A survey of delusional ideation in primary-care patients

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ABSTRACT

Background. To assess the prevalence of delusional ideas in primary-care patients.

Method. A survey was carried out with the Aquitaine Sentinel Network of general practitioners (GPs). Consecutive practice attenders were invited to complete the Peters *et al.* Delusional Inventory (PDI-21) self-report questionnaire, designed to measure delusional ideation in the normal population. GPs, blind to the questionnaire results, provided information on patients' psychiatric history.

Results. Of the 1053 attenders included in the survey, 348 (35%) had a lifetime history of psychiatric disorder, of whom 20 (2%) had a history of broadly defined psychotic disorder. The self-report questionnaire was completed by 790 patients. The range of individual PDI-21 item endorsement in subjects with no psychiatric history varied between 5 and 70%, suggesting that delusional ideation is a dimensional phenomenon lying on a continuum with normality. The main discriminative items between psychotic and non-psychotic patients were those exploring persecutory (OR = 15·2, 95% CI 4·3–53·7), mystic (OR = 6·4, 95% CI 1·9–22·4) and guilt (OR = 5·8, 95% CI 1·5–23·2) ideas.

Conclusions. This survey demonstrates that questions that explore delusions and hallucinations are well-accepted by most primary-care patients. More research is needed on psychotic disorders in primary-care settings to improving early identification of these disorders.

INTRODUCTION

In recent decades, much research has been devoted to improving recognition of psychiatric disorders in primary care (Lloyd & Jenkins, 1994). This field of research has been especially fruitful for depressive disorders, and the possibility of developing screening instruments and campaigns to improve recognition and treatment of depressive disorders in primary care has been demonstrated (Paykel & Priest, 1992). Psychotic disorders have a lower prevalence than depressive disorders, and psychotic patients are most frequently referred to specialists for treatment and follow-up (Verhaak, 1993), which might explain the low numbers of studies on psychotic disorders in primary care. Nevertheless, general practitioners (GPs) play a key role in the early recognition and diagnosis of psychotic disorders. The importance of early recognition of psychotic disorders has been underlined by studies that suggest a possible association between duration of untreated psychosis and outcome (Crow *et al.* 1986; Loebel *et al.* 1992; McGlashan & Johannessen, 1996).

Because of their relative rarity, GPs are not routinely geared towards the identification of psychotic symptoms. Development of screening instruments may assist primary-care physicians in the early identification of subjects with an incipient psychotic disorder. Several rating scales aimed at evaluation of so-called psychosis-

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proneness in the general population have been developed (Chapman & Chapman, 1980; Vollema & van den Bosch, 1995; Peters & Garety, 1996). These scales have mostly been used for studying personality traits and psychotic symptoms as dimensional phenomena lying on a continuum with normality. Research on the potential pragmatic use of these scales for preventive purposes has been much less developed (Chapman *et al.* 1994).

The present survey was the first phase of a follow-up study designed to test the predictive validity of a self-report questionnaire measuring delusional ideation. The objectives of the present study were to assess: (*i*) the prevalence of delusional ideas in primary-care patients; (*ii*) the acceptability of the self-report questionnaire by primary-care patients.

METHOD

The study was conducted in collaboration with the Aquitaine Sentinel Network. This network of GPs (who practise in the Aquitaine region of Southwest France) was initiated in 1986 to perform epidemiological surveys of several diseases and health-related conditions (Maurice *et al.* 1989) and relies on 137 GPs trained to conduct epidemiological surveys. The GPs enrolled in this network were asked to participate on a voluntary basis in the present study. Of the 41 GPs who initially agreed to participate, 31 were eventually involved in the survey and they were representative in age and geographical distribution of the population of Aquitaine GPs.

Data collection took place in June 1996. The sample in the survey included every attender aged over 18 years, whatever the reason for the visit, on 4 half-days randomly spread over 2 weeks. Except when the medical state of the patient or language/reading difficulties did not allow completion of a self-report questionnaire, the GP asked every attender to complete a self-report questionnaire in the waiting room. The questionnaire included the 21 items of the Peters *et al.* Delusions Inventory (PDI-21, Peters & Garety, 1996), and three questions exploring auditory hallucinations (verbal hallucinations, voices conversations, command hallucinations), which were added to the PDI-21.

The PDI-21 was designed to measure delusional ideation in the normal population (Peters & Garety, 1996). The questions are derived from items used in the Present State Examination (Wing *et al.* 1974) to assess delusional symptoms, but are toned down and aimed to explore a lifetime experience, using the introductory expression 'do you ever feel as if …'. A total score is obtained by adding up the number of positive answers, with a maximum score equal to 21. The PDI-21 questionnaire also allows a multidimensional assessment of delusional ideation: when an item is endorsed, three 5-point scales exploring distress, pre-occupation and belief are filled out. The internal consistency, concurrent validity and criterion validity of the PDI-21 have been previously established (Peters & Garety 1996). A French translation of the PD1-21 was made for the present study. The PDI-21 was translated into French by H. V., and back into English by E. Peters, who originally developed the PDI-21.

At the beginning of the questionnaire survey, the patients were informed that if they agreed to complete the questionnaire, their answers would remain anonymous and this would include anonymity from their own GP. Patients were asked to put the completed questionnaire in an envelope, and to leave the closed envelope with their GP. The GPs were, therefore, blind to the patient's questionnaire results. For each patient, the GPs had to fill out a standard study form recording sociodemographic characteristics, the reason for the visit, and a brief psychiatry history, if any. GPs were asked to indicate whether, according to their own judgement, the patient was currently presenting, or had ever presented, with a psychiatric disorder. When the answer was positive, they were asked to specify the current and/or past diagnosi(e)s. A list of psychiatric diagnoses was proposed, without further definition or precision; this list could be completed by an open answer. The traditional French classification was used to establish the list of psychotic disorders diagnoses, because most GPs currently practising have learnt this classification during their medical training (Van Os *et al.* 1993). The psychiatric history included information on psychiatric follow-up, psychiatric hospitalization, psychiatric medication, attempted suicide. No instruction was given to the GPs to make a specific enquiry to collect information on the psychiatric history. To allow crossover between medical and questionnaire

data, each questionnaire and each GP form was given a specific identification number.

Analyses

Statistical analyses were carried out using SPSS software (Norušis/SPSS Inc. 1992). Categorial variables were compared using the χ^2 test. Student's t test and the non-parametric Mann–Whitney's U test were used to compare means. Spearman's test was used to analyse correlations between variables. Logistic regression models were used to calculate odds ratio (OR) and 95% confidence intervals (CI), and to adjust for confounding factors.

RESULTS

Characteristics of the patients

Of the 1053 patients enrolled in the survey, most (93·6%) were previously known by the GPs. The sample included 432 (41·4%) males and 611 (58·6%) females, with a mean age of 52·1 (s.D. 17·8; range 18–95) years. Most patients ($N = 891$, 90%) were born in metropolitan France or in another European country ($N = 52$, 5·2%); 40 (4%) patients were born in an African country, 6 (0·6%) in a non-European French region and 3 (0·3%) in another place; data on place of birth were missing for 61 patients. Of the 1017 patients for whom the occupational status was specified, 455 (44·7%) were currently working, 315 (31%) were retired, 122 (12%) were housewives, 53 (5·2%) were students, 33 (3·2%) were receiving a disability pension and 39 (3·8%) were unemployed or had another status.

Medical and psychiatric history

Frequent reasons for medical consulting were cardiovascular pathology ($N = 235$, 23·4%), psychiatric or psychological problems ($N = 116$, 11·5%) and rheumatological pathology ($N = 100$, 10%). Frequent psychiatric reasons for consulting reported by the GPs were depression ($N = 32$, 27·6%), fatigue ($N = 19$, 16·4%), anxiety ($N = 15$, 12·9%) and sleep disorders ($N = 13$, 11·2%). According to the GPs, 348 (35%) of the attenders had a lifetime history of psychiatric disorder, of whom 207 (59·5%) were currently suffering from such a disorder. The most frequent diagnosis was depression ($N = 192$, 19·3%), either alone ($N = 69$, 6·9%) or associated with another diagnosis, which was anxiety

disorder for 108 (10·8%) patients, and other diagnoses (psychotic disorder, personality disorder, substance use disorder, dementia) for 15 patients. Anxiety disorder without depression was the second most frequent diagnosis, either alone ($N = 114$, 11·4%) or associated with other diagnoses ($N = 8$; 0·8%). A diagnosis of broadly defined psychotic disorder was given to 20 patients (2%), including 6 patients with manic–depressive illness or affective psychosis, 6 patients with paranoia, 4 patients with 'chronic hallucinatory psychosis', 2 patients with schizophrenia, and 2 patients with 'chronic psychosis'. For subsequent analyses, the 20 patients were considered as constituting the 'psychotic' subgroup. Information on psychiatric history was missing for 59 patients. Of the total sample of patients, 113 (11·8%) had a history of psychiatric follow-up, 41 (4·3%) a history of psychiatric hospitalization and 25 (2·7%) a history of attempted suicide. A psychotropic treatment was prescribed to 196 (19·6%) patients (anxiolytic drugs, $N = 134$ (13·4%); antidepressants $N = 76$ (7·6%); hypnotic drugs $N = 38$ (3·8%), antipsychotic drugs $N = 19$ (1·9%), mood stabilizers $N = 3$ (0·3%)).

Completion of the questionnaire

Of the 1053 patients included in the survey, 790 (75%) completed the self-report questionnaire, 25 (2·3%) explicitly refused, 65 (6·2%) could not do so because of medical or language/reading reasons, and 173 (16·4%) did not complete the questionnaire but did not initially refuse to do it. For 42 patients it was not possible to crossover the data contained in the survey form completed by the GP and in the self-report questionnaires, owing to missing identification numbers. Patients who refused to complete the questionnaire were older than those who completed it (61·2 (s.D. 18·5) v. 52·1 (s.D. 17·4) years; $t = -2·41$, df = 760, $P = 0·02$), more frequently had history of psychiatric hospitalization (19% v. 3·4%; OR = 6·7, 95% CI 2·1–21·7, $P = 0·01$), were more prone to receiving a psychotropic treatment (57·1% v. 17·8%; OR = 6·2, 95% CI 2·5–14·9, $P = 0·0001$) and were more frequently given a diagnosis of psychotic disorder (10% v. 1·6%; OR = 7·1, 95% CI 1·5–34·2, $P = 0·05$). Patients who did not explicitly refuse to complete the questionnaire but who eventually failed to do so did not differ from completers with regard to

Table 1. *Associations between PDI-21 total score and psychiatric history*

Lifetime psychiatric history*	Mean PDI-21† scores (S.D.)	z‡	P
Consulting for psychiatric reason ($N = 79$)	5·10 (3·24)	−2·82	0·005
Consulting for other reason ($N = 639$)	4·19 (3·38)		
Psychiatric disorder ($N = 245$)	5·01 (3·70)	−4·04	0·0001
No psychiatric disorder ($N = 462$)	3·89 (3·16)		
Psychiatric follow-up ($N = 76$)	5·70 (3·69)	−3·90	0·0001
No psychiatric follow-up ($N = 605$)	4·06 (3·29)		
Psychiatric hospitalization ($N = 22$)	5·09 (4·10)	−0·88	0·38
No psychiatric hospitalization ($N = 660$)	4·19 (3·33)		
History of suicide attempt ($N = 18$)	7·05 (4·62)	−2·86	0·004
No history of suicide attempt ($N = 639$)	4·08 (3·28)		
Psychotropic treatment ($N = 126$)	5·56 (3·95)	−4·17	0·00001
No psychotropic treatment ($N = 586$)	4·02 (3·19)		

* Numbers are less than group total because of missing data.
† Maximum score = 21.
‡ Mann–Whitney's U test.

Table 2. *Comparison of self-report questionnaire answers in psychotics and in patients with no psychiatric history*

	No psychiatric disorder $N = 462$ N (%)	Psychotic disorder $N = 11$ N (%)	OR (95% CI)	P
PDI-21 items				
Hints/double meaning	195 (42·2)	8 (72·7)	3·7 (1·0–14·1)	0·04
Special messages TV magazines	26 (5·6)	1 (9·1)	1·7 (0·2–13·6)	0·65
People who are not what they seem to be	320 (69·3)	9 (81·8)	2·0 (0·4–9·4)	0·34
Being persecuted in some way	118 (25·5)	9 (72·7)	7·8 (2·0–29·9)	0·001
Conspiracy against you	48 (10·4)	7 (63·6)	15·2 (4·3–53·7)	0·00005
To be someone very important	39 (8·4)	1 (9·1)	1·1 (0·1–8·7)	0·94
To be a special or unusual person	56 (12·1)	4 (36·4)	4·2 (1·2–14·6)	0·04
To be especially close to God	99 (21·4)	7 (63·7)	6·4 (1·9–22·4)	0·003
Telepathic communication	217 (46·9)	7 (63·6)	1·9 (0·6–6·9)	0·27
Electric device influencing way of thinking	23 (5·0)	0 (0)	1·0 (0·9–1·0)	0·29
To have been chosen by God	39 (8·4)	3 (27·3)	4·1 (1·0–16·0)	0·07
Believing in the power of witchcraft, occult	108 (23·4)	2 (18·2)	0·7 (0·2–3·4)	0·68
Worrying about one's partner's unfaithfulness	72 (15·6)	3 (27·3)	2·3 (0·6–9·1)	0·26
To have sinned more than the average people	28 (6·1)	3 (27·3)	5·8 (1·5–23·2)	0·03
People looking oddly at you	83 (18·0)	5 (45·5)	3·8 (1·1–12·8)	0·04
To have no thought in the head	99 (21·4)	3 (27·3)	1·4 (0·4–5·3)	0·65
End of the world	36 (7·8)	1 (9·1)	1·2 (0·2–9·5)	0·88
Alien thoughts	68 (14·7)	3 (27·3)	2·2 (0·6–8·4)	0·29
Thought broadcasting	68 (14·7)	1 (9·1)	0·6 (0·1–4·6)	0·58
Thought echoing back	43 (9·3)	4 (36·4)	5·6 (1·6–19·7)	0·02
To be a like a robot or a zombie	40 (8·6)	2 (18·2)	2·4 (0·5–11·3)	0·33
Hallucinatory items				
Hearing voices	74 (16)	3 (27·3)	2·0 (0·5–7·6)	0·35
Hearing voices conversing	22 (4·8)	4 (36·4)	11·4 (3·1–42·0)	0·001
Hearing command voices	22 (4·8)	0 (0)	1·0 (0·9–1·0)	0·30

sociodemographic variables and psychiatry history.

Questionnaire results

In the total sample, the mean total PDI-21 score was 4·2 (S.D. 3·3, range 0–21, median 4). The mean distress, preoccupation, and belief scores were 9·4 (S.D. 9·4, range 1–70, median 6), 9·8 (S.D. 9·3, range 1–70, median 7) and 13·8 (S.D. 11·4, range 1–75, median 11), respectively. The total PDI-21 score was negatively correlated with age (Spearman's rho = −0·28, $P = 0·0001$). No other significant association was found between sociodemographic characteristics and

PDI total score. The total PDI score was significantly higher in patients with a psychiatric history, whatever the criteria used to define a psychiatric history (Table 1).

Comparison of patients with no identified psychiatric disorder and psychotic patients

Psychotic patients did not differ significantly in age, sex and place of birth from those with no identified psychiatric disorder, although the latter were younger than the former (58·3 (s.d. 14·2) *v.* 52·2 (s.d. 17·8) years). The PDI-21 total scores were significantly higher in psychotic patients than in patients with no identified psychiatric disorders (7·64 (s.d. 4·86) *v.* 3·91 (s.d. 3·16), $z = -2·73$, $P = 0·006$), as well as the distress (8·38 (8·33) *v.* 19·33 (11·22), $z = -2·95$, $P = 0·003$), preoccupation (9·08 (8·54) *v.* 15·44 (10·37), $z = -1·95$, $P = 0·05$) and conviction scores (12·91 (10·34) *v.* 25·0 (15·65), $z = -2·64$, $P = 0·008$).

Nearly all PDI-21 items were endorsed more frequently by the psychotic patients than by the patients with no identified psychiatric disorders. The main discriminative items were delusional ideas concerning persecutory, mystic, and guilt theme, as well as ideas concerning thought echo (Table 2). For example, psychotic patients were 15 times more likely to have 'ever felt as if there was a conspiracy against them', and 6 times more likely to have 'ever felt as if they were especially close to God'. Only the item exploring conversation of voices was endorsed more frequently by psychotic patients than by those with no psychiatric history. The associations between individual items and diagnosis (psychotic disorder *v.* no psychiatric disorder) remained constant or increased after adjustment for age, except for the association with the item 'worrying about partner's unfaithfulness', which became significantly more frequently endorsed by psychotic patients (OR = 6·5 (1·9–22·6) $P = 0·003$).

Comparison of psychotic patients and patients with other psychiatric diagnosis

The PDI-21 total score was significantly higher in psychotic patients than in patients with non-psychotic psychiatric disorders (7·6 (s.d. 4·9) *v.* 4·9 (s.d. 3·6); $z = -2·0$, $P = 0·05$). Five PDI-21 items were significantly more frequently endorsed by psychotic patients than by patients

suffering from non-psychotic psychiatric disorders: 'being persecuted' OR = 3·7 (95% CI 1·0–14·3, $P = 0·04$); 'conspiracy' (OR = 5·9, 95% CI 1·7–20·8, $P = 0·005$); 'close to God' (OR = 4·6, 95% CI 1·3–16·1, $P = 0·02$); 'chosen by God' (OR = 4·7, 95% CI 1·1–19·1, $P = 0·05$); 'sinned more than the average person' (OR = 4·6, 95% CI 1·1–19·0, $P = 0·05$) and 'thought echo' (OR = 3·9, 95% CI 1·1–14·1, $P = 0·06$). The item exploring voice conversations was also more frequently endorsed by the psychotic patients (OR = 7·0, 95% CI 1·9–26·2, $P = 0·009$).

DISCUSSION

Methodological limitations

The response rate to the questionnaire was satisfactory, since 80% of the patients who were able to complete a self-report questionnaire agreed to participate in the survey. However, patients who explicitly refused to complete the questionnaire were more frequently suffering from a psychiatric disorder and were especially more likely to be given a diagnosis of psychotic disorder. The fact that the more severely ill psychiatric patients are less likely to participate in such surveys is a usual finding (Kessler *et al.* 1995). Therefore, psychotic patients included in the present survey may not be representative, and may have presented with less severe forms of illness. However, such a bias would have attenuated rather than exaggerated the differences found between psychotic and non-psychotic patients. On the other hand, we cannot definitely exclude the possibility that psychotic patients who participated in the survey were more likely to report delusional experiences than those who refused to complete the questionnaire.

Since we chose to be as close as possible to naturalistic diagnostic procedures in primary-care settings, the GPs did not receive instructions on how to assess psychiatric history, and no diagnostic criteria were specified for psychiatric diagnoses. Thus, diagnostic misclassification cannot be excluded. For example, GPs often label as 'depression' different emotional conditions that do not agree entirely with strictly defined mood disorders (Barret *et al.* 1988). Some patients presenting with a psychotic disorder might have been given a diagnosis of non-psychotic psychiatric disorder, such as

'depression'. The reverse misclassification, i.e. labelling psychotic a non-psychotic disorder, is much less likely. A survey carried out in London has shown that GPs accurately diagnose psychotic disorders (Nazareth *et al.* 1993), but such data are not available for French GPs. GPs enrolled in the Aquitaine Sentinel Network have participated in several epidemiological studies on different psychiatric disorders, such as suicide (Maurice *et al.* 1989) and depressive syndromes (Maurice-Tison *et al.* 1992), so they are probably more trained to recognize and correctly diagnose psychiatric disorders than most GPs. The 35% prevalence rate of any lifetime psychiatric disorder is in accordance with those found by previous studies carried out in primary care (Von Korff *et al.* 1987; Barret *et al.* 1988; Tiemens *et al.* 1996). Although the diagnostic procedure was not stringent in the present survey, we nevertheless confirm the high prevalence of psychiatric disorders in primary-care settings, with an over-representation of anxiety and depressive disorders. Few data are available on the prevalence of psychotic disorders in primary-care settings. For example, Verhaak (1993) reported a 2·4% prevalence of psychotic disorders among primary-care patients presenting with a psychological or social problem. The estimated prevalence for schizophrenia was 0·4% in Von Korff *et al.* (1987) and the prevalence for non-affective psychosis was 0·4% in Nazareth *et al.* (1996). We found a 2% prevalence for broadly defined psychotic disorders. The lack of precision of diagnoses does not allow us to calculate the exact prevalence for schizophrenia, which is probably higher than 0·2%, since some of the patients given a diagnosis of chronic hallucinatory psychosis would probably be categorized as schizophrenics according to international diagnostic criteria.

Peters & Garety, (1996) obtained higher PDI-21 scores, both in normal subjects (mean = 6·6) and in psychotic patients (mean = 11·9). The former difference was probably linked to the negative association between age and psychosis proneness, since normal subjects were much younger in Peters & Garety's study; and the latter to the fact that, in the British sample, psychotic patients were acutely ill in-patients, suggesting that, although the PDI-21 is aimed to explore a life-time experience, the score may be at least in part state-dependent.

Interpretation of findings

The range of individual PDI-21 item endorsement in subjects with no psychiatric history varied between 5% and 70%, and 16% of these subjects reported that they had experienced verbal hallucinations. The present findings confirm that psychotic symptoms are not straightforward all-or-nothing experiences, but dimensional phenomena lying on a continuum with normality (Claridge, 1987). As for many pathological conditions (Rose, 1992), the dichotomization of delusions or hallucinations as symptoms either absent or present is a convenient concept for diagnostic process and medical decision-taking, despite the fact that a continuum model better describes these phenomena. For convenience, we use the terminology 'delusional idea' to refer to the phenomena explored by the PDI-21 questionnaire, keeping in mind that 'delusion' has not to be considered as equivalent to a pathological phenomenon in most primary-care patients.

Despite the small number of psychotic subjects, the PDI-21 discriminates between these patients and those with no psychiatric history, on the one hand, and those with a history of non-psychotic disorder, on the other. Examination of individual items showed that some of them better discriminate psychotic from non-psychotic subjects. Especially, persecutory, mystic and guilty ideas, though echo and conversation of voices, were more frequent in psychotic patients than in patients with no psychiatry history, or in patients with a history of non-psychotic disorders. For example, psychotic patients were 15 times and 6 times were more likely to answer positively to the question 'do you ever feel as if there is a conspiracy against you?' than patients with no psychiatric history, or with a history or non-psychotic disorder, respectively. One of eight patients answering positively to this question presented with a psychotic disorder. On the other hand, the differences were quantitative rather than qualitative, and most of these delusional themes were also more frequent, although with lower frequencies than in psychotics, in patients with a history of non-psychotic psychiatric disorders than in patients with no psychiatric history.

The validity of self-report questionnaires for assessing psychotic or psychosis-like symptoms

or experiences might be questioned, since poor insight, denial and suspiciousness can lead to under-reporting of symptoms. However, it has recently been demonstrated that self-administered questionnaires may be a valid method to assess positive psychotic symptoms in schizophrenic out-patients (Hamera *et al*. 1996). The PDI-21 was designed in an attempt not to stigmatize as pathological the phenomena and experiences explored by this questionnaire, so over-reporting may be more likely to occur than under-reporting, as suggested by the high endorsement rate for some items. Some unusual experiences such as thought disturbances or passivity are quite difficult to describe in a self-report questionnaire, so the content of some items may have been misinterpreted, and might have led to false positive answers. Similar obstacles are encountered when structured or semi-structured clinical interviews are used to detect psychotic disorders in the community, and the validity of cases identified by such methods has been questioned (Jablensky, 1995).

The high acceptance rate of the PDI-21 questionnaire, which was completed by 80% of the primary-care patients who were able to do so, is encouraging. It is important to demonstrate to GPs that even if they may feel uneasy about questions exploring delusions and hallucinations, these questions are well-accepted by most patients. Since psychotic disorders have a low prevalence in primary care, and psychotic or psychotic-like symptoms a relatively high prevalence in non-psychotic subjects, the specificity and positive predictive value of such symptoms are low, limiting the development of valid screening instruments for psychotic disorders. Nevertheless, the identification of the main discriminative symptoms may facilitate the elaboration of instruments helping GPs to recognize psychotic disorders. The development of screening tools, in association with GPs' education on psychotic disorders, may be a first step to improve secondary prevention (Paykel & Priest, 1992; Jenkins, 1994). More research is needed on psychotic disorders in primary-care settings to improve early detection of such disorders in the community.

REFERENCES

Barrett, J. E., Barett, J. A., Oxman, T. E. & Gerber, P. D. (1988). The prevalence of psychiatric disorders in a primary care practice. *Archives of General Psychiatry* **45**, 1100–1106.

Chapman, L. J. & Chapman, J. P. (1980). Scales for rating psychotic and psychotic-like experiences as continua. *Schizophrenia Bulletin* **6**, 476–489.

Chapman, L. J., Chapman, J. P., Kwapi, I. T. R., Eckblad, M. & Zinser, M. C. (1994). Putatively psychosis-prone subjects 10 years later. *Journal of Abnormal Psychology* **103**, 171–183.

Claridge, G. S. (1987). The schizophrenia as nervous type revisited. *British Journal of Psychiatry* **151**, 735–745.

Crow, T. J., McMillan, J. F., Johnson, A. L. & Johnstone, E. C. (1986). A randomised controlled trial of prophylactic neuroleptic treatment. *British Journal of Psychiatry* **148**, 120–127.

Hamera, E. K., Schneider, J. K., Potocky, M. & Casebeer, M. A. (1996). Validity of self-administered symptom-scales in clients with schizophrenia and schizoaffective disorders. *Schizophrenia Research* **19**, 213–219.

Jablensky, A. (1995). Schizophrenia: recent epidemiological issues. *Epidemiologic Reviews* **17**, 10–20.

Jenkins, R. (1994). Principles of prevention. In *Prevention in Psychiatry* (ed. E. S. Paykel and R. Jenkins), pp. 11–24. Royal College of Psychiatrists: London.

Kessler, R. C., Little, R. J. A. & Groves, R. M. (1995). Advances in strategies for minimizing and adjusting for survey nonresponse. *Epidemiologic Reviews* **17**, 192–204.

Lloyd, K. & Jenkins, R. (1994). Primary care. In *Prevention in Psychiatry* (ed. E. S. Paykel and R. Jenkins), pp. 198–209. Royal College of Psychiatrists: London.

Loebel, A. D., Lieberman, J. A., Alvir, J. M., Mayerhoff, D. I., Geisler, S. H. & Szymanski, S. R. (1992). Duration of psychosis and outcome in first-episode schizophrenia. *American Journal of Psychiatry* **149**, 1183–1188.

McGlashan, T. H. & Johannessen, J. O. (1996). Early detection and intervention with schizophrenia: rationale. *Schizophrenia Bulletin* **22**, 201–222.

Maurice, S., Pommereau, X., Pueyo, S., Garros, B., Gay, B. & Salamon, R. (1989). Epidemiologic surveillance of suicide and attempted suicide in Aquitaine: an original computer network of sentinel general practitioners. *Journal Epidemiology Community Health* **43**, 290–292.

Maurice-Tison, S., Bourgeois, M., Perez, P. & Salamon, R. (1992). Fatigue et signes de la série depressive en médecine générale en Aquitaine. *Encéphale* **XX**, 611–614.

Nazareth, I., King, M., Haines, A., Rangel, L. & Myers, S. (1993). Accuracy of diagnosis of psychosis on general practice computer system. *British Medical Journal* **307**, 32–34.

Nazareth, I., King, M. & Tai, S. S. (1996). Monitoring psychosis in general practice: a controlled trial. *British Journal of Psychiatry* **169**, 475–482.

Norušis, M. (1992). *Statistical Package for Social Sciences*. SPSS Inc: Chicago.

Paykel, E. S., & Priest, R. G. (1992). Recognition and management of depression in general practice: consensus statement. *British Medical Journal* **305**, 1198–1202.

Peters, E. R. & Garety, P. A. (1996). The Peters *et al.* Delusions Inventory (PDI): new forms for the 21-item version. *Schizophrenia Research* **18**, 119.

Rose, G. (1992). *The Strategy of Preventive Medicine*. Oxford University Press: Oxford.

Tiemens, G. G., Ormel, J. & Simon, G. E. (1996). Occurrence, recognition, and outcome of psychological disorders in primary care. *American Journal of Psychiatry* **153**, 636–644.

Van Os, J., Galdos, P., Lewis, G., Bourgeois, M. & Mann, A. (1993). Schizophrenia sans frontieres: concepts of schizophrenia among French and British Psychiatrists. *British Medical Journal* **307**, 489–492.

Verhaak, P. F. M. (1993). Analysis of referrals of mental health problems by general practitioners. *British Journal of General Practice* **43**, 203–208.

Vollema, M. G. & van den Bosch, R. J. (1995). The multidimensionality of schizotypy. *Schizophrenia Bulletin* **21**, 19–31.

Von Korff, M., Shapiro, D. B., Burke, J. D., Teitlebaum, M., Skinner, E. A., German, P., Turner, R. W., Klein, L. & Burns, B. (1987). Anxiety and depression in a primary care clinic. Comparison of Diagnostic Interview schedule, General Health Questionnaire, and practitioner assessment. *Archives of General Psychiatry* **44**, 152–156.

Wing, J. K., Cooper, J. E. & Sartorius, N. (1974). *Measurements and Classification of Psychiatric Symptoms*. Cambridge University Press: Cambridge.