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ORIGINAL PAPER

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Physical illness and lifestyle risk factors in people with their first presentation of psychosis

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Abstract *Background* There is an increased prevalence of physical illness and poor lifestyle in patients with chronic schizophrenia. It is unclear whether these are present at the onset of psychosis or develop over the course of illness. We aimed to establish whether patients experiencing their first episode of psychosis have worse physical health and lifestyle than community controls without psychosis. *Method* Eighty-nine patients with new onset illness were compared to age and sex matched controls for self-reported physical illness and cardiovascular and respiratory risk factors. *Results* Patients reported more physical health complaints, mainly respiratory, compared with age and gender matched controls (odds ratio 2.85, 95% confidence interval 1.2–6.7). Patients were more likely to be cigarette smokers (1.82, 95% CI 1.0–3.3) and eat a fast food diet (1.04, 95% CI 1.0–1.1), but these differences were accounted for by patients' unemployment status. *Conclusions* Some risk factors for physical health problems are present at the onset of psychosis, but these may be explained by unemployment.

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Background

Premature mortality and prevalence of medical comorbidity

It is established that schizophrenia is associated with significant premature mortality [6, 16]. Mortality largely due to natural causes with respiratory (Standard Mortality Ratio 226); cardiovascular (SMR 178); and digestive diseases (SMR 185) being the most common [5, 25]. Similarly cross sectional studies have identified discrete physical diseases in 12–53% of chronic psychiatric samples [11, 18, 27]. Felkner et al. [13] estimate that 35% of psychiatric patients have undiagnosed physical disorders.

What is unclear, however, is the direction of causality. There are a number of risk factors, secondary to schizophrenia, like smoking, which could account for some of the excess mortality from natural causes and increased prevalence of medical co-morbidity. Alternative explanations include factors that increase the risk of schizophrenia, such as living in an inner city area, which in turn may be associated with less healthy lifestyles.

One way of addressing this issue is to determine what risk factors for physical illness are already present at the onset of illness. One of the few studies examining medical co-morbidity in patients with first episode psychosis found a prevalence of 17.6% [39].

Lifestyle risk factors

People with schizophrenia have been shown to have unhealthier lifestyles compared to the general population. Poor diet, lack of exercise and higher levels of

smoking contribute to increased risk of physical illness [7, 8].

McCreadie et al. [30] found that on average patients with schizophrenia ate less than half of the recommended intake of fruit and vegetables. In an assessment of lifestyle factors, Brown et al. [7] found people with schizophrenia performed only light or no exercise in the previous week, (males: 45% and 36% respectively; females: 57% and 32% respectively).

The prevalence of smoking is markedly high in people with schizophrenia. Estimates have ranged between 75 and 92% for people with schizophrenia compared to 30–40% in the general population [22]. The impact of smoking concerns not just the negative consequences to a person's physical health but affects the pharmacological treatment of schizophrenia by increasing neuroleptic metabolism. Smokers with schizophrenia often require higher doses of neuroleptics than non-smokers [40].

Antipsychotic medication also contributes to increased risk factors for physical ill health. After 10 weeks of treatment with a standard dose of these drugs, weight gain can increase by 4.5 kgs [41]. Weight gain is a major concern with atypical antipsychotics, particularly clozapine and olanzapine, and is associated with glucose intolerance and hypertension [14].

It is unclear whether poor physical health and/or unhealthy lifestyle are present at the onset of psychosis or whether they develop over the course of the psychiatric illness. Little is known about physical illness and lifestyle risk factors in first presentation patients with psychosis. Our aims therefore were to examine: (a) whether the prevalence of self-reported physical illness is higher in people with their first episode psychosis compared to controls; and (b) whether these patients have poorer lifestyle characteristics and are at greater risk of developing physical health problems.

Method

First presentation patients with psychosis

We used an age and gender matched case–control design to recruit people presenting with their first episode of psychosis from two South-East London catchment areas, served by the Maudsley and Lambeth Hospitals. 'First presentation' was defined as a first contact with mental health services within the past 12 months for a psychotic illness. Patient recruitment was in conjunction with the AESOP (Aetiology and Ethnicity in Schizophrenia and Other Psychoses) study [33]. The procedures for case finding involved recruiting all patients with a first episode of psychosis. This was conducted through regular checks at all points of possible contact with secondary and tertiary health services during a 2-year period (January 1999 to December 2001). The Screening Schedule for Psychosis [19] was used to screen potential cases through interviews and/or reading case notes and information from psychiatric staff. Patients were included if they were aged 16–65 years and lived within the defined geographical area. Those who had previously presented to mental health services with non-psychotic psychiatric symptoms were included in the study. Patients were excluded if they were unable to speak English or had any prior contact with mental health services for psychotic symptoms. Patients identified as eligible for inclusion were approached and informed consent sought. Diagnostic categories were assigned after reviewing case notes and based on the presence of hallucinations, delusions, or thought disorder using Research Diagnostic Criteria [37].

No age (27.3 (SD 9.0) vs. 27.2 (SD 6.1) respectively, $t = 0.1$, $P = 0.936$) or sex differences (males 72% vs. 28% and females 65% vs. 35% respectively, $X^2 = 0.71$, $P = 0.399$) were found for participating and non-participating patients.

Control group

The control group was matched for patients' age and gender. Initially we recruited local community controls using a procedure of door knocking. Streets local to patients' addresses were chosen. Once streets were identified, the first door number was randomly selected and knocked. Every subsequent fifth door was knocked. Each address was followed-up, at least once on a separate occasion, and excluded only if no response had been received after a second follow-up. Respondents living in the household who could be matched for age (within a 5-year age band) were recruited. The age and gender of eligible controls refusing to participate in the study were recorded were possible. Recruiting sufficient numbers of young males proved difficult through door knocking. Therefore, snowball sampling (asking those recruited for names of males who would be eligible to participate in the study) and approaching people through a local job centre was also used to reach the required number of male controls. Informed consent was sought for eligible and participating controls.

The study was approved by the local ethics committee.

Data collection

Data were collected through a semi-structured interview administered by an experienced researcher (CS) to patients and controls. The Health and Lifestyle (HAL2) (1991–1992) [9] questionnaire includes seven sections including:

1) Health attitudes and beliefs;
2) Health status (past and present);
3) General Practitioner (GP) and hospital visits in the past month, and any treatment for health problem;
4) Dietary habits and usual frequency of consumption of 31 food items per week;
5) Smoking behaviour including smoking history, number and type of cigarettes smoked per day, and the ability to give up smoking if willing;
6) Exercise activity including time spent walking per day and if any particular sports were performed in the past two weeks; and
7) A physical health review measuring blood pressure, height and weight, and respiratory function [forced expiratory volume in 1 second (FEV_1), forced vital capacity (FVC) and peak expiratory flow (PEF)].

Statistical analyses

We estimated the prevalence of reported physical illness, lifestyle and cardiovascular and respiratory risk factors in patients and compared them to controls using McNemar's test. Factor analysis was performed, followed by varimax rotation, on the 31 items of the dietary food frequency questionnaire to identify which items were correlated with each other [20]. The optimum number of factors was determined using the scree plot and considered with the interpretability of the associated factors.

Using conditional logistic regression we performed initial univariate analyses to examine associations between the physical illness, cardiovascular and respiratory risk factors and lifestyle variables and ethnicity, marital status, educational qualification and

Table 1 Socio-demographic characteristics of patients and matched controls[a]

	Patients (n = 89)	Controls (n = 89)	X^2	P value
Ethnicity				
White	34 (38.2%)	55 (61.8%)	39.4	<0.001
African-Caribbean	24 (27%)	15 (16.8%)		
Black African	22 (24.7%)	9 (10.1%)		
Indian	9 (10.1%)	10 (11.2%)		
Marital status				
Single	73 (82%)	55 (61.8%)	9.0	0.003
Cohabiting/married	16 (18%)	34 (38.2%)		
Educational qualification				
None	17 (19.1%)	5 (5.6%)	12.5	<0.001
GCSE/O levels	43 (48.3%)	27 (30.3%)		
A levels/higher qualification	29 (32.6%)	57 (64%)		
Employment status				
Unemployed/workless	56 (62.9%)	15 (16.8%)	19.3	<0.001
Employed	33 (37.1%)	74 (83.1%)		

[a] Matched for age and gender

employment status to decide which covariates to include in the multivariate analyses. Educational qualification and employment status were selected given their significant associations with these variables of interest. Further univariate analyses where then performed to examine associations between caseness for physical illness, lifestyle and cardiovascular and respiratory risk factors, allowing for matches according to age and gender. Multivariate analyses were subsequently conducted adjusting for unemployment and unemployment and educational qualification. We adjusted for smoking when examining differences in lung function. Analyses were conducted using Stata version 8.0 (Stata Corporation, College Station, TX).

Results

Eighty-nine patients (65%; 89/137) and 89 controls (70%; 89/127) approached agreed to take part in the study. The mean ages for patients and controls were 27.3 (SD 8.9) and 28.7 (SD 9.9) years respectively. Fifty-five (62%) of patients and controls were male.

Table 1 shows the significant differences between patients and controls for ethnicity, marital status, educational qualification and employment status. According to research diagnostic criteria, 47 (53%) of patients had a diagnosis of schizophrenia, 23 (26%) schizoaffective disorder, 13 (14%) affective psychosis and 6 (7%) unspecified or functional psychosis. Sixty-one (68.5%) of the study subjects were inpatients and 28 (31.5%) were outpatients when recruited to the study.

Prevalence of physical illness

Table 2 lists the results of the univariate and multivariate analyses for patients and age and gender matched controls' for physical health status. A significantly larger proportion of patients reported a current physical health problem compared to age and gender matched controls (OR 2.85, 95% CIs 1.2–6.7, P = 0.021). Adjustment for unemployment lead to a considerable reduction in the odds ratio for having a reported current physical health problem (OR 1.47, 95% CIs 0.5–4.3, P = 0.484). The number of reported physical symptoms in the past month was greater in patients compared to controls (mean

Table 2 Comparisons of physical health variables between patients and matched controls[a,b]

Factor	Patients (n = 89)	Controls (n = 89)	Odds ratio (95% CI)		
			Unadjusted	Adjusted for unemployment	Adjusted for unemployment & education
Physical illness status (n %)					
No physical illness	63 (70.8%)	76 (85.4%)	1.0	1.0	1.0
Current physical illness	26 (29%)	13 (14%)	2.85 (1.2–6.7)*	1.47 (0.5–4.3)	1.36 (0.4–4.8)
No. of reported physical symptoms in past month					
Mean (SD)	5.8 (4.0)	3.6 (2.5)	1.26 (1.1–1.4)**	1.22 (0.2–6.4)	1.24 (1.0–1.5)*
Taking medication for current physical illness (n %)					
No	75 (86%)	73 (83%)	1.0	1.0	1.0
Yes	12 (14%)	15 (17%)	0.75 (0.3–1.8)	0.39 (0.1–1.4)	0.14 (0.1–1.0)
Seen GP in past month (n %)					
No	59 (66%)	77 (87%)	1.0	1.0	1.0
Yes	30 (34%)	12 (13%)	3.57 (1.5–8.2)*	3.20 (1.2–8.2)*	2.31 (0.6–8.2)

[a] Matched for age and gender
[b] Physical health variables derived from HAL2 questionnaire
* P < 0.05, ** P < 0.001

Table 3 Numbers and types of physical illness in patients and matched controls[a]

Type of physical illness	Patients (n = 89)	Controls (n = 89)
Respiratory	21	7
Gastrointestinal	9	4
Ophthalmic and auditory	7	6
Neurological	6	3
Dermatological	5	2
Musculoskeletal	4	6
Genitourinary	4	4
Cardiovascular	3	3
Endocrine, nutritional and metabolic	3	1
Infectious	2	5
Injury	2	4
Congenital	2	0
Haematological	1	1

[a] Matched for age and gender

5.8 (SD 4.0) vs. 3.6 (SD 3.6), $P = 0.001$). A significantly greater number of patients had visited their GP in the past month compared to controls (34% vs. 13%, OR 3.57, 95% CIs 1.5–8.2, $P = 0.003$) and remained so after adjustment for unemployment (OR 3.20, 95% CIs 1.2–8.2, $P = 0.016$). The majority of reported physical illnesses were minor or well controlled conditions, but few patients appeared to take any medication for a current physical health problem (14%). Table 3 shows the types of physical illnesses in patients and age and gender matched controls. Respiratory problems, such as asthma, were the most frequently reported.

Physical health review

Table 4 details the results of the univariate and multivariate analyses for blood pressure, body mass index (BMI) and lung function. Slightly more patients compared to matched controls had a body mass index greater than 25 indicating they were overweight or obese (BMI 30+), although the difference was not statistically significant (35% vs. 28%, OR 1.38, 95% CIs 0.7–2.7, $P = 0.400$). Only a minority of the sample were obese 6 (7%) patients and 7 (8%) controls. At the time of interview, 79 (89%) of patients were taking psychotropic medication, mainly antipsychotics, including atypicals such as olanzapine (20%), risperidone (11%) or others (8%).

Systolic and diastolic blood pressures were within normal limits (i.e. <140 mm Hg for systolic and <90 mm Hg for diastolic) for the majority and similar between patients and controls (90% vs. 95% and 91% vs. 86% respectively) (see Table 4). Lung function was poorer among patients (FEV_1 was significantly lower in patients and remained so after adjustment for unemployment and educational qualification (mean 2.7 (SD 0.9) vs. 3.2 (0.8), $P = 0.001$), as was PEF (mean 510.7 (SD 105.8) vs. 560.0 (SD 97.4), $P = 0.003$) (see Table 4).

Lifestyle factors

Table 5 shows the results of univariate and multivariate analyses for lifestyle factors for diet, exercise and smoking. Two main dietary components emerged: (a) fast food diet, low in fruit and vegetables, and (b) diet high in fruit and vegetables. Dietary patterns between patients and matched controls revealed significant differences following univariate analysis. Patients were more likely to consume a high fat/fast food diet high in meat and low in fruit and vegetables compared to matched controls (mean dietary score 28.7 (SD12.9) vs. 24.3 (SD 8.8), OR 1.04, 95% CIs 1.0–1.1, $P = 0.009$). After adjustment for unemployment and educational qualification the statistical significance disappeared (see Table 5). Marginally more patients felt they did

Table 4 Results of the physical health review in patients and matched controls[a]

Factor	Patients (n = 89)	Controls (n = 89)	Odds ratio (95% CI)		
			Unadjusted	Adjusted for unemployment	Adjusted for unemployment & education
Body mass index (kg/m^2)					
<25 normal weight	52 (58%)	57 (64%)	1.0	1.0	1.0
25+ overweight/obese[c]	31 (35%)	25 (28%)	1.38 (0.7–2.7)	1.33 (0.5–2.9)	1.74 (0.7–4.3)
Systolic blood pressure (mm Hg)					
<140	79 (90%)	85 (95%)	1.0	1.0	1.0
140+	9 (10%)	4 (5%)	2.66 (0.7–10.0)	2.00 (0.4–10.9)	5.10 (0.5–53.2)
Diastolic blood pressure (mm Hg)					
<90	80 (91%)	77 (86%)	1.0	1.0	1.0
90+	8 (9%)	12 (14%)	0.60 (0.2–1.6)	0.34 (0.1–1.5)	0.61 (0.1–4.1)
Respiratory function mean values (SD)					
FVC	3.2 (0.9)	3.4 (0.8)	0.71 (0.5–1.0)	0.68 (0.4–1.1)[b]	0.77 (0.4–1.4)
FEV_1	2.7 (0.9)	3.2 (0.8)	0.35 (0.2–0.6)**	0.38 (0.2–070)*[b]	0.42 (0.2–0.8)*
PEF	510.7 (105.8)	560.0 (97.4)	0.99 (0.98–0.99)**	0.99 (0.9–1.0)*[b]	0.99 (0.9–1.0)*

[a] Matched for age and gender
[b] Adjusted also for smoking status
[c] BMI of 30+
* $P < 0.05$, ** $P < 0.001$

Table 5 Comparisons of diet, exercise and smoking between patients and matched controls[a]

Factor	Patients (n = 89)	Controls (n = 89)	Odds ratio (95% CI)		
			Unadjusted	Adjusted for unemployment	Adjusted for unemployment & education
Diet (past week) mean scores (SD)					
High fat/fast food diet	28.7 (12.9)	24.3 (8.8)	1.04 (1.0–1.1)*	1.03 (0.9–1.0)	1.04 (0.9–1.1)
High in fruit and vegetables	22.2 (9.3)	25.1 (7.1)	0.96 (0.9–1.0)*	0.97 (0.9–1.0)	0.98 (0.9–1.0)
Do enough exercise (past month) (n %)					
No	57 (64%)	64 (73%)	1.0	1.0	1.0
Yes	32 (36%)	24 (27%)	1.53 (0.8–2.9)	1.75 (0.7–4.1)	1.5 (0.6–3.8)
Done any exercise activities (past 2 wks)					
No	23 (26%)	17 (19%)	1.0	1.0	1.0
Yes	66 (74%)	72 (81%)	0.68 (0.3–1.3)	0.49 (0.2–1.3)	0.47 (0.1–1.6)
Smoking status (n %)					
Non-smoker	45 (51%)	59 (66%)	1.0	1.0	1.0
Current smoker	44 (49%)	30 (34%)	1.82 (1.0–3.3)*	1.35 (0.7–2.9)	1.67 (0.7–3.6)
Mean age (SD) started smoking	15.8 (3.8)	16.5 (3.6)	0.94 (0.8–1.0)	0.89 (0.7–1.0)	0.85 (0.6–1.1)
Mean no. (SD) of cigarettes smoked per day	5.8 (9.1)	3.5 (6.0)	1.03 (0.9–1.1)	1.01 (0.9–1.1)	1.67 (0.7–3.6)
Would give up smoking (n %)					
No	15 (34%)	9 (31%)	1.0	1.0	1.0
Yes	29 (66%)	20 (69%)	1.00 (0.1–7.1)	1.00 (0.1–15.9)	1.74 (0.1–36.5)

[a] Matched for age and gender
* $P < 0.05$

enough exercise (36% vs. 27%), although they reported doing less exercise activities compared to matched controls (74% vs. 81%). These differences, however, were not statistically significant. Patients were more likely to be current cigarette smokers compared to matched controls (OR 1.82, 95% CIs 1.0–3.3, $P = 0.047$). This effect was reduced after adjustment for unemployment (OR 1.35, 95% CIs 0.7–2.9, $P = 0.389$). Patients were younger when they started smoking (mean age 15.8 (SD3.8) vs. (16.5 (SD 3.6), although this was not significant. Patients also smoked more cigarettes per day compared to matched controls (mean 5.8 (SD 9.1) vs. 3.5 (SD 6.0), although the difference was not statistically significant. Patients' willingness to give up smoking was similar to that of controls (66% vs. 69%, $P = 0.978$).

Table 6 compares drug and alcohol misuse between patients and matched controls. Drug misuse was high among both patients and controls (40% vs. 43%, $P = 0.746$). The most commonly used illicit drug was cannabis. Of the 45 patients (40%) who had misused a drug in the past year, all had used cannabis compared to 81% of controls who had used drugs. Patients used illicit drugs, predominantly cannabis, more often compared to controls in terms of number of weeks in the past year (mean 43.7 (SD 16.2) vs. 29.4 (SD 22.2) and days per week (mean 5 (SD 2.3) vs. 3.8 (SD 2.6), but neither of these differences were statistically sig-

Table 6 Comparisons of drug misuse and alcohol consumption in patients and matched controls[a]

Factor	Patients (n = 89)	Controls (n = 89)	Odds ratio (95% CI)		
			Unadjusted	Adjusted for unemployment	Adjusted for unemployment & education
Used an illegal drug in past year (n %)					
No	53 (60%)	51 (57%)	1.0	1.0	1.0
Yes	35 (40%)	38 (43%)	0.9 (0.5–1.7)	0.64 (0.3–1.4)	1.11 (0.4–3.0)
Mean age first started drug use (SD)	15.9 (2.8)	17.1 (2.9)	0.79 (0.5–1.2)	0.39 (0.1–2.3)	0.41 (0.1–1.9)
How many weeks in past year					
Mean no. weeks (SD)	43.7 (16.2)	29.4 (22.2)	1.04 (0.9–1.1)	0.99 (0.9–1.0)	0.99 (0.9–1.1)
Days per week in past month used illegal					
Mean no. days (SD)	5 (2.3)	3.8 (2.6)	1.47 (0.9–2.4)	1.19 (0.7–2.1)	1.34 (0.7–2.5)
Alcohol consumption (n %)					
Non-drinker	54 (60.7%)	26 (29.2%)	1.0	1.0	1.0
Moderate[b]	27 (30.3%)	48 (53.9%)	0.23 (0.1–0.5)**	0.16 (0.1–0.5)*	0.21 (0.1–0.7)*
Excessive[c]	8 (8.9%)	15 (16.8%)	0.26 (0.1–0.7)*	0.27 (0.1–1.2)*	0.50 (0.1–1.8)

[a] Matched for age and gender
[b] <21 units/week for males; <14 units/week for females
[c] >21 units/week for males; >14 units/week for females
* $P < 0.05$, ** $P < 0.001$

nificant. Patients were much more likely to abstain from drinking alcohol (61% vs. 29% for controls).

Discussion

Main findings

The prevalence of physical illness in medically screened, chronic psychiatric samples has been variously reported to be 12–53% [18, 27]. We found a prevalence for current reported physical health problems of 29% among patients, twice that of matched controls. The number of reported physical symptoms was significantly greater in patients than controls even after adjustment for unemployment. This is not an unexpected finding given the association between schizophrenia and increased physical ill health. However, medically diagnosed disorders were not significantly more common.

Cardiovascular risk factors were not markedly raised in patients at this early stage of psychotic illness. Very few patients were obese but poorer lung function in patients was evident. Explaining the differences in lung function is difficult. A higher proportion of patients compared to controls reported respiratory problems but again, there was no increase in respiratory disease as opposed to symptoms. Similarly, it is unlikely that patients around the age of 27 would have sufficiently severe chronic lung disease to decrease their FEV1 scores by 0.5 litres, particularly as we adjusted for smoking. One explanation concerns the measurement of FEV1. FEV1 is a manoeuvre of volition, therefore motivation is very important. It is possible that patients were less motivated or lacked interest in performing lung function tests, which may have contributed to lower lung function scores. Caution therefore needs to be exercised when interpreting the results from the lung function tests.

Patients ate less fruit and vegetables than controls and were significantly more likely to consume foods that are high in fat. This finding is congruent with studies in patients with chronic schizophrenia [7, 30]. Time spent exercising also differed significantly compared with controls. These findings concerning diet and exercise are partly explained by many patients being in hospital at the time of interview and having only limited access to opportunities for exercise (e.g. a gym), particularly if compulsorily detained. Patients were much more likely to be smokers compared to controls (49% vs. 34%). This high smoking prevalence is important to note largely because it is apparent at the beginning of illness, despite being accounted for by unemployment.

There were no differences between patients and controls in reporting a wish to give up smoking. This result confirms a previous study in which patients with schizophrenia were shown to be just as motivated to give up smoking as other people [2]. The prevalence for any substance misuse was relatively high among both patients and controls (40% vs. 43%) and presumably reflects the young age group, predominance of males, and the inner city catchment area. This is an interesting finding since it suggests that one possible pathway, in which substance abuse causes both physical illness and schizophrenia, may not be an explanation or pathway in this study. A previous study showed a similar rate for substance misuse in patients with severe mental illness from south London of 36%, [31]. Conversely, alcohol consumption among patients was low compared to controls, although this is not unusual, and has been previously reported for psychiatric patients in South London [4]. Brown et al. [7] suggest that the low prevalence of alcohol abuse may be due to reduced access to alcohol as a consequence of poverty, negative symptoms, and concerns about the possible interactions with medication, but also to social anxiety and isolation.

Impact of unemployment

Adjustment for unemployment shows the importance this has on health and lifestyle behaviour. The notable reduction in the odds ratios following adjustment for unemployment accounted for many of the positive findings for reported physical health problems, diet and smoking. This indicates that the unemployment and the social deprivation experienced impact negatively on physical health and contributes to the increased lifestyle risk factors. This is an important consideration given the inevitability of unemployment with the onset of psychosis for many people [1], and stresses the key role of employment for this group. There is, however, the possibility that unemployment lies on the causal pathway from schizophrenia to physical ill health. Unemployment could itself be a prodromal part of illness, in which case we may have over adjusted for something that is also a part of schizophrenia, and so reduced the 'true' association between schizophrenia and physical ill health.

Implications for health service delivery

All first presentation patients admitted to a psychiatric hospital in the UK automatically undergo a medical evaluation as part of their psychiatric assessment. However, the physical health assessments that are undertaken are largely geared towards establishing the medical causes for psychosis. Subsequent regular physical health checks are seldom systematically performed, and monitoring of physical health and health education by community mental health staff is often unsatisfactory [3]. The stigma of mental illness is another barrier preventing psychiatric patients from receiving adequate physical health care, as some physicians may be uncomfortable in

working with this group [36]. Mirza and Phelan [32] point out that the challenging task of managing physical illness in people with severe mental illness requires skill, patience and experience as patients often present late with complications. Recommendations have been suggested to better detect, manage and treat comorbid medical conditions in people with schizophrenia so as to provide optimal care in secondary care settings [15, 24, 28].

We found that patients were more likely to have recently seen their GP than controls. This finding in itself is not remarkable as most patients with severe mental illness contact primary care services, but it is clear that this does not ensure access to good physical health care [36]. The patient's GP appears to be the person most suited to be responsible for his/her physical health [17, 21]. Beecroft et al. [3] stress the need to introduce a system of regular health checks for those with severe mental illness together with a more proactive follow-up by GPs. A recent study examined whether patients with psychosis were willing to participate in a screening assessment for cardiovascular risk and found many patients were willing to accept the offer (adjusted odds ratio 0.74, 95% confidence intervals 0.49–1.08) [34]. In a subsequent study examining the risk for coronary heart disease (CHD), Osborn et al. [35] found that having a severe mental illness was associated with increased 10-year risk scores for CHD; high-density-lipoprotein (HDL) cholesterol levels; raised cholesterol/HDL-cholesterol ratios; diabetes mellitus and smoking. Osborn et al.'s [35] findings varied significantly with age but were not entirely explained by adjustment for unemployment.

Of the lifestyle factors, smoking is the cause for most concern among patients with severe mental illness as the rates for smoking can be as high as 70% or more [10]. The present study confirms other findings of the high proportion of psychotic patients who smoke [23]. Smoking is likely to aggravate existing respiratory conditions, and a recent study has shown, despite earlier reports to the contrary, that patients with schizophrenia are at increased risk of lung cancer [26]. Targeting cigarette smoking in patients with severe mental illness is thus crucial, and although treatment is difficult, it can be effective [12]. Motivation to quit smoking is also important and gaining attention. Steinberg et al. [38] have shown that motivational interviewing is effective in encouraging patients with schizophrenia to contact smoking cessation clinics.

McCreadie et al.'s [29] study represents one of the few studies aiming to improve the diet of people with schizophrenia and in a randomised controlled trial evaluated the impact of giving free fruit and vegetables for 6 months on dietary habits in people with schizophrenia. At 6 months the mean number (SD) of portions of fruit and vegetables consumed per week increased from 16 (14) to 30 (19) for the free fruit and vegetable with instruction group; 14 (12) to 31 (24) for the free fruit and vegetables alone group; and, 19 (17) to 18 (15) for the treatment as usual group. At 12 and 18 months the mean number of portions consumed gradually declined but still remained higher than at baseline.

Main limitations

One major limitation in our study was the relatively low response rate. This, however, is a general problem with all new onset studies, since patients are by definition new to services, in unfamiliar surroundings, and often bewildered and fearful. As a result some bias may have been introduced. Excluding those unable to speak English could have lead to further selection bias.

Data were primarily collected from interviews with patients and controls and relied on accurate reporting of physical illness, past and present. A full medical exam was not performed to detect any unidentified physical illnesses but we did review the patients' case notes. Small numbers in some sub-groups limited some of the analyses that could have been performed, such as gender and ethnic differences. Similarly, not being able to perform blood tests to investigate the metabolic syndrome and other similar factors presents another limitation. Generalising these findings must be done with caution as participants were a specific patient population from an inner city location.

Conclusions

Our findings show that increased physical health problems, poorer diet and increased smoking start early in the illness among patients with psychosis. These significant findings were explained by patients' unemployment status, which also indicates an important additional consideration. These findings, together with the existing evidence on increased mortality rates, poor physical health and unhealthy lifestyle in chronic patients with severe mental illness provide a strong argument for initiating preventive measures early, as well as regular reviews of physical health thereafter.

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