

PRACTICE OBSERVED

Practice Research

Use of a questionnaire in general practice to increase the recognition of patients with excessive alcohol consumption

PAUL WALLACE, ANDREW HAINES

Abstract

A self-administered questionnaire, the health survey questionnaire, was designed to detect excessive alcohol consumption and mailed to patients who were registered with two general practices.

Within 12 months after the questionnaire survey three groups of respondents were reviewed: (a) the excessive drinkers, (b) those who indicated concern about drinking but did not exceed the limits for excessive consumption, and (c) a random sample of those who were in neither of these two categories.

estimation of mean cell volume, gamma glutamyltransferase activity, and serum aspartate transaminase activity.

There were highly significant correlations between estimates of consumption obtained by the questionnaire and those obtained at interview except among the women who were excessive consumers, whose responses to the questionnaire indicated levels of consumption that were much higher than those to which they admitted at interview.

The use of this simple and inexpensive instrument is likely to prove widely acceptable to patients in general practice and should result in a considerable increase in the recognition by general practitioners of patients with excessive alcohol consumption.

Introduction

Alcohol consumption has been rising since the second world war in the United Kingdom and many other countries (at least until the late 1970s) and has been accompanied by a parallel increase in associated morbidity and mortality.<sup>1</sup>

Department of General Practice, St Mary's Hospital Medical Centre, London W2 1PG. PAUL WALLACE, MRc, MRCP, St Jules Thorn Research Fellow in general practice. ANDREW HAINES, MRc, MRCP, senior lecturer in general practice. Correspondence to: Dr Paul Wallace, MRc, Epidemiology & Medical Care Unit, Northwick Park Hospital, Harrow, Middlesex HA1 3JL.

specificity of the laboratory tests that are traditionally used in clinical practice for this. Standard interviews and questionnaires have identified more excessive drinkers than laboratory tests in hospital patients, but little is known about their usefulness in general practice.<sup>2</sup>

Patients and methods

Data on the alcohol consumption and levels of concern about drinking were obtained with the health survey questionnaire, a self-administered questionnaire that was developed for use in general practice. This includes questions relating not only to alcohol consumption but also to other aspects of health—namely, cigarette smoking, weight reduction, and physical exercise. These were included to obtain additional information and because there is evidence that a disguised questionnaire may result in more truthful responses to questions on alcohol consumption.<sup>3</sup>

The study population comprised all the patients aged 17-70 on the age-sex registers of two practices in a health centre that is situated on a council housing estate in Harlesden, north west London. Patients were mailed a copy of the questionnaire, which was accompanied by a covering letter that was signed by their general practitioners and a prepaid envelope. Non-responders received reminder letters at three weeks and six weeks, and the records of persistent non-responders were tagged so that they could be handed a copy of the questionnaire when they attended surgery. The returned forms were coded and double checked before being sent for computer analysis.

RESULTS

QUESTIONNAIRE SURVEY

Of the 3997 patients between the ages of 17 and 70 on the age-sex registers of the two practices, 545 had died or changed address, as indicated by post being returned marked "address unknown". From the remaining 3452 patients whose addresses were apparently correct, 1573 questionnaires were returned, giving an overall response rate of 75%.

Of these, 641 men (57%) admitted to regular drinking (at least one drink a day): 289 (26%) drank only on one or two days and 352 (54%) every day. For women there were 469 (32%) regular drinkers, with 296 (26%) drinking on one or two days a week and 173 (37%) drinking every day.

After the questionnaire survey a sample of the patients who had returned a completed questionnaire within six months of the original mailing was invited to attend for an interview, breath alcohol measurement, and venesection for the estimation of mean cell volume, gamma glutamyltransferase activity, and serum aspartate transaminase activity. This included all the patients whose responses to the questionnaire indicated excessive consumption (excessive consumers) and all those classified as positive CAGE responders or self-assessed problem drinkers without stating a weekly consumption in excess of the limits (concern only). In addition, a random sample of those

whose responses indicated neither excessive consumption nor concern about their drinking was also invited to attend.

The patients were interviewed (mostly by one of two interviewers) about their lifestyle and general health. A systematic history of their alcohol consumption in the previous week was taken, and they then underwent a brief physical examination during which measurement of breath alcohol was carried out with a Lion Alcotester. Finally, the venesection was performed.

The comparisons between the interview and other measures of excessive consumption were based on the results from those patients who were seen within 12 months of completing the original questionnaire in view of the non-normal distribution of alcohol consumption and laboratory variables.

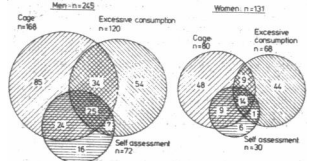


Fig. 2—Positive responders to health survey questionnaire. CAGE (Cap to detect concern about drinking or evidence of drinking problems).

Median values and ranges are given in the tables. Wilcoxon's test and Spearman's rank correlation coefficient were used to compare the medians and the intercorrelations between the measurements respectively, while the chi-square test was used to compare the proportions of patients in different categories. The small differences in the number of observations available for comparison of the laboratory and interview data are due to some incomplete blood samples.

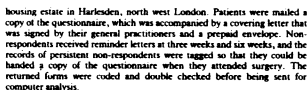


Fig. 1—Weekly alcohol consumption (regular drinkers).

COMPARISON OF RESPONSE TO QUESTIONNAIRE WITH STANDARD INTERVIEW, BREATH ALCOHOL MEASUREMENT, AND BLOOD TESTS

Completed questionnaires were returned by 2477 patients within six months of the original mailing. Of these, 354 patients were classified as positive responders and were invited to attend for interview and blood tests. Thirteen had died or changed address in the intervening period and, of the remainder, 203 (60%) attended within 12 months of the original mailing.

The attendance rate was similar among the random sample of patients who were not classified as positive responders to the questionnaire who were also invited to attend. The mean ages for the patients in the excessive consumption, concern only, and control groups were 45.2, 46.3, and 46.3 years respectively for the men and 44.3, 39.1, and 43.2 years respectively for the women.

There was a highly significant association (Spearman's rank correlation coefficient = 0.71 for men and 0.67 for women overall) between the estimates of weekly consumption obtained by the questionnaire and those obtained at interview. Significant correlations were found within all groups except the female excessive consumers in whom the median value obtained at interview was considerably lower (table 1). Among the men the correlation seemed to be

stronger in the controls than in the heavier drinkers. The laboratory indicators of excessive consumption were raised above the limits of normal in only small proportions (less than 40% in all cases) of the patients in the questionnaire excessive consumption and concern only categories, whereas up to 10% of the controls had results above the normal range (table II). A similar pattern was evident for patients who were classified as excessive consumers from their interview (table III).

The estimated sensitivity and specificity of the questionnaire and laboratory tests were calculated using excessive consumption at interview as the standard measure. The cut-off points for the laboratory tests were the same as those shown in tables II and III. For the questionnaire both excessive consumption and concern only were taken as positive responses. To obtain estimates of the sensitivity and specificity of the different measures in the whole population the findings in the sample who attended the interview and blood tests were weighted according to the proportion of patients in each questionnaire category who attended (table IV).

For the men the questionnaire had considerably higher sensitivity than any of the tests and comparable specificity. For the women, of whom the numbers who attended to excessive consumption at interview were small, the questionnaire apparently performed less well. The mean cell volume was

TABLE 1—Reported weekly consumption at interview: by questionnaire category

Table with 7 columns: Questionnaire category, No. at interview, Median consumption (units/week), Range, Median interview consumption (units/week), Range, Spearman's correlation coefficient, Excessive consumption at interview (%).

TABLE II—Comparison of laboratory tests and responses to questionnaire

Table with 10 columns: Questionnaire category, No. at interview, Mean cell volume, Hemoglobin, Gamma-GT, Aspartate, No. at interview, Mean cell volume, Hemoglobin, Gamma-GT, Aspartate.

TABLE III—Comparison of laboratory tests with reported consumption at interview

Table with 10 columns: Consumption at interview (units/week), No. at interview, Median cell volume, Range, % Excessive\*, Hemoglobin, Range, % Excessive\*, Gamma-GT, Range, % Excessive\*, Aspartate, Range, % Excessive\*.

the most sensitive of the laboratory tests for both men and women. The gamma glutamyltransferase activity, though more specific than the mean cell volume, was considerably less sensitive, while serum aspartate transaminase activity, though comparable in sensitivity and specificity to the gamma glutamyltransferase activity, for the men, failed to detect any of the female excessive consumers. Positive breath alcohol readings were obtained from 11 (3%) men and one (1%) woman in the questionnaire excessive consumption and concern only categories, whereas in the control group four (2%) of the men and one (1%) woman had positive readings.

TABLE IV—Estimated sensitivity and specificity of questionnaire, mean cell volume, gamma glutamyltransferase, and serum aspartate measurements: with excessive consumption\* at interview as the standard measure

Table with 3 columns: Measurement, No. at interview, Sensitivity (%), Specificity (%).

Discussion

The health survey questionnaire seems to be both acceptable and intelligible even to a relatively deprived urban population as judged by the high rates of response and satisfactory completion. Indeed, the true response rate may have been higher than indicated by our calculations because of the probable underestimation of the numbers of those who changed address without the knowledge of the practice.<sup>2</sup>

The principle theoretical disadvantages of such an instrument are the possibility of misinterpretation or misreading inherent in any self-administered questionnaire and its reliance on an estimated weekly consumption that may fail to detect binge drinkers. The accuracy of this estimate also may have been reduced by the failure to use separate quantity/frequency scales for beer, wine, and spirits, although increasing the complexity of the scale might have resulted in a greater potential for error in completion. None the less, the findings are similar to those of several previous community studies, both in the overall patterns of consumption and in the preponderance of excessive drinkers among men.<sup>1-3</sup>

The cut-off points that we used to define excessive drinking in men and women are lower than those used in most other studies. None the less, there is much evidence to suggest that they are appropriate for primary prevention. The results of a study of male civil servants indicated that mortality may increase at levels of consumption in excess of 35 g a day (24.5 units a week),<sup>4</sup> while the results of a case-control study in France showed that the risk of cirrhosis in men may be increased by consumption of 60 g a day (42 units a week),<sup>5</sup> and there is now considerable evidence that women are more susceptible to the adverse effects of alcohol than men, particularly to hepatic disease.<sup>6</sup>

underestimate the true extent of excessive drinking because of the possible overrepresentation of heavy drinkers among the non-responders. Though the overlap between excessive consumption and positive response to the CAGE and self-assessment sections was considerable, a substantial proportion of patients was classified in the concern only category. This finding may have been due to several factors. Some of the patients may genuinely have an average weekly consumption below the limits set for the study but may have been concerned because of occasional binge drinking. Others may have been concerned because of a family history of drinking problems or the belief that even small quantities of alcohol can be harmful. Twenty per cent of the men in this category, however, who attended for interview subsequently admitted to excessive consumption when carefully questioned about their previous week's drinking, and this suggests that these questions may be a useful supplement to the quantity/frequency scale in improving the detection of excessive consumers.

A comparison of the estimates of weekly alcohol consumption obtained by the questionnaire with the previous week's consumption as stated at interview showed generally good agreement between these measures. Indeed, this may have been underestimated both because of the lapse of up to 12 months between completion of the questionnaire and attendance for interview and because the previous week's alcohol consumption may not have been typical. The agreement was less good in the excessive consumption categories (than in the two others), and for the women in this category there was no correlation between the two measures. Regression to the mean may account for some of the tendency for consumption according to the questionnaire to be higher than at interview, but it is unlikely to explain the pronounced difference found for the women. There is no evidence that the interval between the completion of the questionnaire and interview was longer for the women than for the men, and much of the difference may have been due to underestimation of consumption at a face-to-face interview that results from the greater stigma attached to women drinking.

Calculation of sensitivity and specificity is difficult because of the absence of a "gold standard" for the estimation of excessive alcohol consumption, but a detailed previous week's drinking history is generally regarded as the most reliable measure. The system of weighting used in calculating the estimates of sensitivity and specificity is based on the assumption that the samples of patients in each of the categories who attended for interview were representative of the patients in these categories in the study population as a whole. Since it is impossible to be certain that this was indeed the case these estimates should be treated with some caution. None the less, for the men the questionnaire seems to be much more sensitive in identifying those who admit to excessive consumption at interview than any of the other measures, and its specificity was comparable. Although it appeared to perform less well for the women, few were classified at interview as excessive drinkers. We have discussed the possibility that the interview may seriously underestimate the actual numbers of women who drink excessively, and the true sensitivity of the questionnaire may be greater than these calculations suggest.

The sensitivity of breath alcohol measurement was so low that it called into question the usefulness of this in general practice, although its performance might have been better had the patients been attending for a routine surgery appointment. The laboratory tests were of limited sensitivity and specificity in detecting excessive drinkers. Although this may have been in part due to the low cut-off points used for the definition of excessive consumption, these findings agree with the results of previous studies in suggesting that the use of such tests alone in a general population may result in many missed cases. They can, however, be useful for detecting heavy drinkers and may provide a valuable indication of changes in alcohol consumption of such patients during follow-up.

Our results indicated that the health survey questionnaire can be used in general practice to increase substantially the recognition of patients with excessive alcohol consumption. In men it works considerably better than the blood tests traditionally used for this purpose, although its performance in the case of women requires further evaluation. By distributing the questionnaire to patients attending surgery costs and inconvenience could be reduced to a

