

A Study of 13 Diagnostic Systems (Criteria) For Schizophrenia on an Egyptian Sample: Frequencies, Agreements and Validity

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ABSTRACT

We compared the frequencies and agreements of 13 systems for the diagnosis of schizophrenia: Schneider; E. Bleuler; M. Bleuler; Langfeldt; Kraepelin, North America; Great Britain, Dongier; WHO-CSB; Yusin; Newmark; DSM-III; and Feighner. We tested also the validity of five of these systems as their concordance with clinical diagnosis and their sensitivity and specificity. The sample consisted of 200 newly admitted psychotic patients at four psychiatric hospitals in Egypt. Patients were assessed by the Arabic version of Landmark's questionnaire for the assessment of schizophrenia which is constructed to cover the requirement of the 13 systems showed that the 13 systems varied much in comprehensiveness. The highest agreement was between systems that specify the type of onset and course. The validity study supports the usefulness of DSM-III, WHO-CSB, and Langfeldt's systems for clinical practice. Feighner's criteria were the most specific for biological researches and Schneider's criteria were the least specific as they are unable to exclude other forms of psychoses.

INTRODUCTION

Most clinicians and investigators agree that the group of disorders called schizophrenia are heterogeneous, consequently the history of the nosology of schizophrenia provided us with many competing diagnostic formulations.

Kendell (1982) has discussed the considerations that ought to govern the choice between the competing definitions and he suggested that the best research strategy at present time may be the use of two or three alternative definitions simultaneously. It has proved possible to examine one and the same patient population employing various diagnostic formulations for a given illness concept, for example, schizophrenia, utilizing the "polydiagnostic approach in psychiatric research". This approach could become a kind of "comparative psychiatric nosology" facilitating mutual understanding among psychiatrists in different countries and cultures. Thus, it could be possible to gradually diminish, on a worldwide scale, the differences in psychiatric diagnostics (Berner *et al.*

1983). The present state of development of research instruments and modern computer technology makes it possible that several diagnostic systems can be used simultaneously in a given research project (Katschnig and Berner, 1985). Landmark, 1982 has published an instrument for the assessment of schizophrenia, the lay-out of this questionnaire is based on several considerations: the natural course of a clinical interview; the statistical applicability; the logical grouping of symptoms and other variables. The questionnaire is a semi-structured interview permitting rephrasing of questions -if necessary- several times according to the patient's intelligence, cultural background, education etc. As a matter of fact, it was suggested to be the most suitable one for application in our culture. For ensuring high reliability, the psychiatrist must follow the definitions of the systems and the sequence of the criteria in the questionnaire. Utilizing Landmark's questionnaire for the assessment of schizophrenia we compared the 13

systems' frequencies, documented their agreements and analyzed their differences. we tested also the validity of these systems as their concordance with clinical diagnosis through testing their sensitivity and specificity.

METHODOLOGY

I) System for the diagnosis of schizophrenia:

We compared the following systems for the diagnosis of schizophrenia: Schneider; E. Bleuler; M. Bleuler, Langfeld. C., (clinical and research versions); Kraepelin; North America; Great Britain; Dongier; WHO-CSB (6 points cut-off); Yustin; Newmark; DSM-III; Feighner and bad prognosis.

It is important to note here that these systems and their cut scores are arranged according to Landmark (Landmark, 1982). The bad prognostic dimension was arranged by Landmark according to Stephens et al., 1966, and also according to Langfeldt's prognostic factors (Landmark, 1982). See appendix.1

II) The sample:

Newly admitted patients at four psychiatric hospitals were evaluated for this study within one week of their admission. Patients were selected by screening the case notes with the exclusion of children under 15 years of age, old patients above the age of 65, patients whose case notes suggested that they have suffered from an organic reaction type, patients with below average I.Q., substance abuse and gross personality and adjustment disorders. Patients included are those whose case notes suggested that they suffer from one of the functional psychoses according to the definition of psychosis, Egyptian Diagnostic Manual for Psychiatric disorders-DMP-1 (EPA, 1979). 200 patients were studied: the first 39 were from Abbassiya Hospital (State Hospital) cases from 40 to 100 from the psychiatric department of Ain-Shams University Hospital, cases from 101 to 150 were from a

private psychiatric Hospital and cases from 151 to 200 from another private psychiatric hospital.

III) Evaluation procedures:

Every patient was assessed by the Arabic version - (Okasha and Haggag 1988) of Landmark's questionnaire (Landmark, 1982), for the assessment of schizophrenia. The questionnaire (part I) covers the patient's demographic data, his anamnesis, "dynamic" variables and other relevant background. The second part covers a total summary of the patient's symptomatology in the past (from medical records, and if possible checked with the patient and his relatives) as well as an assessment of his present (within last month) symptomatology. It contains also specific variables such as medication, prognosis and MMPI schizophrenic scale (the Arabic translation), heading (Melika et al. 1977). The majority of the questions demand clear cut yes or no answers, this especially pertains to the symptomatological part. Some variables have "graduated" coding but most of these can be changed into yes-no dichotomy as well; which will simplify the statistics. The results from the assessment are marked directly on the coding list, punched and computerized for statistical purposes. The lay-out of the coding list is as follows: the number of the variable and the "name" of the variable itself are listed first. Directly below this follow the coding instructions. The number and the "name" of the variables correspond directly to the one in the questionnaire. In part II of the coding list (symptomatology) there are two columns of "boxes" respectively headed by "presently" for symptoms present within the last month or previously. There must be no doubt at all whether a symptom is present or not. If there is a doubt "no" should be coded, otherwise "0" is coded for "no information" or "not applicable".

Statistical procedures

Data were analyzed utilizing the Statistical Package for Social Sciences (SPSS)

at " AMAC " Al-Ahram News paper Computer Center, Egypt.

RESULTS

Descriptions of Sample :

200 patients 72% were males (144), 28% females (56) and overall they had a mean age of 28.2 years ranging from 16 to 59 years. 151 were single, 38 married and 11 divorced. Results will be presented under two categories:

I-Frequencies and Agreements.

II-Concordance with clinical diagnosis.

I-Frequencies and agreements:

1) Frequencies:

Graph (1) and (2): present the frequencies of diagnosing schizophrenia by the thirteen systems used in this study. The last value represents the dimension "bad prognosis"

Graph (1): shows the assessment of the patients' conditions during the last month while graph (2) demonstrates the assessment of the patients' conditions before the last month.

Graphs (1) and (2) show how the diagnostic system differs very much in their rates of diagnosing schizophrenia in the total sample.

2) Agreement:

Table (1) and (2) present concordance between paired systems after chance correction using Kappa coefficient (Endicott *et al.* 1982) presently and previously respectively.

Table (1) shows that the highest Kappa value = 0.75 between Langfeldt's (research version) and Kraepelin.

Table (2): shows that the highest Kappa value=0.81 between Kraepelin and Langfeldt's (research version).

II- Concordance with clinical diagnosis:

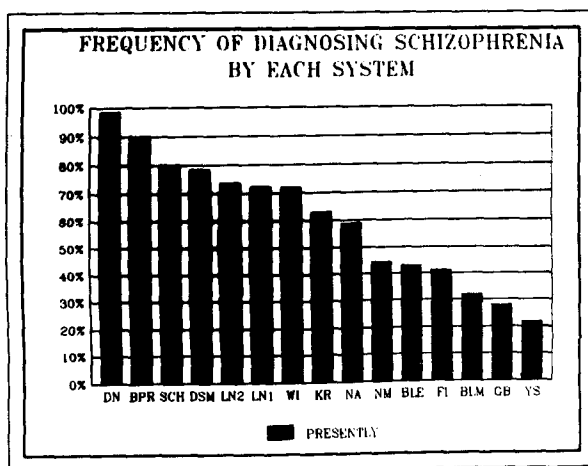
This factor was investigated by calculating Kappa concordance value between patients labelled the diagnosis of schizophrenia by the clini-

cians in the four psychiatric hospitals N=167 and those diagnosed as schizophrenia by five systems, namely: Schneider, Langfeldt I (research version), WHO-CSB (6 points cut-of), DSM-III and Feighner. This clinical diagnosis was recorded in the medical record.

Table (3) shows the concordance between the five systems chosen and clinical diagnosis, and the degree of sensitivity and specificity. A chi-square and phi statistical tests of significance indicated highly significant association between experimental diagnosis (the 5 diagnostic systems) and the clinical diagnosis, ($P < 0.005$). DSM -III showed the highest Kappa value= 0.64, Langfeldt's and WHO-CSB (6 points cut of) showed moderate Kappa values: 0.54 and 0.53 respectively. On the other hand both Feighner's and Schneider's criteria showed low Kappa values 0.24 and 0.22 respectively.

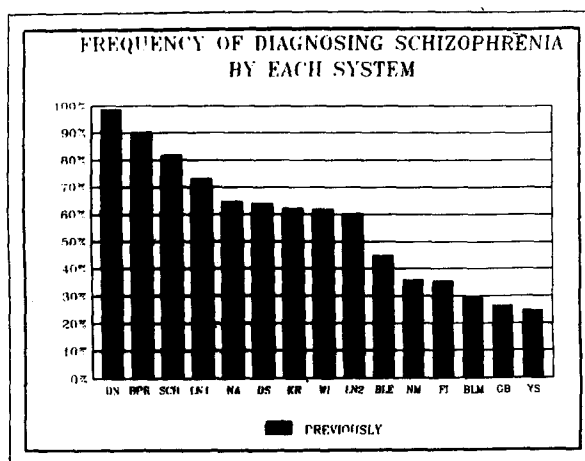
COMMENT

Owing to the gross inadequacies of using routine clinical diagnosis to select or describe samples of subjects with schizophrenia, and because of the unreliability of using unspecified diagnostic criteria, many researchers have developed systems with specific criteria for the diagnosis of schizophrenia that were more restrictive than those used in clinical diagnostic practice (Endicott *et al.* 1982). These systems pose an important advantage over those of the former era that is: they can be submitted readily to the rigors of empirical investigation and tested against several key factors of diagnostic viability and utility (Glashan, 1989). The availability of many different sets of criteria face the researchers and clinicians who are interested in the results of various studies with the problem of comparing such different sets of criteria considering their differences and their points of overlap. Fenton *et al.* (1981) have outlined the factors that they considered important in judging any diagnostic system; reliability,



(Graph I) : Assessment of Patients' Conditions During the Last Month

DN= Dongier, BPR = Bad prognosis, SCH= Schneider, DSM= DSM-III, LN2= Langfeldt II (clinical version), LN1= Langfeldt I (research version), WI= WHO-IPSS (6 points cut-off), KR= Kraepelin, NA= North America, NM= Newmark, BLE= E. Bleuler, FI= Feighner, BLM= M. Bleuler, GB= Great Britain, Y= Yusin.



(Graph II) : Assessment of Patients' Conditions before the Last Month

DN= Dongier, BPR = Bad prognosis, SCH= Schneider, LN1= Langfeldt I (research version), NA= North America, DS= DSM-III, KR= Kraepelin, WI= WHO-IPSS (6 points cut-off), LN2= Langfeldt II (clinical version), BLE= E. Bleuler, NM= Newmark, FI= Feighner, BLM= M. Bleuler, GB= Great Britain, Y= Yusin.

TABLE I

*Agreement between Systems after Chance Correction Using Kappa Coefficient
(Assessment of patients' condition during the last month)*

[illegible]

TABLE II

*Agreement between Systems after Chance Correction Using Kappa Coefficient
(Assessment of patients condition during the last month)*

[illegible]

TABLE III
Concordance between Systems and Clinical Diagnosis

Clinical diagnosis	Schiz	Systems		Total	Sensitivity		Specificity		Kappa	X 2	
		Non-Sch			No	%	No	%			
Schneider											
Schiz.	141	20	161	141	84						
Non-Schiz.	26	13	39			13	39	0.22	8.50	0.22	
TOTAL	167	33	200								
Langfeldt											
Schiz.	139	5	194	139	83	28	84	0.54	61.35	0.57	
Non-Schiz.	27	28	55								
TOTAL	166	56	199	139	83	28	84				
WHO-IPSS											
Schiz.	139	5	144								
Non-Schiz.	28	28	56	151	90	27	81	0.53	60.02	0.56	
TOTAL	167	33	200					0.64	80.69	0.65	
DSM-III											
Schiz.	151	6	157	82	49	33	100	0.24	25.72	0.37	
Non-Schiz.	16	27	43								
TOTAL	167	33	200								
Feighner											
Schiz.	82	0	82								
Non-Schiz.	84	33	117								
TOTAL	166	33	199								

$P < 0.005$ $df=1$

Sensitivity = No. of true cases.

Sensitivity = No. of true non cases.

concordance with established clinical use, comprehensiveness, specificity and validity. They defined comprehensiveness as the base line rate or percentage of patients in any sample classified by each system into the target diagnosis. They stressed that although there is no "right" base-line rate for any diagnostic category, the validity and / or utility of a diagnostic system would be questioned if it was applied to several samples and found regularly to classify too many or too few into the identified category. Our study of diagnosing schizophrenia by the systems used reflecting how much they vary in comprehensiveness. Schneider's criteria, for example, diagnosed almost twice as many patients as schizophrenic as Feighner's criteria did and almost four times as Yusin's criteria. This finding is consistent with other research findings e.g. by Mellor, (1970). The high rates obtained by bad prognostic criteria and Dongier criteria as excluding criteria for acute forms of psychoses with more favourable prognosis suggest that our sample is a relatively homogeneous sample of chronic patients with bad prognosis. So the overlap seen between DSM-III, Langfeldt's (both versions) and WHO-CSB system (6 points cut-off) can be expected. In this relatively homogeneous sample, comprehensiveness with such a sample should rule out the system as a viable definition of schizophrenia and this was the case in the seven of the systems used in this study: North America, Newmark, Eugene and Manfred Bleuler, Feighner, Great Britain and Yusin. In part of these systems, the low comprehensiveness might be due to their requirement of more numbers of criteria of heterogeneous nature. The degree of agreement between systems measured as Kappa concordant values ranged from (0.75) to (0.01) presently and from (0.81) to (0) previously. The same discrepancies were reported in the diagnosis of schizophrenia (Singerman et al. 1981). Kraepelin's and Langfeldt's criteria showed the highest agreement in both the present and previous assessments which

can be explained by their specification of the type of onset (insidious or 6 months duration) and by including course criteria as an essential requirement. Kety (1980) stressed that we must restrict the term schizophrenia to its original concept of a chronic disorder of thought and feelings, in which an insidious onset, the premorbid personality qualities and the fundamental features described by Kraepelin and Bleuler were the defining characteristics. Worth mentioning here is that the Egyptian Diagnostic Manual for psychiatric disorders (DMP-1, 1979) conceptualizes schizophrenia as process and outcome in common with Kraepelin's, Langfeldt's and Kety's concepts. Striking was the very low Kappa values obtained by Schneider's criteria with all systems. This can be explained on the basis of their unidimensional character, lacking of prognostic factors, the requirement of only one system of the "reported psychotic symptoms" denying the fundamental basic symptoms of thought and feeling described by Kraepelin and justified by E. Bleuler (Bleuler E., 1950). Carpenter *et al.* (1974) and Taylor (1972) reported that the first-rank symptoms do not occur in all cases and that they may occur in all cases and that they may occur also in affective disorders, and they are no longer seen as perfect guides to diagnosis. Nancy Andreasen (1982) postulated that Kraepelin was correct in making the diagnosis of schizophrenia a polythetic construct rather than a monothetic one. The five systems studied for validity were the DSM-III, Schneider's, Langfeldt's (research version), Feighner's and WHO-CSB systems. The DSM-III was tested because it is widely accepted and used, the WHO-CSB system because it was derived from cross-cultural collaborative project carried out in nine countries that differ widely in their socio-cultural and economic characteristics (The International Pilot Study of Schizophrenia, 1974), Feighner's because they were validated primarily by follow up and family studies (Feighner *et al.* 1972), and because they

were considered the most stringent. Schneider's because of much controversy about their diagnostic significance and Langfeldt's because they were assumed to have excellent prognostic reliability (Brookington *et al.* 1978).

Although the 5 systems have shown significant association with clinical diagnosis ($P < 0.005$), yet their Kappa concordance values with clinical diagnosis differed. (table 1, 2). Three systems demonstrated high to moderate agreement with clinical diagnosis: DSM-III 0.64; Langfeldt 0.54 and WHO-CSB 0.53. As such these three systems can be considered as fairly representatives of the diagnostic conceptualizations concerning schizophrenia in this study, so they can be useful in clinical practice. Feighner's and Schneider's criteria on the other hand demonstrated low Kappa values suggesting their relative inability to be representatives of diagnostic conceptualizations concerning schizophrenia in this study. Striking was the 100% specificity of Feighner's criteria and their relative low sensitivity (49%). This result supports their usefulness in biological research and that they are rather useless in clinical practice. Schneider's criteria have demonstrated satisfactory sensitivity (84%) indicating that they are strongly associated with schizophrenias. But their low specificity (39%) demonstrated their inability to exclude other psychoses as was shown in other studies (Taylor and Abrams 1973).

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ABSTRAIT

Une étude de 13 systèmes diagnostiques (critères) pour la schizophrénie dans un échantillon Egyptien: Fréquences, Agréments et Validité

Nous comparons les fréquences et les agréments de 13 systèmes pour diagnostiquer la schizophrénie: Schneider, E. Bleuler, M. Bleuler, Langfeldt, Kraepelin, North America, Great-Britain, Dongier, WHO- CSB, Yusin, New mark, DSM-III, et Feighner.

Nous avons examiné aussi la validité de cinq de ces systèmes selon leur concordance avec le diagnostic clinique et leur sensibilité et spécificité.

L' échantillon a été fait de 200 patients psychotiques récemment admis dans quatre hôpitaux psychiatriques en Egypte.

Les patients ont été évalués par la version Arabe du Landmark questionnaire pour l' évaluation de la schizophrénie, qui a été formé pour couvrir les demandes des 13 systèmes choisies.

Les résultats ont montré que les 13 systèmes varient beaucoup en compréhension.

L'agrément le plus noté remarqué a été parmi les systèmes qui ont spécifié le type de d'utilité des systèmes DSM-III, WHO-CSB, et Langfeldt pour la pratique clinique. "Feighner's criteria" ont été les plus spécifiques pour les recherches biologiques et "Schneider's criteria" ont été les moins spécifiques car ils n'ont pas supprimé les autres formes de psychoses.