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CAN THE HOSPITAL ANXIETY AND DEPRESSION (HAD) SCALE

BE USED ON CHINESE ELDERLY

IN GENERAL PRACTICE ?

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CAN THE HOSPITAL ANXIETY AND DEPRESSION (HAD) SCALE BE USED ON CHINESE ELDERLY IN GENERAL PRACTICE ?

ABSTRACT

A study was carried out in a general practice in Hong Kong to find out if the Hospital Anxiety and Depression (HAD) Scale could be used to detect psychological problems in Chinese elderly. The HAD Scale was translated into Cantonese and administered by an interviewer to 298 Chinese aged 60 or above before their doctor consultations. The acceptance rate of the Scale was 96% and each interview took only 5 to 10 minutes to complete. All 298 elderly understood and completed the HAD Scale. Validation of the results of the HAD Scale by the Clinical Interview Schedule (CIS) was done on a random sample of 100 elderly. Relative operating characteristic (ROC) analysis showed that the optimal cut-off points of the HAD Scale was a depression score of 6 and an anxiety score of 3. The sensitivity was 80%, specificity was 90%, OMR (overall misclassification rate) was 12%, positive predictive value was 67% and negative predictive value was 95%. Thirty-six percent of the elderly had scores above these cut-off points. More females than males had high anxiety scores. Nearly half of those with positive HAD scores were not known to have any psychological illness. The HAD Scale has great potential to be used as a screening instrument for psychological illnesses in Cantonese speaking Chinese elderly all over the world.

INTRODUCTION

Studies have shown that general practitioners missed about half of the psychological problems in their patients (1-3). Psychological problems may be more likely to be missed in the Chinese because of their tendency to somatization (4).   Psychological problems are also more likely to be missed in the elderly than the young because doctors are often pre-occupied with the co-existing physical illnesses or may attribute psychological symptoms to normal aging (5).   The detection of psychological problems in Chinese elderly is a real clinical challenge.

The Hospital Anxiety and Depression (HAD) Scale developed by Zigmond and Snaith (6) for the screening of psychological problems is short and simple, and has been found to be valid in the general practice setting (7).   The HAD Scale consists of a total of 14 questions with seven each on symptoms of anxiety and depression. Each question is scored on a scale of 0 to 3; the sum of the scores of the questions on anxiety gives the anxiety score and that of the questions on depression gives the depression score. The original authors proposed, for each sub-scale, cut-off scores of 8 and 11 to indicate possible and definite cases, respectively (6). Wilkinson and Barczak found that a cut-off point of 8 was the most suitable for general practice (7) but others have proposed different cut-off points (9,10,).

The original HAD Scale is in English and is designed for self-administration. It has been translated to several languages and tested in several Asian cultures including Chinese (9-11) but it has never been tested on Chinese elderly. It is important to validate and calibrate the Scale before it is applied to this population that has very different cultural and socioeconomic background from those of previous studies.

The aim of this study was to test the HAD Scale as a screening instrument for psychological illnesses in Chinese elderly because it had never been done before. We wanted to assess the acceptability, feasibility, validity and usefulness of the HAD Scale for the detection of psychological illnesses in Cantonese speaking Chinese elderly.

METHODOLOGY

The HAD Scale was translated into Cantonese, the most popular Chinese dialect in Hong Kong, and worded for interviewer administration. This was necessary because more than 40% of the elderly in Hong Kong are illiterate (11).   The final translation was obtained after several forward and back translations, and testing on several laymen Cantonese.

All patients aged 60 or over attending the clinic of the General Practice Unit of the University of Hong Kong from July 26 to November 5, 1990. were invited to take part. All the interviews were carried out by one trained research assistant. The HAD Scale was administered individually to each participant before the doctor consultation. Each question and its possible answers were read to the patient who then chose the answer that he/she thought was most appropriate. Each elderly patient was sampled once only.

Validation of the results of the HAD Scale was done on a random sample of 100 subjects by two psychiatrists (P.C.P. and S.Y.C.) who visited the clinic twice a week during the study period. Those elderly who happened to be attending the clinic on the day of their visits were used for validation. The psychiatrists were blind to the HAD scores of the subjects they assessed.

The Clinical Interview Schedule (CIS) was used for the psychiatric assessment by the psychiatrists.   The CIS is a semi-structured interview widely used as the gold standard for case identification of psychological illnesses in the community and has been tested in Chinese (12-14).   An overall severity rating

of > 2 on a scale of 0 to 4 of the CIS was used as an indicator of the presence of a significant psychological illness (12-14).

Specific diagnoses were also made by the psychiatrists on patients with OSR > 2. Inter-rater reliability of the CIS results between the two psychiatrists was assessed in 20 elderly and there was 90% agreement on those with OSR > 2.

The sensitivity, specificity, overall misclassification rate (OMR), the positive predictive value, and the negative predictive value of the HAD Scale at different cut-off points were calculated.

Relative (receiver) operating characteristic (ROC) plots of the true positive rate against the false positive rate were performed in order to determine the optimal cut-off score of the HAD Scale (7,15,16). The point furthest away from the diagonal plot is the optimal score.

The records of the subjects with positive HAD scores were reviewed to find out if they had been diagnosed to have any psychological illness on or before the day of their interviews. Any diagnosis coded under chapter V of the ICHPPC-2 (17) except headache, lumbalgia or mental retardation was considered as a positive psychological diagnosis. The consulting doctors were blind to the HAD scores of the patients throughout the whole study.

All the data were entered into the computer and analyzed by the SPSS-PC+ (Statistical Packages for Social Science-Personal Computer) programme (18). Difference between groups were tested by the Chi square and Fisher's Exact tests. P values of < 0.05 were considered statistically significant.

RESULTS

Sample, Acceptability and Feasibility

Three hundred and eleven patients aged 60 or over consulted the clinic of the General Practice Unit from July 26 to November 5 ,1990. Ninety-six percent (298) of them completed the HAD Scale. Seven refused to be interviewed, five patients had communication problems, and one patient was too ill.

All 298 patients in the study were Chinese. Table 1 shows the age, sex, social class and marital status of the total sample (298 patients) and the validation sample (100 patients). There was no significant difference in the demographic characteristics between the two groups. The social classes of the subjects were classified by their present or pre-retirement occupations (19), the occupation of the head of household was used if the respondent was a housewife. Most patients were from the lower social classes which is a feature of the practice (20). All those agreed to be interviewed understood and answered all the questions of the HAD Scale. Each interview took five to ten minutes to complete. The interviewer did not encounter any difficulty in administering the HAD Scale.

Comparison of the HAD Scores and CIS Diagnoses

Twenty out of the 100 elderly in the validation sample were found to have OSR > 2. Nine had depressive illnesses, 6 had anxiety, 3 had sleep disorders and 2 had dementia.

Figure 1 shows the ROC curve of the HAD depression and anxiety

scores.   The optimal depression score is 6 and the optimal anxiety score is 3 by ROC analysis.   Table 2 shows the sensitivity, specificity, OMR, positive predictive value, and negative predictive value of a depression score > 6 alone, anxiety score > 3 alone, and combined depression score of > 6 or an anxiety score of > 3 in the detection of any psychological illness (OSR > 2) or specifically for anxiety or depression.   The best results are obtained by using the depression score > 6 and anxiety score > 3 combined for the detection of significant psychological illnesses (OSR > 2).   The sensitivity was 80%, specificity was 90%, OMR was 12%, positive predictive value was 67% and negative predictive value was 95%.

The HAD Anxiety and Depression Scores

The anxiety scores of the 298 elderly in the study ranged from 0 to 12, with a median of 1 and a mean of 1.893 (S.D. 2.516). Seventy-eight (26%) patients had anxiety scores of 3 or above.

The depression scores ranged from 0 to 17, with a median score of 3 and a mean of 3.711 (S.D. 3.14). Seventy-two (24%) patients had depression scores 6 or above. Forty-two (14%) patients had both anxiety scores > 3 and depression scores > 6.   A total of 108 (36%) of the 298 elderly had either anxiety scores > 3 or depression scores > 6. Using the positive predictive value of 67% as found in the validation by CIS, the prevalence of significant psychological illnesses was 24% among our elderly.

Table 3 compares the demographic characteristics of patients with high and low HAD scores. There is a higher proportion of females among patients with high HAD scores.   This sex difference was

statistically significant (p = 0.0094, df = 1) between the high and low anxiety score groups.   When controlled for age this sex difference was reversed for high depression score in those aged 70 or over. In those aged > 70, there were more males than females with depression scores > 6 but the difference was not statistically significant.   There was no significant association between age, social classes or marital status and high HAD scores.

The records of seven patients were not available because the patients were transferred to other practices. Review of the records of the remaining 101 patients with positive HAD scores (depression score > 6 or anxiety score > 3) showed all of them had been under the care of our practice for more than one year before the time of the study.   Fifty-two (51%) of the 101 patients had been diagnosed to have one or more psychological illnesses. Seventeen had depressive disorders only, 17 had anxiety disorders only, 15 had both, and three had others (2 insomnia, 1 dementia).   Psychological diagnoses were found in 68% (26% both anxiety and depression, 21% anxiety only, 12% depression only, and 9% others) in those with anxiety score ≥ 3. They were found in 53% (20% depression only, 20% anxiety only, and 13% both) of those with both anxiety score ≥ 3 and depression score ≥ 6. Only 30% (19% depression only, 7% anxiety only and 4% both) of patients with positive depression score only were known to have psychological illnesses.   The differences between the likelihood of known psychological diagnoses in groups with different positive HAD scores were not statistically significant.

DISCUSSION

       This is the first study to show that it is feasible and acceptable to administer the HAD Scale by an interviewer. Interviewer administration is necessary when the instrument has to be applied to illiterate patients. Contrary to the common belief, our Chinese elderly were willing to disclose their psychological symptoms when they were asked. Our elderly, despite their age, low educational level, and low social classes, understood and accepted the HAD Scale very well. We expect other Cantonese speaking elderly to accept and understand the HAD Scale as well as, if not better, than our subjects.

       Our interviewer was able to administer the HAD Scale after several hours of training. The HAD Scale can easily be administered by a practice nurse or receptionist in regular clinical practices to patients while they are waiting to see the doctors without much extra workload.

       The ROC curves of the HAD scores were very far away from the diagonal plot indicating that the HAD Scale was able to distinguish true cases from non-cases (15,16). The optimal cut-off depression score of 6 and anxiety score of 3 that we found were lower than those suggested by others (6,7,9,10). If the cut-off score of 8 as recommended by Wilkinson and Barczak were used (7), the sensitivity of the HAD scale would be only 35% in our elderly population. This shows that it is important to validate and calibrate a test before it is applied to a population that is different from that of the original study.

       We found using the scores combined to screen for significant

psychological illnesses gave better results than using them separately as suggested by the original authors (6). Mixed anxiety and depression is common especially in the elderly (21,22). Thirty nine percent of the elderly with positive HAD scores in our study had both positive anxiety and depression scores. Furthermore, symptoms of depression and anxiety are often found in patients with other psychological illnesses such as dementia and sleep disorders.

The face validity of our results obtained by the HAD Scale was good. There was a good spread of the scores and the Scale was able to detect psychological illnesses in elderly with different demographic characteristics. Our prevalence of psychological illnesses of 24% was consistent with the 20% to 30% found by several other studies among elderly living in the community (23,24). Most other studies also found psychological illnesses being commoner in females than males. The reversal of sex difference in the prevalence of depression in the older elderly found in our study was also reported by Gurland and Cross (24).

Nearly half of the elderly found to have positive HAD scores had never been diagnosed to have any psychological illness by our doctors before. Wilkinson and Barczak also found that the HAD Scale was more sensitive than general practitioners in the detection of psychological illnesses (7). Goldberg and Blackwell found that one third of the psychiatric cases were missed by a general practitioner who was also a psychiatrist (1). Others also found that general practitioners without special psychiatry training missed more than half of the cases of major depression (2,3).

CONCLUSION

The HAD Scale has great potential to be used as a screening instrument for psychological illnesses in Chinese elderly in general practice.   We have shown that it is feasible, practical and acceptable to administer the HAD Scale to Cantonese speaking Chinese elderly by an interviewer. Our Cantonese translation of the HAD Scale should be applicable to other Cantonese speaking Chinese elderly in Hong Kong as well as Southern China and many other countries all over the world.

The HAD Scale was found to be valid and the optimal cut-off points were anxiety score of 3 and depression score of 6 for our elderly.   The best result was obtained by using the depression and anxiety scores combined for the screening of significant psychological illnesses. It detected many psychological illnesses that were previously missed.   It can help us meet the challenge of detecting the many hidden psychological illnesses among our Chinese elderly patients in general practice.

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N.B.:A copy of the Cantonese HAD Scale can be obtained from the first author by writing.

REFERENCES

1. Goldberg D.P. Blackwell B., Psychiatric illness in general practice. A detailed study using a new method of case identification. Br Med J 1970; 2: 439-443.

2. Freeling P., Rao B.M., Paykel E.S., Sireling L.I., Burton R.H., Unrecognised depression in general practice. Br Med J 1985; 290:1880-1883.

3. Skuse D., Williams P., Screening for psychiatric disorders in general practice. Psychological Medicine 1984; 14: 365-377.

4. Goldberg D.P., Bridges K., Somatic presentations of psychiatric illness in primary care setting. J Psychosom Res 1988; 32: 137-144.

5. 5.National Institute of Health (NIH) Consensus Development Panel on Depression in Late Life, NIH Consensus Conference - Diagnosis and treatment of depression in late life. JAMA 1992; 268:1018-1024.

6. Zigmond A.S., Snaith R.P., The hospital anxiety and depression scale. Acta Psychiatr Scand 1983; 67: 361-370.

7. Wilkinson M.J.B., Barczak P., Psychiatric screening in general practice: comparison of the general health questionnaire and the hospital anxiety depression scale. J R Coll Gen Pract 1988; 38: 311-313.

8. Leung C.M., Ho S., Kan C.S., Hung C.H., Chen C.N., Evaluation of the Chinese version of the hospital anxiety and depression scale. International Journal of Psychosomatics 1993; 40:29-34.

9. Nayani S., The evaluation of psychiatric illness in Asian patients by the hospital anxiety depression scale. Br J Psychiatry 1989; 155: 545-547.

10. Malasi T.H., Mirza I.A., El-Islam M.F., Validation of the hospital anxiety and depression scale in Arab patients. Acta Psychiatr Scand 1991; 84: 323-326.

11. Census and Statistics Department, Social data collected by the General Household Survey - Report III. Hong Kong: Government Printer, 1985.

12. Goldberg D.P., Cooper B., Eastwood M.R., Kedward H.B., Shepherd M., A standardized psychiatric interview for use in community surveys. Br J Prev Soc Med 1970; 24: 18-23.

13. Cheng T.A., A pilot study of mental disorders in Taiwan. Psychological Medicine 1985; 15: 195-203.

14. Pan P.C., Goldberg D.P., A comparison of the validity of GHQ-12 and CHQ-12 in Chinese primary care patients in Manchester. Psychological Medicine 1990; 20:931-940.

15. Metz C.E., Basic principles of ROC Analysis. Seminars in Nuclear Medicine 1978; 8: 283-298.

16. Erdreich L.S., Lee E.T., Use of relative operating characteristic analysis in epidemiology. Am J Epidem 1981; 114: 649-662.

17. ICHPPC-2 (International Classification of Health Problems in Primary Care). WONCA. 3rd edition. Oxford University Press 1983.

18. Norusis M.J., SPSS/PC+ for the IBM PC/XT/AT. Chicago: SPSS Inc. 1986.

19.	General Registrar Office, Registrar General's Classification of Occupation. United Kingdom, 1966.

20.	Munro C., Lewis J., Lam C., Cho S.K., Characteristics of patients attending a University general practice in Hong Kong. H.K. Practitioner 1990; 12: 865-872.

21.	Hamilton M., The clinical distinction between anxiety and depression. Br. J Clin Pharmac. 1983; 15: 165s-169s.

22.	Shinfuku N., Depression in old age. In: Ban T.A., Gonzalez R., Jablensky A.S., Sartorius N.A., Vartanian F.E.(eds.), Prevention and Treatment of Depression. Baltimore : University Park Press 1981; p.63-68.

23.	Copeland JRM, Gurland BJ, Dewey ME, Kelleher MJ, Smith AMR, Davidson IA. Is there more dementia, depression and neurosis in New York- A comprative study of the elderly in New York and London using the Computer Diagnosis AGECAT. Br J Psychiatry 1987; 151: 466-473.

24.	Gurland B.J., Cross P.S., Epidemiology of psychopathology in old age, some implications for clinical services. Psychiatr Clin North Am 1982; 5: 11-26.

Table 1: DEMOGRAPHIC DATA OF THE ELDERLY IN THE STUDY

	TOTAL SAMPLE N=298	VALIDATED SAMPLE N=100
M : F Ratio	37 : 63	44 : 56
Mean Age (S.D.)	68.5 (5.8)	68.5 (5.3)
Social Class		
1 and 2	12%	10 %
3	31%	35 %
4	19%	19 %
5	36%	36 %
Unknown	1%	
Marital Status		
Married	64%	66%
Widow(er)	29%	24%
Single/Divorced	7%	10%
Unknown	0.3%	

N.B. The percentages may not add up to 100 due to rounding

Table 2 : VALIDITY OF THE HAD SCALE AT DEPRESSION SCORE > 6
AND ANXIETY SCORE > 3

CIS DIAGNOSIS	Depression Score > 6	Anxiety Score > 3	Combined Depression > 6 or Anxiety > 3
ALL OSR > 2			
Sensitivity	55%	70%	80%
Specificity	95%	93%	90%
OMR	13%	12%	12%
Positive Pred.	73%	70%	67%
Negative Pred.	89%	93%	95%
DEPRESSION ONLY			
Sensitivity	78%	-	-
Specificity	91%	-	-
OMR	10%	-	-
Positive Pred.	47%	-	-
Negative Pred.	98%	-	-
—			
ANXIETY ONLY			
Sensitivity	-	67%	-
Specificity	-	83%	-
OMR	-	18%	-
Positive pred.	-	20%	-
Negative pred.	-	98%	-

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Table 3: COMPARISON BETWEEN ELDERLY WITH HIGH & LOW HAD SCORES

	Depression Score		Anxiety Score		Combined*	
	> 6 (N=72)	< 6 (N=226)	> 3 (N=78)	< 3 (N=220)	high (N=108)	low (N=190)
Females (%)	67%	60%	74%	57%	68%	59%
Age > 70	42%	42%	38%	43%	41%	42%
Social Class						
1 & 2	10%	13%	13%	12%	12%	13%
3	29%	32%	33%	30%	31%	32%
4	18%	19%	23%	18%	19%	19%
5	39%	35%	29%	39%	35%	37%
Unknown	4%	0	1%	1%	4%	0
Marital S.						
Married	61%	65%	60%	66%	60%	67%
Widow(er)	32%	27%	32%	27%	32%	26%
Sing/Div	5%	7%	6%	7%	6%	7%
Unknown	1%	0	1%	0	2%	1%

N.B. The percentages may not add up to 100 due to rounding

* Combined high = anxiety score ≥ 3 or depression score ≥ 6
Combined low = anxiety score < 3 and depression score < 6