Comparison of Clinical Diagnoses, NIMH-DISC-IV Diagnoses and SCL-90-R Ratings in an Adolescent Psychiatric Inpatient Unit: A Brief Report

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ABSTRACT

Introduction: To compare results of clinical diagnosis, NIMH DISC-IV diagnoses and the Global Severity Index of the Symptom Check List- Revised (SCL-90-R) in an adolescent inpatient population. **Method:** NIMH DISC-IV and SCL-90-R were administered to consecutive admissions to the inpatient adolescent unit of a teaching hospital as a regular admission procedure. **Results:** There was better agreement between clinical diagnosis and the NIMH-DISC-IV diagnosis as compared to previous studies for NIMH DISC-IV. The presence of an NIMH DISC-IV diagnosis was associated with elevated SCL-90-R scores. **Conclusion:** Structured diagnostic interviews and Self rated symptom scales are useful adjuncts in clinical diagnostics, enhancing valuable clinical expertise.

Key Words: inpatient, adolescent psychiatry, diagnostic-interviews

RÉSUMÉ

Introduction: Le but poursuivi a été de comparer les diagnostics cliniques, ceux du DISC-IV de l'INSM et le SCL-90-R chez des adolescents hospitalisés. **Méthodologie:** Nous avons administré de routine le DISC-IV et le SCL-90-R à chacune des admissions dans une unité d'hospitalisation d'un hôpital universitaire. **Résultats:** Nous avons observé un meilleur rapprochement des diagnostics entre la clinique et le DISC-IV que lors d'études précédentes. Le diagnostic par le DISC-IV était accompagné d'un score élevé au SCL-90-R. **Conclusion:** Les entrevues diagnostiques structurées et l'auto-évaluation des symptômes sont des ajouts utiles et valables aux diagnostics cliniques.

Mots clefs: hospitalisation, psychiatrie de l'adolescent, entrevues diagnostiques.

INTRODUCTION

Recent studies comparing self rated measures, computerized interviews and clinician rating have demonstrated a trend towards better test-retest reliability, inter-rater reliability and significantly better user satisfaction in the computer versions as compared to pencil and paper versions.

An added advantage of the former is that, the results are automatically added to a spreadsheet, thereby reducing operator error in coding and entering results (Truman et al, 2003; Horesh, 2001; Gater et al, 1995). Despite these advantages, there has been poor agreement between clinical diagnosis and diagnosis assigned by various structured and self-report interviews.

In adult inpatients, Steiner et al studied the relationship between diagnoses generated by the Structured Clinical Interview for DSM-III-R (SCID) and unstructured psychiatric interviews, their results demonstrated reasonable agreement for some diagnoses but the overall agreement between the SCID diagnosis and the clinical diagnosis was low, with a Kappa of .30 (Steiner et al, 1995; Pogge et al, 2001). An adolescent study of clinical chart diagnosis and the NIMH's Diagnostic Interview Schedule for Children version IV (NIMH-DISC-IV) of manic episodes in adolescent inpatients showed generally poor agreement yielding a Kappa of 0.13 (Pogge et al, 2001). Similarly a study of 163 consecutive inpatients comparing DISC-C diagnoses to Clinicians DSM-III-R diagnoses demonstrated poor agreement yielding Kappa's of .03 to 0.17 (Aronen et al, 1993).

We report on a comparison between clinical diagnosis and diagnosis generated by the NIMH DISC-IV (Pogge et al, 2001) and ratings on SCL-90-R (Aronen et al, 1993) in 13 to 17 year old adolescents hospitalized on the adolescent psychiatry unit of a teaching hospital.

METHOD

The sample consisted of twenty-eight consecutive admissions to the adolescent psychiatric inpatient unit in a teaching hospital. Three out of the twenty-eight patients were excluded due to the severity of their thought disorder, which precluded completion of the questionnaire.

Twenty five patients were administered NIMH- DISC- IV by a trained masters -level Research assistant blind to the clinical diagnosis and the reports were stored in a database password accessed by her alone.

The NIMH-DISC-IV voice version is a highly structured diagnostic interview which assesses more than 30 psychiatric disorders occurring in children and adolescents, it can be administered by minimally trained lay interviewers. The computer-voice version used for this study had questions that were read aloud by the computer as they simultaneously appeared on the screen; to ensure privacy earphones were provided. The RA was present to respond to any problems in understanding the questions.

Preliminary reliability and acceptability results on the NIMH-DISC-IV are favorable (Shaffer et al, 2000). Just as the RA was blind to the clinical diagnoses, the clinical team was

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kept blind to the results of the computer-based interviews and followed their routine assessment, treatment and discharge diagnosis. In addition to the NIMH-DISC-IV administered at admission, the SCL–90-R (Symptom Checklist-90-Revised) is administered weekly on the unit, so data from multiple SCL-90-Rs were available for each subject. The SCL-90-R has 90 items, has excellent reliability and validity, and its Global Severity Index is often used as a summary measure of the scale (Derogatis, 1992).

All statistical calculations were done from formulae (Byrt, Bishop, & Carlin, 1993) using Microsoft Excel.

RESULTS

Demographics: The patients ranged in age from 13 to 17 years and 56% were females.

Twenty patients were 15 to 17 and five patients were between 13 and 14 years of age. All subjects were attending high school except one.

Table 1 shows the correspondence between diagnoses given by the NIMH-DISC-IV and the clinical discharge diagnosis. When comparing exact patterns, diagnoses were required to agree completely. This meant that three cases where there was a single diagnosis from the NIMH-DISC-IV but two diagnoses from the clinician were classed as diagnostic disagreement even though one of the two clinical diagnoses agreed with the computer generated diagnosis. When diagnoses were required to agree exactly on the presence and absence of 21 different multiple diagnoses (Exact pattern), the level of agreement was 52%, with a Cohen's Kappa of .48, and a prevalence-adjusted bias-adjusted Kappa of .50. When the criterion was relaxed to attend only to correspondence of the first diagnosis regardless of second diagnosis, there were only 16 diagnoses. The level of agreement was 60% with a Cohen's Kappa of .56, and a prevalence-adjusted bias-adjusted Kappa of .57.

Twenty-four of the patients had SCL-90-R scores available from several administrations, but the number of administrations differed for each patient and the distribution was rather skewed. Clinical self-report scales typically have a strong positive skew due to a few extremely high scores, and the SCL-90-R data followed that pattern. We used each patient's median score on all available administrations rather than a mean score. This had the effect of trimming most of the extreme scores and of reducing the skew of the distribution of SCL-90-R scores used for analyses.

We tested the difference between those with NIMH-DISC-

Table 1.
NIMH-DISC-IV and Corresponding clinical diagnosis at discharge.

NIMH-DISC-IV Diagnosis		Corresponding clinical Diagnoses given at discharge	N
ADHD	2	ADHD	2
Alcohol Abuse	1	*Adjustment Disorder	1
Anorexia Nervosa	1	Anorexia Nervosa	1
Anxiety Disorder	6	Anxiety Disorder	4
		*Parent-Child Conflict	1
		*PDD, Anxiety Disorder	1
Conduct Disorder	2	Conduct Disorder	2
Major Depressive Episode	2	*Major Depressive Episode, ADHD	1
		*PTSD	1
None	5	*Anxiety Disorder	1
		*Conduct Disorder	1
		*Conduct Disorder, ADHD	1
		*Dysthymia	1
		None	1
Obsessive Compulsive Disorder	1	Obsessive Compulsive Disorder	1
Oppositional Defiant Disorder	1	*ADHD	1
PTSD, MDE	1	*Conduct Disorder	1
Selective Mutism	1	Selective Mutism	1
Substance Use Disorder	1	*Substance Use Disorder, Psychosis	1
Substance Use Disorder, ODD	1	Substance Use Disorder, ODD	1

Notes. *: classed as disagreement for "exact pattern" criterion
All other combinations of diagnoses were empty cells
ADHD: Attention Deficit Hyperactivity Disorder
PDD: Pervasive Developmental Delay
PTSD: Post Traumatic Stress Disorder
MDE: Major Depressive Episode
ODD: Oppositional Defiant Disorder

IV diagnoses and those without diagnoses using the SCL-90-R Global Severity Index as a dependent measure. Those with diagnoses on the NIMH-DISC-IV obtain significantly higher scores and those without a diagnosis show lower scores ($t = 2.494$, $df = 22$, $p. < .001$, $r = .47$).

DISCUSSION

This study assessed whether the NIMH-DISC-IV generated diagnoses demonstrated improved correspondence with clinical diagnosis made by a psychiatrist working with a multidisciplinary team. Despite small sample size and a naturalistic design there was much higher correspondence between NIMH-DISC-IV diagnoses and clinical diagnoses than that reported in previous studies. One reason for this may be the particular psychiatrist's experience and adherence to the DSM criteria for diagnosis over a period of 20 years of clinical work. Furthermore the presence of a NIMH-DISC-IV diagnosis is associated with elevated scores on the SCL-90-R Global Severity Index.

Despite ongoing changes in the DSM, diagnostic precision and accuracy remain limited. Inter-psychiatrist agreement depends on factors such as level of experience and phenomenological interpretation. Thus efforts have been directed at producing semi-structured and structured interviews rated by physicians, other professionals or lay interviewers and self rated by the patients to make diagnostics more homogenous across clinicians and increase accuracy and inter-rater reliability (Shaffer et al, 2000; Fennig et al, 1994).

Although the use of structured and semi-structured diagnostic instruments has been widely adopted in research and in adult psychiatry, this has not been the case for Child and Adolescent psychiatry, especially in the context of clinical assessments in the ambulatory clinics or the inpatient units. In recent years a concerted effort has been made to redress this and a number of structured and semi-structured interviews are available to assist in diagnostics for the child and adolescents population (Ezpeleta et al, 1997; Hodges, 1993; Roberts et al, 1989). As the push towards evidence based medicine continues we are more likely to use standardized structured interviews to support our clinical diagnosis. In an era of computer literate adolescents, computerized structured diagnostic interviews such as the NIMH-DISC-IV provide an efficient and valid method of gathering comprehensive data and reaching a diagnosis based on the DSM-IV criteria to complement and support clinical diagnosis.

The small sample size of our study limits the generalizability of the results. A larger study is required to derive more detailed understanding and to make recommendations.

Despite this limitation we believe that in service of evidence based medicine, the regular use of structured diagnostic interviews can play a major role in refining our diagnostics and in turn our management of our patients.

REFERENCES

Aronen, E. T., Noam, G. G. and Weinstein, S. R. (1993). Structured diagnostic interviews and clinicians' discharge diagnoses in hospitalized adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry*, 32, 674-681.

Byrt, T., Bishop, J. and Carlin, J. B. (1993). Bias, Prevalence and Kappa. *Journal of Clinical Epidemiology*, 46, 432-429.

Derogatis, L. R. (1992). SCL-90-R: *Administration, scoring and procedures manual--II*. Baltimore, MD: Clinical Psychometric Research.

Ezpeleta, L. de la O. N., Domenech, J. M., Navarro, J. B., Losilla, J. M. & Judez, J. (1997). Diagnostic agreement between clinicians and the Diagnostic Interview for Children and Adolescents - DICA-R - in an outpatient sample. *Journal of Child Psychology and Psychiatry,* 38, 431-440.

Fennig, S., Craig. T., Lavelle. J., Kovasznay, B. and Bromet, E. J. (1994). Best-estimate versus structured interview-based diagnosis in first-admission psychosis. *Comprehensive Psychiatry,* 35, 341-348.

Gater, R. A., Kind, P. and Gudex, C. (1995). Quality of life in liaison psychiatry. A comparison of patient and clinician assessment. *British Journal of Psychiatry,* 32, 515-520.

Hodges, K. (1993). Structured interviews for assessing children. *Journal of Child Psychology and Psychiatry*, 34, 49-68.

Horesh, N. (2001). Self-report vs. computerized measures of impulsivity as a correlate of suicidal behavior. *Crisis*, 22, 27-31.

Kronenberger, W. G., Causey, D. and Carter, B. D. (2001). Validity of the pediatric inpatient behavior scale in an inpatient psychiatric setting. *Journal of Clinical Psychology*, 57, 1421-1434.

Pogge, D. L., Wayland-Smith, D., Zaccario, M., Borgaro, S., Stokes, J. and Harvey, P. D. (2001). Diagnosis of manic episodes in adolescent inpatients: structured diagnostic procedures compared to clinical chart diagnoses. *Psychiatry Research*, 101, 47-54.

Roberts, N., Vargo, B. and Ferguson, H. B. (1989). Measurement of anxiety and depression in children and adolescents. *Psychiatric Clinics of North America*, 12, 837-860.

Shaffer, D., Fisher, P., Lucas, C. P., Dulcan, M. K. and Schwab-Stone, M. E. (2000). NIMH Diagnostic Interview Schedule for Children Version IV (NIMH DISC-IV): description, differences from previous versions, and reliability of some common diagnoses. *Journal of the American Academy of Child and Adolescent Psychiatry*, 39, 28-38.

Steiner, J. L., Tebes, J. K., Sledge, W. H. and Walker, M. L. (1995). A comparison of the structured clinical interview for DSM-III-R and clinical diagnoses. *Journal of Nervous and Mental Disorders*, 183, 365-369.

Truman, J., Robinson, K., Evans, A. L., Smith, D., Cunningham, L., Millward, R., et al. (2003). The Strengths and Difficulties Questionnaire: a pilot study of a new computer version of the self-report scale. *European Child and Adolescent Psychiatry*, 12, 9-14.