Psychosocial, lifestyle, and health status variables in predicting high attendance among adults

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SUMMARY

Background: Increasing consultation rates have implications for the organisation of health services, the quality of care, and understanding the decision to consult. Most quantitative studies have concentrated on very high attenders — not those attending five or more times a year, who are responsible for most (60%) consultations — and have assessed neither the role of lifestyle nor patients' attitudes.
Aims: To assess associations with higher than average attendance (five or more times a year).
Design of study: Postal questionnaire sent to a random sample.
Setting: Four thousand adults (one per household) from six general practices.
Method: Data were analysed to identify predictors significantly associated with higher than average attendance.
Results: The response rate was 74%. Self-reported attendance agreed with the notes (r = 0.80, likelihood ratio for a positive test = 9.4). Higher attendance was independently predicted by the severity of ill health (COOP score = 0–7, 8–9, and 10+; adjusted odds ratios = 1, 1.72, 1.91 respectively; test for trend P<0.001) and the number of reported medical problems (COOP score = 0, 1, 2, and 3+ respectively; adjusted ORs = 1, 2.05, 2.31, 4.29; P<0.001). After controlling for sociodemographic variables, medical problems, the severity of physical ill health, and other confounders, high attendance was more likely in those with medically unexplained somatic symptoms (0, 1–2, 3–5, and 6+ symptoms respectively, ORs = 1, 1.15, 1.48, and 1.62; P<0.001); health anxiety (Whitely Index = 0, 1–5, 6–7, and 8+ respectively; ORs = 1, 1.22, 1.77, and 2.78; P<0.001); and poor perceived health ('very good', 'good', 'poor' respectively; ORs = 1, 1.61, and 2.93; P<0.001). Attendance was less likely in those with negative attitudes to repeated surgery use (OR = 0.61, 95% CI = 0.47–0.78), or to doctors (Negdoc scale <18, 18–20, and 21+ respectively; ORs = 1, 0.87, 0.67; P<0.001), in those usually trying the pharmacy first (OR = 0.61, 95% CI 0.48–0.78), and those consuming alcohol (0, 1, 2, 3+ units/day respectively; ORs = 1, 0.62, 0.41, 0.29; P<0.001). Anxiety or depression predicted perceived health, unexplained symptoms, and health anxiety.
Conclusion: Strategies to manage somatic symptoms, health anxiety, dealing with the causes of — or treating — anxiety and depression, and encouraging use of the pharmacy have the potential both to help patients manage symptoms and in the decision to consult. Sensitivity to the psychological factors contributing to the decision to consult should help doctors achieve a better shared understanding with their patients and help inform appropriate treatment strategies.
Keywords: frequent attenders; consultation; lifestyle; patient attitude.

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Introduction

PATIENTS manage the vast majority of symptoms without seeking medical advice.[1] Nevertheless, small percentage changes in those seeking advice provide a significant potential problem: every 10 years[2] there is a 10% increase in consultations overall and a 15% increase for 'self-limiting' conditions. Although the reasons are unclear — possibly related to changing expectations and social support networks[3] — there are important implications, including changing out-of-hours care[4] and time for the consultation.[5] It is also important for doctors to understand better patients' decisions to consult, and identify potential strategies that might help patients in these decisions.

What evidence is available about the predictors of attendance? Small studies with detailed individual measurements and large cohorts with limited data suggest that chronic medical conditions, social class, sex, marital status, anxiety or depression, life events, employment, and house tenure are important.[6-14] Qualitative work suggests that personality may be important,[15] and quantitative evidence that medically unexplained physical symptoms[16] or health anxiety[17] may be important.[18,19] However, key limitations to the current evidence include:

- little quantitative assessment of the importance of lifestyle, attitudes to doctors, medicine, and to the use of pharmacies;[15,20]
- assessing unusual individuals — very frequent attenders (usually defined as more than 10 or more than 12 attendances a year).[13] The average attendance is three to four times a year[2,21]: it is unclear whether the evidence applies to less extreme groups who still consult more than average (five or more times a year) and who account for the majority of NHS consultations; and
- piecemeal evidence — in most cases, quantitative studies have not simultaneously measured the majority of relevant variables. Thus, it is not clear which variables are the best independent predictors of attendance.

Cross-sectional studies are inevitably exploratory, but are important in identifying predictors that can be tested in longitudinal studies. This paper reports the variables associated with higher than average attendance in a large sample of patients registered in six general practices.

Method

Six general practices within a 30-mile radius of the administrative centre were chosen to give a range of sociodemographic and practice characteristics. A sample of 4000

HOW THIS FITS IN

What do we know?

Most quantitative studies of attendance have concentrated on very high attenders and have assessed neither the role of lifestyle nor patients' attitudes.

What does this paper add?

Higher than average attendance was more likely in those with medical problems and poor health, but also in those with medically unexplained somatic symptoms, health anxiety, and poor perceived health. Attendance was less likely in those usually trying the pharmacy first and those consuming alcohol. Anxiety or depression predicted perceived health, unexplained symptoms, and health anxiety. Sensitivity to the psychological factors contributing to the decision to consult should help achieve a better shared understanding with patients and inform appropriate management.
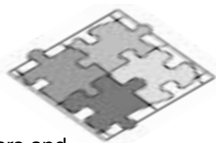
households was randomly chosen, using equal numbers from the age–sex register of each practice. Patients from nursing homes and those aged over 80 years old were excluded owing to difficulty in completing the questionnaire. Patients were sent a letter explaining the project, the questionnaire, and one of three types of information leaflet/booklet. The cohort was followed to assess the effectiveness of the leaflets (these results will be reported elsewhere). One adult per household was sampled to avoid contamination of groups. Where the random choice of participant from the age–sex register was a child (aged under 16 years, $n = 487$) an adult was asked to fill in a questionnaire for themselves, in addition to one for the child: this paper reports the adults' data. A second and third mailing were sent to patients who had not responded to the first questionnaire.

Questionnaire

Existing measures. We included items from previous studies, questions about lifestyle, and attitudes[20] (Table 1).

New measures. To limit type I error, where variables potentially addressed similar domains, exploratory factor analysis with varimax rotation was performed to identify a smaller number of 'latent' variables. Scales were developed based on a simple sum of the items which loaded strongly for each factor.[22] 'New' measures included:

- *Health status* (modified COOP WONCA chart questions[23]). The chart component was omitted for ease of printing and scanning, leaving the wording unchanged. Factor analysis suggested a two-factor solution:
  - (a) 'physical health' — physical activity (rotated factor loading 0.50), bodily discomfort/pain (0.52), ability to work (0.65), and overall condition (0.50). A higher score represents poorer 'physical health' status. Cronbach's α for the scale was 0.72, i.e. in the optimum range.[22]
  - (b) 'social/emotional health' — emotional problems (0.69), social activities (0.53), quality of life (0.71), and overall functioning (0.62) ($\alpha = 0.81$). Questions

about social support and change in condition did not load strongly onto either 'physical' or 'emotional' factors.

The validity of the word format was compared with the original chart version sent one month later in 32 consecutive responders (Spearman's $\rho = 0.80$ for 'physical'; $\rho = 0.79$ for 'social/emotional').

- *Willingness to tolerate symptoms*. Thirteen questions documented the number of days that people would wait before seeing the doctor for clinical scenarios (1 = less than one day; 2 = one to two days; 3 = three to seven days; 4 = eight to 14 days; 5 = over 14 days; 6 = would not contact). Factor analysis suggested a one-factor solution. Seven questions 'loaded' strongly: headache (0.62), constipation (0.67), diarrhoea and vomiting (0.62), indigestion and heartburn (0.66), cold and runny nose (0.64), 'flu with fever (0.66), sore throat and fever (0.71) ($\alpha = 0.83$[22]). Test–retest reliability of the scale after one month in 32 people was acceptable ($\rho = 0.48$).

- *'Personality'*. Questions were based on Kokko's descriptions of personality types in high attenders[15] (1 = 'very strongly agree', through to 7 = 'very strongly disagree'). Factor analysis suggested a three-factor solution.
  - (a) Factor 1 ('demedicalise') — 'the importance of the doctor making sure there is nothing seriously wrong' (0.56), 'the doctor checking things out quickly when unwell' (0.60), 'liking to find out as much as possible when unwell' (0.69), 'liking referral to specialist when possible' (0.73), 'liking tests when unwell' (0.75), 'wanting to know about side-effects' (0.55), and 'wanting the doctor to do something about it when unwell' (0.59) ($\alpha = 0.83$).
  - (b) Factor 2 ('positive and interested') — this 'loaded' questions about: 'changing health being outside my control' (0.56), 'my problems are more serious than the doctor thinks' (0.57), 'being worried when the doctor goes into details' (0.57), and 'wanting to just have the treatment without the doctor going into reasons' (0.62) ($\alpha = 0.69$).
  - (c) Factor 3 ('medophile') — this 'loaded' questions about: 'dislike of taking medicines and remedies' (0.51) 'and most illnesses get better without medicines' (0.50) ($\alpha = 0.58$, owing to being only two items).

The question scoring meant that higher scores for the three factors reflected patients who disliked the medical process, were positive and interested in health, and positive about medicines, respectively. Other questions derived from Kokko's descriptions did not load onto the above factors — including 'repeated visits are normally needed to get the right treatment'.

Self-reported attendance

We were interested in those consulting the doctor or nurse more frequently than the average, i.e. five or more attendances a year (the top 25%, accounting for the majority [60%] of consultations). We assessed test–retest reliability of

Table 1. Items included in questionnaire

Measurement	Specific items measured/development of measures	Reference
Sociodemographic	Age, sex, ethnic group, employment status, marital status, children at home, academic qualifications (GCSE and above)	7–10, 13, 14, 24
Lifestyle	Alcohol consumption (units per week). Smoking status (current, ex-smoker, never) Brisk exercise (sufficient to cause shortness of breath or perspiration) on a weekly basis	25–27
Chronic medical problems	Checklist of 24 problems they recall being told by a doctor that they have, previously shown to be valid compared with patient notes	8, 12, 24, 25
Health status	Modified COOP WONCA charts	8, 12, 23–25
Self-rated health	Likert scale ('very poor', 'poor', 'good', 'very good')	10, 23
Willingness to tolerate symptoms	Scale based on scores of seven questions related to willingness to tolerate usually self-limiting symptoms	
Medically unexplained physical symptoms (MUPS)	Somatic Symptom Inventory. A version modified for self-report was used. Patients indicated on a checklist the number of symptoms for which no medical explanation was found which were severe enough to interfere with normal life or which required seeing a doctor.	18, 19, 28
Health anxiety	Whitely Index	8, 12, 17
Stressful life events	Number of stressful life events in past 12 months (death of friend or family member; moving house; getting married; divorce/separation; changing or losing jobs; new serious medical problem personally or in family)	11, 12
Anxiety/depression	Hospital Anxiety and Depression Scale	12, 23
Social support	Rand Social Support Index	9, 11, 23
Personality factors	Questions based on Kokko's personality types	15
Attitude to doctors	Negdoc (attitude to doctors) and Posmed (attitude to the medical profession). The original five-point Likert scales were modified for consistency in the questionnaire to a seven-point scale	20
Attendance	The number of times seen by doctor or nurse in past 12 months	See text

the question about self-reported attendance in the first 32 responders after one month. We also compared self-reported attendance for attendance documented in the notes in 270 consecutive responders.

Sample size ($\beta = 0.2$, $\alpha = 0.05$ using the EPI INFO software)

To detect risk factors with an odds ratio of 2 for high attendance, where the prevalence of higher attendance in patients with risk factors ranges from 10% to 90% and the prevalence of exposure ranges from 20% to 80%, 2202 responders were required (or 3146 allowing for 30% non-response).

Analysis

Data were scanned using Formic 3 software and analysis performed using SPSS and Stata for Windows software. Variables significantly associated with attendance (five or more per year) were entered in logistic regression models by forward selection, and retained if they remained significant (using the likelihood ratio test) and no evidence of significant multi-collinearity. To allow the reader to better assess the 'risk' associated with significant continuous variables (e.g. somatic symptom inventory, health anxiety) they were converted to ordinal variables: cut-offs were determined by the shape of the relationship with outcome rather than using pre-determined arbitrary cut-offs. The large sample allowed us to choose a 1% level of significance to limit type I error: a 1% level rather than the more conservative Bonferroni correction was chosen owing to close interrelation of many of the variables and collinearity of the hypotheses being tested. The adequacy of the model in predicting outcome was assessed by calculating the area under the receiver operator characteristic (ROC) curve.

Results

Self-reported attendance

Test–retest reliability was acceptable (r = 0.82). There was good overall agreement between self-reported attendance and GPs' records (rank correlation r = 0.76; median difference = 0, interquartile range = 0–2), and for five or more attendances per year (likelihood ratio for a positive test = 9.4, and likelihood ratio for a negative test = 0.33). Furthermore, none of the factors that predicted higher self-reported attendance from the main analysis (Tables 2–4) were significant predictors (at the 5% level) of the difference between reported and documented attendance: thus the results are not likely to represent possible measurement bias.

Response rates

A minority of patients (327 [8%]) were either reported to be not living at the given address ('ghosts'), or had left the practice, or had died, or were deemed unsuitable to complete a questionnaire by their GP. Of the remaining effective sample of 3673 patients, 2719 (74%) returned questionnaires. Comparing the characteristics of the enumeration district of responders and non-responders using postcode-derived indices, responders were more likely to have a higher percentage of non-manual social class than non-responders (50% and 42% respectively) but a similar percentage were economically inactive (14% and 18% respectively) and retired (28% and 28% respectively). Those who responded were also compared with the Office of National Statistics (ONS) figures: the number without academic qualifications (31% [ONS 33%]), the number living in council housing (16% [ONS 19%]), and the relative age proportions were similar (ages 25–44, 45–64, and 65–80 years; ratio 4:3:1.5 [ONS figures 4:3:1.8]). Females were more likely to respond

Table 2. Sociodemographic, life events and practice variables associated with self-reported higher attendance at GP surgery (five or more times in past 12 months).

Variable	High attender (%)	Not a high attender (%)	Crude odds ratio (95% CI)	Adjusted odds ratio (95% CI)[a]	Likelihood ratio[b] χ^2 (P-value)
Sociodemographic					
Age (years)					
<20	24/625 (4)	121/1901 (6)	1	1	6.5 (P = 0.090)
<20–39	196/625 (31)	657/1901 (35)	1.50 (0.94–2.40)	1.77 (0.90–3.46)	
<40–64	263/625 (42)	869/1901 (46)	1.53 (0.96–2.41)	1.28 (0.66–2.51)	
>64	142/625 (23)	254/1901 (13)	2.82 (1.74–4.57)	1.50 (0.72–3.11)	
Sex (female)	423/622 (68)	1083/1898 (57)	1.60 (1.32–1.94)	1.44 (1.11–1.87)	7.5 (P = 0.006)
No qualifications	257/593 (43)	479/1814 (26)	2.13 (1.76–2.59)	1.61 (1.25–2.07)	13.6 (P<0.001)
Children at home	354/623 (57)	907/1869 (49)	1.40 (1.16–1.68)	1.07 (0.84–1.37)	0.3 (P = 0.586)
Ethnicity (non-white)	12/623 (2)	24/1887 (1)	1.52 (0.76–3.07)	1.42 (0.56–3.56)	0.5 (P = 0.464)
Marital status					
Single	92/628 (15)	317/1904 (17)	1	1	1.1 (P = 0.570)
Married	427/628 (68)	1333/1904 (70)	1.10 (0.85–1.43)	0.83 (0.58–1.18)	
Separated/widowed/divorced	109/628 (17)	254/1904 (13)	1.48 (1.07–2.04)	0.83 (0.53–1.30)	
Council house tenant	134/603 (22)	230/1859 (12)	2.02 (1.60–2.56)	1.32 (0.93–1.85)	2.4 (P = 0.118)
Occupation					
Paid employment	311/601 (52)	1316/1865 (71)	1	1	6.7 (P = 0.145)
Homemaker	62/601 (10)	174/1865 (9)	1.51 (1.10–2.07)	0.86 (0.56–1.31)	
Retired	170/601 (28)	298/1865 (16)	2.41 (1.93–3.02)	1.32 (0.95–1.82)	
Disabled	42/601 (7)	22/1865 (1)	8.08 (4.75–13.73)	1.83 (0.86–3.91)	
Unemployed	16/601 (3)	45/1865 (2)	1.50 (0.84–2.70)	1.58 (0.79–3.18)	
Life events					
0	233/630 (37)	836/1913 (44)	1	1	1.1 (P = 0.773)
1	224/630 (36)	617/1913 (32)	1.30 (1.05–1.61)	1.13 (0.85–1.49)	
2	110/630 (17)	302/1913 (16)	1.31 (1.01–1.70)	1.05 (0.74–1.48)	
3+	63/630 (10)	158/1913 (8)	1.43 (1.03–1.98)	1.20 (0.79–1.82)	
Practice					
1 U; A; F; C; DI	105/630 (17)	279/1913 (15)	1	1	8.3 (P = 0.140)
2 U; T; DI	117/630 (19)	281/1913 (15)	1.11 (0.81–1.51)	0.92 (0.60–1.39)	
3 U; DI	101/630 (16)	282/1913 (15)	0.95 (0.69–1.31)	0.80 (0.52–1.23)	
4 U; F; C; I; T	110/630 (17)	330/1913 (17)	0.89 (0.65–1.21)	0.99 (0.65–1.50)	
5 U; I	103/630 (16)	335/1913 (18)	0.82 (0.60–1.12)	0.78 (0.51–1.18)	
6 U/R; T; C; F; M	94/630 (15)	406/1913 (21)	0.62 (0.45–0.84)	0.61 (0.40–0.92)	

[a]Adjusted for other variables that were significantly associated with attendance. [b]Likelihood ratio test. U = predominantly urban; U/R = urban rural mixed; T = teaching; A = academic (linked to university department); F = fundholding; I = inner city; DI = deprived inner city; M = market town.

(responders = 53%; non-responders = 43%), and more females completed the adult questionnaire when the child was selected — hence a higher proportion of females (60% [ONS 50%]). Nevertheless, the mean attendance (3.5 visits per year) was similar to national figures,[2,21] and sex was controlled for in the analysis (see below).

Associations with attendance

The logistic model with all independent variables had an area under the ROC curve of 0.80. Significant variables included the number of medical problems, poor physical health status, sociodemographic variables (sex, absence of academic qualifications), medically unexplained physical symptoms (MUPS), health anxiety (Whitely Index), and perceived health (Tables 2–4). High attenders were less likely to have negative attitudes to doctors, to believe that reattendance is often needed to get the right treatment, and less likely to try the pharmacy first. High attendance may also be related to lifestyle — particularly alcohol consumption. The patients' practice did not significantly affect attendance, nor did including practice as a cluster term alter the statistical inference for any of the variables.

Secondary analysis

Separate logistic models were built to assess the 'secondary' variables associated with of each of the key variables identified in the primary analysis (Table 5). To greatly simplify presentation, and since variables were ordered categorical variables with a trend in odds ratios, odds ratios are quoted for the average increment across the level specified in Tables 2–4 (i.e. assuming proportional odds). Although perceived health, MUPS, and health anxiety all have important 'independent' associations with attendance; there is nevertheless a close inter-relationship between these variables and also with underlying anxiety and/or depression (Figure 1).

Discussion

This is one of the largest studies to date documenting variables associated with attendance. Before the main findings are discussed, the limitations of the study must be identified.

Measurement, selection, non-response bias

Reported attendance agreed well with documented attendance. Practice was not a significant predictor of attendance

Table 3. Medical and health status variables associated with self-reported higher attendance at GP surgery (five or more times in past 12 months).

Variable	High attender (%)	Not a high attender (%)	Crude odds ratio (95% CI)	Adjusted odds ratio (95% CI)[a]	Likelihood ratio[b] χ^2 (P-value)
Medical					
Medical problems					
0	68/630 (11)	646/1913 (34)	1	1	52.1 (P<0.001)
1	141/630 (22)	540/1913 (28)	2.48 (1.82–3.39)	2.05 (1.35–3.11)	
2	139/630 (22)	376/1913 (20)	3.51 (2.56–4.82)	2.31 (1.50–3.56)	
3+	282/630 (45)	351/1913 (18)	7.63 (5.68–10.25)	4.29 (2.85–6.45)	
Depression (HAD)					
No	410/612 (67)	1468/1866 (79)	1	1	4.6 (P = 0.102)
Slight	142/612 (23)	318/1866 (17)	1.60 (1.28–2.00)	0.72 (0.53–0.98)	
Definite	60/612 (10)	80/1866 (4)	1.89 (1.89–3.82)	0.99 (0.60–1.62)	
Anxiety (HAD)					
No	250/608 (41)	1028/1865 (55)	1	1	0.0 (P = 0.996)
Slight	193/608 (32)	555/1865 (30)	1.43 (1.15–1.77)	0.99 (0.75–1.30)	
Definite	165/608 (27)	282/1865 (15)	2.41 (1.90–3.05)	1.00 (0.71–1.40)	
Health (COOP WONCA)					
'Physical' (score: activity, work, pain, overall condition					
0–7	82/576 (14)	559/1557 (36)	1	1	12.1 (P<0.001)
8–9	154/576 (27)	489/1557 (31)	2.15 (1.60–2.88)	1.72 (1.22–2.43)	
10+	340/576 (59)	509/1557 (33)	4.55 (3.48–5.96)	1.91 (1.35–2.72)	
Change in condition (same or worse than last month)	446/619 (72)	1540/1899 (81)	0.60 (0.49–0.74)	0.63 (0.48–0.82)	11.1 (P<0.001)
Social support					
As much as was needed	255/617 (41)	911/1855 (48)	1	1	1.7 (P = 0.426)
Some/quite a bit	232/617 (38)	607/1855 (32)	1.37 (1.11–1.68)	0.92 (0.70–1.21)	
A little/not at all	130/617 (21)	367/1855 (19)	1.27 (0.99–1.61)	0.81 (0.58–1.12)	

[a]Adjusted for other variables which were significantly associated with attendance. [b]Likelihood ratio test.
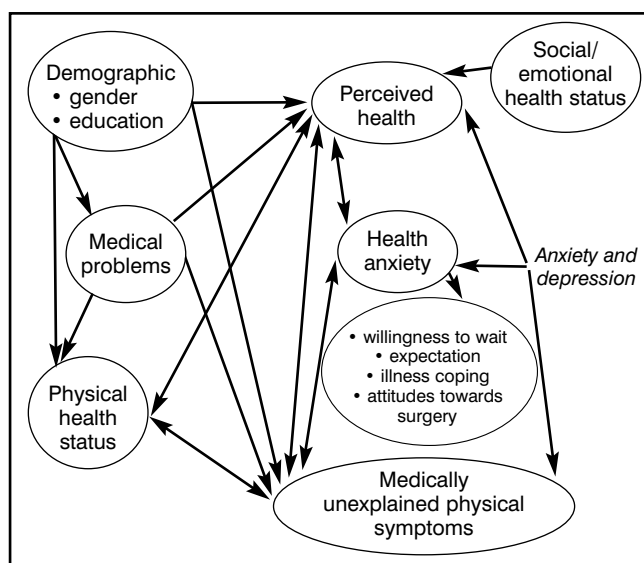

Figure 1. Interrelation between perceived health, health anxiety and perception of somatic symptoms and other primary 'independent' predictors of attendance (in circles) and with secondary predictors (in italics).

with no major intra-practice clustering effect, although in a larger study doctor/practice variables would probably become significant.[29,30] Household sampling gave smaller households higher representation (fewer adults from younger families), but was balanced by the adults completing the children's questionnaire (i.e. increasing adults from younger families). Although a greater number of female

responders implies that attendance rates were slightly over-estimated, mean attendance was similar to national estimates. Furthermore, the aim was to assess predictors of attendance when controlling for demographic variables.

Cause and effect

The relationships observed may be two-way and confounded by health status. Thus MUPS may lead to higher attendance; conversely, attending with medical problems and poor health status may lead to worry about somatic symptoms. However, by controlling for both medical problems and severity of physical ill health it is possible to make some assessment of MUPS and health anxiety. Further teasing out of the relationships between variables requires longitudinal cohorts or trials.

Main findings

Somatic symptoms and health. MUPS, health anxiety, and perception of health are independently associated with attendance after controlling for important sociodemographic variables (sex, educational status), medical problems, and the severity of physical ill health. The concept of MUPS is fraught with difficulty, since the presentation of symptoms, the vigour of investigation, and doctor–patient communication may all determine whether symptoms are perceived as 'medically unexplained': nevertheless there is reasonable agreement between patient self-report and GPs' assessment,[28] and thus the measurement probably crudely identifies somatisation. This data suggests that perception of somatic symptoms is not just relevant for very high atten-

Table 4. Somatic symptoms and health perception, attitude to doctors, and lifestyle variables that were significantly associated with self-reported higher attendance at the GP surgery (five or more times in past 12 months).

Variable	High attender (%)	Not a high attender (%)	Crude odds ratio (95% CI)	Adjusted odds ratio (95% CI)[a]	Likelihood ratio[b] χ^2 (P-value)
Symptom and health perception					
Medically unexplained symptoms					
0	113/630 (18)	653/1913 (34)	1	1	7.5 (P = 0.006)
1–2	172/630 (27)	626/1913 (33)	1.59 (1.22–2.06)	1.15 (0.81–1.62)	
3–5	181/630 (29)	430/1913 (22)	2.43 (1.87–3.17)	1.48 (1.04–2.09)	
6+	164/630 (26)	204/1913 (11)	4.65 (3.49–6.19)	1.62 (1.08–2.42)	
Health anxiety (Whitely Index)					
0	33/630 (5)	160/1913 (8)	1	1	10.9 (P = 0.001)
1–5	478/630 (76)	1606/1913 (84)	1.44 (0.98–2.13)	1.22 (0.71–2.10)	
6–7	63/630 (10)	100/1913 (5)	3.05 (1.87–4.98)	1.77 (0.90–3.46)	
8+	56/630 (9)	47/1913 (2)	5.78 (3.37–9.91)	2.78 (1.31–5.89)	
Perceived health					
Very good	85/610 (14)	590/1874 (31)	1	1	15.4 (P<0.001)
Good	418/610 (69)	1204/1874 (64)	2.41 (1.87–3.10)	1.61 (1.12–2.33)	
Poor	107/610 (18)	80/1874 (4)	9.28 (6.42–13.42)	2.93 (1.71–5.03)	
Attitude to doctors					
Negative attitude (Negdoc scale)					
<18	190/602 (32)	478/1844 (26)	1	1	22.1 (P<0.001)
18–20	214/602 (36)	622/1844 (34)	0.87 (0.69–1.09)	0.83 (0.62–1.11)	
21+	198/602 (33)	744/1844 (40)	0.67 (0.53–0.84)	0.48 (0.36–0.66)	
Often need to reattend to get right treatment (% disagreeing)	331/609 (54)	1344/1874 (72)	0.47 (0.39–0.57)	0.61 (0.47–0.78)	14.6 (P<0.001)
Usually try chemist first (% agreeing)	352/612 (58)	1349/1884 (72)	0.54 (0.45–0.65)	0.61 (0.48–0.78)	15.2 (P<0.001)
Lifestyle					
Alcohol (units/day)					
0	172/595 (29)	342/1822 (19)	1	1	10.1 (P = 0.002)
1	372/595 (63)	1200/1822 (66)	0.62 (0.50–0.77)	0.82 (0.61–1.09)	
2	36/595 (6)	176/1822 (10)	0.41 (0.27–0.61)	0.76 (0.46–1.27)	
3+	15/595 (3)	104/1822 (6)	0.29 (0.16–0.51)	0.25 (0.11–0.55)	
Sedentary (no brisk exercise)	253/610 (41)	632/1858 (34)	1.37 (1.14–1.66)	0.98 (0.76–1.27)	0.0 (P = 0.900)
Smoking					
Never	267/623 (43)	872/1884 (46)	1	1	0.2 (P = 0.892)
Ex-smoker	207/623 (33)	563/1884 (30)	1.20 (0.97–1,48)	0.93 (0.70–1.25)	
Current	149/623 (24)	449/1884 (24)	1.08 (0.86–1.36)	0.98 (0.72–1.34)	

[a]Adjusted for other variables which were significantly associated with attendance. [b]Likelihood ratio test.

ders[18,19,31] but also for those seeking the majority of NHS consultations. Research suggests that group therapy,[24] cognitive behavioural therapy[32] (albeit intensive), antidepressants,[33] and symptom re-attribution[34] may all help MUPS. Provision of information about the self-management of somatic symptoms may also potentially help in the decision to consult. Condition-specific information provided in consultations is likely to be more effective than general leaflets.[35-40] It is also very important that information is balanced to ensure that patients who really should see a doctor are not inhibited from so doing.

Anxiety and depression. The previous evidence about psychopathology in very frequent attenders[10,12,13,31,41-43] also applies in less extreme groups. The predictive value of anxiety and depression disappears when controlling for other variables, i.e. they act through other variables (perceived health, somatic symptoms, health anxiety). These data suggest that improvement in the social conditions that lead to anxiety and depression and/or treatment of anxiety and depression[11] could potentially modify the decision to consult. Doctors should also be sensitive to the underlying psychological causes involved in the decision to consult.

Attitudes

Attitudes to doctors,[20] to surgery use, and to the use of the pharmacy are important — and these are also related to attitudes to health and medicine and willingness to tolerate symptoms. This supports previous qualitative work,[15] although it does not specifically identify the well-defined sub-types proposed.[15] Future research could assess the potential for information campaigns to modify attitudes and whether encouraging use of the pharmacy helps patients in managing symptoms.

Lifestyle. Sedentary patients, and those who drink no alcohol are more likely to attend. The effect of exercise may be explained by the relationship between sedentary lifestyle and poor physical health status. The estimates for alcohol are not significantly confounded by perception of somatic symptoms, health anxiety or attitudes, nor are they owing to reverse causality (reduced consumption with chronic disease) and may reflect the likely health benefits of modest alcohol consumption.[44-49]

Conclusion. As expected, the number of medical problems and the severity of physical ill health are strongly associated

Table 5. 'Secondary' predictors of 'primary' variables.

'Primary' variables	Secondary' variables	Adjusted odds ratio (95% CI)[a]
Medically unexplained physical symptoms (three or more on SSI)	Chronic medical problems	1.42 (1.30–1.56)
	Physical health status (COOP WONCA physical scale)	1.41 (1.23–1.60)
	Health anxiety (Whitely Index)	1.43 (1.17–1.75)
	Perceived poor health	1.42 (1.15–1.77)
	Sex (female)	1.33 (1.08–1.62)
	Depression	1.29 (1.12–1.53)
Health Anxiety (Whitely Index score >3)	Perceived poor health	1.97 (1.57–2.48)
	Unexplained physical symptoms	1.48 (1.32–1.66)
	Anxiety (HAD scale)	1.92 (1.65–2.22)
	Beliefs/attitudes	
	'There is often something seriously wrong' OR =	2.44 (95% CI = 2.06–2.89)
	'I cope well when I'm ill'	0.72 (0.60–0.85)
	Willingness to tolerate symptoms OR =	0.97 (95% CI = 0.95–0.98)
	Disagree that repeated visits to the GP are normally needed to get right treatment	0.73 (0.58–0.92)
Perceived poor health (poor or very poor)	Chronic medical problems	1.36 (1.14–1.62)
	Poor physical health status (COOP WONCA physical scale)	3.70 (2.33:5.88)
	Poor emotional/social health status (COOP WONCA social/emotional scale)	1.32 (1.23–1.41)
	Depression (HAD scale)	1.52 (1.15–2.01)
	Sex (female)	0.45 (0.31–0.65)
	Beliefs/attitudes: disagree that repeated visits normally needed to GP to get right treatment	0.56 (0.39–0.80)
Negative attitude to doctors (>20 on modified Negdoc scale)	Positive attitude to medical profession (Posmed scale)	0.89 (0.85–0.93)
	Liked and believed in medicines (Kokko medophile scale)	0.74 (0.70–0.79)
	Positive and interested in health care (Kokko interested scale)	0.79 (0.76–0.82)
	Willingness to wait and tolerate symptoms	1.03 (1.01–1.05)
	Beliefs/attitudes	
	'Doctor's treatments usually work slowly'	1.36 (1.17–1.57)
	'I like to receive a prescription when I see the doctor'	1.34 (1.13–1.60)
	'I like doing what the doctor says'	1.22 (1.06–1.40)
	'I like to know the cause of my illness'	0.78 (0.64–0.96)
	'I like the appointment to be convenient for the doctor'	0.66 (0.57–0.76)
	Social support (COOP WONCA: not as much social support as wanted)	1.29 (1.13–1.48)
Poor physical health status (score >10 on COOP WONCA physical scale)	Chronic medical problems	1.36 (1.21–1.52)
	Age	2.01 (1.50–2.17)
	Perceived poor health	4.01 (2.90–5.54)
	Medically unexplained physical symptoms	1.39 (1.23–1.57)
	Sex (female)	1.45 (1.13–1.87)
	Sedentary lifestyle	2.05 (1.60–2.62)
	Poor emotional/social functioning (COOP/WONCA social/emotional scale score)	1.57 (1.49–1.65)
	Attitude: would like to have a prescription when seeing the doctor	1.30 (1.09–1.56)
Medical problems (two or more)	Perceived poor health	1.83 (1.46–2.28)
	Age	1.83 (1.56–2.15)
	Unemployed/retired/disabled	1.67 (1.25–2.23)
	Change in condition	0.77 (0.64–0.94)
	Medically unexplained physical symptoms	1.52 (1.37–1.69)
	Poor physical health status (COOP WONCA physical scale)	1.31 (1.14–1.50)
	Sex (female)	1.54 (1.25–1.90)
	Attitude/personality	
	Like and believe in medicines (Kokko medophile scale)	1.06 (1.01–1.12)
	Positive and interested in health care (Kokko interested scale)	1.08 (1.04–1.12)
	Repeated attendance at surgery is needed to get right treatment	1.26 (1.09–1.45)

[a]Adjusted for other significant variables for each model.

with attendance. Further studies should assess the extent to which strategies to manage somatic symptoms, health anxiety, dealing with the causes of — or treating — anxiety and depression, and encouraging use of the pharmacy have the potential to help patients in their decision to consult. Sensitivity to the psychological factors contributing to the decision to consult should help doctors achieve a better shared understanding with their patients and help inform appropriate management.

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