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European Consultation–Liaison Psychiatric Services: the ECLW Collaborative Study

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Objective: To describe the patterns of organization of consultation–liaison (C-L) services in 11 European countries in relation to hospital characteristics and national approaches to C-L psychiatry.
Method: Cross-sectional survey.
Results: Services can best be described in terms of their size and seniority of their staff and whether or not they are multidisciplinary. Single-discipline services are based upon the standard medical consultant model, whereas those with multidisciplinary teams work in a way that is comparable with community mental health teams. German psychosomatic C-L services belonged to either model. National differences were found.
Conclusion: This first international study provides empirical evidence for the wide variation in the organization of C-L services. In view of the increasing numbers of patients with psychiatric disorder who are being treated in general hospitals and the changing patterns of medical care there are important implications for clarification and improvement of the role of C-L services.

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Key words: consultation; health service research; general hospital; psychiatry; psychosomatic medicine

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Introduction

Psychiatric consultation–liaison (C-L) services should be commonly available in general hospitals, because of the size and the impact of psychiatric morbidity on the outcome and costs of hospital admissions (1). Describing C-L services as they are provides valuable information about the strength and weaknesses of these services and may point to improvements. Empirical data describing C-L psychiatric service-delivery are based on single-site studies — mainly in the USA or UK. There are several problems associated with these studies. First, the studies focus on characteristics of the referred population rather than on the characteristics of the

C-L service and hospital settings in which these services are provided (2). As the single-site studies described in literature are substantially biased towards more established C-L services in larger medical school-affiliated hospitals (3). This might have resulted in an overestimation of the size of C-L service delivery. According to experts in Europe, an additional factor influencing patterns of service delivery is the difference of the national health care systems (4, 5). More comprehensive questions concerning the relationship between the organization of services and hospital characteristics and between these and the characteristics of the referred population have not been systematically addressed. Where differences are found in single-site C-L service delivery studies, such as patterns of referral and interventions, they seem to be associated with manpower effects and health service policies (6, 7). Also the participation of different disciplines in the team is likely to influence patterns of service delivery (8).

One of the specific purposes of the European Consultation–Liaison Workgroup Collaborative Study (ECLW CS) was to explore these expected differences in a systematic way and consequently to obtain more insight into different types of C-L services and their hospital settings (9–12).

Material and methods

Organization

In order to perform this study, a number of steps were necessary: (a) instruments had to be developed to describe relevant variables found in a large variety of clinical settings and health care; (b) the recruitment, training and (reliability) testing of participating consultants had to be organized; (c) an administrative infrastructure had to be developed to ensure data validity. The study was co-ordinated through a programme management group and a network of representatives from the European countries (national co-ordinators). The programme management group and the national co-ordinators met twice a year during the period of the study. The national co-ordinators were asked to recruit diverse C-L services from each of the countries involved, trying to balance university and non-university hospitals and hospitals from rural and urban areas. In Germany, a specific goal of the study was to balance the sample of participating C-L services towards psychiatric C-L services and those with a psychosomatic theoretical background (for a description of the specific aspects of C-L service delivery in Germany, see Herzog (4, 5)). Through this network of national co-ordinators the programme management group was able to guarantee a broad sample of services, to set up central and national training and reliability studies (9).

Sample

One hundred and three C-L services from 13 countries indicated their interest to participate. Eighty-three C-L services from 11 countries were able to participate in reliability training and testing. Finally, 56 C-L services fulfilled the inclusion criteria and have been included (9–11). These criteria were: period of study (1 year), minimum case-load (26 cases), reliability criteria and the provision of institutional and provider data. As a result the study sample of C-L services consisted of 56 services: Belgium, 4; Finland, 6; France, 1; Germany, 11; including five psychiatric and six psychosomatic C-L services; Greece, 4; Italy, 5; The Netherlands, 7; Norway, 3; Portugal, 5; Spain, 3; and the United Kingdom, 7.

Instruments

The instruments to describe the C-L service and the hospital characteristics have been designed on the basis of available literature (2, 6) and consensus meetings with the national co-ordinators. Although differences in the availability of these data had been expected, it had been decided to develop an extensive instrument applicable to different health care systems (9). Only those variables were included in this specific study when the information was available for at least 95% of the centres.

Statistical analysis

The procedure of the data analyses is presented in Fig. 1 (details can be found in Opmeer (13)). The data reduction and subsequent cluster analyses are performed on the hospital and C-L service dataset separately to identify pertinent characteristics within hospitals and C-L services.

Data reduction

Data reduction is designed to construct composite variables, which optimally represent the original information. The score of each C-L service or hospital on these composite variables is obtained by a combination of values for the original variables. In order to apply data-reduction on variables of a low measurement level (mostly nominal, some ordinal), PRINCALS is used as a non-linear alternative for principal components analysis (PCA) (14). To obtain composite variables optimally representing the latent construct, rotation of the dimensions is considered. As PRINCALS does not perform rotation linear PCA is applied, using the numerical values obtained from the PRINCALS

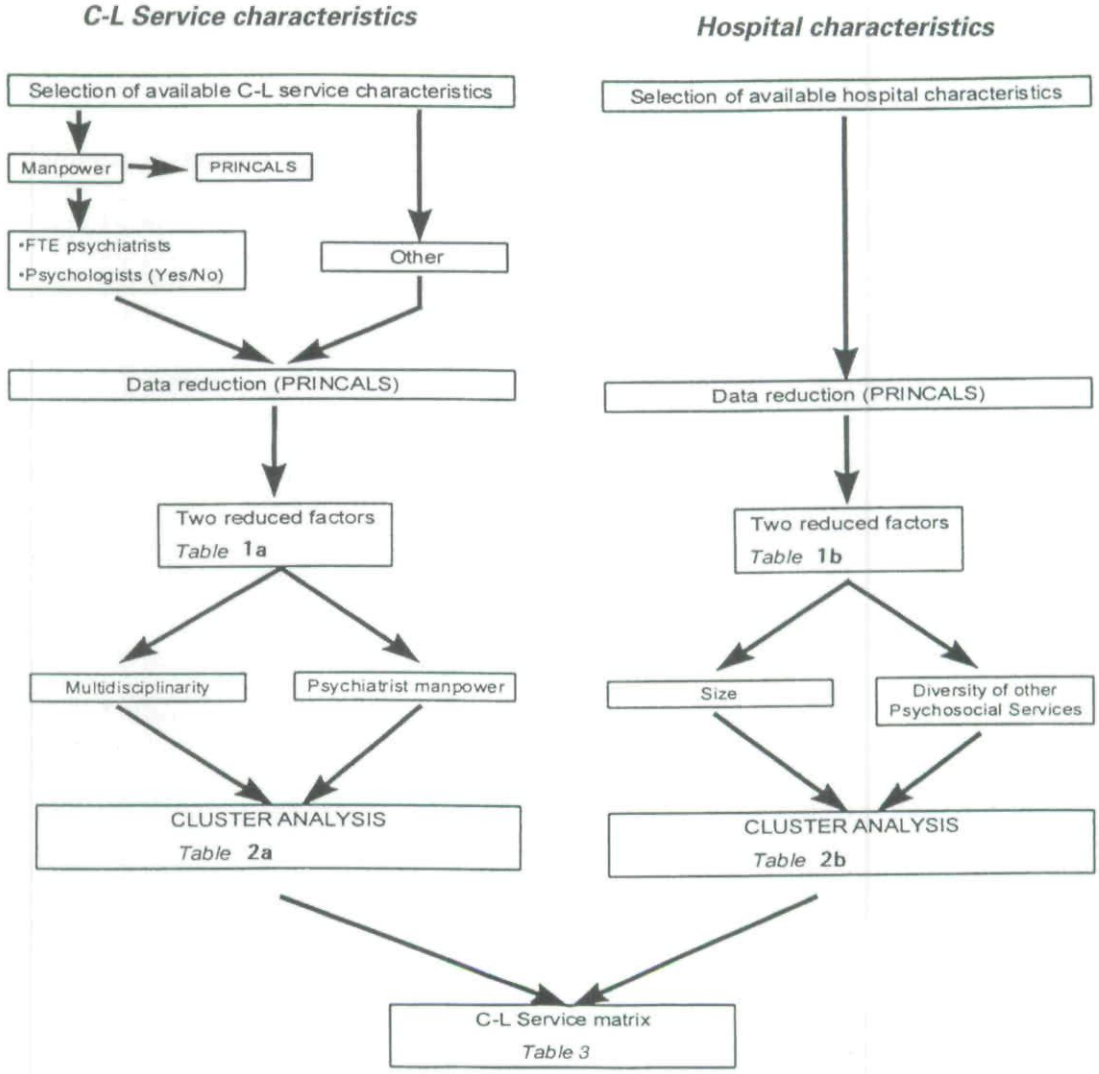

Fig. 1. Variable selection and data-analyses.

solution, yielding optimally rotated dimensions (14). To indicate how well the original data fit the current solution, a 'goodness of fit' measure is evaluated (15), comparable with the 'proportion of explained variance' in PCA (14).

Cluster analyses

With the reduced set of hospital and C-L service characteristics the 'Ward' method of cluster analyses is used to generate clusters and to classify the C-L services and their hospitals into those clusters (16). The 'Ward' method of cluster analysis takes into account the overall similarity with respect to the characteristics by minimizing the variance within clusters. Classification occurs based on similarity as represented by the Euclidean distances generated by the hierarchical cluster procedure, rather than equality, where hospitals or C-L services need to have exactly the same scores in order to be classified in the same cluster. Selection of the appropriate number of 'typical' settings will be based on the interpretability of the clusters, the scree-test and the stability of the cluster solution through replication of the results on subsamples.

Results

Data reduction

C-L services (Table 1a). The data reduction analyses with the original variables describing the organization of the C-L service resulted in the six following variables contributing to the composite variables: the total manpower of the C-L service, the psychiatric manpower of the C-L service, the number of years' experience of the members of the C-L team, the number of participating disciplines

Table 1. (a) Organizational characteristics of C-L services: PRINCALS component loadings

	Dimension		
	1	2	Total fit
C-L service characteristics			
Psychiatric manpower	0.30	0.78	
Psychologists	0.88	−0.18	
Disciplines	0.93	−0.02	
Experienced staff	0.23	0.83	
Secretary	0.86	−0.29	
Eigenvalues	0.50	0.28	0.78

Dimension 1: multidisciplinarity; dimension 2: psychiatric manpower.

Table 1. (b) Characteristics of hospitals: PRINCALS component loadings

	Dimension		
	1	2	Total fit
Hospital characteristics			
Type	0.60	0.29	
Population served	0.21	0.08	
Psychiatric emergency room	0.20	0.13	
Psychiatric out-patient clinic	0.47	0.24	
Medical psychology	0.23	0.76	
Pastoral work	0.08	0.73	
Social work	−0.09	0.86	
Beds	0.84	−0.13	
Additional specialities	0.67	−0.05	
Psychiatric beds	0.67	0.02	
Eigenvalues	0.23	0.21	0.44

Dimension 1: size; dimension 2: diversity of psychosocial service delivery.

Table 2. (a) Main types of organization of the participating C-L services

	Cluster A ($n=19$) n (%)	Cluster B ($n=19$) n (%)	Cluster C ($n=18$) n (%)
Monodisciplinary†	1 (5)	18 (100)	8 (4)
Multidisciplinary‡	12 (63)	0 (100)	6 (33)
Secretarial support	13 (68)	0 (78)	11 (61)
Psychologist(s) in C-L team	11 (61)	0 (44)	1 (10)
Psychiatric manpower (median FTE)	2	1	0.5
C-L experience (mean %)	49	39	21
Total clinical manpower (median FTE)	5.4	1	1.6

† One discipline; ‡ ⩾3 disciplines. A: larger multidisciplinary; B: smaller monodisciplinary; C: smaller multidisciplinary.

Table 2. (b) Main types of participating hospitals

	Cluster I ($n=19$) n (%)	Cluster II ($n=18$) n (%)	Cluster III ($n=19$) n (%)
University	2 (11)	14 (74)	17 (95)
Beds (median)	467	854	1049
Admissions (median)	16607	27264	37343
Psychiatric beds (median)	30	50	114
Medical psychology	11 (61)	0 (0)	13 (72)
Social work	18 (100)	2 (11)	18 (100)
Pastoral work	14 (78)	3 (16)	14 (78)
Psychiatric OP clinic	8 (44)	10 (53)	8 (44)
Psychiatric emergency room	5 (28)	5 (26)	7 (39)

I: smaller equipped; II: larger restricted; III: university equipped.

in the C-L service, the presence of psychologists and the presence of an own organizational infrastructure as reflected by the presence or absence of secretarial support.

An association was found between manpower and the number of different disciplines. In addition, the composition of the team in terms of the proportional distribution of disciplines varies across teams with different size of manpower. An increase of psychiatric and resident manpower formation does not imply extension of the staff with psychologists. Either growth of psychiatry or psychology manpower co-varies with the presence of C-L nurses and/or social workers in the C-L team. As the psychological manpower in C-L teams is not proportionate to the overall manpower, the association of manpower with other C-L service characteristics needs to be differentiated into two factors: psychiatry and psychology manpower.

In a second step, other C-L service characteristics (use of pagers, 24-hour service), staff experience (percentage of faculty working 3 or more years in the C-L service) and number of disciplines in the C-L team are combined with the manpower of psychiatrists and psychologists (Fig. 1). This results in two recognizable dimensions: one reflecting the multidisciplinary composition of the C-L team (including psychologists and secretarial support), and one reflecting the psychiatry manpower. C-L services with more psychiatry manpower are more likely to have consultants with more than 3 years' experience in C-L work.

Hospitals (Table 1b). Data reduction on the set of hospital characteristics yields two predominant factors. One factor is associated with the size of the hospital, as high correlations are found with the number of beds, the number of admissions, the amount of different medical specialities present in the hospital and the amount of psychiatric inpatient treatment places and university affiliation. The second factor reflects the presence of psychosocial services in the hospital in addition to the participating C-L service, such as: social work, psychological medicine and pastoral care. The presence of a psychiatric out-patient clinic and psychiatric emergency facilities is associated with both factors, the size of the hospital and presence of psychosocial services.

Table 3. Types of organization of C-L services in relation to their hospitals

		Larger multidisciplinary		Smaller monodisciplinary		Smaller multidisciplinary	
	Total FTE	5.3		1.0		1.6	
	Psychiatric FTE	2		1		0.5	
	Experience	49		39		21	
	Multidiscipl. %	63		0		33	
	Secretary %	68		0		61	
	Psychologist %	61		0		10	
Restricted		6		10		3	
University %	74	Belgium	2	Belgium	1		
Beds	854	Germany P	1	Germany P	1		
Admissions	27264	Greece	1	Greece	1	Greece	1
Psychiatric beds	50	Italy	1	Italy	3	Italy	1
Psychology %	0			Portugal	3	Portugal	3
Social work %	11	United Kingdom	1	United Kingdom	1		
Pastoral work %	16						
Psychiatric OP %	53						
Psychiatric ER %	26						
Small equipped		5		4		9	
University %	11			Belgium	1		
Beds	467					Germany P	1
Admission	16607			Germany PS	2	Germany PS	2
Psychiatric beds	30	Finland	1			Finland	1
Psychology %	61					France	1
Social work %	100			Greece	1		
Pastoral work %	78	Netherlands	2			Netherlands	2
Psychiatric OP %	44	Norway	1	Norway	1		
Psychiatric ER %	28	United Kingdom	1			United Kingdom	2
Large equipped		8		5		6	
University %	95			Germany P	2		
Beds	1049			Germany PS	2	Germany PS	1
Admissions	37343	Finland	2			Finland	2
Psychiatric beds	114	Netherlands	1			Netherlands	2
Psychology %	72	Norway	1				
Social work %	100	Portugal	1				
Pastoral work %	78	Spain	2	Spain	1		
Psychiatric OP %	44	United Kingdom	1			United Kingdom	1
Psychiatric ER %	39						

P: psychiatric; PS: psychosomatic.

Cluster analyses

C-L psychiatric services (Table 2a). The participating C-L services can be described in three equally distributed clusters (A, B and C). The first group (A) of C-L services is characterized by having an average manpower of about five full-time equivalents, including two psychiatrists. About 2/3 of these teams are multidisciplinary, including psychologists (61%). These C-L services will be further referred to as 'larger multi-disciplinary' C-L services. The clinical staffs of these C-L services have, in about half of these services (49%), worked for more than 3 years in the C-L service. Two-thirds (68%) of these C-L services have their own secretarial support. The next group (B) is characterized by the lowest amount of manpower — approximately one; this is usually a psychiatrist who, in about 40% of these C-L services, is more experienced. These C-L services — further referred to as 'smaller monodisciplinary' C-L services — tend to have no secretarial support. The last group (C) is characterized by limited (median 1.6 full-time equivalents) and less experienced clinical staff (only 20% of the C-L services has a staff with 3 or more years' experience). A third of these C-L services consists of multidisciplinary teams, further referred to as 'smaller multidisciplinary' C-L services.

Hospitals (Table 2b). The participating hospitals can be described in three clusters of almost equal size. The first group of hospitals (I) consists of

smaller-sized (about 450 beds), mainly non-university hospitals (89%) all having social work; 60% of them have psychological services. These are further referred to as 'smaller equipped'. Another group of hospitals (II) consists of larger hospitals (about 850 beds). Of these, 3/4 is a university hospital. These hospitals are characterized by most restricted psychosocial services, as is reflected in the availability of social work in only 11% and psychological C-L services in none. These hospitals are further referred to as 'larger restricted'. The hospitals of the third cluster (III) are of the largest size (1000 beds). They are almost all university hospitals (95%). The hospitals belonging to this cluster all have social work facilities and 72% have psychological C-L services, and are further referred to as 'university equipped'.

Combination of hospital and C-L service characteristics (Table 3). This results in nine possible combinations of hospitals and C-L services over which the participating C-L services are distributed homogeneously.

The group of 'smaller monodisciplinary' C-L services contains a group of Italian and Portuguese C-L services in this study which belong to the hospital cluster of 'larger restricted', mainly university hospitals with restricted psychosocial facilities. All Italian and Greek, and most Portuguese hospitals belong to the cluster of these larger hospitals with restricted psychosocial facilities. None of the Dutch, Norwegian, Finnish or Spanish, and almost none of the German and UK hospitals belong to this group of hospitals. Only the Spanish C-L services all belong to university hos-pitals, whereas the C-L services of other countries are represented by a mix of university and non-university hospitals. The German and UK C-L services are divided over six of the nine cells, the Dutch over four. In contrast to the services of the other participating countries, the Dutch and the Finnish C-L services only belong to the clusters with the 'larger-' and 'smaller multidisciplinary' teams in 'larger-' and 'smaller equipped' hospitals.

Discussion

The objective of this study is to describe the main organizational characteristics of C-L services taking into account the characteristics of their hospitals and their national background. The results suggest two main types of C-L services: (a) C-L services organized along the lines of the classical medical model comparable with consult services provided by other medical specialists, being 'monodisciplinary'; (b) C-L services which are organized according to the 'multidisciplinary' mental health model. The latter theoretically implies a more differentiated model of C-L service delivery. For instance, including psychologists for psychotherapy or C-L nurses, who are better able to instruct and coach ward-staffs to handle behaviourally disturbed patients. Moreover, such teams are also better equipped to implement more preventive ward-orientated programmes (17, 18). Whether or not these characteristics of C-L services have an influence on the case-mix and case-load, as indicated by the referral rate and the urgency of referrals, is explored elsewhere (13, 19).

The finding that the three groups of C-L services are equally distributed over the three main groups of hospitals has two implications. First, although not a representative sample, it can be concluded that the C-L services participating in this study represent a wide range of European hospitals and C-L services. On a national level it is presumably the case for the UK and Germany, as well as the Netherlands and Finland, that the most heterogeneous samples of C-L services, with regard to their own organization and hospital size, have participated in this study. In these countries selection bias of earlier studies (single-site, university) has been avoided. Nevertheless, there is a selection bias towards highly motivated C-L services which is illustrated by the reduction of teams from 103 (intention to participate) to 56 (those who participated). Therefore the reported findings can be regarded as representative for the state of C-L service delivery in more established C-L services in the participating European countries. It is likely that this still overestimates the status of C-L service delivery in Europe as the sample of C-L services and their hospitals is still biased towards larger (university) hospitals (3). Secondly, there is no straightforward relationship between the size of the hospital and the size of the C-L service. The smaller multidisciplinary teams are more often found in smaller non-university hospitals. The monodisciplinary medical consultant model is seen more frequently in larger university hospitals with restricted other psychosocial services. This is a remarkable finding, as it illustrates the lack of a general strategy towards the organization of mental and social services in general hospitals. Here the national dimension to the distribution over the different groups sheds light on a health service policy factor. This, in combination with tendencies in epidemiology (increase of elderly and chronically ill) and health service delivery (reductions of beds and length of stay in general hospitals) emphasizes the

need for clear national policies on the systematic development of psychosocial and psychiatric C-L services in the general hospital.

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