial system coordinated by WHO between 1993 and 1995. The field trials involved 274 clinicians from 21 countries spanning all the regions of the world (Africa, Asia, Europe, North and South America and Oceania).

The main objectives of the first, large-scale field trial were to assess the perceived usefulness and ease of use of the ICD-10 multi-axial system and accompanying instruments and to obtain some estimates of their reliability. The decision to conduct a second, small-scale field trial of the ICD-10 multi-axial system was made after the analysis of the results and comments of the participants in the first field trial. The second field trial was aimed at exploring the consequences of the

amendments made to the ICD-10 multi-axial system and its instruments after the analysis of results of the first field test.

The ICD-10 multi-axial field trial package comprised the protocol, instruments, rating forms and the ICD-10, as well as 12 case vignettes containing descriptions of psychiatric patients seen in different countries. The field trial version of the WHO DAS-S was different from the current form of the instrument. In addition to the four specific areas of functioning, it contained a category “global disability” (defined as “the clinician’s best estimate of the patient’s total disability”) and its scale was continuous with the following anchor points: 0–19 (no disability to minimal disability); 20–39 (minimal to obvious disability); 40–59 (obvious to severe disability); 60–79 (severe to very severe disability); 80–99 (very severe to gross disability).

The field trial documents and instruments were sent to 14 ICD-10 coordinating centres located in Campinas, Brazil; Beijing, China; Risskov, Denmark; Cairo, Egypt; Lübeck, Germany; Bangalore, India; Naples, Italy; Nagasaki, Japan; Luxembourg, Luxembourg; Wellington, New Zealand; Moscow, Russian Federation; Madrid, Spain; Oxford, United Kingdom; Rockville, United States. The centres were asked to translate and distribute the field trial materials to the professionals and institutions in their respective regions who expressed interest in participating in the field trials. The field work at each participating centre included: (1) familiarization with the ICD-10 multi-axial system, field trial protocol and instruments and their pre-test application; (2) rating of 12 psychiatric case vignettes by two clinicians; (3) assessment (by two clinicians making their ratings independently) of ten general psychiatric patients selected in an unbiased way (e.g. first patient of the day) so as to yield a reasonably representative sample of the general psychiatric population cared for at each centre; (4) formulation of final comments and specific recommendations for improving the ICD-10 multi-axial system and its instruments.

The analyses of the field trial data included: (1) content analysis of the participants’ comments on the applicability of the ICD-10 multi-axial system and accompanying instruments such as the WHO DAS-S; (2) computation of the inter-rater reliability coefficients determined by intraclass correlation and extended kappa. The intraclass correlation coefficients were calculated using the SPSS for Windows 5.0 programme [11] and the following formula: $r = (MS_{measures} - MS_{residual}) / (MS_{measures} + (df_{people} \times MS_{residual}))$. This formula (which gives an index of reliability for a typical judge) was used bearing in mind that, prior to the field trials, the participating clinicians in the centres went through the instrument familiarization procedure based on the uniform protocol and, for training purposes, used the instrument in the pre-test application on five psychiatric patients. The extended kappa coefficients were calculated using a Fortran programme and proportional overlap procedure [12]. As with the original kappa [13], the extended kappa is a chance corrected measure of nominal scale agreement among raters, and it has been designed for a general case in which a variable number of raters formulate a variable number of statements or ratings for each patient [14]. It is important to note that the extended kappa and the intraclass correlation coefficients are commensurable with each other [15].

Results

The overall results of the field trials of the ICD-10 multi-axial system are described elsewhere (submitted). Only the results pertinent to the WHO DAS-S and related Axis II disability categories are presented here.

Table 1 provides a summary distribution of clinicians’ ratings of disabilities using the field trial version of the instrument. The clinicians’ ratings showed that most of the patients and case vignettes (43.0% and

Table 1 Distribution of clinicians' ratings on the WHO Short Disability Assessment Schedule

Disability	Personal care				Occupation				Family and household				Broader social context				Global disablement			
	Patients		Vignettes		Patients		Vignettes		Patients		Vignettes		Patients		Vignettes		Patients		Vignettes	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Minimal	678	36.4	723	33.2	301	16.2	291	13.4	349	18.8	422	19.4	300	16.1	287	13.2	181	10.0	149	6.8
Obvious	455	24.4	393	18.0	366	19.7	317	14.6	444	24.0	465	21.4	405	21.7	343	15.8	386	21.4	325	14.8
Severe	327	17.5	339	15.6	392	21.1	448	20.6	441	23.8	459	21.1	426	22.9	448	20.6	448	24.9	475	21.6
Very severe	197	10.6	531	24.4	365	19.7	785	36.1	334	18.0	647	29.8	374	20.1	846	38.9	419	23.2	902	41.1
Gross	208	11.1	191	8.8	433	23.3	334	15.3	385	15.4	179	8.2	359	19.3	253	11.6	369	20.5	345	15.7
Total	1865	100	2177	100	1857	100	2175	100	1853	100	2172	100	1864	100	2177	100	1803	100	2196	100

51.4%, respectively) were "very severely" or "grossly" disabled in "occupational functioning"; a smaller proportion of patients and case vignettes (21.7% and 33.2%, respectively) were rated as "very severely" or "grossly" disabled in "personal care and survival". "Functioning in family and household" was "very severely" or "grossly" affected in 33.4% of patients and 38.0% of case vignettes, and disability in "broader social context" was rated as "very severe" or "gross" in 39.4% of patients and 50.5% of case vignettes. The clinicians' ratings indicated that in 69.5% of patients and 77.5% of case vignettes, "global disability" was rated in the range of medium values of the scale, i.e. "obvious" to "very severe".

The intraclass correlation coefficients for the WHO DAS-S disability categories ranged from 0.13 for disability in "family and household activities" to 0.45 for disability in the "broader social context". With the exception of intraclass correlation coefficients for disability in "occupational activities" and "broader social context" in the patient group (0.42 and 0.45, respectively), the intraclass correlation coefficients for all other disability categories in both the patient group and the set of case vignettes did not reach 0.40.

The inter-rater agreement on specific disability categories covered by the WHO DAS-S was also analysed for specific centres that participated in the first field trial. The reliability coefficients for specific centres did not significantly differ from the overall reliability results of the WHO DAS-S. For example, the intraclass correlation coefficients for the two centres with the largest number of participating institutions and clinicians (i.e. Japan and Spain) were as follows: disability in personal care, 0.37 and 0.43 for patients and case vignettes, respectively; disability in occupational functioning, 0.10 and 0.09 for patients and case vignettes, respectively; disability in family and household activities, 0.16 and 0.36 for patients and case vignettes, respectively; disability in functioning in the broader social context, 0.53 and 0.44 for patients and case vignettes, respectively.

Taking into account the results of the first field trial, as well as comments and recommendations of the field trial participants, several amendments were made to the ICD-10 multi-axial system and to the WHO DAS-S itself. The WHO DAS-S was simplified and produced as a 6-point rating scale with short definitions of the anchor points and more precise specifications for the assessment time-frame.

A second, small-scale field trial to explore the consequences of the amendments made to the ICD-10 multi-axial system and its instruments was organized in 1994-1995, involving the participation of 28 clinicians and the assessment of six case vignettes and 61 patients from Austria, Denmark and Spain. A total number of 735 assessments of local patients and case vignettes was made across the sites. The results of the analysis of the second field test showed that the intraclass correlation

coefficients for specific disability categories in the revised WHO DAS-S ranged from 0.40 for disability in "family and household activities" in the patient group to 0.74 for disability in "personal care" in the set of case vignettes; 50% of specific disability categories had extended kappa values above 0.50, and for the other 50% the extended kappa values were in the range of 0.40 to 0.50.

The content analysis of the participants' comments in the second field trial revealed a problem in the relationship between rating of global disability and disabilities in specific areas of functioning, i.e. many clinicians could not make "independent" assessments of the two, and rated global disability either as an average or equal to the maximum disability in the specific areas of functioning. To avoid ambiguities, most of the clinicians suggested deletion of the "global disability" rating, which has been done in the current version of the ICD-10 multi-axial system.

Discussion

The WHO DAS-S was produced and tested in the context of the development and field trials of the ICD-10 multi-axial system. The participants of the field trials – clinicians belonging to different schools of psychiatry and psychiatric traditions – were almost unanimous in their praise for the ease of use of the system and accompanying instruments. However, the results of the first field trial indicated limited reliability of the disability categories covered by the original version of the WHO DAS-S. This was not surprising in view of the fact that the assessment of disabilities requires detailed information about the patient's activities and a good knowledge of the cultural setting in which he or she lives. Such (and similar) findings were among the reasons for excluding disabilities from the ICD-10 diagnostic criteria wherever possible and for launching a major long-term project aiming to develop highly specified ("operational") criteria and instruments for the assessment of disabilities [16].

Following experience from the first field trial, as well as participants' suggestions for improvement of the WHO DAS-S, the instrument was revised and tested in the second field trial, the results of which indicated that the amendments to the instrument improved its reliability. The second field trial also showed the necessity for further adjustments of the instrument, i.e. deletion of the "global disability" category, which was found to overlap with ratings of disability in specific areas of functioning. Small samples (i.e. ten patients per centre) and the uneven participation of clinicians and centres across countries (e.g. more than one-third of the participants in the first field trial were from Spanish-speaking countries; the second field trial was conducted in only three Western European countries) represent impor-

tant limitations of the field testing of the WHO DAS-S, the reliability results of which should mainly be considered as informational and orientational.

The WHO DAS-S has now been released for general use, and all the necessary information about the instrument is available from WHO on request. Although the results of the international field trials contributed to the development of a short, user-friendly and reasonably reliable tool for the assessment of disabilities, further work on the instrument is required. Such work should comprise: (1) the development and testing of national adaptations of the instrument so as to obtain culturally relevant definitions of specific disability categories covered by the WHO DAS-S; (2) studies of the concurrent validity of the instrument employing the strict statistical procedures such as calculation of agreement measures taking into account the nested structures of the participating centres; (3) modification of the instrument in order to make it compatible with the next edition of the ICIDH, the revision of which is under way. WHO will also collect users' reports on their experience with the WHO DAS-S and will take them into account in producing the next version of the instrument.

Acknowledgement The full list of participants in the development and field trials of the ICD-10 multi-axial system and accompanying instruments is given in the document *Multi-axial presentation of ICD-10 for use in adult psychiatry* [7].

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