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ORIGINAL PAPER

Persecutory delusions and psychological well-being

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Abstract
Purpose Persecutory delusions are one of the key problems seen in psychotic conditions. The aim of the study was to assess for the first time the levels of psychological well-being specifically in patients with current persecutory delusions.
Method One hundred and fifty patients with persecutory delusions in the context of a diagnosis of non-affective psychosis, and 346 non-clinical individuals, completed the Warwick-Edinburgh Mental Well-Being Scale and symptom assessments.
Results Well-being scores were much lower in the persecutory delusions group compared with the non-clinical control group. 47 % of the persecutory delusions group scored lower than two standard deviations below the control group mean score. Within the patient group, psychological well-being was negatively associated with depression, anxiety, and hallucinations. In both groups, lower levels of well-being were associated with more severe paranoia.
Conclusions Levels of psychological well-being in patients with current persecutory delusions are strikingly low. This is likely to arise from the presence of affective symptoms and psychotic experiences. Measurement of treatment change in positive mental health for patients with psychosis is recommended.

Keywords Delusions · Paranoia · Schizophrenia · Psychological well-being · Positive psychology

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Background

There is a spectrum of severity of paranoia—unfounded thoughts that others are deliberately trying to cause the person harm—in the general population. Its severe end, persecutory delusions, is taken as a key sign of schizophrenia. Persecutory delusions are clinically important: in patients diagnosed with schizophrenia severe paranoia is one of the most common experiences [1]; such beliefs are the most distressing and acted upon delusion subtypes [2, 3]; and the presence of persecutory delusions is a predictor of admission to hospital [4]. Across the population, paranoid thoughts are associated with physical ill health, suicidal ideation, and increased use of treatment services [5].

Psychological well-being, sometimes also referred to as positive mental health, life satisfaction, or happiness, has not been examined specifically in patients with persecutory delusions. There is every reason to expect it to be low. Foremost, the delusions are inherently distressing and lead to social withdrawal. Levels of depression are high, and self-esteem low, in patients with persecutory delusions [6, 7]. Self-stigma is known to be high in patients with schizophrenia [8], and the presence of positive psychotic symptoms is associated with lower subjective well-being [9]. Moreover, it is hypothesised that central to the occurrence of paranoia are negative thoughts about the self,

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which create the sense of vulnerability in which such fears thrive [10]. Such negative thoughts about the self have often developed in the context of adverse life experiences [11]. However, an alternative delusion-as-defence theoretical account of paranoia might lead to the expectation of preserved psychological well-being. Further, the presence of negative effect does not preclude the occurrence of positive emotion, although they negatively correlate and share a degree of overlapping environmental and genetic risk [12]. Consistent with this, a study of patients with schizophrenia found that satisfaction with life and positive effect were inversely correlated with levels of depression and anxiety [13]. In that study, levels of positive effect in patients with schizophrenia were comparable to the general population and levels of life satisfaction only slightly lower.

We therefore examined levels of psychological well-being specifically in patients with persecutory delusions (in the context of a non-affective psychotic disorder). The Warwick–Edinburgh Mental Well-Being Scale (WEMWBS) was used [14]. This positively worded—and carefully developed—measure was designed to assess both the subjective experience of happiness (hedonic well-being) and positive psychological functioning including good relationships with others (eudaimonic well-being) [15]. Factor analysis indicates it captures a single underlying dimension. In a study of outcome measures, the WEMBWS has been rated highly by service users [16] and it is being considered by the UK Department of Health as a patient-rated outcome measure for general use in mental health services as part of its payment by results implementation programme [17]. To our knowledge, WEMBWS scores in patients with schizophrenia have not been reported before. We predicted that psychological well-being would be low in patients with persecutory delusions. This would be observed in patients' actual reports of their frequency of experiencing positive psychological well-being and compared with individuals in the general population without psychosis. It was also predicted that well-being scores would be negatively correlated with levels of paranoia and depression.

Method

Participants

Patients with persecutory delusions

One hundred and fifty patients with persecutory delusions completed the well-being measure during the baseline assessment (prior to randomisation) of a clinical trial testing a worry reduction intervention (ISRCTN23197625) [18]. Patients with persecutory delusions were recruited equally from two mental health NHS Trusts: Oxford Health NHS Foundation Trust and Southern Health NHS Foundation Trust (teams serving Hampshire). The inclusion criteria were: a current persecutory delusion as defined by Freeman and Garety [19]; scoring at least three on the conviction scale of the PSYRATS delusions scale (i.e. at least 50 % conviction in the delusion) [20]; that the delusion had persisted for at least 3 months; a clinical diagnosis of schizophrenia, schizo-affective disorder or delusional disorder (i.e. 'non-affective psychosis'); a clinically significant level of worry, as indicated by scores above 44 on the Penn State Worry Questionnaire [21]; aged between 18 and 65; and no changes to medication in the past month. Criteria for exclusion were a primary diagnosis of alcohol or substance dependency or personality disorder; organic syndrome or learning disability; a command of spoken English inadequate for engaging in therapy; and currently having individual CBT. Referrals were sought of patients with persecutory delusions, who were then screened for the appropriate level of worry. Only six patients during the screening stage were excluded on the basis of scoring 44 or lower on the Penn State Worry Questionnaire.

Non-clinical control group

Three hundred and forty six adults from the general population completed the study as part of a screening stage for experimental studies being carried out by our team. Participants were recruited predominately via the playing of local radio adverts in Oxfordshire ($n = 221$) and on the website of a local newspaper ($n = 66$). A smaller number of participants came by the way of the local universities ($n = 29$), word of mouth ($n = 15$), or other sources ($n = 15$). The individuals who responded were then invited to take part in a screening stage when the measures were completed.

Assessments

All the participants answered basic demographic questions. The persecutory delusions group went on to complete all the measures. The non-clinical group was only asked to complete the well-being and self-report paranoia measures.

Warwick-Edinburgh mental well-being scale (WEMWBS) [14, 15]

The WEMWBS is a 14-item scale assessing well-being over the past fortnight. Each item is rated on a one (none of the time) to five (all of the time) scale, and therefore the total score can range from 14 to 70 with higher scores indicating a greater level of well-being. In a Scottish

general population sample of almost 2,000 people, the mean score was 50.7 (95 % confidence interval 50.3–51.1, standard deviation 8.8, median 51). Example items are I have been feeling optimistic about the future; I have been feeling useful; I have been feeling relaxed; I have been feeling good about myself; I have been feeling confident; I have been feeling loved; I have been feeling cheerful. The scale has high test–test reliability and criterion validity with other well-being scales. In the current study, the scale had high internal reliability in the persecutory delusions (Cronbach's alpha 0.89) and non-clinical (Cronbach's alpha 0.92) groups.

Choice of outcome in CBT for psychosis (CHOICE) [22]

The CHOICE is a psychosis service user-led outcome measure. It has 24 items. We used ten items that we considered reflected positive mental health, to provide validation of the WEMWBS in the persecutory delusions group. The ten items had high internal reliability in the persecutory delusions group (Cronbach's alpha 0.90). The items included self-confidence, the ability to relax, having ways of dealing with distressing experiences, feeling safe and secure, and a sense of being in control. Ratings were obtained for the past week. Higher scores indicated higher well-being.

Paranoid thoughts scale part B (GPTS-B) [23]

The GPTS–part B measures persecutory ideation, as defined by Freeman and Garety [19], over the past month. Each of the 16 items in the scale (e.g. 'certain individuals have had it in for me' 'people have been hostile towards me on purpose' 'I was sure someone wanted to harm me' 'I was convinced there was a conspiracy against me') are rated by the person on a 5-point scale (1–5). Scores can range from 16 to 80, with 16 indicating the absence of persecutory ideation and higher scores indicating greater persecutory ideation. The questionnaire has shown good psychometric properties in both clinical and non-clinical populations and has been validated against an experimental test of the occurrence of paranoid thinking [24, 25].

Psychotic symptom rating scales: delusions (PSYRATS) [20]

The PSYRATS delusions scale is a six-item multidimensional measure. It assesses the conviction, preoccupation, distress and disruption associated with delusions. Symptoms over the last week are rated. Higher scores indicate greater severity. The two assessors in the current study had high inter-rater reliability ($n = 20$, intra-class correlation coefficient 0.99).

Positive and negative syndrome scale (PANSS) [26]

The PANSS is a 30-item rating instrument developed for the assessment of patients with schizophrenia. Symptoms over the last week were rated (i.e. currently present). Higher scores indicate the greater presence of psychiatric symptoms. The two assessors in the current study had high inter-rater reliability ($n = 20$, PANSS total intra-class correlation coefficient 0.91).

Analysis

Analyses were carried out using SPSS Version 20.0 [27]. The central hypothesis concerned the difference in well-being scores between the persecutory delusions group and the non-clinical group, which was examined using a t test. Associations between well-being and symptoms scores were tested using Pearson correlation coefficients. Significant test results for all the analyses are quoted as two-tailed probabilities.

Results

Demographics

The demographics of the participants are displayed in Table 1. As expected from the study entry criteria, levels of the persecutory delusion were high as assessed using the PSYRATS and the GPTS, with scores similar to those in other samples selected for persecutory delusions [23, 28, 29]. There were no recruitment site differences in the level of paranoia, t ($df = 148$) $= -0.846$, $p = 0.399$, or delusions, t ($df = 148$) $= -1.401$, $p = 0.163$. Hallucinations were common in the clinical group, with 92 of the 150 patients scoring four or above on the PANSS hallucination item. Only eight patients reported a score of four or above on the PANSS grandiosity item. Levels of paranoia in the non-clinical group were comparable to similar studies [30].

Levels of well-being

The mean WEMWBS scores for the persecutory delusions group was 35.4 (SD 9.4, minimum 14, maximum 55, median 35.0) and for the non-clinical group it was 50.9 (SD 8.4, minimum 24, maximum 70, median 52.0). This mean difference of 15.4 points (95 % confidence interval 13.8–17.1) was statistically significant, t ($df = 494$) $=$ 18.08, $p < 0.001$. The non-clinical group mean score was almost identical to the WEMWBS original Scottish general population data. 76.6 % ($n = 115$) of the persecutory delusions group was scoring at least one standard deviation below the non-clinical control group mean score. 46.7 %

Table 1 Basic demographic and clinical information

	Persecutory delusions group ($n = 150$)	Non-clinical group ($n = 346$)
Mean age in years (SD)	42.4 (11.8)	31.2 (10.7)
Sex		
Male	86	146
Female	64	200
Ethnicity		
White	136	309
Black Caribbean	0	0
Black African	0	9
Black others	1	1
Indian	3	5
Pakistani	0	3
Chinese	0	5
Others	10	14
Diagnosis		
Schizophrenia	111	
Schizo-affective disorder	11	
Delusional disorder	10	
Psychosis NOS	18	
Neuroleptic medication (chlorpromazine equivalent)		
None	8	
Low (1–200 mg)	45	
Medium (201–400 mg)	32	
High (>400 mg)	63	
Mean PSYRATS delusions score (SD)	18.3 (3.0)	
Mean PANSS total score (SD)	80.6 (13.7)	
Mean GPTS—part B score (SD)	58.6 (15.7)	22.0 (10.2)

($n = 70$) of the persecutory delusions group was scoring at least two standard deviations below the non-clinical group mean score. This clear difference in scores between the two groups can be seen in Fig. 1.

In the persecutory delusions group, there was a high correlation between the WEMWBS and the choice, $r = 0.75, p < 0.001$. There was no difference in well-being scores in the clinical group by site (Oxford vs. Southampton), t ($df = 148$) $= -1.570$, $p = 0.119$, or gender, t ($df = 148$) $= -0.152$, $p = 0.879$, nor a significant correlation with age, $r = -0.05$, $p = 0.524$. There was no evidence of a difference in scores by diagnosis, F (3, 146) $= 0.838$, $p = 0.475$.

In the non-clinical group, there was no significant difference in well-being scores by gender, F (1, 344) $= 0.41$, $p = 0.521$, nor a significant correlation with age, $r = -0.04$, $p = 0.468$. Individuals within the non-clinical group who reported having ever being diagnosed or treated for a mental illness had lower well-being scores ($n = 61$, mean 48.6, SD 9.6) than the individuals who reported no history of mental illness ($n = 285$, mean score 51.3, SD 8.1), F (1, 344) $= 5.45$, $p = 0.020$.

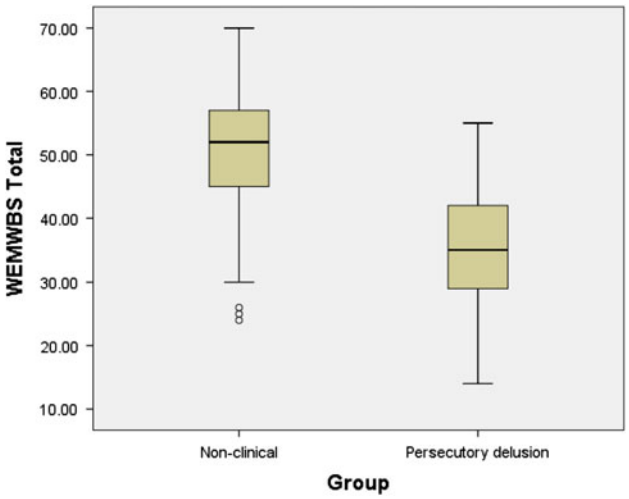

Fig. 1 Boxplot for well-being scores by group

Well-being and symptom scores

In the persecutory delusions group, lower levels of well-being were associated with higher levels of the persecutory delusion (PSYRATS), $r = -0.44$, $p < 0.001$; paranoia (GPTS), $r = -0.30$, $p < 0.001$; and suspiciousness (PANSS), $r = -0.31$, $p < 0.001$. Lower levels of well-being were also associated with higher levels of PANSS depression, $r = -0.46$, $p < 0.001$; PANSS anxiety, $r = -0.24$, $p = 0.003$; PANSS hallucination, $r = -0.17$, $p = 0.036$p; PANSS general, $r = -0.34$, $p < 0.001$; PANSS negative scores, $r = -0.28$, $p < 0.001$; and PANSS total score, $r = -0.32$, $p < 0.001$, but not with PANSS positive scores, $r = -0.07$, $p = 0.425$. PANSS grandiosity scores were associated within the patient group with a higher level of well-being, $r = 0.20$, $p = 0.013$. Within the non-clinical group, lower levels of well-being were associated with higher levels of paranoia (GPTS), $r = -0.44$, $p < 0.001$.

Discussion

There are many markers of the distress caused by persecutory delusions. The aim of this study was to assess levels of positive mental well-being in a large cohort of patients with current persecutory delusions. The results are striking. Almost half of the persecutory delusion group was scoring lower than two standard deviations below the mean of the non-clinical group, indicating they are approximately in the bottom two percent of the population for positive mental

well-being. The highest score in the delusions group was close to the mean of the non-clinical group, in which, by contrast, the highest score was at the top of the scale. The absolute score on the well-being measure for patients with persecutory delusions was clearly low; the average item score for patients indicated that they are reporting positive mental well-being little more than rarely. The individuals with delusions were not at acute episode, but had established paranoid fears that had remained despite treatment with neuroleptic medication. Greater levels of paranoia were associated with lower levels of psychological well-being. Psychological well-being was also associated with levels of anxiety and depression; indeed, the delusion group score was comparable to people with depression [31].

Patient-reported outcome measures for schizophrenia are gaining greater prominence [32] and are becoming a requirement of health systems internationally. In England, it is now expected that the Health of the Nation Outcome Scales [33] are completed on all new referrals to mental health services and then at specified intervals during their contact with services. Payment in the near future will depend on this [17]. However, measures completed by clinicians need to be complemented by those rated independently by patients. A study of expert mental health service users' opinions of 24 outcome measures found high approval ratings for the WEMWBS [16]. It was particularly commended for asking about good mental health. There is an evidence from outside psychosis groups that the measure is sensitive to change [34]. The WEMWBS could be a valuable addition to routine outcome monitoring and is likely to be used increasingly in both evaluations of routine treatments in services and in clinical trials. In the current study, we have reported initial scores for patients with positive psychotic symptoms, and therefore for the first time demonstrated that it is a valid measure to use in a key group using mental health services, that is, those who have psychosis. Agreeing and evaluating the goal of feeling more positive, as assessed by such a scale, is likely to help with patient engagement and collaboration with services.

The study was cross-sectional, and therefore cannot provide insights into the causes of the low levels of psychological well-being. The data were also collected as part of a clinical trial, and not routinely in a service, which will affect its degree of representativeness. Our recruitment strategy was to seek referrals of all patients with persecutory delusions within the two NHS Trusts and only a few people with such delusions did not meet the entry criteria. The severity of the delusions was comparable to other studies testing patients with persecutory delusions [23, 28, 29], nonetheless this was not an epidemiological sample. The control group was not epidemiologically representative either nor matched with the clinical group, which is the greatest weakness for interpreting the patient scores. Further, the controls were only recruited from one of the patient areas. However, the control group's scores almost exactly matched other data from the general population, allowing for the conclusion—together with the actual low endorsement rate of positive effect by patients—that the persecutory delusion group is at the lowest end of psychological well-being. The study did not test the drivers of the low levels of well-being; plausibly, well-being levels could be a result of both the negative affect common in patients with psychosis and the psychotic experiences themselves. The key finding is the lack of positive psychological well-being in patients with persecutory delusions. Given that such negative well-being is a problem in its own right, and hypothesised to be central to the occurrence of paranoia [10], then it is a clear treatment target for standard cognitive-behavioural and positive psychological intervention techniques [35].

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Conflict of interest None.

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