The influence of gender on clinical and social characteristics of patients at psychosis onset: a report from the Psychosis Incident Cohort Outcome Study (PICOS)

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Background. This paper examined the hypothesis that males with first-episode psychosis (FEP) experience lower pre-morbid adjustment, greater social disability and more self-perceived needs at illness onset than females (by controlling for duration of untreated psychosis, diagnosis, age and symptoms at onset). Results disconfirming this hypothesis were thought to suggest the potentially mediating role of social context in determining the impact of symptoms and disability on the everyday lives of male patients in the early phase of psychosis.

Method. A large epidemiologically representative cohort of FEP patients ($n = 517$) was assessed within the Psychosis Incident Cohort Outcome Study (PICOS) framework – a multi-site research project examining incident cases of psychosis in Italy's Veneto region.

Results. Despite poorer pre-morbid functioning and higher social disability at illness onset, males reported fewer unmet needs in the functioning domain than females did. An analysis of help provided by informal caregivers showed that males received more help from their families than females did. This finding led us to disconfirm the second part of the hypothesis and suggest that the impact of poorer social performance and unmet needs on everyday life observed in male patients might be hampered by higher tolerance and more support within the family context.

Conclusions. These findings shed new light on rarely investigated sociocultural and contextual factors that may account for the observed discrepancy between social disability and needs for care in FEP patients. They also point to a need for further research on gender differences, with the ultimate aim of delivering gender-sensitive effective mental health care.

Introduction

Several studies have revealed the key role of gender among various schizophrenia onset risk factors (Bardenstein & McGlashan, 1990; Piccinelli & Gomez Homen, 1997; Castle *et al.* 2000; Aleman *et al.* 2003). In fact, across various cultural contexts and countries, men present an earlier onset age for all psychoses than is observed for female patients (Jablensky *et al.* 1992; Häfner *et al.* 1993; Beratis *et al.* 1994; Faraone *et al.*

1994; Gorwood *et al.* 1995; Jablensky & Cole, 1997; Gureje & Bamidele, 1998; Kirkbride *et al.* 2006; Rabinowitz *et al.* 2006), and first contact with psychiatric services occurs at a younger age for male patients (Kirkbride *et al.* 2006). These findings appear to be independent of culture (Gureje, 1991; Wessely *et al.* 1991; Jablensky *et al.* 1992; Vázquez-Barquero *et al.* 1995), operational definition of onset (Häfner *et al.* 1991, 1993) and diagnostic criteria used to define illness (Lewine *et al.* 1981).

Although the current literature accordingly shows better outcomes for female patients in terms of illness characteristics and severity of course (De Lisi, 2011), a congruent gender-difference model of psychosis at onset has not yet been developed. For example, some studies observe more negative symptoms in male than

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in female patients (Mueser *et al.* 1990; Ring *et al.* 1991; Fennig *et al.* 1995; Gur *et al.* 1996; Moriarty *et al.* 2001; Preston *et al.* 2002; Choi *et al.* 2009), but others do not (Goldstein & Link, 1988; Häfner & Nowotny, 1995). Furthermore, the data regarding the impact of gender differences on duration of untreated psychosis (DUP) are controversial (Norman & Malla, 2001; Perkins *et al.* 2005). Conversely, there is a general consensus on gender influences and pre-morbid function, with male patients showing worse pre-morbid function in late adolescence, especially in terms of scholastic adjustment, social interests, sociosexual development and quality of interpersonal relationships (Larsen *et al.* 1996; Preston *et al.* 2002; Addington *et al.* 2003) and worse global functioning at onset (Tang *et al.* 2007). Little information is, however, available on how these differences make an impact on everyday life of patients and on their perceived needs for care.

With this latter regard, research conducted on patients with long-term psychoses found that a greater number of needs for care is significantly associated with higher number of psychotic symptoms, lower global functioning, diminished participation in daily activities and a higher frequency of stressful events (McCrone *et al.* 2001; Ochoa *et al.* 2005). As far as gender differences are concerned, female patients have found to report fewer self-perceived needs than men (Ochoa *et al.* 2005), and this finding may be probably accounted for by the better social functioning of schizophrenic women with respect to men (Usall *et al.* 2002). Some gender differences have also been found in some specific need domains, such as health and social needs, with females showing more clinical needs, and males reporting more social needs (Wiersma, 2006). Yet, the impact of gender on self-perceived needs for care has never been specifically addressed in patients at psychosis onset.

This body of knowledge suggests that optimal psychosis treatment approaches should be based on gender-specific forms of intervention. These findings also underscore a need to obtain more detailed information on cross-cultural sensitivity in gender differences observed in psychosis, and whether they differentially make an impact on needs for care as a function of culture.

The present paper, therefore, investigated the variable of gender in psychosis onset in an effort to shed light on the mechanisms that link psychopathology and disability with the sociocultural context. A cross-sectional study was conducted in a large sample of first-episode psychotic (FEP) patients, to test three hypotheses based on the above-reported literature. Specifically, after controlling for the effect of potential confounding factors (i.e. age at onset, DUP, diagnosis, and symptoms at onset), it was expected that males, as

compared with females, would experience: (1) lower pre-morbid adjustment; (2) greater social disability at onset; and (3) higher number of self-perceived needs at onset. It was assumed that any result disconfirming these hypotheses would suggest the potentially mediating role of social context in determining the impact of symptoms and disability on the everyday lives of male FEP patients.

Method

Context

Data were collected within the broader Psychosis Incident Cohort Outcome Study (PICOS) framework. This multisite naturalistic research aims to examine the relative role of clinical, social, genetic and morpho-functional factors in predicting clinical and social outcomes in a large cohort of FEP patients in contact with public mental health services in the Veneto region of northeastern Italy (Lasalvia *et al.* 2009). Overall, 25 collaborating sites took part in the PICOS, covering a catchment area of nearly 3.3 million inhabitants (which corresponds to 76% of the inhabitants living in the entire region).

Veneto, with a population of approximately 4.6 million inhabitants (latest census available, 2001), represents 8% of Italy's total population. Of these, nearly 2.5 million inhabitants are aged 15–54 years and are thus considered population at risk for psychosis. The region's population structure is in line with the national average in terms of older age inhabitants (7% are aged >65 years), whereas younger generations are slightly below the national average (23.8% *v.* 25.8% aged <25 years). The vast majority of residents are of Caucasian background, comprising an ethnically homogeneous population thereby. Over the last 10 years, however, the proportion of foreign immigrants with respect to the total population increased from 6.76% in 2001 (Census data 2001) to 9.30% in 2008 (administrative data, Veneto region). The urban structure of the region is polycentric, presenting only a few large-scale cities (i.e. Venice, Padua and Verona, which exceed 200 000 inhabitants) and many mid- and smaller-scale cities. An entrepreneurial system of small and mid-size businesses located throughout the regional territory makes the economic system very competitive, which has led Veneto to become one of Italy's most affluent regions.

Study settings

The participating PICOS services were routine public community-based mental health services, established according to the 1978 psychiatric legislation reform

('Law no. 180') and which operate in the Italian National Health Service (NHS) context. Psychiatric care in Veneto is delivered by the NHS through its Departments of Mental Health, each of which presents its own geographically defined catchment area. Multidisciplinary teams operating these Departments of Mental Health provide a wide range of comprehensive and integrated programmes for the local adult population, including in-patient care, day care, rehabilitation, out-patient care, home visits, 24-h emergency services, and residential facilities for long-term patients. In Veneto, the vast majority of psychotic patients are treated within the public sector. Previous research has in fact shown that only a negligible fraction of psychotic patients are treated in private hospitals or in private practice alone and that it is standard practice for general practitioners to refer all psychosis cases to the public mental health services (Amaddeo *et al.* 2001). Standard care for FEP patients generally consists of personalized out-patient psychopharmacological treatment, combined with non-specific supportive clinical management at the Community Mental Health Centre level or – when required – in patients' homes (Lasalvia *et al.* 2007). When necessary, brief hospital stays can also be arranged in small in-patient psychiatric units located in public general hospitals (Lasalvia & Tansella, 2010).

Participants

Mental health services participating in the PICOS were asked to refer all potential cases of psychotic patients at first service contact to the study's research staff, during the index period (1 January 2005 to 31 December 2007). The Screening Schedule for Psychosis (Jablenski *et al.* 1992) was administered to all patients within 30 days after first contact. Inclusion criteria were based on the screening methodology adopted in the World Health Organization (WHO) Ten-Country Study (Jablensky *et al.* 1992), as follows: age between 15 and 54 years; residence in the catchment area; presentation of at least one severe positive symptom or two negative symptoms; first contact with a psychiatric service; and absence of mental disorders due to a general medical condition. All participants signed informed consent forms. Patients who refused to participate in the study were contacted at monthly intervals up to three more times.

Instruments

A set of standardized instruments was used to collect clinical information. The Premorbid Social Adjustment (PSA) scale (Foerster *et al.* 1991) was used to assess the participants' pre-morbid school and social adjustment over two consecutive time periods: 5–11 years (childhood) and 12–16 years (adolescence). The Positive and Negative Syndrome Scale (PANSS; Kay *et al.* 1987) was used to evaluate severity of psychotic symptoms (the scale yields positive symptoms, negative symptoms, and general psychopathology scale scores). The Disability Assessment Schedule (DAS-II; WHO, 1988) was used to assess disability in social roles (participation in household, relationship with partner, parental role, friction in social contacts, occupation role, interest in getting a job, information, and behaviour in emergencies). The Camberwell Assessment of Need (CAN; Phelan *et al.* 1995) was used to assess patient-rated needs for care; it covers 22 areas of needs grouped into five larger domains: health (psychotic symptoms, drugs, alcohol, safety to self, safety to others, psychological distress, and physical health), basic (accommodation, food, and daytime activities), social (sexual expression, social networks, and intimate relationships), service (information, telephone use, transport, and benefits), and functioning (basic education, money, childcare, self-care, looking after the home). Each item is assessed on a three-point scale with 0 = no problem, 1 = no/moderate problem due to continuing intervention (met need), and 2 = current serious problem whether or not help is offered or given (unmet need); the CAN also assesses informal help received, on a four-point scale in which 'high help' = 3, 'moderate help' = 2, 'low help' = 1, and 'no help' = 0.

International Classification of Diseases, tenth revision (ICD-10) diagnoses were established by using the Item Group Checklist of the Schedule for Clinical Assessment in Neuropsychiatry (WHO, 1992).

All researchers received specific training in administering the study's instruments. An inter-rater reliability session was held to test the consistency of evaluation among the researchers. The inter-rater reliability for PANSS was 0.902 (Cronbach's α).

Statistical analysis

Mean scores were used to describe the sample's basic sociodemographic and clinical characteristics. The χ^2 test (Fisher's exact test if cell frequencies < 5) was used to analyse all associations between gender and differences in demographic, social and diagnostic characteristics and DAS, because they are categorical variables. To analyse the continuous variables for male–female differences on the PANSS, PSA and CAN, *t* tests were used. One-way ANOVA (with Bonferroni's correction) was used to analyse for gender diagnosis categories [males and females with affective psychosis (AP) and non-affective psychosis (NAP)]. We controlled for the possible confounding

effect of age by stratifying the sample into four age groups defined by quartiles ($\leqslant 20$ years; 21–30 years; 31–40 years; >40 years). All tests were bilateral at the 0.05 significance level, and all analyses were run with SPSS 17.0 for Windows (SPSS, Inc., USA).

Results

A total of 555 patients were referred from the participating services to the PICOS research staff, as potentially eligible cases. Out of the 555 patients, 517 had a confirmed ICD-10 diagnosis of psychosis (F1x.4, F1x.5, F1x.7, F20–29, F30.2, F31.2, F31.5, F31.6, F32.3, F33.3). Of the 517 patients, two could not be approached due to severe psychopathology, one died before being interviewed, 48 were untraceable, and 10 had moved after first service contact (most of these had been seen in hospital emergency wards only). Among the remaining patients, 27 declined to be interviewed; treating clinicians did not permit another 17 to be interviewed, and 15 were not referred to the research staff. Overall, 397 patients (76.8%) were assessed with the complete set of measures described in the previous section and made up the final sample. In terms of gender, 215 (54%) of the sample were males and 182 (46%), females. Due to diagnostic instability at psychosis onset, the sample was stratified into two broad diagnostic categories, NAP and AP (Cotton *et al.* 2009). Among male participants, 186 (86.5%) had a diagnosis of NAP (ICD-10: F20–29); 29 (13.5%) had a diagnosis of AP (ICD-10: F30–31–32). Among female patients, 133 had a diagnosis of NAP (73.1%); 49 (26.9%) had a diagnosis of AP.

Sample representativeness

The available treated incidence data in the Veneto area for schizophrenia and related functional psychoses ranges from around 17/100 000 (de Salvia *et al.* 1993) to 11/100 000 (Tansella *et al.* 1991) per year. Some PICOS sites collected a number of incident cases lower than expected. Specifically, among the 25 PICOS sites, the cases were lower than expected in 11 sites ($n=101$; person-years, 1 505 739; incidence rate, 6.7/100 000). Thus, patients recruited in these sites may not be fully representative of all new cases. The 14 remaining sites recruited a number of cases ($n=426$; person-years, 3 144 483; incidence rate, 13.5/100 000) that was substantially in line with numbers reported in previous studies. A 'leakage study' was therefore undertaken in these 14 sites, in order to further assess the accuracy of the recruitment procedure and to identify any missed cases through the routine procedures. All electronic and paper information systems were carefully scrutinized for any cases aged 15–54 years, presenting to the services for the first time during the index period, with ICD-10 diagnostic codes of psychosis (F1x.04, F1x.5, F1x.7, F20–29, F30–31.9, F32–33). These data were compared with case records to confirm eligibility. Through this procedure we found that in seven sites the proportion of missed cases was negligible (missed cases $n=27$; 12%; recruited cases $n=183$; person-years, 1 311 493; incidence rate, 16/100 000), whereas in the remaining seven sites the proportion of missed cases was higher (missed cases $n=152$; 39.9%; recruited cases $n=229$; person-years, 1 832 990; incidence rate, 20.8/100 000). Therefore, to be conservative, we may assume that only the subsample recruited in the former seven sites may be considered fully representative of new cases of psychosis living in their respective catchment areas. However, the gender-specific analyses separately conducted on patients recruited in these seven sites yielded no significantly different patters with respect to those found in the seven remaining sites as well as in the overall study sample, thus showing a good stability of this study's results (detailed results are available on request from the authors).

Overall, on the basis of the leakage study, the treated incidence rate of psychosis in the Veneto region is 18.8/100 000 a year (further details on the treated incidence data will be provided in Lasalvia *et al.*, unpublished observations).

Age at onset

Mean age at first contact was significantly lower for male participants, who were nearly 3 years younger than female patients [mean = 30.44 (s.d. = 9.15) *v.* 34 (s.d. = 10.19) years, $p=0.000$]; the difference remained significant even after controlling for diagnostic group [AP: male 33.24 (s.d. = 9.28) *v.* female 36.29 (s.d. = 9.40) years, NAP: 30 (s.d. = 9.07) *v.* 33.20 (s.d. = 10.37) years, $p=0.000$].

DUP

DUP was operationally defined as time (in months) from onset of first psychotic symptom (as reported by patients) to first contact with mental health services (Norman & Malla, 2001). The data for eight patients were excluded from the analysis, as they were outliers due to a DUP of >5 years. The mean DUP tended to be longer for male patients than for females [males, 5.5 (s.d. = 10.46) months, females, 4.10 (s.d. = 8.62) months]. This difference was more pronounced in the AP group, in which males presented a longer DUP [5.87 (s.d. = 12.21) months] than female patients did [2.20 (s.d. = 4.41) months] [NAP group, males 5.50 (s.d. = 10.21) months, females 4.86 (s.d. = 9.74) months].

Table 1. *PANSS-measured gender differences in psychotic symptoms (only significantly different items are shown)*

PANSS items	Total sample		AP		NAP	
	Males (*n* = 213)	Females (*n* = 182)	Males (*n* = 29)	Females (*n* = 49)	Males (*n* = 184)	Females (*n* = 133)
Passive/apathetic social withdrawal	3.34 (2.00)*	2.89 (1.95)*	3.21 (1.97)	2.67 (1.92)	3.36 (2.01)	2.97 (1.96)
Hostility	2.62 (1.72)*	2.26 (1.59)*	2.38 (1.72)	2.39 (1.62)	2.66 (1.72)	2.21 (1.58)
Difficulty in abstract thinking	2.53 (1.74)**	2.07 (1.58)**	2.00 (1.44)††	1.77 (1.24)††[a]	2.62 (1.77)††[a]	2.19 (1.68)††
Depression	2.92 (1.77)**	3.41 (1.78)**	3.32 (2.18)††	3.79 (2.02)††[a]	2.86 (1.70)††[a]	3.27 (1.67)††
Disturbance of volition	2.11 (1.50)*	1.80 (1.34)*	2.29 (1.65)	1.65 (1.30)	2.08 (1.48)	1.85 (1.36)
Poor impulse control	2.25 (1.59)*	1.91 (1.38)*	2.64 (1.79)	2.00 (1.47)	2.19 (1.56)	1.88 (1.35)

Data are given as mean (standard deviation).
PANSS, Positive and Negative Syndrome Scale; AP, affective psychoses; NAP, non-affective psychoses.
* $p < 0.05$, ** $p < 0.01$ (*t* test).
†† $p < 0.01$ (one-way ANOVA).
[a] Significant differences with Bonferroni's correction.

Table 2. *PSA-measured gender differences in the presence of relevant problems in childhood and in early adolescence*

PSA dimensions	Total sample		AP		NAP	
	Males (*n* = 161)	Females (*n* = 112)	Males (*n* = 22)	Females (*n* = 31)	Males (*n* = 139)	Females (*n* = 81)
Childhood, 5–11 years						
Social area	0.32 (0.21)	0.30 (0.23)	0.26 (0.18)	0.26 (0.20)	0.33 (0.21)	0.31 (0.24)
School area	0.29 (0.17)*	0.23 (0.18)*	0.26 (0.19)	0.25 (0.16)	0.29 (0.16)	0.23 (0.19)
Early adolescence, 12–16 years						
Social area	0.34 (0.19)	0.30 (0.20)	0.25 (0.17)	0.26 (0.18)	0.35 (0.19)	0.32 (0.21)
School area	0.36 (0.18)**	0.29 (0.19)**	0.31 (0.18)††	0.28 (0.18)††[a]	0.37 (0.18)††[a]	0.29 (0.20)††

Data are given as mean (standard deviation).
PSA, Premorbid Social Adjustment; AP, affective psychoses; NAP, non-affective psychoses.
* $p < 0.05$, ** $p < 0.01$ (*t* test).
†† $p < 0.01$ (one-way ANOVA).
[a] Significant differences with Bonferroni's correction.

Due to high variability, however, DUP did not differ significantly by gender, even after controlling for age and diagnostic group.

Psychopathology

The traditional PANSS subscales (positive, negative and general psychopathology) yielded no significant gender differences in both the entire sample and within diagnostic groups. An examination of individual PANSS item scores revealed that male participants showed more severe passive/apathetic social withdrawal, greater hostility, difficulty in abstract thinking, disturbances in volition and impulse dyscontrol (see Table 1). These differences were accounted for by the higher levels of impulse dyscontrol observed in AP males and difficulty in abstract thinking reported by

NAP males. Overall, female patients were more depressed; this result was essentially due to the higher levels of depression reported by AP patients. Age had no confounding effect on psychopathology.

Functioning in the pre-morbid phase and at onset

As shown in Table 2, in the pre-morbid phase, male patients had worse scholastic performance during childhood and adolescence, with NAP males showing the lowest scores for this variable.

Table 3 shows the sample's main sociodemographic characteristics and, in particular, that women achieved higher educational levels, although the difference was not significant.

Other sociodemographic characteristics differed significantly by gender, with male patients more

Table 3. *Gender differences in demographic, social and diagnostic characteristics*

Characteristics	Total sample		AP		NAP	
	Males ($n=215$)	Females ($n=182$)	Males ($n=29$)	Females ($n=49$)	Males ($n=186$)	Females ($n=133$)
Educational level						
Low (primary school, middle school)	52.5	45.5	51.9	45.5	52.6	45.5
High (high school, university)	47.5	54.5	48.1	54.5	47.4	54.5
Marital status***						
Unmarried	79.7	52.6	65.4	52.4	82.0	52.7
Married	16.6	37.5	30.8	38.1	14.3	37.3
Widowed, separated, divorced	3.7	9.9	3.8	9.5	3.7	10.0
Living condition***						
Alone	8.6	8.8	3.8	8.9	9.3	8.7
With partner and/or children	17.2	44.4	34.6	51.1	14.5	41.7
With other relatives	71.7	41.9	61.5	35.6	73.3	44.3
Other	2.5	5.0	0.0	4.4	2.9	5.2
Working status						
Employed	44.2	42.9	69.2*	52.2*	40.5*	39.1*
Unemployed	41.2	32.1	23.1*	32.6*	43.9*	31.8*
Housewife, student, retired	13.6	23.7	7.7*	15.2*	14.5*	27.3*
Other	1.0	1.3	0.0*	0.0*	1.2*	1.8*

Data are given as percentages.

AP, Affective psychoses; NAP, non-affective psychoses.

* $p<0.05$, *** $p<0.001$ (χ^2 test).

frequently found to be unmarried and living with their family of origin. These gender differences were confirmed after group stratification based on age: in the younger group (21–30 years) female patients more frequently lived alone, or with a partner and children, and male participants lived with their original family (males living alone 1.3% *v.* 5.9% females, males living with family of origin 89.7% *v.* 68.6% females, $p=0.003$). Male participants aged 31–40 years were more frequently unmarried (71.4% *v.* 29.5% females, $p=0.001$) and lived with their original family (54.5% *v.* 18.8% females, $p=0.001$); female patients more frequently lived with a partner and children (68.8% *v.* 25.8% males, $p=0.000$).

Out of the 397 patients assessed, 311 also accepted to be interviewed on drug misuse (78.3%). Of these, 21.3% were positive for any substance use. Among substance users, the proportion of males was significantly higher (89.1%) compared with females (10.9%) ($p=0.000$, Fisher test) (S. Tosato *et al.*, unpublished observations).

As shown in Table 4 (upper part), male participants were much less frequently involved in marital roles (76.5% *v.* 51.7% females not involved) and parental roles (86.9% *v.* 62.9% females not involved). When these roles were present, however, no significant gender differences in disability were observed. Yet, as

shown in Table 4 (lower part), a higher percentage of male patients had very severe disability (DAS item score $\geqslant 4$), especially in parental role (18.2% *v.* 9.4% females) and in finding a new job (31.4% *v.* females 20.0%).

Perceived needs for care at onset

Significant gender differences were detected in the CAN functioning domain (i.e. looking after the home, self-care, child care, basic education, money), with female participants reporting a higher number of total met and unmet needs (Table 5). Male patients showed a selective increase in perceived care needs in the functioning domain, as a function of severity of their disability. In fact, in the subgroup of participants with a DAS score of $\geqslant 4$ no significant gender differences in patients' perceived needs were observed.

The analysis of the CAN concerning help provided by informal caregivers showed that males received more help from their families than female patients did, particularly in terms of food preparation (male 91.2% *v.* female 74.1%), looking after the home (male 96.8% *v.* female 83.7%), self-care (male 89.5% *v.* female 78.6%), physical health (male 80.6% *v.* female 66.7%), psychotic symptoms (male 81.4% *v.* female 65.7%), psychological distress (male 78.2% *v.* female 67.0%),

Table 4. *Gender differences in disability assessed by DAS regarding participants with no role and participants with very severe disability*

DAS items	Total sample		AP		NAP	
	Males (*n* = 183)	Females (*n* = 151)	Males (*n* = 26)	Females (*n* = 43)	Males (*n* = 157)	Females (*n* = 108)
No role						
Participation in household	1.6	5.3	0.0	7.0	1.9	4.6
Marital role	76.5***	51.7***	57.7†††	51.2†††	79.6†††	51.9†††
Parental role	86.9***	62.9***	73.1†††	60.5†††	89.2†††	63.9†††
Frictions in social role	2.2	0.7	0.0	0.0	2.5	0.9
Work role	41.0	48.3	23.1	48.8	43.9	48.1
Interest in getting a job	59.6	59.6	73.1	62.8	57.3	58.3
Information and interests	1.1	2.0	3.8	0.0	0.6	2.8
Behaviour in an emergency	20.2	16.6	19.2	20.9	20.4	14.8
Very severe disability (item score ⩾4)						
Participation in household	21.8	18.7	12.0	13.2	23.4	20.8
Marital role	11.9	18.6	0.0	9.5	16.1	22.4
Parental role	18.2	9.4	0.0	5.9	23.5	11.1
Frictions in social role	19.0	19.7	15.4	16.7	19.6	21.0
Work role	18.7	17.3	5.3	9.5	21.6	20.4
Interest in getting a job	31.4	20.0	33.3	0.0	31.3	27.3
Information and interests	16.3	15.1	13.0	14.0	16.8	15.5
Behaviour in an emergency	15.6	11.9	15.8	9.4	15.5	13.0

Data are given as percentages.

DAS, Disability Assessment Schedule; AP, affective psychoses; NAP, non-affective psychoses.

*** $p < 0.001$ (χ^2 test).

††† $p < 0.001$ (Fisher's exact test).

self-safety (male 84.6% *v.* female 71.4%) and company (male 69.7% *v.* female 67.6%). No confounding effect was observed for age (⩽20 years, 21–30 years, 31–40 years, >40 years).

Discussion

The present study was based on the assumption that mental health care delivery systems endeavouring to provide optimal health care for FEP patients should also focus on the key role of gender issues (Køster *et al.* 2008; Cotton *et al.* 2009; De Lisi, 2011). In fact, 'to achieve the highest standard of health, health policies have to recognize that women and men, owing to their biological differences and their gender roles, have different needs, obstacles and opportunities' (WHO, 2001).

The study presents a number of strengths over previous research. First, it was conducted by examining a large and epidemiologically based cohort of first-episode psychosis patients, greatly reducing the probability of selection bias thereby. Second, it presents the added value of being carried out in 'real-world services', which have been operational for several years – an approach that obviated the limitations of

research programmes run in dedicated research centres. Third, standardized assessment measures were used to survey sociodemographic and psycho-pathology data, and operational diagnostic criteria. These were administered together with a set of instruments surveying patient disability and need-for-care status, including degree of informal help, and all the data yielded thereby were all applied in the patients' clinical diagnoses. Last, the study recruited a large cohort of cases and collected data on a comprehensive set of clinical and social aspects; all analyses were run on both the entire sample and the AP and NAP subgroups, so as to reduce the probability of bias due to mixed diagnostic sampling.

Our findings, however, should also be interpreted in light of some limitations. Specifically, the patients' DUP information was self-reported and not corroborated by 'objective' evaluations. Furthermore, it was not always possible to ask patients' family members about pre-morbid adjustment, and this type of information was also frequently self-reported. In addition, only a proportion of the PICOS sites provided a number of patients in line with the number of expected cases and could therefore be considered representative of all FEP patients treated in the overall PICOS

Table 5. *Gender differences in mean number of perceived total, met and unmet needs assessed by the CAN*

CAN dimensions	Total sample		AP		NAP	
	Males (n = 164)	Females (n = 131)	Males (n = 24)	Females (n = 40)	Males (n = 140)	Females (n = 91)
Total needs						
Health	2.15 (1.27)	2.19 (1.22)	2.04 (1.55)	2.17 (1.24)	2.17 (1.22)	2.20 (1.22)
Basic	0.71 (0.83)	0.79 (0.85)	0.29 (0.46)	0.80 (0.72)	0.78 (0.86)	0.77 (0.91)
Social	0.99 (1.06)	1.16 (1.09)	0.79 (0.88)	1.37 (1.19)	1.03 (1.09)	1.07 (1.03)
Service	0.40 (0.61)	0.40 (0.66)	0.29 (0.69)	0.30 (0.52)	0.41 (0.60)	0.45 (0.72)
Functioning	0.63 (0.93)***	1.09 (1.20)***	0.42 (0.78)†††[a]	1.37 (1.35)†††[a]	0.67 (0.95)†††[a]	0.97 (1.12)†††
Met needs						
Health	0.84 (0.98)	0.81 (1.02)	0.87 (1.03)	0.77 (1.07)	0.84 (0.97)	0.82 (1.01)
Basic	0.37 (0.67)	0.43 (0.70)	0.08 (0.28)	0.45 (0.68)	0.42 (0.71)	0.43 (0.72)
Social	0.24 (0.58)	0.34 (0.63)	0.12 (0.34)	0.30 (0.56)	0.26 (0.62)	0.36 (0.66)
Service	0.19 (0.45)	0.24 (0.49)	0.17 (0.48)	0.20 (0.46)	0.20 (0.45)	0.25 (0.51)
Functioning	0.35 (0.64)**	0.59 (0.88)**	0.21 (0.66)††[a]	0.77 (1.10)††[a]	0.37 (0.64)††[a]	0.51 (0.75)††
Unmet needs						
Health	1.31 (1.13)	1.38 (1.21)	1.17 (1.24)	1.40 (1.17)	1.34 (1.11)	1.37 (1.23)
Basic	0.33 (0.60)	0.34 (0.66)	0.21 (0.41)	0.35 (0.62)	0.36 (0.62)	0.34 (0.69)
Social	0.76 (1.00)	0.82 (1.00)	0.67 (0.92)	1.07 (1.09)	0.77 (1.01)	0.70 (0.94)
Service	0.20 (0.47)	0.17 (0.47)	0.12 (0.45)	0.10 (0.30)	0.21 (0.48)	0.20 (0.52)
Functioning	0.29 (0.68)**	0.50 (0.96)**	0.21 (0.51)	0.60 (1.10)	0.30 (0.71)	0.46 (0.89)

Data are given as mean (standard deviation).
CAN, Camberwell Assessment of Need; AP, affective psychoses; NAP, non-affective psychoses.
** $p < 0.01$, *** $p < 0.0001$ (t test).
†† $p < 0.01$, ††† $p < 0.001$ (one-way ANOVA).
[a] Significant differences with Bonferroni's correction.

catchment area. It is, however, noteworthy that gender-specific analyses conducted separately on patients recruited in 'non representative sites' yielded no significantly different patterns with respect to those found in the overall study sample, thus showing a good stability of this study's results.

The present study therefore makes an important contribution to the literature on the topic of the ways in which mental disorders are linked to gender issues in various cultural and health service contexts and sheds new light on rarely investigated social-context variables. As reported in several studies (Faraone *et al.* 1994; Jablensky & Cole, 1997; Häfner *et al.* 1998; Kirkbride *et al.* 2006), we observed onset occurring significantly earlier in men and male adolescents, with age of first service contact occurring approximately 3 years earlier than in female patients. The present study's results are therefore in line with the robust finding of earlier onset age for males, observed across many studies and cultures (McGrath, 2006). The female patients' typically later illness onset would have presumably allowed them to undergo more appropriate psychosocial development, increasing the likelihood of their being involved in close affective

relationships, and of developing earlier and greater autonomy from their family of origin thereby (Wattie & Kedward, 1985; Häfner & Novotny, 1995). This explanation could also account for the male–female asymmetry we observed in marriage rates, with women more frequently observed to be married. This study also confirmed previous research showing that male patients receive a diagnosis of NAP more frequently than females do (Ring *et al.* 1991) and that female patients are more likely to present affective symptoms than their male counterparts (Ring *et al.* 1991; Szymanski *et al.* 1995). Our male participants, however, did not exhibit more negative symptoms, as conversely reported elsewhere (Choi *et al.* 2009). This finding might have been due to the more extensive family and informal support network that is typical of southern European trends and which facilitates patient participation in daily activities and involvement in social life.

Male participants did show poorer pre-morbid functioning in scholastic performance, as described by Leung & Chue (2000), but no significant gender differences in friction in social contacts were observed. At illness onset male patients presented poorer

functioning in several areas than female patients did, and this seems a factor that could prevent men from filling marital and parental roles and could cause higher disability when they do have to cover these social roles. Overall, these findings confirmed the first part of the study hypothesis (i.e. lower pre-morbid adjustment and greater social disability for male patients at illness onset).

Notably, despite higher levels of current and pre-morbid disability, male patients reported fewer unmet needs in the functioning domain than females did – a finding that disconfirmed the second part of our hypothesis (male patients presenting more self-perceived needs at illness onset than females). It also generates the question of why the lower functioning observed in our male participants was unrelated to a higher number of unmet needs. Yet, given that our study evaluated self-reported needs for care, this result may be due to a greater lack of insight by male patients (Køster *et al*. 2008). Moreover, environmental theories suggest that social, familial and cultural factors shape the ways in which psychosis is expressed (Ruggeri *et al*. 2008). Thus, the potential negative impact of our male participants' greater lack of insight on their everyday lives, associated with a decline in performance, could be hampered by tolerance in the family context. In Italy, families are more likely to accept and cope with underperforming males (Bianco, 2001; Bimbi, 2003). The influence of unmet needs might be less problematic for male individuals living in Italy, because – as confirmed by our data – they typically receive greater support from their family members in their everyday life activities than females do. It is also possible that both of these context-linked attitudes toward males could help account for the observed gender discrepancy between function and needs. Hence, the rationale for disconfirming the second part of the study hypothesis could be culture-specific and not generalizable to other contexts.

Last, our study interestingly yielded a trend only of longer DUP in males, which did not reach significance, conversely to the results of Larsen *et al*. (1996). The finding could be due to the lack of an observed correlation between gender and negative symptoms in our sample, given that negative symptoms usually correlate strongly with DUP. Moreover, our sample generally showed a briefer DUP than reported in other studies conducted outside of Italy (Norman & Malla, 2001; Perkins *et al*. 2005). Once again, this result might also be due to social and cultural differences among countries and to the more widespread diffusion of community-based mental health services in Italy, as prescribed by the national health care system (de Girolamo *et al*. 2007). Given that specific context and service factors may reasonably be presumed to influence this variable, further international multisite studies should be promoted to address this issue.

Regarding time trend comparison of our findings with previous data, it is interesting to note that gender differences in psychopathology (with men showing more negative symptoms and poorer social functioning than woman) reported by most research conducted in the 1980s and the 1990s (Levine *et al*. 1981; Bardenstein & McGlashan, 1990; Leung & Chue, 2000) were explained in the light of environmental theories: it was contended that men were subjected to greater social and vocational expectations than women (and expectations for greater vocational success) and that the higher expectations and the need to deny dependency aspiration could place more pressure and stress among young males and consequently hasten the appearance of schizophrenia in vulnerable subjects (Piccinelli & Gomez Homen, 1997). We found that clinical and social gender discrepancies in our sample are less pronounced than could be expected from early research. We speculate that this finding may be possibly accounted for by the changes in gender roles that have occurred over the last decades in Western society, which nowadays impose similar levels of pressure and expectations on both men and women.

The present paper can contribute to a better understanding of the impact of gender on psychosis onset and its differential impact on the various other biological, social and service-related factors that most probably contribute to the aetiopathogenesis of psychoses (Grossman *et al*. 2008; van Os *et al*. 2008). Our findings also draw attention to the problem of lack of a gender perspective in public mental health services. A more comprehensive view including gender issues would conversely require greater focus on individualized service planning and intervention models and the adoption of gender-specific treatment guidelines (Women's Health Council, 2007; Goldberg, 2010; De Lisi, 2011). The next stage of our research will be focused on the impact of gender on the course of illness in the short and medium term, by following up on the sample examined in the present paper at 1, 2 and 5 years.

Viewing mental health through the lens of gender reveals differences over the early course of illness and in the different impact of biological, psychological and social factors involved during this phase. The need to provide a range of treatments informed by a greater understanding of gender differences has therefore become a pressing issue. A gender-focused mental healthcare model would highlight the importance of contextualizing health service delivery in relation to the social, cultural and economic situation of individuals seeking care (Judd *et al*. 2009; Amaddeo & Tandella, 2011). Prevention policies establishing

targeted training programmes for primary care personnel should also be adopted, so as to help these staff members more immediately to recognize gender differences in the presentation of illness and to more effectively develop tailored treatment protocols.

Appendix. The PICOS-Veneto Group

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Declaration of Interest

None.

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