

USEFULNESS OF BORTNER RATING SCALE IN THE MEASUREMENT OF TYPE A BEHAVIOUR PATTERN

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SUMMARY

This paper describes a study conducted in the Department of Psychiatry, Christian Medical College, Vellore to find out the usefulness of Bortner Rating Scale (BRS) in the assessment of type A or coronary prone behaviour. The test re-test reliability and interrater reliability of BRS are quite high. Its validity as assessed by finding out its correlation with the Jenkin's Activity Survey was satisfactory. It was found that BRS was useful to discriminate patients with coronary heart disease from normals. The implications of the above observations are discussed.

Introduction

Cardiovascular diseases have been aptly called 20th century diseases. Their mortality is high in developed countries. Among the cardiovascular diseases, arteriosclerotic heart disease (ischaemic heart disease) is responsible for one third of all deaths in men between the ages of 45 and 64 in the industrial and urbanized nations (WHO 1969). Coronary heart disease is reported to be on the increase in India, and 6% to 23% of all cardiac patients suffer from ischaemic heart disease (Sinha 1970).

We can predict that as India becomes more prosperous, ischaemic heart disease may become a major health problem (Park and Park 1980). Several studies suggest that classical risk factors do not give total explanation for the occurrence of coronary heart disease, especially in younger individuals and that additional factors are involved in its aetiology (Werko 1976).

There is strong evidence to suggest that an interplay of personality charac-

teristics with the environmental milieu also plays a role in an individual's predisposition to coronary heart disease. A large body of research has been undertaken in this area. The most important work in this area has been that of Rosenman and Friedman (Friedman and Rosenman, 1959, 1960; Rosenman and Friedman 1961; Rosenman et al 1970 & 1975). Their studies suggest that coronary heart disease is usually associated with a particular type of life style called type A behaviour. Type A behaviour is "a characteristic action-emotion complex which is exhibited by those individuals who are engaged in a relatively chronic struggle to obtain an unlimited number of poorly defined things from their environment in the shortest period of time and against the opposing efforts of other things or persons in this same environment" (Hackett et al 1984).

Structured Interview is the most effective way of measuring type A behaviour. But it requires highly trained interviewers and therefore a number of simpler self reporting questionnaires have been developed.

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The best known and most widely used of these is the Jenkins Activity Survey (JAS). The JAS consists of 52 items which the subjects have to answer by selecting one among the answers given below each question. There are 4 subscales, the type A scale, Factor S (Speed and impatience scale), Factor J (Job involvement scale) and Factor H (Hard-driving competitive scale). These subscales were standardised on the original Western collaborative Group Study (Jenkins et al 1979).

A number of studies have used a different questionnaire developed by Bortner from the same Western collaborative Group study (Bortner 1969). The Bortner Rating Scale (BRS) consists of 14 scales on which the subjects has to indicate on a 1½ inch line where he would be on the dimension described. The Bortner Scale is scored by measuring the subject's response to the nearest 16th of the inch from the non type A end, a high score indicating more Type A behaviour pattern. The subject's 14 responses are summed to provide the type A score.

The present study was undertaken in the department of Psychiatry, Christian Medical College, Vellore, to find out the usefulness of Bortner Rating Scale in the measurement of Type A behaviour by assessing (1) the test re-test reliability of the BRS, (2) Inter rater reliability of the BRS, (3) the validity of the BRS by finding out the correlation between the BRS and the JAS in the measurement of the type A behaviour pattern and its ability to differentiate coronary heart disease patients from normal controls.

Material and Methods

Ten staff members were selected to assess the test re-test reliability. The BRS was administered to them and repeated after 5 months. The correlation between the initial scores and the repeated scores were calculated.

Two raters independently administered the BRS to another group of 5 subjects to determine the interrater reliability of BRS.

For assessing the validity of BRS, 29 male patients who consecutively underwent coronary angiography for the assessment of coronary heart disease in the department of Cardiology from June 1985 to November 1985 were selected. All had previous history of either angina or myocardial infraction in addition to atherosclerotic narrowing of 50% or more of the lumen of one or more coronary vessels as measured by angiography. All knew to read and write English. Patients in critical condition, patients with coronary heart disease other than due to atherosclerosis and patients who were psychiatrically ill were excluded from the study. The control group comprised of 29 healthy normal subjects who were matched for age, sex, and education on a person to person basis.

The purpose of the study was explained to both the groups and Jenkin's Activity Survey and Bortner's Rating Scale were administered after getting consent from the persons concerned.

Results

The mean Bortner Score of 10 healthy staff members at the beginning of the study was 10.7 ± 2.2 inches. The mean Bortner score of the same 10 subjects 5 months later was 11.5 ± 2.1 inches. The correlation coefficient between these is 0.79 ($P < 0.001$).

The Bortner scores of 5 subjects obtained individually by two raters is shown in table 1. The correlation coefficient (r) is 0.93 ($P < 0.001$).

The mean Bortner scores of the study group and control group were 12.8 ± 3.1 inches and 10.7 ± 3.2 inches respectively.

Table 1
Bortner Rating Scale : Interrater reliability

Subject No:	Score from Rater 1 (inches)	Score from Rater 2 (inches)	Correlation Coefficient (r)
1	14.0	12.7	r = 0.93 (P±0.001)
2	11.0	10.2	
3	7.6	6.0	
4	10.2	10.7	
5	7.5	8.0	

The difference between the two groups was significant at 5% level.

Table 2
Correlation coefficient (r) between BRS scores and JAS scores in study group and control group

JAS subscale	Study Group		Control Group	
	Correlation Coefficient (r)	Significance	Correlation Coefficient (r)	Significance
A	0.54	P<0.01	0.74	P<0.001
S	0.59	P<0.001	0.63	P<0.001
J	0.09	Not significant	0.42	P<0.05
H	0.05	Not significant	0.49	P<0.01

Table 2 shows the correlation coefficient (r) values of the mean Bortner score and mean scores of 4 subscales of JAS in the study group and control group. In the study group the 'r' value for Bortner score and type A score of the JAS was 0.54 (P<0.01) and for factor 'S' was 0.59 (P<0.001). The correlation with the other 2 subscales (i.e) Factor J and Factor H was not statistically significant. In the control group all subscales of JAS were significantly correlated with the mean Bortner scores.

Discussion

The important findings of the present study are:

- i) the test re-test reliability and inter-rater reliability of the BRS are high.
- ii) the validity of BRS to measure Type A or Coronary Prone behaviour is good as evidenced by (a) the ability of BRS to differentiate the study group from control group and (b) the moderately high correlation between BRS and type A scale of JAS in the study group and the control group.

The test re-test reliability of the present study is similar to earlier studies reported by Price (1979) and Johnston and Shaper (1983). Our findings are in agreement with an earlier study by Verghese et al (1985) from the same centre in which it was found that the BRS differentiated the normal group of subjects from a group of patients with coronary heart disease. The correlation between the BRS score and type A scale score of JAS in the present study is moderately high in both the study group and control group indicating that both scales are measuring the same quality in patients and normals, which is in agreement with the findings of Johnston and Shaper (1983).

The above results confirm the reliability of Bortner Rating Scale and suggest that it can be used to measure type A or coronary prone behaviour.

Certain precautions have to be observed while interpreting the results of the present study. Though the cross cultural nature of the type A behaviour is well established in the North American and European studies, the applicability of the methods used for its assessment must be carefully weighed in a different culture from where they are standardised. Since English is not the mother tongue of the subjects in the present study, their ability

to understand BRS and JAS may not be the same as in an English speaking country. Most of the patients in the present study came from an upper socioeconomic group which makes this group biased.

All these patients had past history of either angina or myocardial infarction both of which require considerable readjustment of daily living which includes behaviour pattern also. Proper precaution must be taken to eliminate the error of wrong self assessment due to readjustment in life style after the onset of disease in known coronary heart disease patients. Although the present study shows an association between type A behaviour and coronary heart disease, it is not clear whether it is the cause of the illness or the result. Only well planned longitudinal studies will clarify this point.

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