The Predictive Validation of a Suicide Intent Scale: A Five Year Follow-up

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Summary: Five hundred patients who had completed a suicide intent scale after self injury were followed up over five years. Seven definite and six doubtful suicides occurred. The future suicides tended to have high scores on the scale for their original self injury episodes and had very high scores for the penultimate self injury before suicide. Discussion centres on the small number of suicides ascertained and on the use of the scale as a suicide predictor. A group of very high risk patients was identified by repeated use of the scale, and the suggestion is made that the scale might be used as part of a suicide prevention programme.

Recognition that patients who injure themselves by self poisoning or by other means and survive do not willingly or accurately reveal their true suicidal intention as a result of direct questioning has led to the development of more oblique methods of assessment. One such way of assessing intent uses a suicide intent scale (Beck *et al*, 1974), which is a series of scored questions dealing both with the circumstances surrounding a suicidal act and with the patient's self report of his state of mind at the time. This scale was used by Pallis and Sainsbury (1976) to show that high intent self injury patients tended to resemble suicides in that they suffered a serious risk to life, they scored highly on a predictive suicide risk scale based on demographic and clinical items (Tuckman and Youngman, 1968), and finally they showed a higher incidence of the clinical features of depression than did low intent patients.

The Beck scale was later modified by reducing and modifying self report items, and adding two items dealing with the medical risk of the self injury. This resulting IS (Intent Score) scale, which was closely correlated with the Beck scale, was investigated in detail, found to be reliable, and was also shown to be related to a number of clinical variables themselves connected with the incidence of suicide (Pierce, 1977). Thus the circumstances score was high in men, in older patients and in the physically ill, while self report scores were high among patients with a history of psychiatric treatment or of previous self injury.

These positive relationships comprise one form of validation of the scale, but the chief purpose behind the scale's development has been to enable the clinician to identify the self poisoners and other 'parasuicides' who are likely to commit suicide in the future. By far the most important kind of validation for the scale is therefore predictive. This study deals with an attempt to demonstrate the predictive validity of the IS scale by following up a group of suicide attempters with known scale scores for a five year period and relating those scores to the occurrence of suicide.

Method

Five hundred consecutive cases of self injury seen at a district general hospital during 1973–74 were interviewed as soon as their condition allowed. The great majority (94 per cent) were self poisoners. An IS score was recorded for each patient.

The distribution of the scores was very much skewed towards the lower end, and patients could be conveniently divided into low intent cases (numbering 125 or 25 per cent of the total) who scored between 0 and 3, medium intent cases (numbering 244 or roughly 50 per cent) scoring between 4 and 10, and finally high intent cases (numbering 131 or again roughly 25 per cent) who scored 11 or over. The range of scores was 0 to 21.

After the score had been recorded the patients all underwent a routine psychiatric interview at which a decision was made about future management. As expected from similar studies, most of the patients returned home when they had recovered from the effects of what they had taken and were referred either to their general practitioners or to the social services. Those patients needing psychiatric treatment were dealt with by the normal services and no special

suicide prevention scheme was set up as part of the study.

During the follow up period 108 patients (21 per cent) repeated their self harming behaviour and IS scores were recorded for all these episodes if the patient was admitted to the same hospital. A survey after two years showed that only about 5 per cent of repeat episodes were being dealt with at other hospitals. The IS scores for the original index episode, and for repeat episodes including the penultimate one before a successful suicide, were used in determining the predictive validity of the scale.

Information concerning the death of any patient was obtained from a number of sources. Several patients died in local hospitals after being admitted for long term care, and in these cases information was passed directly to the author. All post mortem examinations from the catchment area of the hospital were undertaken at the hospital itself and these were scrutinized. Notes of local inquests were obtained and lists of deceased patients sent routinely to the local community physician were examined. In addition a two year interview follow up of nearly 200 cases was undertaken by a social worker as part of a project on repetition of self injury.

At the end of five years a postal survey was carried out to trace all patients other than those still in contact with the local psychiatric services and those who were known to have died—a total of 110. This produced a response of 213 (55 per cent) out of 390 patients. One hundred and twenty-two of the remaining 45 per cent were found through the local Family Practitioner Committee, leaving 55 cases untraced. A search was made of death certificates at the OPCS to establish whether any of these patients had died. In all cases where death was confirmed it proved possible to determine the cause either from post mortem reports, death certificates, or from the coroner's verdict if the death had been the subject of an inquest. Wherever death had occurred from other than natural causes enquiries were made to discover whether any self poisoning or other self injury had taken place before death even if this was not given as the major cause of death. An estimate was then made of the likelihood that the death had been suicidal even if a formal verdict of suicide had not been recorded.

Six cases fell into the category of 'doubtful but likely' suicides. There were two cases recorded as death by misadventure. One involved a patient who died after jumping from a high window in a psychiatric hospital. He had a history of brain damage and it is probable that his actions were impulsive and genuinely suicidal. The IS score for his original episode was 5, within the medium range. The other patient was a middle aged man whose identical twin

brother had committed suicide five years previously. He died after taking a relatively small quantity of drugs with excess alcohol. He had on many occasions expressed determined suicidal ideas to join his twin. His original score however was zero, although he was given a score of 7, in the medium range, for his penultimate attempt.

Two inquests led to verdicts of accidental death although more than the therapeutic dose of a drug had been swallowed shortly before death. Both these male patients had received extensive psychiatric treatment; had certainly threatened suicide in the past and had a history of impulsive behaviour and alcohol abuse. The index episode scores for these patients were 14 and 10.

Finally there were two cases in which death was recorded at inquest as due to natural causes but the ingestion of a drug was mentioned as a contributing cause of death. Moreover there was evidence that more than a therapeutic dose had been taken shortly before death. Both these patients had been treated for depression and their original IS scores were 19 and 5.

Results

These are given first for legally defined suicides, that is for deaths recorded as suicide at inquest. A second group of results is then described dealing with the likely suicides.

Legally defined suicides

The number recorded during the five year follow up was only seven out of the original 500 cases. Only one of the seven was a woman and the mean age of the patients at the time of death was 40. This number is much smaller than that reported in many other studies, and the result will therefore be discussed in detail below. The clinical and social details of the suicides are listed in Table I.

The mean IS score for the index self injury episode during 1973–74 was 10.29 ± 5.44 for these patients who later killed themselves. This compares with a mean score of 7.49 ± 4.9 for the original 500 consecutive cases. These means are not significantly different although the trend is clear for future suicides to obtain high scores. The IS score for one episode cannot therefore be regarded as a clear indicator of later behaviour for the individual patient. The calculations were of course appreciably affected by the unexpectedly low number of suicides.

Four of the suicides repeated their self injuring behaviour a number of times before they ended their lives. The mean IS score for the penultimate episodes was 13.57 ± 4.12, which was significantly different from the mean of the 500 cases at a level of $P < 0.001$ ($t = 3.28$). The mean score for all the self harm episodes of the eventual suicides during the five year follow up was

TABLE I

Clinical and social details of legal suicides at time of index self injury

Case number	Age	Sex	Civil state	Social isolation	Physical health	Previous treatment	Previous self injury	Alcohol problem
1	38	M	M	No	Good	No	1	No
2	24	M	S	No	Good	No	3	No
3	49	F	M	No	Good	Yes	4	No
4	26	M	M	No	Good	No	1	Yes
5	27	M	M	No	Poor	Yes	1	Yes
6	65	M	W	Yes	Good	No	0	Yes
7	33	M	M	No	Good	Yes	0	No

TABLE II

Intent scale scores for legal suicides

Case number	Score for index self injury 1973–4	Scores for repeat episodes				Mean for total number of episodes in five years
		First	Second	Third	Fourth	
1	8	—	—	—	—	8
2	15	—	—	—	—	15
3	19	6	19	18	—	15.5
4	2	12	18	—	—	10.7
5	8	14	—	—	—	11
6	10	—	—	—	—	10
7	10	10	14	10	11	11

almost as high at 12.4±5. All the IS scores for episodes during follow up are listed in Table II. No score for a penultimate episode lay within the low intent range.

The mean number of self injury episodes for these patients, including the index episodes, was 2.15 over the five years. As four of the suicides had a history of self injury before entry into the study the mean number of episodes during life was 2.85.

Likely suicides

All the IS scores for the self injuries of the doubtful suicides are listed in Table III. The mean IS score for the index self injury was 9.62 ± 5.94, while the mean score for their penultimate episodes was 11.23 ± 5.59. This penultimate mean was significantly higher than the mean for the 500 consecutive cases, which was 7.49 ± 4.9 (t = 2.75, P <0.01). There was a consistent but non significant tendency for the doubtful cases to have lower scores than the legally defined suicides.

In view of the small number of suicides, suicide rates were calculated for the combined group of legally defined and doubtful cases. The suicide rate for the low intent cases identified among the 500 consecutive patients in 1973–74 was 0.8 per cent per five years

TABLE III

Intent scale scores for doubtful suicides

Case number	Score for index self injury 1973–4	Scores for repeat episodes		
		First	Second	Third
1	5	–	–	–
2	0	–	–	–
3	14	–	–	–
4	19	–	–	–
5	10	0	7	5
6	5	1	2	–

while the rate for the medium and high intent groups combined was 2.9 per cent per five years or 0.64 per cent per annum.

During the five year follow up regular use of the scale identified a small group of patients who made repeated high intent suicide attempts. Out of this group of eighteen there were three (17 per cent) who

committed suicide during the study. This rate is very significantly higher than the rates for the other patients (P <0.001). They had penultimate IS scores of 18, 18 and 11. This result showed the ability of the scale to identify a group of patients with a very high suicide rate and the practical implications of this finding are discussed below.

Discussion

It is necessary first to comment on the small number of suicides ascertained during the follow-up. The legally defined suicides amounted to only seven patients and this number increased only to 13 by adding all doubtful cases. This led to a maximum suicide rate of 0.52 per cent per annum for the 500 cases, a much lower figure than has been found in many other comparable studies including some carried out in this country (see Table IV).

There are several possible explanations for this result. The first one is that it was simply due to a failure to ascertain some suicides. This cannot be supported in view of the very extensive search through death certificate files for all cases which had not been traced by other means. Some patients might have left the area and subsequently died, but this seems unlikely as the area in which the study was carried out is not one of high social mobility.

Next it was considered that some deaths among the 500 cases might have been 'hidden suicides' reported for instance as being due to accidents. The maximum number of deaths in this category was however only 3 and there was no evidence suggesting suicide in the coroners' reports.

If the low suicide rate for these self injury case is real it is important to clarify the reasons for this finding. One of the more optimistic explanations could be that the low rate was caused by the successful intervention of the psychiatric services after the original episode. Unfortunately there is no firm evidence to support this argument. Four of the legal suicides and the two patients who died by misadventure were in fact under psychiatric care when they killed themselves. Two of this group of six died in hospital, while the other four were in-patients on leave. All but one of the six had recently shown a clinical improvement after treatment for a depressive illness, a finding which highlights the dangers of a recovery period when discharge from hospital is being planned.

The next possible explanation of the low suicide rate lies in the duration of the study. It has been a general finding in the follow-up of self injury cases that longer studies report higher rates of suicide. Excess suicides might occur among the 500 cases during the next five years and it will therefore be important to continue following up this group.

The decline in the suicide rate in the country as a whole might explain the results, but this decline is not sweeping enough to account for the very marked difference between the suicide rates for parasuicides reported in other studies in Great Britain between 1954 and 1971 and the present results (see Table IV).

A further possible reason for the low rate was that the group of 500 cases was atypical. This explanation can be firmly rejected as the patients were already known to show no significant differences from a group of suicide attempters studied in Chichester at about the same time (Pallis and Pierce, 1979).

Finally it has to be considered that the suicide rate for the catchment area of the hospital might have been abnormally low. Records showed, however, that the annual rate was around 8.6 per 100,000, which is comparable with the rest of England and Wales.

The rest of the discussion deals with the use of the IS scale as a practical means of predicting suicide among cases of self injury. The scale, which was described in detail in earlier work (Pierce, 1977) and is given in Appendix A, is short, consisting of only twelve questions. It can be easily learnt, is reliable and is suitable for completion either as part of a comprehensive interview or during a brief talk if the patient is

TABLE IV

Risk of suicide following parasuicide United Kingdom reports

Source		Number of patients	Period surveyed in years	Suicide percentage
Batchelor and Napier	1954—Scotland	200	1	2
Stengel and Cook	1958—England	210	2–5	1.4
Kessel and McCulloch	1966—Scotland	511	1	1.6
Greer and Lee	1967—England	52	2.5	3.8
Buglass and McCulloch	1970—Scotland	511	3	3.3
Greer and Bagley	1971—England	204	1.5	2
Buglass and Horton	1974—Scotland	2809	1	0.8
Rosen	1975—Scotland	886	5	3.8

insistent on leaving hospital quickly. As two questions deal with medical risk the scale is not suitable for use by staff from other disciplines without medical guidance. There is evidence from this follow up that it would be useful as a screening device in the assessment of all self injury cases particularly in casualty departments when patients leave before psychiatric staff can interview them. The results show the general tendency of potentially suicidal patients to achieve high scores, but there are some more important specific findings. None of the patients who scored in the low range (0–3) died by definite suicide as a result of their next self injury. Therapeutic intervention to avert suicide should probably be centred on the medium and high intent groups, although even amongst these cases the suicide rates were low—7 out of 244 and 4 out of 131 respectively over a five year span.

The most potentially valuable result was the suicide rate of three out of the eighteen patients (17 per cent) who were identified by regular use of the scale as 'high intent repeaters'. These patients are clearly at great risk. There is therefore a case for offering them a special suicide prevention service, although it is by no means clear what form such a service should take. These three patients were under routine psychiatric care for depression when they killed themselves, but it is of interest in view of the comments of Barraclough (1972) that none of them was taking lithium. Psychiatric after-care services (Choudhury et al, 1973) and special social work provisions (Gibbons et al, 1978) have so far failed to prevent the repetition of parasuicidal behaviour. There is no evidence that the suicide prevention centres in the USA have reduced the suicide rate while opinions are divided on the effectiveness of the Samaritan organization in preventing suicide.

The finding that the suicides had made an average of nearly three non fatal attempts emphasizes the importance of repetition along with high intent in the prediction of at least some suicides. It suggests that the scale may be most appropriately used regularly to identify patterns of parasuicidal behaviour over periods of time.

References

BARRACLOUGH, B. M. (1972) Suicide prevention, recurrent affective disorder and lithium. *British Journal of Psychiatry*, **121**, 391–2.

BECK, A. T., SCHUYLER, D. & HERMAN, I. (1974) In *The Prediction of Suicide* (eds. A. T. Beck, H. L. P. Resnik and A. J. Lettier). Bowie, Maryland: Charles Press Publishing.

CHOWDHURY, H. L., HICKS, R. C. & KREITMAN, N. (1973) Evaluation of an aftercare service for parasuicide (attempted suicide) patients. *Social Psychiatry*, **8**, 67–81.

GIBBONS, J. S., BUTLER, J., URWIN, P. & GIBBONS, J. L. (1978) Evaluation of a social work service for self poisoning patients. *British Journal of Psychiatry*, **133**, 111–18.

PALLIS, D. J. & PIERCE, D. W. (1979) Recognizing the suicidal overdose. *Journal of Royal Society of Medicine*, **72**, 1–7.

—— & SAINSBURY, P. (1976) The value of assessing intent in attempted suicide. *Psychological Medicine*, **6**, 487.

PIERCE, D. W. (1977) Suicidal intent in self injury. *British Journal of Psychiatry*, **130**, 377–85.

TUCKMAN, J. & YOUNGMAN, W. F. (1968) A scale for assessing suicide risk of attempted suicides. *Journal of Clinical Psychology*, **24**, 17–19.

Appendix A

INTENT SCORE SCALE

Circumstances related to suicidal attempt

1. Isolation
   - 0 Somebody present.
   - 1 Somebody nearby or in contact (as by phone).
   - 2 No one nearby or in contact.

2. Timing
   - 0 Timed so that intervention is probable.
   - 1 Timed so that intervention is not likely.
   - 2 Timed so that intervention is highly unlikely.

3. Precautions against discovery and/or intervention
   - 0 No precautions.
   - 1 Passive precautions e.g. avoiding others but doing nothing to prevent their intervention. (Alone in room, door unlocked).
   - 2 Active precautions, such as locking doors.

4.	Acting to gain help during or after the attempt	0	Notified potential helper regarding attempt.
		1	Contacted but did not specifically notify potential helper regarding the attempt.
		2	Did not contact or notify potential helper.
5.	Final acts in anticipation of death	0	None.
		1	Partial preparation or ideation.
		2	Definite plans made (e.g. changes in a will, taking out insurance).
6.	Suicide note	0	Absence of note.
		1	Note written but torn up.
		2	Presence of note.

Self report

1.	Patient's statement of lethality	0	Thought that what he had done would not kill him.
		1	Unsure whether what he had done would kill him.
		2	Believed that what he had done would kill him.
2.	Stated intent.	0	Did not want to die.
		1	Uncertain or did not care if he lived or died.
		2	Did want to die.
3.	Premeditation	0	Impulsive, no premeditation.
		1	Considered act for less than one hour.
		2	Considered act for less than one day.
		3	Considered act for more than one day.
4.	Reaction to the act	0	Patient glad he has recovered.
		1	Patient uncertain whether he is glad or sorry.
		2	Patient sorry he has recovered.

Risk

1.	Predictable outcome in terms of lethality of patient's act and circumstances known to him	0	Survival certain.
		1	Death unlikely.
		2	Death likely or certain.
2.	Would death have occurred without medical treatment?	0	No.
		1	Uncertain.
		2	Yes.

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