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Assessment instruments: standardization of the European Service Mapping Schedule (ESMS) in Spain

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Objective: To adapt the *European Service Mapping Schedule* (ESMS) for use in Spain and assess the quality of this schedule.
Method: Following linguistic and conceptual translation, 77 services in five Spanish catchment areas were described by independent local raters, including two experts in health services research. Feasibility (applicability, acceptability and practicality), descriptive validity and overall percentage agreement were assessed.
Results: ESMS feasibility was considered adequate. The tree system facilitates reporting and comparison of data. Face, content and discriminant validity are adequate for almost all services. The overall reliability was high but completion of the service utilization section required expert supervision. The ESMS revealed large differences in service availability and utilization in the five different areas of Spain.
Conclusion: The ESMS has proved useful for describing mental health services in Spain, and facilitates comparisons between catchment areas.

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Key words: service; description; utilization; mental health service reform

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Introduction

Increasing activity in mental health services research over the past few years has been accompanied by the introduction of new instruments for the description and evaluation of various aspects of mental health care. They include instruments for assessing needs, describing services and interventions, defining the philosophy underlying services, service utilization and cost assessment, auditing and description of service organization (1, 2).

When comparing clinical instruments, however, data regarding the psychometric properties are discontinuous and incomplete. This can be attributed to several factors. First, the conceptual framework for service evaluation has yet to be formulated in a way that clearly defines domains and dimensions. Recognizing this, a number of recent papers have begun to address the issue (3, 4). Secondly, a standard glossary of terms for health care services that is internationally acceptable has yet to be compiled, and lastly, the implementation of validation procedures is hampered by the lack of standard recommendations or guidelines. For example, there is no agreement on the sample size needed to perform a reliability study in this field, or on the conceptual limits between consistency and reliability, or between feasibility and descriptive validity. The magnitude of this problem increases when such quality parameters are to be applied in an area where there is no clear operational framework (such as service evaluation) in which the units of analysis are not individuals but a whole array of programmes, settings, services and care modules.

The international work group EPCAT (2, 5) discussed issues relating to the quality criteria that should be met by service assessment instruments such as the new *European Service Mapping Schedule* (ESMS; 5). As part of their contribution to the work of the EPCAT team, the PSICOST Group (see Acknowledgments) developed the Spanish version

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of the ESMS and tested the quality of the instrument.

Material and methods

The ESMS provides a description of the levels and types of service provision within a given area. To facilitate its testing and use in Spain, the PSICOST group undertook a linguistic and conceptual translation of the schedule and an analysis of its content/structure, feasibility, descriptive validity, and inter-observer reliability.

Training course

The English version of ESMS was piloted by EPCAT members in 1997. In April 1998, a training course on the use of ESMS was organized in Jerez (Spain) and seven PSICOST researchers took part. Problems in the employment of the ESMS in both Spain and Italy were reviewed and discussed during the course. These considerations were taken into account as the final version was prepared.

Conceptual translation

A conceptual translation is one in which the essence of the topic being assessed is clearly reflected in the second language. The process turns a simple linguistic translation into one that has cultural relevance; this should be the aim when translating any assessment instrument (6, 7). Two teams performed independent translations of the ESMS that were compared by the co-ordinator (LSC). The final version was then piloted to reveal any outstanding incongruities and inadequacies. These were resolved in discussions held with the original author.

Selection of health areas and services

To encompass examples of all service types available in Spain, a range of areas with varying characteristics and service structures was selected for the ESMS reliability study. Spain is divided into 17 autonomous regions called 'Autonomous Communities' (AC). The responsibilities of the National Health System and Social Services have been gradually transferred to AC local government, enabling each to adopt their own health planning policies (8). To test the ESMS under a variety of conditions we selected four small health care areas in ACs which have organized their mental health services differently and which have incorporated different objectives in their wider health policy. All services in one AC (Cantabria) were also assessed. The areas chosen include deprived areas, both rural (Loja district, in Granada, Andalucia) and urban (Gava district, in Barcelona, Catalonia), as well as less deprived areas, both mixed rural and urban (Burlada district, Navarre; Cantabria AC) and urban (Salamanca district, Madrid). Three ACs have developed their own model of care (Andalucia, Catalonia, Navarre) but services in Cantabria and Madrid are still organized within the centralized National Health System. The main characteristics of the areas selected have been described in previous papers (9, 10) and summary data are provided in Table 1.

A full list of services available to the target population in each area was not routinely available so we asked the local authorities to compile the information for us. PSICOST researchers reviewed the completed lists. While a number of services on the lists were excluded from our study as they did not fulfil ESMS inclusion criteria, our two main researchers (reference raters) identified 29 mental health services which did not appear on the list. These were identified through the item 'links with other services' in section D of the ESMS. A sample list of services available from the health care areas for a target population was not really available in the regions assessed. Eventually, 77 services were identified for inclusion in the study and 93 codes on the ESMS were generated with nine services meeting the criteria for more than one branch on the ESMS tree.

Procedure

Specific services for mental retardation, psychogeriatrics, drug addiction and child psychiatry were excluded. Generic health services and counselling services were also excluded, as specified by the ESMS. All other mental health services available in every location were included, with the exception of private out-patient clinics that did not have a contract with the public system. Five local researchers completed a descriptive report of every service in the area plus the ESMS. Two reference raters with previous experience in health services research (LSC and CR) reviewed each description independently and the ESMS inventory (section D), requested additional information when needed, and then completed the ESMS trees (sections B and C) ignoring the local rater coding. A final categorization and code was agreed for every service after discussion between reference and local raters.

Feasibility

Three areas of feasibility have been defined: applicability, acceptability and practicality (11). The applicability of a measure or instrument is

Table 1. Sociodemographic profile of five health areas in Spain

	Burlada (Navarre)		Gava (Catalonia)		Loja (Andalucia)		Salamanca district (Madrid)		Cantabria[1]	
Inhabitants*	62.268		135.000		63.493		142.001		500.000	
Size (km^2)*	2141.05		124.5		1727		5.5		5.253	
% Population*	Male	Female[2]	Male	Female[2]	Male	Female[2]	Male	Female	Male	Female[2]
0/17 years	26.38	26.63	30.8	29.1	21.14	20.66	16	11.8	27.56	24.81
18/39 years	18.59	17.55	32.03	31.9	39.66	36.43	36	29.5	31.62	29.2
40/64 years	36.98	33.36	28.8	27.4	27.02	27.25	29.2	30.7	28.57	27.95
65 years or more	18.05	22.46	8.3	11.5	12.17	15.66	18.8	28	12.24	18.02
% Employment categories*	Male	Female	Male	Female	Male & female		Male	Female[3]	Male	Female
employed	59.09	27.7	50.9	20.9	41.1		56.1	28.5	25.02	11.28
unemployed	6.89	8.87	6.9	7.8	12.7		13.5	11.1	4.7	5.15
econom. inactive	34.01	63.4	42.1	71.2	46.7		30.4	60.4	18.9	34.25
% single, widowed or divorced*	49.13		29.9		40.28[3]		55.04[3]		52.75	
% people living alone*	3.4		9.45		4.16[3]		4.09[3]		3.98	
% people living alone with children*	1.03		1.82		0.93		0.99[3]		0.89	
% people lived at a different address 1 year prior*	1.9[3]		2.59		1.44[3]		1.44[3]		1.39	
% private households contain more than one person per room*	9.8[3]		9.6[3]		13.2[3]		10.3[3]		11.7[3]	
Death rate (per 100 000 people)*	900		590		916		727.6[3]		955.3[3]	
Death rate Under 65 years (per 100 000 people)*	204.6[3]		1763		232		167.3[3]		145.7[3]	
% Illiteracy[4]	1[3]		2[3]		8.7[3]		2.1[3]		0.6[3]	
% Unskilled work[4]	50.2[3]		45.6[3]		59[3]		40.7[3]		41.6[3]	

[1] Autonomous community.
[2] Different distribution per age: Gava and Cantabria: 0/19 years and 20/39 years; Loja: 0/14 years and 15/39 years; Burlada: 18/34 years and 35/64 years.
[3] Autonomous community data are shown when catchment area data are not available.
[4] Median values.
* Items according to SDS (Socio-Demographic Schedule).

defined as the degree to which it addresses areas of importance to the consumer, whether it is useful for service providers in making decisions, and whether it allows for the aggregation of data in a way that is useful to service management. The central question may be framed as follows: 'Are the resulting data meaningful to recipients?'

The applicability of the ESMS was tested by the PSICOST group and with the mental health authorities from two Autonomous Communities. A wider group, comprising all raters participating in the study, assessed the ease with which a consumer or clinician could use a particular measure (i.e. user-friendliness) and its practicality. Practicality relates to cost of implementation, training requirements and the level of complexity when scoring, reporting and interpreting the data (11, 12).

Validity

We used three descriptive procedures to investigate the validity of the Spanish ESMS. Quantitative methods for assessing consistency and validity have not been considered here. Face validity reflects what experts consider to be significant measures of the topic or the investigators' subjective assessments of the relevance of the questions (13). To some extent face validity and applicability are overlapping concepts. However, applicability is concerned with the opinion of a broader spectrum of users. The key question has been formulated as follows: 'Do the items appear to be relevant, reasonable, unambiguous and clear?'

Content validity defines the degree to which the set of items on an assessment instrument adequately represents a particular domain. It refers to appraisal of the extent to which the content of the instrument appears to impartially examine and include the full scope of the topic or domain it is intended to measure (13). Discriminant validity may be defined in a number of different ways. Here we use it to refer to the ability of the ESMS to categorize similar services in the same branch and different services in different branches (14). Questions regarding descriptive validity have been formulated thus:

(1) Is the description and/or grouping logical and sound? (face validity).
(2) Is the description comprehensive? (content validity).
(3) Is the description precise? (discriminant validity).

Reliability

Two types of inter-rater reliability were explored.

(1) the level of agreement between experienced raters who had a similar knowledge of the instrument (reference raters); and
(2) the level of agreement between a reference rater and a local rater with limited experience in the use of ESMS.

As the ESMS is intended for use by non-expert raters, reliability between reference and local raters is important. Overall percentage agreement was used as an indicator of reliability. We could not carry out a kappa reliability analysis as the sample size required would have exceeded the number of services available in the five areas.

Results

Conceptual translation

There were three main differences between the two Spanish translations of the ESMS. Two conceptually different terms were suggested for the translation of 'care' (*cuidado* and *atención*). Eventually, the latter was selected. 'Mapping' was translated as *diagrama* or as *mapa*. Both terms were considered equivalent in this context. We also found that there is no corresponding term in Spain for 'facility'. We selected *dispositivo* instead of other options such as *recurso* or *servicio*. Other phrases and sentences were adapted as necessary to facilitate a better understanding of the ESMS completion requirements in Spain.

Service description and coding

Ninety-three ESMS codes were generated by the 77 services assessed in this study. The data are summarized by catchment area in Table 2.

Service utilization is shown in Figs 1–3. In spite of the wide variations between catchment areas, only 18 of 33 ESMS categories were used. Gava and Burlada were the areas with the smallest numbers of services and service types, while Cantabria had the greatest number of services (26), followed by Salamanca district in Madrid and Loja (21 services). Loja had the broadest range of service types (14 different categories) but alongside this diversity we found quite low rates of service utilization. Many services, particularly in Cantabria, did not belong to an integrated network or department.

Construction and general characteristics of the ESMS

The ESMS meets the EPCAT requirement for good quality service assessment instrumentation on a number of points: it includes an introductory section; a description of the level of expertise required by raters; a clear set of instructions for completion; definitions for catchment areas and the target population; exclusion and inclusion criteria, and a glossary of terms with examples for each category.

Table 2. Number of services coded on each branch of the ESMS in five health areas in Spain

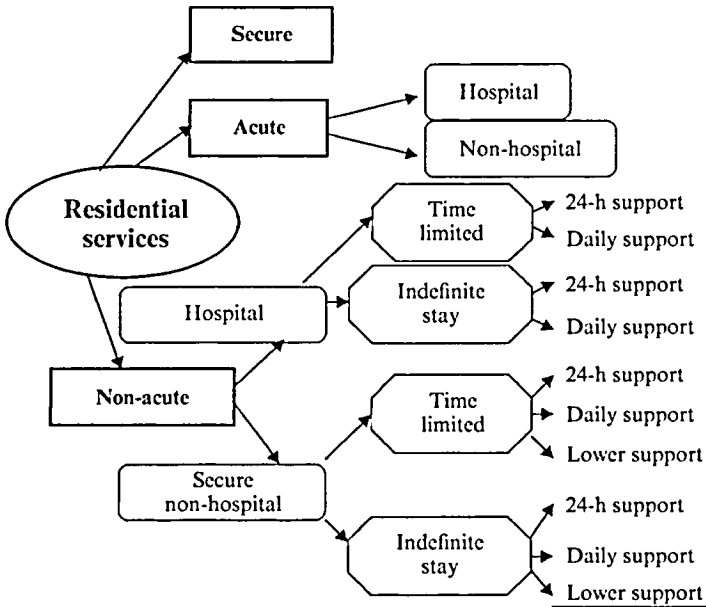
ESMS code[1]	Burlada	Gava	Loja	Madrid	Cantabria
R1					1
R2	4	1	1	1	2
R3					
R4		1		2	
R5					
R6		1	1	2	2
R7					
R8	1		1	2	
R9					
R10					
R11			2		1
R12		2	1		
R13			4		1
D1	1	1		2	
D2			1		2
D3	2		1	1	3
D4	1	1	4	2	2
D5					
D6					
D7					
D8					
D9					
O1					
O2					
O3	1	2	1	1	1
O4	1	1	1		4
O5					
O6					
O7			1		
O8	1			4	4
O9		1	1		
O10					
S1	1	1	1	4	3

[1] Branch names are shown in Figs 1–3.

Feasibility

Applicability. All the participants (raters, PSICOST members and local authority personnel) considered that the questionnaire addressed an important issue and provided useful information.

Acceptability. The user-friendliness of the questionnaire was rated low by one rater, and medium by the rest. The main difficulty related to gathering data, rather than identifying the data required or recording them. The wording was considered difficult to understand by only one rater. Despite the training, a few mistakes and



ESMS code	Burlada	Gava	Loja	Salam. district	Cantabria
R1					0.4(2)
R2	11.2(7)**	11.8(16)*	12.6(8)	19.7(28)	2(10)
R3					
R4		4.42(6)		0.7(1)	
R5					
R6		2.2(3)	3.14(2)	4.22(6)	3.18(16
R7					
R8	11.2(7)		0[1]	0[1]	
R9					
R10					
R11			3(2)		0.6(3)
R12		4.4(6)	1.5(1)		
R13			0[1]		0.6(3)
Total beds	22.4(14)**	22.8(31)*	10.6(7)	24.6(35)	6.7(34)

Fig. 1. Service Counting Tree: residential services in five catchment ares in Spain (bed occupancy in the selected month, related to a population of 100 000; absolute data in parantheses). *Data on utilization of services incomplete; **data on utilization of services not in the area not available. [1]Services available not used in the reference period.

incongruities appeared in the forms submitted by two local raters, particularly in section C (service utilization), where the distinction between high and low service users was not clearly understood. In each case, reference raters had to reassess the completed questionnaires and clarify doubts with local raters. Our assumption that the ESMS could be completed by untrained raters may have been too optimistic.

Practicality. Local raters needed 2–5 weeks to complete the area description. Completion time varied due to the availability of data and the number of services in each area. Particular problems were found in compiling the data required for section C. The original instrument suggests that in facilities that do not routinely quantify their service use, a 1-month census will be needed. Active collaboration of the service staff is required for the census but it was difficult to obtain, especially in non-public services that are used irregularly by catchment area patients. Including both annual mean utilization rates and monthly rates may be misleading as the latter data may show wide differences due to seasonal variations.

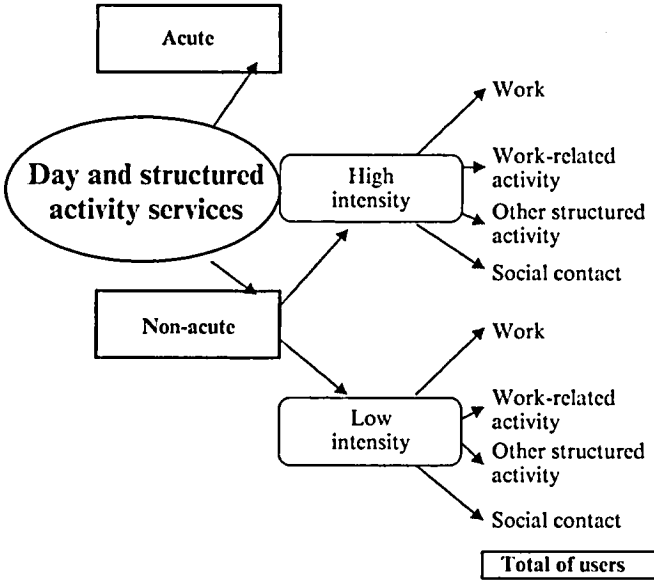
Descriptive validity

In general, the description provided by the ESMS was meaningful to its intended recipients such as health authority personnel and staff in the health care service (face validity). The main branches ('residential', 'day and structured activity' and 'out-patient and community services' allowed a logical classification of services available in the selected areas. The ESMS also showed good levels of content and discriminant validity: according to expert opinion, 72 out of 77 services were adequately described by the ESMS.

One problem that emerged was that not all units could be described in a way the experts felt encapsulated their most important features. For example, the ESMS was unable to properly describe a hospital liaison psychiatric service in the Salamanca district (Madrid). Moreover, five of 77 services were classified in similar branches despite being considered different by the raters. An example of this was when a mental health service with definite mobile care modules was classified in the non-mobile category due to the mobility cut-off point of out-patient services (more than 20% of mobile activities).

As noted above, the intensity criteria for coding the final branch of 'out-patient and community services' was also found to yield subjective opinions. Our study suggests that specifying criteria to distinguish the intensity of service provision should be considered. In order to classify intensity we asked whether contacts 'at least three times per week' could be considered as part of routine practice.

Finally, we found that the end branches of 'day and structured activity' were not sufficiently described, often failing to grasp the features assessors



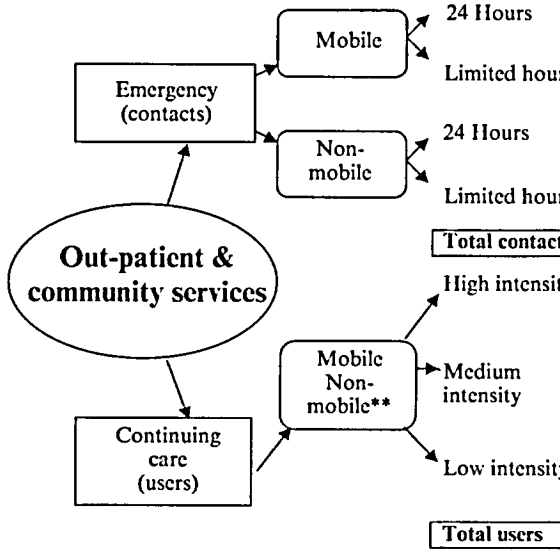
ESMS code	Burlada	Gava	Loja	Salam. district	Cantabria
D1	11.2(7)	1.47(2)		7.72(11)	
D2			0[1]		0.5(3)
D3	11.2(7)		0[1]	0.7(1)	2.5(13)
D4	4.8(3)	24.3(33)	20.4(13)	4.9(7)	0.9(5)
D5					
D6					
D7					
D8					
D9					
Total of users	27.2 (17)	25.7(35)	20.4(13)	13.3(19)	3.9(21)

Fig. 2. Service Counting Tree: day and structured activity services in five catchment areas in Spain (users in the selected month, related to a population of 100 000; absolute data in parantheses). [1]Services available not used in the reference period.

maintained were central to the services. This meant that services with different profiles were classified in the same final branch. For example, one service providing training courses was classified in the same branch as another service where patients participated in craft activities. Similarly, the final branch of 'day hospitals' can include services with the capacity to admit patients within 72 hours (available in the Salamanca district) and those with a rehabilitation function. However, when the ICMHC (15) was also applied, services were distinguished more clearly, which reinforces the importance of combining data from both instruments.

Reliability

Data on the reliability of the ESMS service tree (section B) are shown in Table 3. The overall



ESMS code	Burlada	Gava	Loja	Madrid	Burlada
O1					
O2					
O3	47(29)	29,5(40)*	*	54,9(78)	4(20)
O4	69(43)	22,1(30)	49,3(32)	*	*
Total contacts	116(72)	51·6(70)*	49·3(32)*	54·9(78)*	4(20)*
O5 O8	97,9(61)	511,4(693)**		601,3 (854)**	79,2 (354) **
O6 O9	467,3(291)				
O7 O10	1154,6(719)		814,2(512)		
Total users	1719·8(1071)	511·4(693)	814·2(512)	601·3(854)	79·2(354)

Fig. 3. Service Counting Tree: out-patient and community services in five catchment areas in Spain (contacts 01–04 and users 05–010 in the selected month, related to a population of 100 000; absolute data in parentheses). *Data on utilization of services incomplete; **data on mobilization not disaggregated in the databases.

Table 3. ESMS branches agreement in five health areas in Spain[1]

ESMS codes	C	N	Agreement between reference raters (%)	C	N	Agreement between local and reference 1 raters (%)
Total	93	88	75/88 (85.2)	93	79	70/79 (88.8)
Residential	34	34	34/34 (100)	34	33	33/33 (100)
Secure	1	1	1/1 (100)	1	1	1/1 (100)
Acute	9	9	9/9 (100)	9	9	9/9 (100)
Hospital	9	9	9/9 (100)	9	9	9/9 (100)
Non-hospital	0	0	—	0	0	—
Non-acute	24	24	23/24 (95.8)	24	23	23/23 (100)
Hospital	9	9	8/9 (88.8)	9	9	9/9 (100)
Time limited	3	3	2/3 (66.6)	3	3	3/3 (100)
24 h support	3	3	2/3 (66.6)	3	3	3/3 (100)
Daily support	0	0	—	0	0	—
Indefinite stay	6	6	6/6 (100)	6	6	5/6 (83)
24 h support	6	6	6/6 (100)	6	6	5/6 (83)
Daily support	0	0	—	0	0	—
Non-hospital	15	15	15/15 (100)	15	14	14/14 (100)
Time limited	4	4	4/4 (100)	4	3	3/3 (100)
24 h support	4	4	4/4 (100)	4	3	3/3 (100)
Daily support	0	0	—	0	0	—
Lower support	0	0	—	0	0	—
Indefinite stay	11	11	8/11 (72)	11	11	11/11 (100)
24 h support	3	3	3/3 (100)	3	3	3/3 (100)
Daily support	3	3	0/3 (0)	3	3	2/3 (66.6)
Lower support	5	5	5/5 (100)	5	5	4/5 (80)
Day & structured activity	24	19	19/19 (100)	24	19	19/19 (100)
Acute	4	4	2/4 (50)	4	4	3/4 (75)
Non-acute	20	15	13/15 (85.7)	20	15	15/15 (100)
High intensity	20	15	14/15 (93.3)	20	15	14/15 (93.3)
Work	3	3	3/3 (100)	3	3	3/3 (100)
Work-related activity	7	5	4/5 (80)	7	5	4/5 (80)
Other structured activity	10	7	6/6 (85.7)	10	7	6/7 (85.7)
Social contact	0	0	—	0	0	—
Out-patient & community	25	25	25/25 (100)	25	20	20/20 (100)
Emergency	14	14	14/14 (100)	14	9	9/9 (100)
Mobile	0	0	—	0	0	—
Non-mobile	14	14	14/14 (100)	14	9	100
24 h	6	6	6/6 (100)	6	4	100
Limited hours	8	8	8/8 (100)	8	5	100
Continuing care	11	11	11/11 (100)	11	11	100
Mobile	0	0	—	0	0	—
Non-mobile	11	11	11/11 (100)	11	11	100
High intensity	9	9	9/9 (100)	9	9	88.8
Medium intensity	2	2	1/2 (50)	2	2	0
Self-help and non-profes.	10	10	10/10 (100)	10	8	80

[1] Seventy-seven services were available in the five areas. As some services filled more than one branch, 93 categories have been assesed. Some categories were not identified by both raters. These have been excluded from the agreement analysis.
C = total number of categories available for each branch; N = number of categories identified by both raters for each branch.

reliability was high both between local and reference raters and between the two reference raters. Overall, the percentage agreement in the final categorization was 85.2% between the two reference raters and 88.8% between the local and reference raters. This finding suggests that section B can be completed by staff with little (a few hours generally suffices) specific training. In this study the local raters also received some supervision from the reference raters. Local raters found completing the utilization tree more difficult and a number of errors were picked up by the reference raters. These related mainly to the interpretation of service use intensity criteria.

Four overlying findings from our study can be highlighted. Section B might be particularly useful for decision-makers. For instance, our data suggested that many of the areas surveyed do not provide a comprehensive spectrum of services with different functions and different implementation intensities, casting doubt on the extent to which the

service can readily meet the needs of a variety of different users. Through the question on 'links with other services' at the Service Inventory (section D), the ESMS also enabled the identification of 24 services which had not been included in the list provided by the local authority. Knowledge of the full range of services is crucial to ensuring the population's needs are met.

Criteria for using the ESMS suggest a cut-off point of five users in the last year per 100 000 inhabitants. This cut-off point was designed to ensure inclusion of services that were located outside the area but which operated as part of the care network. However, when this utilization cut-off point was applied to services listed by local authorities, some fell below it. Thus, ESMS provided significant information on the inefficiencies of service organization in areas where community services are theoretically well developed. For example, the rehabilitation unit and the day hospital of the Loja district were located 80 km from the town, and Loja patients could not attend the unit on a regular basis. A wide range of services is provided in Madrid but they are not used very intensively and in Burlada (Navarre), many private sector services are contracted to provide support when the public sector is overloaded.

Discussion

The ESMS is a new instrument aimed at describing the range and availability of mental health services within a small area. The study reported here establishes the feasibility and validity of the Spanish version. An international team developed the instrument and it has been translated into several languages. So far more data are needed to confirm the extent of it generalizability, its validity, and the level of inter-rater reliability. The Schedule can also be used to record changes in service provision over time, so work remains to be carried out to establish the schedule's test–retest reliability and sensitivity to change.

In our view, untrained staff may contribute to completing the schedule (particularly sections B and D), but the final schedule should be reviewed and achieved by trained raters, or at least done so under the supervision of trained raters. There are practice vignettes and some follow-up exercises to be completed before employing the ESMS, while developing and disseminating a brief structured training programme in the use of the Schedule remains an important task for the future.

In general, the ESMS tree structure has proved useful for describing services available in our country. The section on service categorization, service use and main characteristics (sections B, C and D, respectively) provide complementary information and they facilitate data gathering and service identification. Although the instrument should be kept as simple as possible, the glossary could be usefully expanded. For example, consultation–liaison services are difficult to classify in the current branches, while our study showed that the definition of 'acute services' and 'day and structured activity services' might well be developed further.

A final difficulty with the ESMS is that some services fit into several different categories. This may lead to confusion in the interpretation of data, which is difficult to avoid where there are integrated services, such as community mental health centres, providing a range of different care services. Strengthening the link between the definition of 'services' in the ESMS, the categories or branches provided by this Schedule and the definition of 'modules' in the ICMHC will aid interpretation.

Our study found that the data generated by the ESMS was useful to providers and purchasers of mental health services. The quality of the instrument was found to be sufficiently high to be used confidently in research. As part of a battery of instruments, for example employing it alongside the ICMHC and the ESDS, the data generated will enable a better description of health services in small areas as well as comparisons within and between European countries.

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