

Physical health care of patients with schizophrenia in primary care: a comparative study

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Roberts L, Roalfe A, Wilson S and Lester H. Physical health care of patients with schizophrenia in primary care: a comparative study. *Family Practice* 2007; **24**: 34–40.

Background. Excess morbidity and mortality associated with schizophrenia is well established. Despite this, no previous multi-centre study has investigated whether patients with schizophrenia receive equitable physical healthcare within primary care.

Objective. To determine whether patients with a diagnosis of schizophrenia receive the same levels of physical health care from primary care practitioners as patients without schizophrenia.

Methods.

Design: Case-matched retrospective case note review.

Setting: Twenty-two general practices in the Birmingham area (UK).

Subjects: 195 patients with a diagnosis of schizophrenia, 390 matched controls with a diagnosis of asthma and 390 general control patients.

Main outcome measures: Proportions of patients within each group having received six pre-defined routine health checks in a 3 year period. Conditional logistic regression models were used to identify differences between groups.

Results. Patients with schizophrenia were half as likely as asthma controls to have blood pressure and cholesterol levels recorded (odds ratio 0.51; 95% confidence interval (CI) 0.35–0.73 and 0.50; 0.31–0.82, respectively) and were also less likely to have smoking status noted (0.60; 0.41–0.85). Similarly, patients with schizophrenia were significantly less likely than general population controls to have either blood pressure or cholesterol recorded (0.68; 0.47–0.97 and 0.58; 0.35–0.95). The significant differences observed were maintained after adjusting for potential confounders with the exception of cholesterol recording between the asthma and schizophrenia groups (0.57; 0.30–1.05).

Conclusions. Patients with a diagnosis of schizophrenia are less likely to receive some important general health checks than patients without schizophrenia.

Keywords. Prevention, primary care, schizophrenia.

Introduction

It has been acknowledged for many years that patients with serious mental illness (SMI) have unmet health needs, excess morbidity and higher standardised mortality rates (SMR) than the general population.¹ Honig² and Brugha³ both reported that approximately half of their samples of long-term mentally ill patients had physical health problems warranting further attention. Similarly, Farmer⁴ reported that 31 (53%) of a sample of patients in a community support programme

with long-term mental illness had undiagnosed medical illness. More recently, a UK survey conducted by the Office for National Statistics⁵ reported that 62% of people with psychosis were experiencing a physical condition, compared to 42% of those without a psychosis. The SMR for all causes of death for people with schizophrenia is 156 for men and 141 for women.⁶ Whilst some of this additional morbidity and mortality is attributable to the mental illness itself (increased mortality from suicide and accidental death), there is also a substantial increase in deaths from other causes,

Received 15 April 2005; Revised 23 June 2006; Accepted 21 September 2006.

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particularly diseases of the cardiovascular and respiratory systems.¹

It has been suggested that the observed excess may be related to higher rates of smoking (with a prevalence of up to 88% reported),^{7,8} side effects of medication such as weight gain^{9–11} and a range of lifestyle effects.¹² It is also possible that the observed differences may be partly explained by differences in access to or the provision of health care. There is evidence, for example, of GP ambivalence towards providing health care for people with SMI.^{13,14} Although the vast majority of GPs have high levels of involvement with their patients with schizophrenia¹⁵ and accept that primary care has responsibility for the physical health-care of patients with SMI,¹⁶ it has been previously reported that some GPs make little attempt to address and treat cardiovascular and respiratory risk factors in this patient population.¹⁷ This suggests the possibility of sub-optimal routine physical healthcare and a lack of congruence between perceived responsibility and behaviour in practice. Given that few Psychiatrists integrate physical health monitoring into their routine out-patients appointments¹⁸ the provision of such care at the primary care level is critical.

Whilst many studies of psychiatric patients suggest a need for increased levels of physical healthcare, no study has reported data from a control group. It is therefore difficult to quantify the degree of unmet need or levels of care offered to the general population.

In summary, a diagnosis of schizophrenia is associated with physical ill health and increased mortality. Some of this may be explained by factors related to mental illness or side effects of treatment, but it is possible that it is further compounded by sub-optimal routine and preventive healthcare. Whilst other studies have compared the care of patients with schizophrenia with controls, these have either focussed on use of services or disease specific assessment^{19,20} or been small single site studies.²¹ Evidence from such studies suggests clinical assessment is rarely undertaken when patients with schizophrenia consult with their GP.²⁰ No previous multi-practice study has attempted to compare the levels of physical health care offered to patients with and without a diagnosis of schizophrenia. This study, therefore, aims to identify differential levels of routine healthcare offered to these patient groups. Within the UK, these data will also provide a useful baseline to enable evaluation of the impact of the new GP GMS contract on the provision of healthcare to this patient group. Data will also contribute to the debate relating to appropriate delivery of physical health care of patients with schizophrenia. Recent recommendations from the United States advise mental health care providers to provide the type of physical health care service usually offered in primary care to patients who do not receive it within this

setting.²² These data clarify the need for such recommendation.

Aims

The aims of the study were to quantify the proportion of patients with schizophrenia who had received specified routine health checks in the previous 3 years, and to determine whether these patients receive the same levels of physical health care from primary care practitioners as patients without schizophrenia, by comparison with data from matched controls.

Methods

Recruitment and identification of eligible cases

The study was conducted in Birmingham, UK, and all practices within the areas covered by South and North Birmingham local ethics committees were invited to participate. Birmingham is a large city with high levels of industrial activity and a population of 1 million and the metropolitan area includes neighbourhoods of deprivation and affluence. Practices were contacted in batches of ~20 throughout the study period to enable research activity to take place within a few months of the practice consenting to participate. Practice recruitment was ongoing throughout the period April 1998–December 2000. The only inclusion criterion was that the practice currently had one or more patients with a diagnosis of schizophrenia. No specification was made about the format of practice records and both computerised and non-computerised practices were eligible for inclusion.

A multi-source approach was adopted for the identification of patients with schizophrenia, with lists obtained from participating General Practices, The Mental Health Trust and Community Mental Health Teams. This multi-source approach was utilised to maximise case ascertainment and ensure that the sample was representative of the patient population both with respect to their illness (patients in and out of contact with mental health teams and with a range of illness duration) and socio-demographic factors (age, sex and social class) as certain patient groups may be more or less likely to receive different modalities of care and may therefore be under or over represented if only a single source of data were used.

Data from the three sources were collated to produce a list of potential cases within each participating practice and medical records were reviewed to confirm eligibility. Eligible patients were those aged 21–64 inclusive with a diagnosis of schizophrenia or persistent delusional disorder preceding the study review period. Patients with dementia, organic brain disorder or learning disability were excluded, and patients were required to have attended the GP's practice at least

once during the 3 year period of review. In any practice with more than 15 eligible patients, a random selection of 15 cases was undertaken, to ensure that no single practice dominated the final sample. After selection of cases within each practice, control patients were selected. Controls were matched for sex, age band and general practice. General controls were selected at random from practice registers and asthma controls were randomly selected from practice asthma registers. The asthma control group were used to represent patients with a chronic physical disease to control for the effect of chronicity. The decision to use asthma was a pragmatic one, based on the likelihood of the availability of registers to facilitate identification and subsequent case matching. Case matching (sex and age band) was undertaken on a 1:2:2 basis (schizophrenia: general:asthma). Controls were subject to the same inclusion criteria as cases, with diagnosis of asthma or 'any medical history' replacing schizophrenia. In addition control groups were required to have no diagnosis or treatment for schizophrenic illness. To maximise consistency between groups, patients entered into the schizophrenia or asthma groups had to have had this diagnosis made prior to the period of review.

Data extraction

Medical records (both paper and electronic) were reviewed for the 3 year period 1 April 1996–31 March 1999. Data were extracted from the primary care medical records of all selected patients (cases and controls) onto a standardised data extraction form. All data were extracted by a single researcher (LR) to maximise consistency. The principal outcomes were differences in the proportions of patients in each of the groups receiving each of six pre-specified health checks during the study period. The health checks compared were recording of: Blood pressure, Weight, Cholesterol, Smoking status, Alcohol consumption and Family history of heart disease. For each variable the data collected was simply yes/no to indicate whether this had been recorded in the patient notes during the period of interest. A positive recording could be in the form of a primary care entry or inclusion of secondary care data in the records.

Possible explanatory and confounding variables were also collected and included occasions where health promotion would have been impossible or inappropriate (based on the researcher's interpretation of information present in records, for example where distress, bereavement or active psychosis were noted) or more likely, such as new registration checks, cervical screening or consultations for contraception. Other data collected included documented health education (including provision of smoking cessation advice) and number of primary care consultations.

For all patients, information was collected on age, sex, and previous significant illness. Information

about participating general practices, including list size, number of partners and an indicator of the level of deprivation of the practice population (Townsend score based on practice postcode) was obtained for descriptive purposes, and to determine representativeness of the recruited sample.

Sample size

Due to lack of published data, sample size estimates were informed by data from the first 200 control patients. The study was powered to detect a 12% difference in the proportion of cases and controls receiving each health check. As sample size was powered on unmatched data, all estimates are conservative. A 1:2 case:control ratio was used to reduce the number of cases required and sample size estimates were corrected using formula for unequal sized groups. Power calculations were undertaken for each of the six primary outcomes. A sample size of 200 cases and 400 controls would enable identification of a 12% difference, or greater, between groups for all of the six recorded outcomes.

Analysis

Participating practices were compared to non-participating practices by comparison of Townsend deprivation scores, practice list size and number of partners. The odds of having received each of the six health checks within each patient group were compared using conditional logistic regression analyses. Between group comparisons were undertaken for pre-specified potential confounding variables which included number of consultations, use of hormonal treatments such as contraception, co-morbid conditions, new patient registration, pregnancy and attendance for cervical screening. Where differences were demonstrated (at the $P < 0.05$ level) these were included in the models. Final models were produced both with and without adjustment for identified confounding variables and were based on best fit using backward elimination. Variables entered into adjusted models included all identified potential confounding variables and the other five health checks.

Results

Practice representativeness

132 practices were contacted, of which 22 (16.7%) participated in the study and two reported that they had no registered patients with a diagnosis of schizophrenia. Townsend scores for deprivation did not differ significantly between participating and non-participating practices ($z = 0.46$, $P = 0.64$). Participating practices were larger than non-participating practices both in terms of numbers of partners ($z = 2.52$, $P = 0.012$) and practice list size (mean list size 6354.1 compared to 4810.3, $t = 2.1$, $P = 0.038$).

TABLE 1 Proportion of patients in each group having received specified health checks during three year review period

Outcome	Schizophrenia group (<i>n</i> = 195) <i>n</i> (%) [95% CI]	General Control group (<i>n</i> = 390) <i>n</i> (%) [95% CI]	Asthma Control group (<i>n</i> = 390) <i>n</i> (%) [95% CI]
BP recorded	109 (55.9%) [48.6, 63.0]	253 (64.9%) [59.9, 69.6]	277 (71.0%) [66.2, 75.5]
Weight recorded	77 (39.5%) [32.6, 46.7]	156 (40.0%) [35.1, 45.1]	181 (46.4%) [41.4, 51.5]
Cholesterol recorded	24 (12.3%) [8.0, 17.8]	76 (19.5%) [15.7, 23.8]	85 (21.8%) [17.8, 26.2]
Smoking status recorded	93 (47.7%) [40.5, 54.9]	167 (42.8%) [37.9, 47.9]	232 (59.5%) [54.4, 64.4]
Alcohol intake recorded	73 (37.4%) [30.6, 44.6]	132 (33.8%) [29.2, 38.8]	142 (36.4%) [31.6, 41.1]
Family history recorded	58 (29.7%) [23.4, 36.7]	110 (28.2%) [23.8, 33.0]	119 (30.5%) [26.0, 35.3]

Patient demographics

The search strategy identified 321 potential cases. 126 patients were ineligible (*n* = 104) or could not be included on the grounds that their medical notes were unavailable (*n* = 22). The majority of ineligible patients (*n* = 72 of 104) did not have a diagnosis of schizophrenia and were identified as a potential case due to the wide search criteria adopted by some practices. Due to the absence of a disease register for schizophrenia, many practices had to use drug searches to identify potential patients, with the inevitable result that other diseases were identified. Such a strategy was favoured to ensure the maximum capture rate within each practice to maximise representativeness of cases. Three patients had a diagnosis of schizophrenia made after the start of the study period and were therefore excluded. Other exclusions included patients having moved from the practice (*n* = 11), death (*n* = 4), having joined the practice after the study review period (*n* = 7), having no recorded psychiatric illness (*n* = 3), being potential 'ghosts' (no consultation or contact during the 3 year period) (*n* = 3) and being hospitalised for the duration of the review period (*n* = 1). The 22 participating practices therefore provided 195 eligible cases, representing at least 83% of the patients in these practices with a diagnosis of schizophrenia (diagnosis could not be confirmed where case notes were missing).

The final sample comprised 114 males and 81 females, with a mean age of 42.8 years. The matched nature of the study provided general and asthma control groups with an identical sex profile and mean ages of 42.6 and 42.8, respectively.

Date of schizophrenia diagnosis was available for 178 cases, with the mean time since diagnosis being 14.5 years (range 0–42 years, SD 9.87, median = 13 years). Mean age at diagnosis was 27.2 (SD 7.34) for males and 29.1 years (SD 9.57) for females. Over 71% of males had received a diagnosis by the age of 30, compared to 63% of women and 32% of the sample had other psychiatric diagnoses preceding the diagnosis of schizophrenia.

Primary outcomes

Table 1 presents the raw numbers of individuals in each group who received each of the specified health

checks. These data suggest that patients in the schizophrenia group were less likely to have had their blood pressure and cholesterol levels recorded than either general or asthma controls (55.9% versus 64.9% and 71.0%, respectively for blood pressure and 12.3% versus 19.5% and 21.8%, respectively for cholesterol). Statistical testing of these proportions was not undertaken due to the paired nature of the data. Potential confounding variables were identified as number of primary care consultations in the 3 year period, consultations for oral contraception and pre-existing disease of the gastric, circulatory, musculoskeletal, skin, endocrine or female genital system. Analyses were initially conducted without adjustment to allow the effect of confounding variables to be identified. Both the unadjusted and adjusted conditional logistic regression models are presented in Table 2. Patients with a diagnosis of schizophrenia were approximately half as likely as the other two groups to have had their blood pressure recorded during the 3 year study period (OR compared to asthma group 0.52, *P* = 0.03; OR compared to general group 0.43, *P* < 0.01). Similar results were noted for cholesterol, although only the general group comparison reached conventional levels of significance (OR compared to asthma group 0.57, *P* = 0.07; OR compared to general group 0.46; *P* = 0.02). Patients with schizophrenia were less likely than asthma patients to have had smoking status recorded (OR 0.37, *P* = 0.001) although a similar result was found when general and asthma comparisons were made and suggests this is due to increased monitoring of patients with asthma rather than reduced monitoring for those with schizophrenia. No other significant between group differences were noted.

Discussion

This study provides robust data on health promotion and prevention activity and demonstrates that patients with a diagnosis of schizophrenia are no more likely than the general population to be targeted for physical health checks by the primary care team despite their increased health risks. Indeed, patients with schizophrenia are significantly less likely than other patient groups to receive some potentially important basic

TABLE 2 Odds ratios for between group comparisons: Odds of receiving each specified health check compared by diagnosis

Comparison	Health check	Unadjusted analyses		Adjusted analyses	
		Odds ratio (95% CI)	P-Value	Odds ratio (95% CI)	P-Value
Schizophrenia with general	Blood pressure	0.68 (0.47, 0.97)	0.03	0.43 (0.23, 0.80)	<0.01
	Cholesterol	0.58 (0.35, 0.95)	0.03	0.46 (0.24, 0.88)	0.02
	Smoking	1.24 (0.86, 1.78)	0.24	1.16 (0.65, 2.07)	0.61
	Weight	0.98 (0.68, 1.40)	0.90	1.18 (0.70, 1.99)	0.53
	Alcohol	1.19 (0.82, 1.74)	0.37	1.49 (0.87, 2.54)	0.14
Schizophrenia with asthma	Family history	1.09 (0.73, 1.62)	0.68	1.25 (0.62, 2.52)	0.53
	Blood Pressure	0.51 (0.35, 0.73)	<0.0001	0.52 (0.29, 0.93)	0.03
	Cholesterol	0.50 (0.31, 0.82)	<0.01	0.57 (0.30, 1.05)	0.07
	Smoking	0.60 (0.41, 0.85)	<0.01	0.37 (0.21, 0.66)	0.001
	Weight	0.74 (0.52, 1.06)	0.10	1.02 (0.60, 1.71)	0.96
Asthma with general	Alcohol	1.05 (0.72, 1.53)	0.80	1.63 (0.95, 2.82)	0.08
	Family history	0.96 (0.65, 1.43)	0.84	1.41 (0.71, 2.79)	0.32
	Blood Pressure	1.34 (0.99, 1.82)	0.06	0.84 (0.52, 1.36)	0.47
	Cholesterol	1.15 (0.81, 1.64)	0.42	0.81 (0.52, 1.26)	0.35
	Smoking	2.08 (1.54, 2.81)	<0.0001	3.15 (1.99, 4.97)	<0.0001
	Weight	1.32 (0.98, 1.76)	0.06	1.16 (0.78, 1.74)	0.46
	Alcohol	1.13 (0.83, 1.55)	0.43	0.91 (0.58, 1.43)	0.69
Family history	1.13 (0.82, 1.57)	0.46	0.89 (0.51, 1.55)	0.68	

health checks, particularly blood pressure and cholesterol measurement. This confirms previous studies suggesting deficiencies in the level of preventative healthcare offered to patients with long-term mental illness.^{17,23} Similar disparities in the level of routine care were observed between cases (schizophrenia) and both sets of controls (general and asthma). It is therefore unlikely that the differences are attributable to the increased healthcare demands that arise from the diagnosis of a chronic illness such as asthma.

Limitations

Only 17% of contacted practices agreed to participate in this study. Recruited practices were larger in terms of list size and partner numbers than non-participating practices. This is perhaps not surprising as larger practices typically have greater research capacity including space, staff and technology. Practices may also have interpreted this study as an audit of the care they provide, and those with less confidence in their ability to care for patients with schizophrenia may have been less willing to participate; should this be the case, then the differences demonstrated are likely to underestimate disparities in care. It is also possible that participating practices were those with greater information technology capacity including the ability to generate SMI registers and may therefore be better equipped to provide health preventive services. Participating practices were therefore probably those with objective indicators of good routine care. Whilst it is not possible to comment on the level of care offered by non-participating practices, it seems sensible to hypothesise that the differences observed in this study tend to

underestimate rather than overestimate differences in care.

The second potential limitation to this study was the lack of opportunity to blind the researcher to the patient group. Bias was minimised by the use of a standardised data collection form, although it is possible that systematic bias existed (e.g. the larger quantity of information in the notes of patients with schizophrenia may have made routine health checks less visible in the paper records). It is also possible that primary care records do not constitute complete indicators of activity. Practitioners may only record when changes to a person's status occur even though they frequently check this status. However it would be expected that measurements like blood pressure and cholesterol would always be formally recorded to act as future reference points and systematic differences, between patient groups, in recording are unlikely.

The study sample size was powered on unmatched data and therefore produced a conservative estimate. Five of the six outcomes required less than 200 cases to detect a significant difference. However, we acknowledge that a type I error may be introduced by multiple testing. After applying the Bonferroni²⁴ correction there is still evidence that patients with schizophrenia were significantly less likely than general population controls to have their blood pressure measured and half as likely compared to asthma controls to have had smoking status recorded.

Implications

Excess morbidity and mortality have frequently been observed in cohorts of patients with schizophrenia

and include excess mortality from respiratory and cardiovascular disease. Evidence from this study suggests patients with schizophrenia do not receive the increased levels of care that might be expected for this high risk group and are, in fact, less likely to receive certain clinically important health checks. This is perhaps a surprising finding given evidence that patients with psychosis have been demonstrated to be willing to engage in health assessment and education activities when invited to do so,²⁵ and implies the barrier to care operates at the practitioner or service level rather than residing with the patient. Recent policy imperatives within the UK may improve the physical health care provided for people with SMI such as schizophrenia. The National Service Framework for Mental Health²⁶ encouraged primary and secondary care organisations to work together and agree protocols for the assessment and management of a range of mental health problems including schizophrenia. National Institute of Clinical Excellence (NICE) guidance on schizophrenia²⁷ included a series of clinical practice recommendations such as the development of primary care practice registers for people with schizophrenia. Perhaps most significantly, the UK GP contract²⁸ awards 41 points (~8% of the total points available) if a practice can provide evidence of good quality care on five mental health indicators. These include producing a register of people with severe long-term mental health problems who require and have agreed to regular follow up, and demonstrate that 90% of patients with severe long-term mental health problems have had a review recorded in the past 15 months that includes a review of physical health care. Strategies to improve the health of this population are not limited to the UK, and whilst the mode of delivery may differ, the aim of improving healthcare provision to patients with schizophrenia is a common focus.²²

This study confirms that current policy is appropriately targeted at a population that has, to date, received less health prevention and promotion than the general population despite evidence of unmet need and that practices may be starting from a relatively low baseline in providing health checks. Further research is required to explore the impact of policy imperatives and recommendations on the provision and recording of basic health checks and in the longer term to establish the effects on morbidity and mortality.

Declaration

Ethical approval: North and South Birmingham Local Research Ethics Committees approved the study (Reference No's 500.00 and 0102, respectively).

Funding: This study was funded by an NHS R&D New Blood Fellowship to Lesley Roberts. Sue Wilson is in receipt of an NHS R&D Career Scientist Award.

Conflict of interest: All authors confirm that they have no conflicting interests to declare.

Contributors: LR was responsible for the content and design of the study, data collection and interpretation, obtaining funding and drafting of the manuscript. LR is the guarantor of this work. AR was responsible for the data analysis and critical revision of the manuscript. SW was responsible for the supervision of the study design and data interpretation and critical revision of the manuscript. HL was responsible for the conception of the study, clinical perspective of the content and critical revision of the manuscript.

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