Patient and practitioner characteristics predict brief alcohol intervention in primary care

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SUMMARY

Background: *The effectiveness of an evidence-based health care intervention depends on it being delivered consistently to appropriate patients. Brief alcohol intervention is known to be effective at reducing excessive drinking and its concomitant health and social problems. However, a recent implementation trial reported partial delivery of brief alcohol intervention by general practitioners (GPs) which is likely to have reduced its impact.*

Aim: *To investigate patient–practitioner characteristics influencing brief alcohol intervention in primary care.*

Design of study: *Cross-sectional analysis of 12 814 completed Alcohol Use Disorders Identification Test (AUDIT) screening questionnaires.*

Setting: *Eighty-four GPs who had implemented a brief alcohol intervention programme in a previous trial based in the Northeast of England.*

Method: *GPs were requested to screen all adults (aged over 16 years) presenting to their surgery and follow a structured protocol to give a brief intervention (five minutes of advice plus an information booklet) to all 'risk' drinkers. Anonymised carbon copies of the screening questionnaire were collected from all practices after a three-month implementation period.*

Results: *Although AUDIT identified 4080 'risk' drinkers, only 2043 (50%) received brief intervention. Risk drinkers that were most likely to receive brief intervention were males (58%), unemployed (61%), and technically-trained patients (55%). Risk drinkers that were least likely to receive brief intervention were females (44%), students (38%), and university educated patients (46%). Logistic regression modelling showed that patients' risk status was the most influential predictor of brief intervention. Also, GPs' experience of relevant training and longer average practice consultations predicted brief intervention. However, personal characteristics relating to patients and GPs also predicted brief intervention in routine practice.*

Conclusion: *Interpersonal factors relating to patients and practitioners contributed to the selective provision of brief alcohol intervention in primary care. Ways should be found to remedy this situation or the impact of this evidence-based intervention may be reduced when implemented in routine practice.*

Keywords: *brief alcohol intervention; implementation; primary care.*

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Introduction

EXCESSIVE alcohol consumption is a significant cause of ill health, social problems, and loss of economic productivity in the United Kingdom each year.[1-4] However, excessive drinking is responsive to early detection and brief intervention by primary health care professionals.[5] A number of randomised controlled trials of brief alcohol intervention have shown that, in comparison with controls, excessive drinkers receiving between 5–15 minutes advice from primary health care workers will reduce alcohol consumption by around 25%.[5-10] Owing to the good evidence of its efficacy, recent research on brief alcohol intervention has focused on identifying effective and cost-effective ways of promoting its uptake[11] and implementation in primary health care.[12]

The effectiveness of an evidence-based health intervention in practice depends on it being delivered consistently and appropriately to patients. However, a recent implementation trial of brief alcohol intervention in primary health care found that only half of the excessive drinkers identified actually received intervention.[12] This finding suggests that the potential impact of brief alcohol intervention could be substantially reduced when implemented in routine practice. Recent research on mental health care has reported that general practitioners' (GPs') decisions about intervention were influenced by non-clinical patient factors.[13] Moreover, GP characteristics are known to influence attitudes to and involvement in preventive care.[14,15] Thus the aim of this study was to investigate possible patient and practitioner characteristics that might influence provision of brief alcohol intervention in primary health care.

Method

Patient screening data were provided by 84 GPs, one per practice, from across the Northern and Yorkshire regions of England. These GPs had agreed to implement a screening and brief alcohol intervention programme in their practice for three months. GPs were subjects in the pilot and main study of a two-stage randomised controlled trial and detailed methods have been reported previously.[11,12] GPs were requested to screen all adults (aged over 16 years) presenting to their surgery and follow a structured protocol to give a brief intervention (five minutes of advice plus an information booklet) to all 'risk' drinkers. Anonymised carbon copies of the screening questionnaire were collected from all practices after a three-month implementation period.

The screening tool

The screening questionnaire was the Alcohol Use Disorders Identification Test (AUDIT)[16] which is a 10-item questionnaire

designed specifically for use in primary care. At a cut-off point of 8 out of a possible total score of 40, AUDIT identifies risk drinking with a sensitivity of 92% and a specificity of 94%.[16] Risk drinking consists of both hazardous consumption, which incurs increased risk of psychological or physical harm[17] and harmful consumption, which is defined by the presence of physical or psychological symptoms.[18] AUDIT is reported to be less sensitive at identifying risk drinking in patients from rural areas,[19] in women,[20-22] and in the elderly.[23] Since this study adopted a population screening approach, which often requires increased instrument sensitivity,[24] AUDIT cut-off points were lowered to 6+ for women and 7+ for men to identify risk drinking.

In addition to the 10 alcohol-related items, the screening questionnaire contained four questions relating to patients' age, sex, educational attainment, and occupation. Self-reported data on occupation were coded according to the Registrar General's Social Class based on Occupation classification.[25] Patients who were not part of the working population were coded using five extra categories: homecarer, unemployed, students, long-term sick, and retired. GPs' personal characteristics were self-reported using an evaluation questionnaire which was given to GPs before the implementation trial began and which was returned to the study centre in a reply-paid, addressed envelope.

Data analysis

Data were analysed using SPSS for Windows 10.5.[26] Statistical analysis initially took the form of descriptive statistics plus a crude analysis of relationships between variables, χ^2 tests for categorical data. The second phase of analysis comprised the development of a logistic regression model, based on the crude analysis and theoretical criteria about independent variables that might influence brief intervention (outcome 'yes' or 'no'). A direct logistic regression model was utilised, since there was no specific hypothesis as to the order or importance of predictor variables. 'Goodness-of-fit' of the model was calculated using the model χ^2 statistic.[27] Statistical significance was accepted at $P<0.05$ and odds ratios (ORs) plus 95% confidence intervals (95% CI) were calculated.

To account for possible misclassification of patients' risk drinking status as measured by AUDIT, preliminary logistic regression modelling considered AUDIT both as a continuous variable and as a binary variable, indicating risk as at its original cut-off point and at the recommended cut-off points (Table 1). Other independent variables were loaded into each model as follows: patients' age (continuous variable), sex, higher education status (binary variables), and occupation (categorical variable with skilled manual workers as the reference category); GPs' age, consultation length (continuous variables), sex, solo practice status, membership of the Royal College of General Practitioners, and direct training in brief intervention (binary variables). Possible interaction effects between patients' and GPs' age and sex were also entered into the model.

While each GP may have had a particular pattern of intervention behaviour, it was felt that the large number of GPs and the large mean number of patients per GP made it preferable to include both sets of characteristics as explanatory variables in the analysis. The alternative, a random effects model for GP influence, was regarded as being too complex to be justifiable given the GP sample size ($n = 84$). Moreover, it was felt that important effects were likely to be detected by the approach adopted.

Logistic regression model selection

There was a great deal of consistency in the number and direction of significant predictors in the logistic regression models produced when the AUDIT score was considered as a continuous or a binary variable. However, the relatively small goodness-of-fit χ^2 for Model 2 suggested that it provided the best interpretation of the data and so these results are reported.

Results

Most of the GPs in the study were male (79%, $n = 66$), with a mean age of 42 years (SD = 9) and a mean time spent in general practice of 12 years (SD = 8). Of 69 GPs who reported a practice type, most worked in group practices (87%, $n = 60$) with a mean of four GP principals (SD = 2) per practice. GPs reported a mean personal list size of 1887 patients (SD = 613) and a mean of 147 consultations (SD = 52) per week in the surgery. The mean consultation length reported by GPs was 9.7 minutes (SD = 3). Of 66 responses concerning RCGP status, 56% ($n = 37$) reported membership or fellowship. Finally, 73% ($n = 61$) of GPs had experienced direct training in the brief intervention protocol in addition to written guidelines, while 27% ($n = 23$) had received written guidelines only.

The GPs screened 12 814 patients during the three-month study period; a mean of 151 patients (SD = 115) per GP. In addition, GPs reported that just 3% (SD = 1.7) of patients declined to complete the screening questionnaire. Of 77 GPs who outlined how they assessed patients' risk drinking status, 90% ($n = 69$) used the AUDIT cut-off points recommended in the study (6+ women, 7+ men), 4% ($n = 3$) used the single cut-off point of 8+ and 6% ($n = 5$) used a weekly consumption total. A total AUDIT score was available on all screening questionnaires and patient characteristics were self-recorded as follows: 99% ($n = 12 705$) reported their

Table 1. Properties of preliminary logistic regression models with AUDIT score as a continuous or a binary variable indicating drinking risk status.

	Model 1 Continuous variable (score 0–40)	Model 2 Binary variable (original cut-off point: 8+)	Model 3 Binary variable (recommended cut-off points: 6+ females, 7+ males)
Cases accurately predicted	84.96%	84.94%	83.70%
Goodness of fit χ^2 (df = 8)	90.68, $P<0.001$	13.94[a]	36.53, $P<0.001$
AUDIT odds ratio	1.49 per unit increase	15.60	23.20
95% CI for AUDIT odds ratio	1.46–1.53	13.46–18.09	19.72–27.28
Number of significant predictors	8	8	8

[a]Not significant.

sex; 99% (*n* = 12 679) reported their age; 94% (*n* = 12 014) reported their current occupation; and 84% (*n* = 10 708) reported their highest educational attainment.

Overall, 4080 (32%) patients were risk drinkers. Of these, 2043 (50%) received brief intervention consisting of structured advice (*n* = 1862, 46%) and/or alcohol-related literature (*n* = 1085, [27%]). Moreover, 499 (6%) patients who were non-risk drinkers received brief intervention, most obtaining advice (*n* = 449, 5%) and some the alcohol-related literature (*n* = 99, 1%). Figure 1 shows the receipt of brief intervention by total AUDIT score. Table 2 shows the breakdown of patients and risk drinkers by socioeconomic status groups, and the final column of this table reports the proportions of risk drinkers who received brief intervention.

There was a significant difference between proportions of risk drinkers who received brief intervention on the basis of their sex (χ^2 = 82.9, df = 1, $P<0.001$), occupation (χ^2 = 59.8, df = 10, $P<0.001$) and educational attainment (χ^2 = 15.1, df = 4, P = 0.004). Brief intervention was received by 58% of male risk drinkers compared with 44% of female risk drinkers. Unemployed risk drinkers were most likely to receive brief intervention (61%) while student risk drinkers were least likely to receive brief intervention (38%). Risk drinkers who were technically trained (55%) were most like-

Table 2. Numbers and proportions of patients (n = 12 814) by socioeconomic status group who were risk drinkers and who received brief intervention.

Patient characteristics	Total sample %	Risk drinkers %	Brief intervention %
Sex			
Males	4569 (36)	1837 (40)	1065 (58)
Females	8136 (64)	2239 (28)	977 (44)
Occupation			
I professionals	398 (3)	156 (39)	81 (52)
II managers	1338 (11)	577 (43)	305 (53)
IIIN skilled non-manual	1619 (14)	665 (41)	325 (49)
IIIM skilled manual	1808 (15)	834 (46)	466 (56)
IV semi-skilled	645 (5)	284 (44)	140 (49)
V unskilled	442 (4)	155 (35)	61 (39)
Homecarer	2023 (17)	368 (18)	155 (42)
Unemployed	799 (7)	322 (40)	197 (61)
Student	454 (4)	243 (54)	93 (38)
Chronic sick	110 (1)	31 (28)	17 (55)
Retired	2378 (20)	252 (11)	126 (50)
Education			
Primary	1456 (14)	325 (22)	176 (54)
Some secondary	1447 (14)	326 (23)	175 (54)
All secondary	4144 (39)	1445 (35)	723 (50)
Technical	1831 (17)	721 (39)	396 (55)
Tertiary	1830 (17)	717 (39)	328 (46)
Age group (years)			
16–19	521 (4)	273 (52)	143 (52)
20–29	2133 (17)	1145 (54)	582 (51)
30–39	2407 (19)	988 (41)	492 (50)
40–49	2243 (18)	820 (37)	407 (50)
50–59	1987 (16)	490 (25)	247 (50)
60–69	1817 (14)	245 (13)	117 (48)
70+	1571 (12)	86 (5)	45 (52)

ly to receive brief intervention in contrast to those with a university education (46%). There was no significant difference by age group in proportions of risk drinkers receiving brief alcohol intervention.

The logistic regression model describing the relationship of patient and practitioner variables to the delivery of brief intervention is reported in Table 3.

Patients' risk drinking status, as measured by total AUDIT score, was clearly the most influential predictor of brief intervention. Thus the odds of receiving brief intervention increased by a factor of 15 for risk drinkers compared with non-risk drinkers. There was a weak effect of patients' age, in that increased age was associated with decreased odds of brief intervention. However, patients' sex did not independently predict brief intervention. University educated patients had a 29% reduced odds of brief intervention compared with non-university educated patients. Furthermore, patients' occupation was a highly significant predictor of brief intervention ($P<0.001$); in particular students, unskilled workers and homecarers had a 55%, 54% and 29% reduced odds of brief intervention compared with the reference group 'skilled manual workers'.

With regard to practitioner characteristics, neither the GPs' age nor sex was an independent predictor of brief intervention. However, solo GPs had a 26% increased odds of giving a brief intervention compared with GPs in group practices, and RCGP members had a 53% reduced odds of brief intervention compared with non-RCGP members. GPs who received brief intervention training plus written guidelines had a 76% increased odds of brief intervention compared with GPs receiving written guidelines alone. Moreover, GPs reporting longer average practice consultations had an increased odds of delivering brief intervention compared with GPs reporting shorter average practice consultations. Thus a one-minute increase in average practice consultation length increased the odds of brief intervention by 12%.

Lastly, there were no significant interaction effects between patients' and GPs' age and/or sex.

Discussion

Despite the fact that GPs were requested to provide brief intervention to all risk drinkers identified by a screening process, only half of the risk drinkers in this study received an intervention. Risk drinkers who were most likely to receive brief intervention were male, unemployed, and technically trained patients while those who were least likely to receive brief intervention were female, students and university-educated patients. It was to be expected that patients' risk status, as measured by AUDIT, was the most influential predictor of brief intervention by GPs. Moreover, GPs' experience of relevant training and longer average practice consultations were positive predictors of brief intervention. However, it was less clear why other significant independent predictors of brief intervention included patients' age, educational attainment, and occupation, plus GPs' solo practice status and membership of the Royal College of General Practitioners.

Although the explanatory variables in the logistic regression modelling accurately predicted brief intervention in the

Table 3. Logistic regression (Model 2) predicting brief intervention ('yes/no').

Predictor	Odds ratio	95% confidence interval	P-value
Patient characteristics			
Risk drinking status	15.60	13.46–18.09	<0.001
Age (years)	0.97	0.95–0.99	0.02
Sex	1.14	0.54–2.38	0.72
University education	0.71	0.59–0.86	0.001
Occupational status[a]			<0.001
Professional	1.19	0.82–1.73	0.33
Managerial	1.01	0.80–1.29	0.87
Skilled non-manual	1.03	0.82–1.29	0.79
Skilled manual	-	-	-
Partly skilled	0.80	0.59–1.09	0.17
Unskilled	0.46	0.31–0.69	<0.001
Homecarer	0.71	0.54–0.92	0.01
Unemployed	1.14	0.86–1.51	0.34
Student	0.45	0.32–0.65	<0.001
Sick	0.79	0.39–1.61	0.53
Retired	0.76	0.57–1.02	0.07
Practitioner characteristics			
Age (years)	1.01	0.99–1.03	0.20
Sex	1.12	0.72–1.72	0.60
Solo practitioner	1.26	1.03–1.53	0.02
Member/Fellow of RCGP	0.47	0.40–0.56	<0.001
Brief intervention training	1.76	1.47–2.11	<0.001
Consultation length (minutes)	1.12	1.09–1.16	<0.001
Interaction effects			
Age patient x Age GP	1.00	0.99–1.00	0.35
Sex patient x Sex GP	0.99	0.71–1.37	0.98
Age patient x Sex GP	0.99	0.98–1.00	0.45
Sex patient x Age GP	1.00	0.98–1.01	0.90

[a]The reference category used for occupational status was skilled manual workers.

majority of cases, even the 'best fit' model could not account for 100% of the variance. Other predictive factors may include the severity of patients' presenting problems, GPs' assessment of patients' motivation for behaviour change, and patients' interest in the subject under discussion. Unfortunately, this study could not assess the contribution of such factors, and future research should investigate this further.

A further inhibiting influence on brief intervention may have been the enhanced sensitivity of the screening questionnaire, particularly in borderline cases of risk drinking. Indeed, the best model to predict brief intervention delivery had drinking risk status defined by the original AUDIT cut-off point (8+) rather that the more sensitive cut-off points recommended in this study. This finding was puzzling, since 90% of the GPs reported using the recommended cut-off points. Nevertheless, the bell-shaped distribution of brief intervention delivery shown in Figure 1 strongly suggested that instrument sensitivity was not a critical issue for GPs.

A clear strength of this study was the large cross-section of patients opportunistically screened by GPs and the low refusal rate reported for the screening process. These data confirm the value of simple questioning to identify alcohol problems in primary care[28] and the considerable impact that GPs could make in terms of early detection and management of risk drinking in the population. Moreover, most routinely presenting patients were willing to answer a brief questionnaire about lifestyle behaviour, even though this may not have been (obviously) related to their reasons for consulting the doctor. However, it was evident that personal factors, unrelated to patients' risk drinking status, influenced brief intervention in routine practice. Recent research has shown that mental health care by GPs was influenced by patient non-clinical factors, such as ethnicity and home ownership status, regardless of clinical need.[13] Furthermore, it has been reported that GPs are less likely to discuss preventive care with higher socioeconomic status patients[29] despite the fact that patients from lower status groups may receive less time in consultations.[30] More research within primary care consultations is needed to unravel the relative contribution of practitioner (supply) or patient (demand) factors in selective provision of health care interventions.

GPs have reported anxiety about discussing lifestyle, and particularly alcohol, issues with patients for fear of provoking negative reactions.[31,32] However, a recent survey found that most GPs felt they should be involved in promoting low-risk drinking and patient resentment was the lowest ranked disincentive for this work.[33] Patients themselves report concern about lifestyle issues and that they would welcome counselling,[34] although one survey reported a discrepancy between patient expectations of lifestyle counselling and their perception of GPs' interest in such issues.[35] More recent work has suggested that patients regard lifestyle enquiry as legitimate but only within certain limits, such as relevance to their concerns about health.[36] In the latter study, although most patients welcomed lifestyle advice, nearly half of them did not want advice about smoking or drinking.[36] Finally, a study of women from lower social classes found that about a quarter were not in favour of life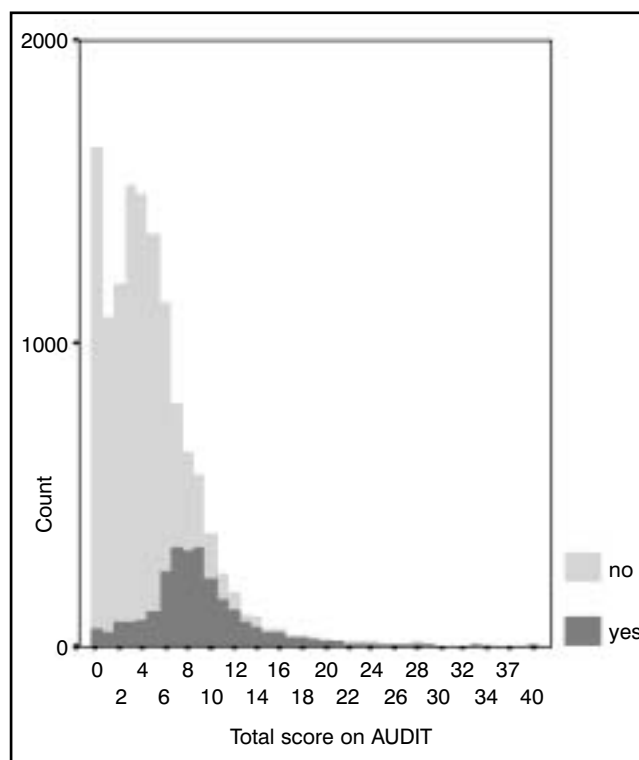style counselling and these women tended to be less well educated than the rest of the sample.[37] Differential interest in lifestyle issues by patients may reflect contrasting views about determinants of health; since patients from higher social classes stressed the importance of smoking, diet and exercise on health, while patients from lower social classes emphasised factors such as housing, unemployment, income and pollution.[37]

Whether the selective intervention found in this study was owing to GPs, patients or an interaction between both parties, it is clear that the reported effectiveness of brief alcohol intervention[5-10] is likely have been reduced in this routine practice setting. Research aimed at implementing evidence-based health care may need to take account of differential delivery in practice. It is also possible that published effect sizes for brief alcohol intervention may be over-optimistic owing to a focus on efficacy studies and biases introduced by selective recruitment and/or loss to follow-up in research trials.[38] More focus should be placed on the use of pragmatic trials when evaluating health-related interventions in primary care.

Figure 1. Receipt of brief intervention by patients' total AUDIT score.

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