The Assessment and Progress of Long-Stay and Elderly Psychiatric Patients: The Predictive Validity of a Ward Behaviour Questionnaire

By MICHAEL CLARKE, JANE WALLER and BARBARA WEBSTER

Summary

This paper describes an attempt to validate a behaviour rating scale used to predict the likelihood of discharge among elderly and long-stay patients in a psychiatric hospital. The scale measured behaviour on the ward as rated by nursing staff. The scale was a sensitive predictor of discharge among those with a low score (indicating least disability), except for patients with organic psychoses. However, many patients with low scores were not discharged. In order to improve the scale's use as a screening technique additional information was considered. The significance of the findings is discussed.

INTRODUCTION

Numerous studies have suggested that many patients in long-stay psychiatric hospitals do not need full-time nursing care, and that they would be better cared for in non-institutional accommodation. To provide those who are responsible for planning community facilities with estimates of accommodation required and to select patients for such accommodation is, however, difficult, since many psychiatric hospitals have resident populations of over 1,000 patients, and it is impracticable to conduct standardized clinical interviews with such large numbers. What is needed in this situation is a well validated screening questionnaire of the patients' present behaviour.

Wing (1961), in an attempt to produce a simple, reliable classification of chronic schizophrenia, developed a scale of ward behaviour to be completed by nurses. It was found that the scale could be used as a crude measure of severity of clinical condition, of chances of discharge, and of level of social functioning within the hospital (Wing and Brown, 1970). Analysis of the items in the scale produced two factors, one of which, social withdrawal (S.W.), we considered appropriate for our purpose.

The social withdrawal component embraces such behaviours as speed of movement, conversation, leisure activity, continence and ability to wash, dress and feed oneself. Behaviour is rated on a three-point scale for each question. The construct validity of this component as a measure of the severity of chronic schizophrenia was demonstrated by Wing (1960), in that S.W. scores distinguished between three clinical sub-groups of schizophrenic patients (moderately ill, severely ill with 'florid' symptoms, severely ill with 'defect' symptoms). Further examples of the validity of the component in distinguishing between levels of clinical severity of chronic schizophrenia were provided by Wing and Brown (1970). The clinical validity of the scale has only been tested on patients with schizophrenia, but it seemed reasonable to use it in the present study, where schizophrenia was the most common diagnosis and almost half the population were schizophrenic. The inter-rater reliability, which Wing (1961) had shown to be 0·85, was replicated by Philip and McKechnie (1969) on a mixed population of schizophrenics and patients with other long-standing disorders, and they found an average reliability between raters of 0·71. They also demonstrated that the use of two raters on

each occasion increased the reliability of the S.W. scale from 0·71 to 0·83.

The Present Study

Park Prewett Hospital, Basingstoke, Hampshire, contains some 1,200 beds. Earlier studies had shown that 47·5 per cent of the patients were over the age of 65, 80 per cent of the patients had been in hospital for one year or more, and 39 per cent of the population had both these characteristics (Clarke and Waller, 1974). In this study we have used the Wing questionnaire on all the long-stay and aged patients in the hospital and have attempted to estimate the validity of the questionnaire as a predictor of discharge home. In addition we have used the results of the survey to estimate the numbers of patients who might be suitable for discharge to non-institutional settings.

Method

It was decided that each questionnaire would be completed as far as possible by all nurses involved in the care of each patient. The decision was made, firstly, because this would provide information on the patient's behaviour during both day and night, and,

secondly, because 37 wards were involved in the study and there would be no guarantee that at the time of the survey senior staff in charge of a ward would have been on the ward very long or be available to take part in the survey. A consensus approach was therefore taken to represent the most accurate available measure of the behaviour of the patients. In order to obtain a measure of the predictive validity of the S.W. scores, all patients in the sample were reviewed two years after the study, and any discharges, transfers to others institutions or deaths were recorded.

Sample

The study was undertaken in mid-February 1972, and included the 1,028 patients who were over 65 years old or who had been in the hospital for more than one year (long-stay). Table I shows the study population by diagnosis and age. Fifty-six per cent of the population were over the age of 65, and 48 per cent had a diagnosis on admission of schizophrenia. Fifty-six per cent of the study population were female, and females outnumbered males by more than 2 : 1 among those over 65 years of age, while males outnumbered females by 3 : 2 below this age.

Table I
Study population by age and diagnosis

Diagnosis	Age in years								Total
	15–24	25–34	35–44	45–54	55–64	65–74	75–84	85+	
Schizophrenia (I.C.D. 295)	6	13	56	97	148	122	52	5	499 (48·5)
Organic psychoses (I.C.D. 290, 292–294)	0	0	0	7	15	53	99	69	243 (23·6)
Other psychoses (I.C.D. 296–299)	1	1	4	4	15	38	53	11	127 (12·3)
Neuroses (I.C.D. 300, 305)	1	1	1	8	8	16	9	4	48 (4·7)
Other disorders	2	7	6	21	31	30	13	1	111 (10·8)
Total number	10	22	67	137	217	259	226	90	1,028
Percentage	(1·0)	(2·1)	(6·5)	(13·3)	(21·1)	(25·2)	(22·0)	(8·7)	(100)

RESULTS

Table II shows the diagnostic groups by length of stay and the mean S.W. scores. Over half the schizophrenics were of over 20 years duration of stay, and the mean S.W. scores increased with length of stay to much the same extent as has been reported previously (Wing and Brown, 1970). Just over a quarter (26·3 per cent) of the patients with organic psychoses were over 65 years old and had been in hospital under one year. This is because the sample for the study had been selected in such a way that all patients of under one year's duration of stay were over the age of 65. Patients in this group had the highest mean S.W. scores, and these did not vary with length of stay. The group with other psychoses had an overall mean S.W. score of 5·6, but the mean score of the recent admissions was somewhat higher. A similar pattern is seen in the patients with neuroses, but overall scores are lower. The diagnostic group of 'other disorders', which included some mentally subnormal patients, addicts, and those with ill-defined conditions, showed increased S.W. scores with length of stay. However, none of the differences either

between diagnosis or between length of stay was statistically significant.

The main purpose of the study was to assess the validity of the S.W. score as a predictor of discharge, and Table III shows the residential status of the patients two years after the survey, together with the mean S.W. scores. The overall results show that the mean scores for those discharged home were lower than for those remaining in hospitals or other institutions. When the individual diagnostic categories are considered, patients with schizophrenia, neuroses and other disorders showed marked differences between those still resident and those discharged. There were no differences between the mean scores of patients discharged and scores of patients still resident for those with organic psychoses and other psychoses. However, of the 60 patients discharged to non-institutional care 80 per cent (48) were schizophrenics, neurotics or those with other disorders.

Overall, patients who died had higher scores than those who remained alive. This finding was marked for all diagnostic categories except for the schizophrenics, who had scores very close to the mean for residents with schizophrenia

TABLE II

Study population by length of stay, diagnosis, and mean social withdrawal score (S.W.)

Diagnosis			Length of stay								Total	
			< 1 yr.		1–9 yrs.		10–19 yrs.		20+ yrs.			
			No.	%	No.	%	No.	%	No.	%	No.	%
Schizophrenia	..	..	1	0·2	112	22·4	128	25·6	258	51·7	499	100
Mean S.W. score		..	0		2·7		3·6		5·2		4·2	
Organic psychoses		..	64	26·3	120	49·4	31	12·8	28	11·5	243	100
Mean S.W. score		..	9·0		8·9		7·7		8·4		8·7	
Other psychoses	..	..	20	15·7	56	44·1	24	18·9	27	21·3	127	100
Mean S.W. score		..	6·5		5·6		5·2		5·3		5·6	
Neuroses	..	..	6	12·5	28	58·3	9	18·7	5	10·4	48	100
Mean S.W. score		..	4·8		2·3		3·6		2·6		2·9	
Other disorders	..	..	3	2·7	39	35·1	30	27·0	39	35·1	111	100
Mean S.W. score		..	0·2		4·0		3·9		5·6		4·4	
Total	..	..	94	9·1	355	34·5	222	21·6	357	34·7	1,028	100
Mean S.W. score		..	7·8		5·4		4·4		5·5		5·4	

TABLE III

Outcomes in 1974 by diagnosis and social withdrawal score in 1972

Diagnosis			Total	Residential status		
				Dead	Still resident*	Discharged home
Schizophrenia no.	..	..	499	36	434	29
Mean S.W. score	..	..	4·2	4·7	4·2	1·2
Organic psychoses no.	..	..	243	100	137	6
Mean S.W. score	..	..	8·7	10·7	7·2	9·8
Other psychoses no.	..	..	127	32	89	6
Mean S.W. score	..	..	5·6	8·1	4·8	4·8
Neuroses no.	..	..	48	7	28	13
Mean S.W. score	..	..	2·9	6·9	2·8	0·8
Other disorders no.	..	..	111	13	92	6
Mean S.W. score	..	..	4·4	9·4	4·0	0·5
Total number	..	..	1,028	188	780	60
Mean S.W. score	..	..	5·4	9·8	4·7	2·2
Standard deviation	..	..	4·5	4·4	4·0	3·8

* Includes Park Prewett residents and discharges to other institutions.

TABLE IV

Patients discharged home and still resident or dead after two years by S.W. score and diagnosis

Diagnosis		Social withdrawal score									
		0	1–2	3–4	5–6	7–8	9–10	11–12	13–14	15–16	Total
Discharged home											
Schizophrenia	..	17	7	4	0	0	0	1	0	0	29
Organic psychoses	..	0	0	1	0	2	1	0	0	2	6
Other psychoses	..	1	2	0	1	0	1	1	0	0	6
Neuroses	..	9	3	0	1	0	0	0	0	0	13
Other disorders	..	5	0	1	0	0	0	0	0	0	6
Total number	..	32	12	6	2	2	2	2	0	2	60
Still resident or dead											
Schizophrenia	..	51	121	106	78	51	24	16	13	10	470
Organic psychoses	..	11	21	19	23	28	34	37	41	23	237
Other psychoses	..	18	15	27	13	10	15	11	9	3	121
Neuroses	..	13	5	4	6	3	1	1	1	1	35
Other disorders	..	15	21	25	13	10	9	7	2	3	105
Total number	..	108	183	181	133	102	83	72	66	40	968
Percentage	..	11·2	18·9	18·7	13·7	10·5	8·6	7·4	6·8	4·1	100

If the questionnaire is to be used as a screening instrument for selecting patients who might be considered for discharge, the predictive validity must be assessed in terms of sensitivity and specificity. Sensitivity is the extent to which a low S.W. score selects out those that have been discharged, and specificity is the extent to which a high score selects out those who have not been discharged. In this study low scores were considered as 4 or less and high scores as 5 to 16. Table IV shows the number of patients discharged home and those still resident or dead by diagnosis and score. The data are summarized in Table Va, which shows that 83 per cent of patients discharged within two years had scores in the range 0–4, whereas only 49 per cent of patients who died or remained in hospital over the two years had scores in this range. The S.W. scale was, however, particularly insensitive in identifying patients with organic psychoses who were discharged. If this group of patients is excluded from the estimates, then 91 per cent of discharged patients had scores in the 0–4 range (Table Vb). The specificity of the social withdrawal scores (the proportion of false positives) was low at 51 per cent, that is to say, many patients who were not discharged also had low scores. Only approximately 10 per cent of patients with scores in the range 0–4 were discharged home in two years.

The finding that patients who died had markedly higher scores than either those discharged or those who remained in hospital prompted an estimation of the sensitivity and specificity of the questionnaire in predicting death. Of the patients who died 82 per cent had scores of 5–16 (sensitivity) and the specificity was 59 per cent (patients with low scores who remained alive). Some 31 per cent (155 of 504) of all patients with scores of 5 and over died during the two-year follow-up (Table Vc).

Although the scale had a high sensitivity as a predictor of discharge for those with low scores, the low specificity reduces its usefulness as a screening technique. In an attempt, therefore, to isolate a group of patients who might be suitable for care in the community, we extracted details of all patients with low scores (0–4) and compared the characteristics of those

TABLE V

Sensitivity and specificity of the social withdrawal score as a predictor of discharge home and death

(a) Sensitivity and specificity of a low social withdrawal score as a predictor of discharge home for all cases

		Discharged home	Still resident or dead	Total
S.W. score	0–4	50	472	522
	5–16	10	496	506
	Total	60	968	1,028

Sensitivity 50 ÷ 60 = 83%
Specificity 496 ÷ 968 = 51%

(b) Excluding organic psychoses

		Discharged home	Still resident or dead	Total
S.W. score	0–4	49	421	470
	5–16	5	310	315
	Total	54	731	785

Sensitivity 49 ÷ 54 = 91%
Specificity 310 ÷ 731 = 42%

(c) Sensitivity and specificity of a high social withdrawal score as a predictor of death

		Dead	Discharged home Still resident	Total
S.W. score	5–16	155	349	504
	0–4	33	491	524
	Total	188	840	1,028

Sensitivity 155 ÷ 188 = 82%
Specificity 491 ÷ 840 = 59%

discharged with those not discharged. Marital status, whether the patient had visitors, or was in receipt of occupational therapy or psychiatric drugs, or had a physical illness, showed no differences between patients still resident and those discharged home. Variables that were significantly different between the two groups are shown in Table VI; each of these differences is highly significant (p < 0·001). Having an address to go to is, predictably, associated with

TABLE VI

Patients with social withdrawal score in the range 0–4 discharged home and still resident in any hospital at 2 years by social and therapeutic categories
(excluding those with organic psychoses and those that died)

	Discharged home Total = 49	Still resident Total = 395
	Number	Number
Address for discharge ..	25	60
Visits home ..	27	107
Work outside ward ..	35	121
Needs no nursing care..	39	92
Less than 10 years length of stay	34	139

(In each category p < 0·001)

discharge, but is of little value in estimating the number of patients whose condition might make them suitable for discharge. We therefore selected all patients with scores of 0–4 who were still in Park Prewett and who worked outside the ward and needed minimal or no nursing care (Table VII). In this table work status has been divided into any work outside the ward and non-supervised work outside the ward, and the need for nursing care has been divided into 'no need for nursing care' and 'minimal nursing care only'. These categories are not mutually exclusive. As can be seen from the table, when the various combinations of work status and need for nursing care are applied to those with low scores remaining in the hospital there is a wide range in the number of individuals (14–102) who emerge as possibly suitable for community care. These are probably minimal estimates in each category, firstly because in another part of the study the nurses estimated that only 68 per cent of those who were discharged home were able to cope without nursing care; secondly because the supply of un-supervised work was limited; and, thirdly, the mean S.W. score for each of these groups of residents was lower than the mean S.W. score for the patients who had been discharged (mean S.W. score of patients discharged was 1·4).

TABLE VII

Patients still resident in Park Prewett Hospital with social withdrawal scores in the range 0–4 by length of stay and need for nursing care and work status
(excluding organic psychoses)

Need for nursing care and work status	Length of stay		Total
	less than 10 yrs.	more than 10 yrs.	
A. Minimal or no nursing care; works outside the ward ..	35	67	102 (27·2)
Mean S.W. score	0·8	1·5	1·2
B. No nursing care; works outside the ward	21	22	43 (11·5)
Mean S.W. score	0·7	1·1	0·9
C. Minimal or no nursing care; works unsupervised outside ward	15	14	29 (7·7)
Mean S.W. score	0·6	1·2	0·9
D. No nursing care; works unsupervised outside ward ..	8	6	14 (3·7)
Mean S.W. score	0·4	0·5	0·4
E. All patients	123	252	375 (100)
Mean S.W. score	1·4	2·1	1·8

DISCUSSION

The American Commission on Chronic Illness (1957) discussed screening and case-finding programmes under the headings of validity, reliability, yield, cost, acceptance and the provision of follow-up services. In this study the yield was 100 per cent, because the nurses taking part felt the exercise was useful and because only a short time was involved in completing each questionnaire. The costs for routine use would be small both for the question-naires and for data processing. In this particular hospital district a recently acquired computer would make routine six-monthly or annual surveys of the elderly and long-stay population eminently practicable. The inter-rater reliability of the instrument has been established previously (Wing, 1961; Philip and McKechnie, 1969), as has the construct validity for schizophrenic patients (Wing, 1960). There is no evidence that the hospital's policy towards rehabilitation and discharge changed during the study, and it is unlikely, therefore, that our findings have been affected by such a change.

The final consideration in the report by the Commission on Chronic Illness was the pro-vision of follow-up services, which in this study could be seen as non-institutional accommoda-tion. Here we faced a dilemma, in that the hospital wanted a mechanism to help them select patients suitable for discharge in order to provide estimates for community care places, whereas the research team, in order to test the predictive validity of the selection method, would have needed unlimited, available non-institutional accommodation. However, the relative lack of available accommodation out-side the hospital will tend to reinforce the finding that up to one hundred patients who are still resident possess the characteristics which are associated with discharge, namely low S.W. scores, little or no need for nursing care, and being capable of work outside the ward. This lack of local provision of community places for long-stay psychiatric patients may in part explain the low specificity of the question-naire. For if there had been more accommoda-tion provided in the community there would have been fewer patients with low scores still resident in hospital, and, assuming that it would have been patients with low scores who were discharged, the specificity and sensitivity would have increased.

The S.W. score failed to predict which of the patients with organic psychoses would be dis-charged, and was therefore of little value for this group. These patients accounted for 24 per cent of the sample, but only for 10 per cent of all discharges home. A quarter of the patients with organic psychoses had been resident for less than a year, and 68 per cent of those who had been in hospital for under one year were patients with organic psychoses. When these short-stay aged patients with organic psychoses were excluded from the other organic psychoses, the discriminatory power of the S.W. score was not increased for the organic psychoses group.

For patients with schizophrenia, other psy-choses, nervous and other psychiatric disorders, who account for 76 per cent of the elderly and long-stay population, the S.W. component of the ward behaviour scale worked well in predict-ing discharge over a two-year follow-up, achieving a sensitivity of 91 per cent and a specificity of 42 per cent. This low specificity indicated that many patients with low score were not discharged, indeed 58 per cent (421) of patients with low scores were still resident or had died after two years. From the point of view of estimating patients appropriate for community care this relatively large number can be usefully subdivided by considering the need for nursing care and the patient's work status. This ward behaviour scale would therefore be of value as a method of screening large psychiatric hospital in-patient populations either for assessing patients for discharge or for making estimates of the need for community care facilities.

REFERENCES

CLARKE, M. & WALLER, J. (1974) Descriptive studies of a psychiatric hospital population. *British Journal of Psychiatry*, 125, 208–9.

COMMISSION ON CHRONIC ILLNESS (1957) *Chronic Illness in the United States*. Vol. 1. Prevention of Chronic Illness. Cambridge, Mass.

PHILIP, A. E. & McKECHNIE, A. A. (1969) The assessment of long-stay psychiatric patients. *Social Psychiatry*, 4, 66–8.

WING, J. K. (1960) The measurement of behaviour in chronic schizophrenia. *Acta Psychiatrica et Neurologica Scandinavica*, 35, 245–54.

—— (1961) A simple and reliable sub-classification of schizophrenia. *Journal of Mental Science*, 107, 862–75.

—— & BROWN, G. W. (1970) *Institutionalism and Schizophrenia: A Comparative Study of Three Hospitals, 1960–1968*. Cambridge.

Michael Clarke, M.B., M.F.C.M., D.P.H., *Lecturer,*＊

Jane Waller, B.A.(Soc.), *Lecturer,*

Barbara Webster, S.R.N., R.M.N., *Research Assistant,*

   Department of Clinical Epidemiology and Social Medicine, St. Thomas's Hospital Medical School, London SE1 7EH

＊ Now Senior Lecturer, Department of Community Health, University of Leicester School of Medicine, 161 Wetford Rd., Leicester LE2 6BF