Violence in women with psychosis in the community: prospective study

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Background Little is known about the determinants of violence in women with psychosis.

Aims To identify predictors of violence in a community sample of women with chronic psychosis.

Method The 2-year prevalence of physical assault was estimated for a sample of 304 women with psychosis. Baseline socio-demographic and clinical factors were used to identify predictors of assault.

Results The 2-year prevalence of assault in the sample was 17%. Assaultive behaviour was associated with previous violence (OR=5.87, 95% CI 2.42–14.25), non-violent convictions (OR=2.63, 95% CI 1.17–5.93), victimisation (OR=2.46, 95% CI 1.02–5.93), African–Caribbean ethnicity (OR=2.24, 95% CI 1.02–4.77), cluster B personality disorder (OR=2.66, 95% CI 1.11–6.38) and high levels of unmet need (OR=1.17, 95% CI 1.01–1.35). An interaction between African–Caribbean ethnicity and cluster B personality disorder was identified in relation to violent outcome. Violent women were found to be more costly to services.

Conclusions Nearly a fifth of community-dwelling women with chronic psychosis committed assault over a period of 2 years. Six independent risk factors were found to predict violence.

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Men commit the majority of assaults in society (Smith & Allen, 2003; Steen & Hunskaar, 2004). Although the presence of a psychotic illness is known to increase the risk of violence (Arseneault *et al*, 2000), there is accumulating evidence that the effect of psychosis on risk of violence is much greater for women than for men (Hodgins *et al*, 1996; Hiday *et al*, 1998; Wessely, 1998). However, relatively few studies have examined the relationship between gender and violence among patients with psychosis in the community. In general, the risk of violence among individuals with psychosis is known to be associated with comorbid substance misuse (Swanson *et al*, 1990), non-compliance with medication (Swartz *et al*, 1998), comorbid personality disorder (Moran *et al*, 2003) and active psychotic symptoms, possibly including delusions of persecution and control, which are referred to as threat/control override symptoms (Link *et al*, 1998).

Little is known about the gender-specific factors associated with risk of violence among individuals with psychosis. Clearly, women with psychosis are a vulnerable group, and the effect of mental illness on the risk of violence in this group requires further investigation. Our aim was to undertake this prospectively in a sample of women with psychosis who were living in the community in urban settings.

METHOD

Participants

A total of 304 women with psychosis from four urban mental health services were recruited as part of a larger randomised trial of standard *v.* intensive community case management (Burns *et al*, 1999). The primary difference between the two treatment groups concerned the size of the case-load of the assigned keyworker, such that patients receiving intensive case management had twice as much contact with their keyworker. Recruitment of individuals aged between 18 and 65 years occurred at the point of discharge from hospital or while they were living in the community. In all four centres, patients were receiving 'standard' case management prior to randomisation and were under enhanced care programme approach provision. Patients were included if they had been hospitalised for psychotic symptoms at least twice, with one admission having occurred within the previous 2 years. Patients with organic brain disorder or a history of primary substance misuse were excluded. Diagnoses according to Research Diagnostic Criteria (RDC) were established using the Operational Criteria Checklist for Psychotic Illness (McGuffin *et al*, 1991). This was based on lifetime records.

Baseline measures

A number of socio-demographic and clinical variables were assessed at baseline on the basis of interview and review of case notes. Clinical history and life circumstances, including self-reported information on assaultive behaviour, during the 2 years before baseline were assessed using the World Health Organization Life Chart (World Health Organization, 1992). The Comprehensive Psychopathological Rating Scale (CPRS; Åsberg *et al*, 1978) was used to assess current psychopathology. Two items from the CPRS, namely 'feeling controlled' and 'ideas of persecution', were taken together as a proxy measure for threat/control override symptoms. The presence of comorbid personality disorder was assessed using a rapid version of the Personality Assessment Schedule (PAS–R; Tyrer *et al*, 1979), a semi-structured interview schedule. Each category of personality disorder was scored on a 3-point scale (0=absence of dysfunction, 1=personality difficulty, 2=personality disorder). In the present study, a dichotomous variable was created (personality disorder and no personality disorder), with a score of 2 defining the presence of personality disorder. Other baseline measures included the Scale for Assessment of Negative Symptoms (SANS; Andreason, 1984), the National Adult Reading Test (NART; Nelson, 1982), the Lancashire Quality of Life Profile (Oliver, 1991), the Camberwell Assessment of Need (CAN; Phelan *et al*, 1995); the Mental Needs Index (MINI; Glover *et al*, 1998) and the World Health Organization Disability Assessment Schedule (DAS; Jablensky *et al*, 1980).

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Participants were asked about their alcohol and drug use by means of a questionnaire designed specifically for this study. A demographic schedule was also devised to gather information about ethnicity, level of education, history of medical illnesses and employment status, among other variables. In addition to obtaining information from interviews and case notes, an application was made to the British Home Office for the full criminal records for each participant, categorised into violent and non-violent convictions. Ethical approval for the study was obtained from the four local ethics committees.

Outcome measures

The main outcome of interest was violence during the 2 years of follow-up. This was defined as actual physical contact regardless of severity or resulting injury of the victim. Three data sources were combined to produce a binary result for each patient, namely self-report, case-note review and case manager's report. Data on costs associated with healthcare, social and non-statutory sector services and prison/police custody were also collected. A full description of the economic methodology employed has been published previously (UK700 Group, 2000).

Statistical methods

Analyses were performed using the Statistical Package for the Social Sciences version 11.0 statistical software for Windows. The prevalence of violence over the 2-year follow-up period was determined. Before the data were inspected, a list of possible baseline predictor variables was drawn up from the clinical and demographic measures available. Initially the data were used to establish a baseline description of the study sample. Logistic regression analysis was then used to compare individuals who were violent with those who were not with regard to the putative predictor variables. Both categorical and continuous variables were included in the analysis. If continuous variables were found to be highly skewed, categorical variables were created by dividing data according to the median. After a univariate analysis had been performed (Tables 1 and 2), a multivariate analysis was undertaken using a stepwise method (Table 3). All univariately significant factors were entered in the model, and those that were no longer significant were then removed. After this stage, each univariate factor tested was entered individually to establish a final model that best predicted violence as the outcome. Tests were also performed to examine the possibility of interactions between the independent predictors identified and the univariately significant factors for violence as the outcome.

Table 1. Socio-demographic characteristics of women by assaultive status

Variable	Assaultive behaviour		Odds ratio (95% CI, unadjusted)
	Yes (n=53)	No (n=251)	
Age (years): *n* (%)	37 (70)	122 (49)	2.45 (1.29–4.62)**
19–39			
40–64	16 (30)	129 (51)	1
Ethnicity: *n* (%)			
White	20 (38)	140 (56)	1
African–Caribbean	25 (47)	70 (28)	2.50 (1.30–4.81)**
Other	8 (15)	41 (16)	1.37 (0.56–3.33)
Marital status: *n* (%)			
Ever married	21 (40)	129 (51)	1
Single	32 (60)	122 (49)	1.61 (0.88–2.95)
Occupation of father at birth: *n* (%)			
Non-manual	3 (7)	35 (17)	1
Manual	28 (65)	115 (56)	2.84 (0.81–9.91)
Unemployed	12 (28)	55 (27)	2.55 (0.67–9.66)
Educational achievement: *n* (%)			
No qualifications	28 (54)	98 (40)	1.75 (0.96–3.20)
Any qualifications	24 (46)	147 (60)	1
Living independently (past 2 years): *n* (%)			
No	5 (9)	19 (8)	1.27 (0.45–3.57)
Yes	48 (91)	232 (92)	1
Employed (past 2 years): *n* (%)			
No	44 (83)	184 (73)	1.78 (0.83–3.84)
Yes	9 (17)	67 (27)	1
Homeless (past 2 years): *n* (%)			
No	52 (98)	242 (96)	1
Yes	1 (2)	9 (4)	0.52 (0.07–4.17)
Victim (past year): *n* (%)			
No	39 (75)	218 (90)	1
Yes	13 (25)	24 (10)	3.03 (1.42–6.45)**
Violent behaviour (past 2 years): *n* (%)			
No	37 (70)	229 (93)	1
Yes	16 (30)	18 (7)	5.50 (2.58–11.74)***
Conviction for violent offence: *n* (%)			
No	47 (89)	240 (96)	1
Yes	6 (11)	11 (4)	2.79 (0.98–7.90)
Conviction for non-violent offence: *n* (%)			
No	37 (70)	219 (87)	1
Yes	16 (30)	32 (13)	2.96 (1.48–5.92)**
Randomisation: *n* (%)			
Group 1	26 (49)	129 (51)	1
Group 2	27 (51)	122 (49)	1.10 (0.61–1.99)

*$P<0.05$, **$P<0.01$, ***$P<0.001$.

RESULTS

Sample characteristics

The mean age of the sample at baseline was 40 years (s.d.=12) and the average length of illness was 14 years (s.d.=10). The ethnic distribution of the sample was as

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follows: 160 White participants (52.6%); 95 African–Caribbean participants (31.3%); and 49 participants of other ethnic origin (16.1%). Only 76 members (25%) of the sample had been employed in the 2 years before the study, and 105 (34.5%) were living alone. With regard to RDC diagnosis, 164 participants (53.9%) had schizoaffective disorder, 94 (30.9%) had schizophrenia, 27 (8.9%) had bipolar disorder and 18 (5.9%) were diagnosed with psychotic disorder not otherwise specified. Only 84 individuals (27.6%) were considered to be in remission at the time of interview. In total, 43 members of the sample (14%) admitted to using at least one illegal drug, while 16 (5%) admitted to a daily intake of alcohol in excess of the levels recommended by the Department of Health. Of the 290 individuals for whom PAS–R data were available, 79 (27%) had at least one comorbid personality disorder (cluster A, n=47; cluster B, n=33; cluster C, n=31).

Prevalence of violence

Information on violence was available from at least one data source for all women (n=304), and no significant difference in the availability of information was found between the two groups. Information on violence was available for 95% of the women based on self-report, for 75% based on the case manager's interview and for 93% based on case-note review. Over the 2-year follow-up period, 53 women (17%) physically assaulted another person.

Univariate analysis

The socio-demographic profile of women who committed assault during the 2-year follow-up period is shown in Table 1. Compared with non-violent women, violent women were more likely to be younger and of African–Caribbean ethnic origin. They were also more likely to have reported being victims of violence themselves in the year before commencement of the study. Violent women more often had a history of committing assault in the 2 years before baseline, and were more likely to have a conviction for a non-violent offence than women who were not violent during the study. No associations were found between violence and employment status, educational achievement or measures of living circumstances (e.g. homelessness). Importantly, there was no association between being randomised to intensive v.

Table 2 Clinical characteristics of women by assaultive status

Variable	Assaultive behaviour		Odds ratio (95% CI, unadjusted)
	Yes (n=53)	No (n=251)	
Diagnosis: n (%)			
Schizoaffective disorder	26 (49)	138 (55)	1
Schizophrenia	22 (42)	72 (29)	1.62 (0.86–3.06)
Affective disorder	3 (5)	24 (10)	0.66 (0.19–2.37)
Other	2 (4)	16 (6)	0.66 (0.14–3.06)
Age of onset (years): n (%)			
⩽30	46 (87)	183 (73)	2.41 (1.04–5.59)*
⩾31	7 (13)	67 (27)	1
Length of illness (weeks): n (%)			
⩽254	43 (81)	185 (74)	1
⩾255	10 (19)	65 (26)	0.66 (0.32–1.39)
Severity of illness: n (%)			
Not recovered	44 (83)	174 (70)	2.11 (0.98–4.54)
Recovered	9 (17)	75 (30)	1
Threat/control override: n (%)			
No	46 (87)	234 (93)	1
Yes	7 (13)	17 (7)	2.09 (0.82–5.34)
Drug use/misuse: n (%)			
None	42 (79)	219 (87)	1
One	6 (11)	22 (9)	1.42 (0.54–3.72)
More than one	5 (10)	10 (4)	2.61 (0.85–8.01)
Alcohol consumption: n (%)			
<2–3 units/day	49 (94)	233 (93)	1
>2–3 units/day	3 (6)	13 (7)	1.10 (0.30–4.0)
Attempted suicide (past 2 years): n (%)			
No	41 (77)	206 (83)	1
Yes	12 (23)	43 (17)	1.40 (0.68–2.89)
Cluster A personality disorder: n (%)			
No	39 (76)	204 (85)	1
Yes	12 (24)	35 (15)	1.79 (0.86–3.76)
Cluster B personality disorder: n (%)			
No	38 (75)	219 (92)	1
Yes	13 (25)	20 (8)	3.75 (1.72–8.16)**
Cluster C personality disorder: n (%)			
No	48 (94)	211 (88)	1
Yes	3 (6)	28 (12)	0.47 (0.14–1.61)
Days in hospital (past 2 years): n (%)			
⩽65 days	21 (40)	134 (54)	1
>65 days	32 (60)	116 (46)	1.76 (0.96–3.22)
Time in prison (past 2 years): n (%)			
No	51 (96)	244 (98)	1
Yes	2 (4)	6 (2)	1.56 (0.31–8.13)
Months of medication (past 2 years): mean (s.d.)	17.98 (7.85)	15.85 (9.10)	1.03 (0.99–1.07)
CPRS total score: mean (s.d.)	21.95 (12.84)	17.73 (12.73)	1.02 (1.00–1.05)*
DAS score: mean (s.d.)	1.38 (0.71)	1.07 (0.88)	1.47 (1.06–2.04)*
SANS score: mean (s.d.)	21.86 (16.76)	19.09 (15.92)	1.01 (0.99–1.03)
MINI score: mean (s.d.)	443.89 (67.27)	440.95 (59.36)	1.00 (0.999–1.01)
Unmet needs: mean (s.d.)	3.25 (2.24)	2.31 (2.21)	1.19 (1.06–2.04)**
NART score: mean (s.d.)	105.27 (10.36)	107.62 (10.18)	0.98 (0.95–1.01)

CPRS, Comprehensive Psychopathological Rating Scale; DAS, World Health Organization Disability Assessment Schedule; SANS, Scale for Assessment of Negative Symptoms; MINI, Mental Needs Index; NART, National Adult Reading Test.
*P<0.05, **P<0.01, ***P<0.001.

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Table 3 Socio-demographic and clinical predictors of violent behaviour

Variable	Odds ratio (95% CI, adjusted for all other variables in the table)
Ethnicity	
White	1
African–Caribbean	2.24 (1.02–4.77)*
Victim (in past year)	
No	1
Yes	2.46 (1.02–5.93)*
Assault (in past 2 years)	
No	1
Yes	5.87 (2.42–14.25)***
Conviction for non-violent offence	
No	1
Yes	2.63 (1.17–5.93)*
Cluster B personality disorder	
No	1
Yes	2.66 (1.11–6.38)*
Unmet needs	1.17 (1.01–1.35)*

*$P < 0.05$, ***$P < 0.001$.

standard case management and an outcome of violence in this sample.

The clinical characteristics of the women who were violent during the study period are listed in Table 2. They were more likely to have an earlier age of onset of illness (under 30 years) and a diagnosis of cluster B personality disorder compared with non-violent women (impulsive personality disorder, $n=9$; dissocial personality disorder, $n=4$; histrionic personality disorder, $n=4$; borderline personality disorder, $n=4$ in the violent group). They also had higher levels of disability, psychopathology and unmet need. However, violent women were not more likely to report misuse of either alcohol or drugs.

The Lancashire Quality of Life Profile (Oliver, 1991) provided information about the way in which the participants perceived their circumstances when interviewed at baseline. Compared with non-violent women, those who were violent during the study were less satisfied with their personal safety (odds ratio (OR)=2.14, 95% CI 1.17–3.91), wanted to move but felt unable to do so (OR=2.02, 95% CI 1.03–3.98), and were dissatisfied with their financial status (OR=2.39, 95% CI 1.11–5.15). However, there were no significant differences in the way that they perceived the safety of their neighbourhood, the support provided by their family or the pleasure they derived from leisure activities.

We then examined the costs associated with healthcare, social and non-statutory sector services, and time spent in prison/police custody for each of the women. Those who were violent during the 2 years of the study were significantly more costly to services than non-violent women. Violent women were more than three times (OR=3.63, 95% CI 1.83–7.16) more likely to require overall care costing over £12 000 during the 2 years of the study than non-violent women (£12 000 was the median cost for the whole sample). Violent women accrued more costs associated with supported accommodation, social services involvement, prison service involvement and healthcare, although only the difference in the latter area of cost reached the level of statistical significance. We did not have access to detailed data that would allow comparison of service contacts between the two groups. However, we did find that violent women spent more time in hospital and were more likely to have spent time in prison during the study, although the differences were not significant (see Table 2). In the whole sample of women with psychosis, the following factors were found to independently predict high total cost: level of unmet need; absence of alcohol misuse; number of days in hospital; and conviction for a non-violent offence. When these factors were added to the unadjusted model, violence during follow-up remained significantly associated with high total costs, but the odds ratio decreased.

Multivariate analysis

Table 3 shows the final multivariate model with each predictor adjusted for all of the others in the univariate tables. The following six factors remained in the multivariate model as significant predictors of violence in the sample: being of African–Caribbean ethnic origin; having been a victim of violence; admitting to a history of violence; having a conviction for a non-violent offence; having comorbid cluster B personality disorder; and having a high level of unmet need.

We tested for interactions using logistic regression analysis by entering an interaction term for ethnicity and factors which were found to be univariately significant in the initial analysis. Cluster B personality disorder was the only factor that was found to contribute any significant interaction to the association between ethnicity and violence. African–Caribbean women with cluster B personality disorder were more likely to be violent than African–Caribbean women without this disorder. We also subsequently adjusted the final model for age, which in itself did not remain significant in the model, but eliminated the significance of being a victim of violence as a predictor.

DISCUSSION

Almost a fifth of this sample of 304 women with severe psychotic illness committed assault during 2 years of follow-up. A history of violence during the 2 years before baseline, conviction for non-violent crime, African–Caribbean ethnicity, victimisation, high levels of unmet need and the presence of cluster B personality disorder predicted violence as the outcome during follow-up.

Methodological issues

This study has a number of strengths. Predictors of violence were investigated in a prospective manner in a large sample of women, thus avoiding the problems inherent in retrospective analyses. Importantly, multiple sources of data were used to identify with greater accuracy those women who were violent during the period of follow-up. Different methods of assessing violence can produce very different results, particularly among patients living in the community, so the use of a multiple source design has important advantages (Mulvey *et al*, 1994). The inclusion of self-reported violence is also important, as this method has been shown to produce higher prevalence figures for violence than the use of other sources (Lidz *et al*, 1993).

Operational definitions of psychosis were used in the study, in addition to well-validated instruments that were predominantly based on interview rather than on records. The large size and community-based nature of the sample also offer a number of advantages. The participants were typical of individuals with chronic and severe psychosis managed by mental health services in the community. The urban settings of the four centres may limit the extent to which our results can be generalised to more rural populations. Finally, the completion rate for measurement of

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outcome over 2 years was high, and information about violence was collected from at least one source for each woman.

One limitation of our study is the lack of information on the frequency, severity and context of the violent episodes recorded, and on the perpetrator's relationship to the victim. Previous research indicates that such factors differ between men and women in populations with and without mental illness (Hiday *et al*, 1998). The MacArthur Violence Risk Assessment Study found that men were more likely to commit violence that resulted in serious injury, whereas women were more likely to target family members and to be violent in the home (Robbins *et al*, 2003). Clearly this is an area that requires further investigation. We also lacked any information about compliance with treatment provided by mental health services, a factor which has been found to predict violence in individuals with mental disorder (Swartz *et al*, 1998).

Prevalence of violence

It is difficult to compare the prevalence of violence found in the present study with that reported from previous investigations, as there is little consistency in the way that violence is either measured or defined. In addition, the selection of samples and the populations from which they are derived vary widely. During a 1-year follow-up after discharge from hospital, 24.6% of the women in the MacArthur Violence Risk Assessment Study committed an act of violence, but that study included women with a range of primary mental disorders in addition to psychosis (Robbins *et al*, 2003). During the first 20 weeks, 7.14% of women who had a diagnosis of schizophrenia, bipolar disorder or other psychosis were violent in the MacArthur study.

Risk factors for violence

After adjustment for potential confounders, six factors were found to predict assault during the follow-up period (Table 3). A past history of violence has consistently been found to predict subsequent violence in a number of populations (Tardiff *et al*, 1997; Steinert, 2002). It is one of the most robust of the static risk factors that are used to predict future violence. In our study, we also found that a history of conviction for a non-violent offence predicted assault during the follow-up period. This may indicate that women with psychosis who commit assault do so in the context of a criminal lifestyle.

Women of African–Caribbean ethnic origin were more likely to commit assault, and this association persisted after adjustment. This is consistent with previous findings from a study of a similar population of individuals with schizophrenia, which reported that belonging to an ethnic minority (predominantly African–Caribbean) independently increased the risk of criminal conviction for both men and women (Wessely, 1998). In our study, an interaction between ethnicity and cluster B personality disorder was found to be an important explanatory factor in the association with assault. Among the African–Caribbean women, those with comorbid cluster B personality disorder (n=13) were more likely to be violent. However, no association was found between comorbid diagnosis of any personality disorder and ethnic origin in the larger sample of men and women from which our study sample was drawn (Moran *et al*, 2003). Little is known about the prevalence and correlates of personality disorder in Black and minority ethnic groups. Personality disorder has in fact been found to be less common among African–Caribbean patients than among White patients presenting to psychiatric services in the UK (Tyrer *et al*, 1994), but the rates in the general population are as yet unknown. Rather than reflecting a genuinely lower prevalence, the rarity of personality disorder among Black patients in treatment may be due to diagnostic or selection bias (Ndegwa, 2004). Another potential interacting factor that we considered, namely substance misuse, was not found to be associated with either ethnicity or violence in our sample, but the limitations of the measure available may have impaired our ability to detect such associations. However, our finding that rates of substance misuse did not differ between ethnic groups is supported by recent evidence in this area (Hutchinson & Haasen, 2004).

The presence of comorbid personality disorder is known to increase the risk of violence among people with a psychotic disorder, and this has been confirmed by analysis of the entire sample from which our study sample of women was drawn (Moran *et al*, 2003). Personality disorder has also been shown to be prevalent among women without psychosis who commit serious assault (Putkonen *et al*, 2003). In our sample of women with psychosis we found that the presence of cluster B (borderline, dissocial, histrionic and impulsive) personality disorder in particular predicted violence, and this association persisted after adjustment. We also found that the presence of cluster C personality disorder (obsessive–compulsive, dependent and avoidant) protected against violent behaviour during the follow-up period, but this association did not remain after adjustment, when the impact of the small number of individuals with the disorder is likely to have been significant. One problem that arises when considering the role of comorbid personality disorder in relation to risk of violence is the fact that one of the diagnostic criteria for a diagnosis of antisocial personality disorder is a history of aggression, although in our sample impulsive rather than dissocial personality disorder was more common in the violent group. Other difficulties associated with the assessment of personality in individuals with psychosis have been highlighted previously (Moran *et al*, 2003), but it is not known whether these are gender-dependent. As was noted previously, little is known about personality disorder in Black and minority ethnic groups, and since most research on antisocial personality disorder has focused on men, very little is known about women with this disorder (Mulder *et al*, 1994). The present study therefore provides valuable descriptive epidemiological data in both of these respects.

In addition to the above predictors, we found two factors which have not been reported frequently in other studies, and which may reflect risk factors that are particularly relevant to women. Victimisation was found to independently predict violence during the follow-up period, but this did not remain significant after adjustment for age. An analysis of the UK700 data was recently undertaken to establish the prevalence of violent victimisation in the entire sample (Walsh *et al*, 2003). In total, 16% of patients (men and women) with psychosis reported being the victim of violence in the year before baseline, and associations were found with severity of symptoms, homelessness, substance misuse, comorbid personality disorder and previous violent behaviour. Victimisation may again reflect the criminal nature of the lifestyle and social milieu of women with psychosis who go on to commit assault. However, only 35% of the women who were victimised committed assault during the follow-up period, so clearly other factors

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are operating to alter the role of being a victim in predicting later violence. Perceptions of safety may mediate the link between victimisation and violence. We found that women who committed assault were less satisfied with their personal safety than those who did not, but we found no differences when we enquired about their perceptions of the safety of their neighbourhood.

The final independent predictor that was identified in this study was the association between higher levels of unmet need at baseline and later violence. This may reflect problems both with the provision of services and with the engagement of women with psychosis with such services. Current service provision may be inadequate, inappropriate, or both, and may well be rejected by women with psychosis, who themselves are likely to have certain personality characteristics which contribute to the development of dysfunctional relationships with others. In addition, the high level of unmet need may reflect a lack of informal support which is caused by poor social networks. In a *post-hoc* analysis, women who committed assault were found to have significantly more serious problems with regard to unmet need in the areas of daily activity, childcare, basic education and finances.

Economic considerations

In addition to establishing predictors of violence, we found that women with psychosis who committed assault during follow-up were more costly to services. This clearly has implications for the planning of service provision. These women incurred more costs to public services in several areas, including health, criminal justice and social services. Interestingly, in addition to finding that unmet need predicted violence, we also found an association between unmet need and total costs in the total sample. Our analysis also suggests that some of the high costs are likely to be due to time spent in hospital and in contact with the criminal justice system, perhaps for non-violent offences in particular. Thus not only are these women more costly to public services, but also their needs are still not being met by those very services.

Implications and further research

Our findings with regard to predictors of violence are similar to previous findings, highlightling history of previous violence, comorbid personality disorder, previous conviction and specific minority ethnicity. Predictors such as victimisation and higher levels of unmet need may represent factors that are particularly relevant to women with a psychotic disorder. In contrast to other studies, we did not find an association with substance misuse. This may reflect a lower prevalence of substance misuse among women with psychosis (12% of the women in our study misused drugs). We also considered the possibility that our measure of substance misuse may well have had limitations that rendered it inadequate for demonstrating a link with violence. In addition, no data were available on compliance with treatment, and we did not find an association with the presence of threat/control override symptoms, which has been reported previously (Link *et al*, 1998).

The high prevalence of violence during follow-up in our sample, as well as the finding of the high costs to services incurred by this group, both highlight the importance of considering the risk of violence in women with chronic psychosis. Clinicians have been shown to consistently underestimate the potential risk of violence posed by female patients with psychosis (Lidz *et al*, 1993; Coontz *et al*, 1994), and consequently this risk may be less likely to be considered when management plans are devised. It has been argued that the inability of clinicians to recognise the potential risk of violence among female patients may contribute substantially to the poor results that are often obtained when risk prediction by clinicians is evaluated (Robbins *et al*, 2003). Violence is regarded as a male phenomenon by clinicians and the lay public alike.

Our findings support the need to raise awareness of the risk of violence in women with psychosis, and they provide some indication of the factors that should be the focus of risk assessment and management. Further research is needed to explore the important predictors of violence in women with mental illness from a range of populations, and also to evaluate the benefits of addressing such factors with a view to reducing the risk of violence.

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CLINICAL IMPLICATIONS

- There is a high prevalence of violence among women with chronic and severe psychosis who are living in the community.
- Experiences of victimisation and high levels of unmet need are predictors of violence in women with psychosis, in addition to well-established risk factors.
- Violent behaviour significantly increases the costs of caring for women with psychosis.

LIMITATIONS

- No data were available on the frequency, severity or context of the violence committed by women.
- No data were available on compliance with treatment or engagement with mental health services.
- The extent to which the findings can be generalised may be limited by the fact that the sample only included women with chronic psychosis living in an urban setting.

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