Low incidence of psychosis in Italy: confirmation from the first epidemiological study in Sicily

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Abstract

Purpose—The incidence of psychotic disorders varies in different geographical areas. As there have been no reports from Southern Italy, this study aimed to determine the incidence rate of first episode psychosis in Palermo, Sicily.

Methods—All patients, aged 18-65 years, presenting with a first episode of psychosis (FEP) (ICD-10 F20-F29, F30-F33) to mental health services in Palermo, were recorded over a 3-year period. Incidence rates of psychotic disorders and their 95% confidence intervals (95% CI) were estimated. Poisson regression was applied to estimate the differences in incidence rate ratio (IRR) by age, sex and migrant status.

Results—Two hundred and four FEP participants were identified during the three years; 183 (89.7%, males n=112) participants were native Italians and 21 were migrants (10.3%, males n=14). The crude incidence of all psychoses was 15.9 (95% CI 13.7-18.1). As predicted, the risk of schizophrenia F20 was higher in males compared to females (adjusted IRR=1.99, 95% CI 1.36-2.88) and in migrants compared to native Italians (adjusted IRR= 4.02, 95% CI 2.39-6.75).

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Conclusions—This study, the first from Sicily, confirms previous findings from Northern Italy that the risk of schizophrenia and other psychoses is much lower in Italian cities than those reported from cities in Northern Europe; the reasons for this disparity may provide important clues to the aetiology of psychosis.

Keywords

psychosis; schizophrenia; incidence; Italy

1 Introduction

For many years it was thought that schizophrenia had a uniform distribution worldwide [1]. However, this "myth" was challenged by the systematic review by McGrath and colleagues who, examining 158 studies from 32 different countries in the world, reported a wide range of the incidence of schizophrenia of 7.7 to 43.0 per 100,000 across different countries [2]. Obtaining accurate epidemiological data is crucial for local mental healthcare planning in different countries. Furthermore, knowledge of incidence variations between different countries may facilitate our understanding of the distribution of risk factors for psychosis, thus influencing prevention strategies. Most of the literature on the epidemiology of psychosis in Europe comes from Northern countries [3–6]. For example, the Aetiology and Ethnicity in Schizophrenia and Other Psychoses (AESOP) study, an incidence study across three cities in UK, reported an incidence of psychoses of 32.1 per 100,000 persons years [6].

There are no epidemiological data on psychosis in Southern Italy, and no studies have ever been carried out in Sicily; the few available Italian studies on this topic have been carried out in the North which is quite different in terms of demographic and socioeconomic circumstances. A study based on data collected by the South-Verona Psychiatric Case Register (PCR), reported an incidence of schizophrenia and other functional psychoses (ICD 9 criteria [7]) of 10 per 100,000 person per year [8]. Another case register study conducted in Portogruaro, in north-eastern Italy, based on first ever contact with psychiatric services, reported an incidence rate for schizophrenia and for other related functional psychoses (diagnosed according to ICD 9 criteria) of 17 per 100,000 per year [9].

Preti and Miotto [10] reported first admission rates to Italian psychiatric wards of patients affected by schizophrenia, affective psychoses and other non-affective psychoses according to data published by the Italian National Institute for Statistics (ISTAT) in the health-care statistics yearbooks. Rates of schizophrenia ranged from 6 to 8.8 per 100,000 persons per year, rates of other non-affective psychoses ranged from 5.7 to 7.8 per 100,000 persons per year, and rates of affective psychoses from 3.3 to 8 per 100,000 persons per year. These are lower than the median incidence of schizophrenia reported by McGrath et al [2]) and by Kirkbride et al. [11].

The above studies did not involve interviews to confirm diagnosis. However, recently, two first episode studies have come from Northern Italy. The first is the Bologna FEP study, an 8-year prospective study, which reported an incidence of 16.4 per 100,000 for psychotic disorders diagnosed according to ICD 10 criteria [12], 7.3 per 100,000 for schizophrenia, 1.7

per 100,000 for affective psychoses, and 11.3 per 100,000 for other non-affective psychoses [13].

The second is the Psychosis Incident Cohort Outcome Study, a multi-site population based first episode psychosis study conducted in the Veneto region. The authors found an incidence of psychotic disorders (according to ICD 10 criteria) of 18.1 per 100,000 per year. Incidence rates were 5.6 per 100,000 per year for schizophrenia, 3.8 per 100,000 per year for affective psychoses, 14.3 per 100,000 per year for other non-affective psychoses [14].

Thus, while accurate estimates of the incidence of psychotic disorders in Northern Italy exist, there is a dearth of literature available from Southern Italy, which differs greatly along cultural, socio-demographic and economic dimensions. In particular, Northern Italy is wealthier and more extensively industrialised than the South. For example, the overall unemployment rate in Italy in 2014 was 13.6%, but this rose to 21.7% in the South of Italy [15]. For this reason, non-Italian migrants, tend to settle in northern Italy (1.356.937 in North-West, 36.0%; 1.066.393 North-East, 28.3%) as opposed to southern Italy (338.871, 9.0%) or the Islands (Sicily and Sardinia: 140.655, 3.7%) [16].

It is important to establish whether or the low rates of psychosis reported from small prosperous cities in Northern Italy are shared by a much larger city in the poorer South. The aims of the present study were therefore: 1) to estimate the incidence of new cases of first episode psychosis presenting to Mental Health Services in Palermo, the capital of Sicily, over a three year period; 2) to identify subgroups at higher risk of psychoses (e.g. migrants versus native Italians, males versus females). We expected to find similarly low incidence rates of psychoses to those reported in other Italian sites [14,15] and to detect increased risk of psychosis in the male and migrant subgroups, findings that have been widely reported. The study methodology was closely based on that of the AESOP study carried out in the UK [6,17] in order that the data would be directly comparable.

2 Methods

2.1 Catchment area

The catchment area included the whole city of Palermo. Palermo is served by a number of mental health services: all inpatient units (five), private psychiatric hospitals (four) and outpatient services (five) were examined in order to identify all new cases of psychosis in Palermo.

2.2 Population at risk

The population at risk was defined as all the people resident in Palermo between 1 May 2008 to 30 April 2011 aged 18-65 years. Data were obtained from the 2011 census of Italy conducted by the National Institute of Statistics (ISTAT) [18].

We use the term migrants to refer to those people who were born outside Italy independently of whether or not they have Italian citizenship. According to ISTAT, in 2011 there were a total of 427,913 residents aged 18-65 (207,552 males and 220,361 females) in Palermo. The population was largely homogenous in terms of ethnicity; it was mostly people who were

born in Italy (n=412,771, 96.5%; males n=199,952, 48.4%); migrants (non-Italy born people) represented only 3.5% (n=15,142 males=7,600, 50.2%). The population denominator was multiplied by 3 to account for the 3-year study period leading to a total of 1,283,739 person-year at-risk.

2.3 Case ascertainment and assessment

Participants were people resident in the catchment area, referred to any mental health service of Palermo for a first episode of psychosis (FEP) between 1 May 2008 and 30 April 2011. The inclusion criteria were: 1) aged between 18-65 years; 2) residence in the catchment area; 3) presence of any psychotic symptoms such as delusions, hallucinations, thought disorder, bizarre or disturbed behaviour, negative symptoms, or mania; 4) absence of previous contact with psychiatric services for psychotic symptoms; 5) absence of an organic cause of psychosis, severe learning disability, or psychotic symptoms due to acute intoxication 6) diagnosis of ICD-10 criteria for schizophrenia (F20), other non-affective psychoses (F21-29) or affective psychoses (F30-33) [12].

Mental health services were contacted on weekly basis and clinical notes were regularly checked, in order to identify all new admissions or new contacts for a first episode of any psychotic disorder. Patients who were eligible were invited to participate in the study and to complete the diagnostic assessment. For those who refused or were unavailable (i.e. having been discharged), it has been used the ethical approval to record anonymous clinical and socio-demographic data, according to the authorization to process personal data for scientific research purposes anonymously [19]. To reduce the risk of missing patients, at the end of the study period, a leakage study was conducted in all the mental health services in order to detect cases of psychosis fulfilling the inclusion criteria, who could have been missed by the initial screen. Patients who consented to participate in the whole assessment were assessed using the Schedules for Clinical Assessment in Neuropsychiatry (SCAN) [24], while clinical data of participants who refused or were not available to be interviewed were recorded using the only SCAN Item Group Checklist (IGC) section. Main socio-demographic data was collected using the Modified version of the Medical Research Council (MRC) socio-demographic scale [21]. The diagnosis of psychotic disorder was made according to ICD-10 criteria [12] using all the available information and then confirmed case by case by consensus meetings among two psychiatrists and two trainees in psychiatry according to the Diagnostic Criteria for Research of the ICD-10 (DCR-10) [22].

2.4 Statistical analysis

Crude incidence rates and their 95% confidence intervals (95% CI) were estimated for overall psychotic disorders and for each diagnostic category by gender and by migration status. Age (9 bands, 18-24 to 60-65) and gender stratified incidence rates were also estimated. Rates were presented per 100,000 persons per year. Poisson regression was used to estimate the differences in incidence rate ratio (IRR) in different groups in the sample, i.e. males versus females (adjusting for age and migration) and migrants versus native-born Italians (adjusting for age and sex). We did not include any interaction terms in these models because no statistical interaction was found between either age and migration, or age and gender, following Likelihood Ratio Tests (LRT) (data not shown).

2.5 Ethics

The study was approved by the Ethical Committee of the Palermo University Medical School. The Department of Mental Health of Palermo (ASP 6) authorized epidemiological data collection in the mental health services of Palermo. It has been performed in accordance with the ethical standards of the Declaration of Helsinki and its later amendments.

3 Results

Two hundred and four patients met the inclusion criteria over the study period. 68 (33.3%) FEP were assessed by face-to-face interviews, while 136 (66.7%) were assessed by clinical notes and information gained from their care coordinators. 72 (35.3%) of the 204 cases refused to be interviewed and 64 (31.3%) were identified by the leakage study. The main reasons for refusing to be enrolled were lack of interest in the research and the fear of being stigmatized.

There were no significant differences in terms of gender, migration, ethnicity, level of education between participants who were recruited and those who refused or who were identified retrospectively. There was a difference in mean age at first contact: non-recruited cases were younger at their first contact.

Of 204 patients, 183 (89.7%, males n=112, 88.9%) cases were native Italians and 21 were migrants (10.3%, males n=14, 11.1%). The main socio-demographic features of the sample are displayed in Table 1.

3.1 Diagnosis

The majority of the cases met ICD-10 criteria for the diagnosis of F20 schizophrenia (n=123, 60.3%), 19 (9.3%) for F30-33 affective psychoses, 62 (30.4%) for other non-affective psychoses F21-29. The affective psychosis (F30-33) category was composed of 12 (63.1%) people affected by mania or bipolar disorder and 7 (36.9%) people by depression with psychotic symptoms. There were no differences in diagnosis distribution by gender (χ^2=2.25, df=2, p= 0.325).

17 migrants (80.95%) were diagnosed with schizophrenia, 4 (19.05%) were diagnosed with other psychosis.

3.2 Age at first contact with mental health services

Median age at first contact with psychiatric services for all psychoses was 28 years (IQR: 22-38). There was a difference in the distribution of age of onset across diagnostic categories (Kruskal Wallis' χ^2=12.5, df=2, p=0.002) as shown in Table 2. There was no difference in median age at first contact between schizophrenia (F20) and affective psychoses (F30-33) (Kruskal Wallis' χ^2=0.10, df=1, p=0.714). Participants affected by other non-affective psychoses (F21-29) were significantly older than those affected by schizophrenia (F20) (Kruskal Wallis' χ^2=12.1, df=1, p<0.001).

Median age at first contact for overall psychoses was significantly higher in females 32.5 (IQR: 24-40) than males 26.5 (IQR: 22-35) (Wilcoxon's z=2.3, p=0.020). The difference by

gender in median age at first presentation was no longer significant when the analyses were repeated for each diagnostic category, presumably due to loss of power (Table 2).

Median age at first contact for all psychotic disorder was significantly different between native Italians (29, IQR:23-39) and migrants (25, IQR:20-30) (Wilcoxon's z=2.0, p=0.049).

3.4   Specific incidence rates by age bands, gender, and diagnostic category

Incidence rates of all psychotic disorders were stratified by age bands. The incidence of all psychotic disorders peaked before 30 years old. After stratifying by age and gender, males showed higher specific rates than females for all psychoses until 30-34 years; from 35-39 rates tended to overlap (Figure 1). When considering the distribution of age by gender for schizophrenia, rates tended to overlap from 40-44 years old.

The total crude incidence of all psychoses was 15.9 (95% CI 13.7-18.1). Table 3 shows incidence rates for all psychoses and by diagnostic categories. Following multivariable Poisson regression, men had an increased risk of all psychotic disorders (adjusted IRR=1.67, 95% CI 1.26-2.23) compared to females, after adjustment for age and migrant status. However, further inspection of separate diagnostic outcomes revealed that this pattern was only observed for schizophrenia (adjusted IRR=1.99, 95% CI 1.36-2.88).

3.5   Incidence rates of psychosis in migrants

Although migrants totalled only 21 people, their proportion exceeded that in population at risk (10.3% vs. 3.5%, χ^2=27.3, df=1, p<0.001).

Among migrant cases, 7 were white Caucasians from Eastern Europe, 7 came from Asia, and 7 came from Africa. There were no differences in the proportion of males and females between native-born Italians and migrants. No migrant received the diagnosis of affective psychosis (mania and depressive psychosis).

Table 4 shows crude incidence rates and their 95% CI for native-born Italians and for migrants for all psychoses and by diagnostic category. Migrants had a nearly 3 fold increased risk of any psychotic disorder (adjusted IRR= 2.78, 95% CI 1.76-4.39) and a 4 fold increased risk of schizophrenia (adjusted IRR= 4.02, 95% CI 2.39-6.75) compared to native-born Italians, after adjustment for age and sex. No difference in risk was found for other psychotic disorders.

4   Discussion

4.1   Main findings

The crude incidence rate of all psychotic disorders in Palermo was estimated 15.9 per 100,000 persons per year (95% CI 13.7-18.1) and the incidence of schizophrenia 9.6 (95% CI 7.9-11.3); rates of affective psychoses were lower than those of other non-affective psychoses. As expected, males had an increased risk of schizophrenia. Migrants had an increased risk of schizophrenia but not of other psychoses.

4.2 Comparison with previous Italian studies

Previous studies carried out in Northern Italy reported similar rates but these rates are not directly comparable because of a different methodology. The Bologna FEP study, carried out in three mental health services of West Bologna, found an overall median incidence rate for all psychotic disorders that is similar to that we found in Palermo [13]. These rates are not totally comparable because the BoFEP included in their sample substance-induced psychoses that were excluded in the present study. Furthermore, no standardization was applied in order to adjust for potential differences in the population structure between the two sites. Taking into account these methodological limitations, no striking differences in the rates of overall psychoses, schizophrenia and, affective psychosis between Palermo and Bologna can be observed, although the incidence rate of other non-affective psychoses seems to be higher in Bologna than in Palermo.

The Psychosis Incident Cohort Outcome Study carried out in the Veneto region [14]. Again, a direct comparison between the two studies was not allowed by the differences in methodology (e.g. age of first episode recruitment, inclusion of substance induced psychosis) and the rates are not strictly comparable due to the lack of standardization to control for the differences in the two population structures. However, again the rates of schizophrenia in Veneto are similar to those we found in Palermo though there were higher rates of other non-affective psychoses and of affective psychoses and lower rates of schizophrenia when compared to Palermo.

4.3 Increased incidence of psychosis amongst males and migrants

The risk for schizophrenia was significantly influenced by gender. Males had a higher risk of schizophrenia compared to women. This result is consistent with previous FEP studies reporting an increased risk of developing psychoses and schizophrenia in males [2,6,13].

Gender differences in schizophrenia might reflect the differential proneness of men and women to two different subtypes of schizophrenia presenting in different stages of life. One suggestion is that men are more vulnerable to a neurodevelopmental form of the disorder while women are more likely to develop a later onset psychotic disorder with an affective component [23]. Other explanations suggest that more women than men have onset later in life due to the declining of the protective effect exerted by oestrogens [24] or due to psychosocial precipitating factors [25].

No differences in the risk by gender were found for affective psychoses as reported by some previous studies [6].

Migrants represented a small proportion (10.3%) of the Palermo first episode sample than in Bologna (23.9%) and in Veneto (22.8%). This is because of the higher migration rates in Northern Italy. According to the last census data (2011) 86.5% of migrants were residents in the North of Italy [16]. Sicily is sadly famous for the recent Mediterranean migrant crisis, but at the time of this study, it did not represent an attractive destination for people who were looking for a job because of the high rate of unemployment.

The present study confirms previous findings about the association between migration and an increased risk of schizophrenia. Migrants were 4 times more likely to be affected by schizophrenia compared to native Italians. These results are similar to those in the Bologna study. Tarricone and colleagues [26] found a higher risk of developing psychoses in migrants compared to natives (IRR= 2.5; 95% CI 2.1-2.9) and an increased risk of schizophrenia (IRR=3.4; 95% CI 3-3.8). An increased risk of overall psychosis in migrants (IRR=2.7; 95% CI 1.8– 2.7) was also reported in the Veneto study [14]. In our study no migrant received the diagnosis of affective psychosis and, although the proportion of migrants was small, this raises the possibility that, despite using standardised methods for the diagnostic assessment, it is more difficult to detect the affective component of psychosis in migrants because of cultural barriers.

4.4 Limitations

The present study has a number of limitations. One of the most important issues in epidemiological studies is the accuracy of the case ascertainment. Every effort was made to detect all the patients affected by psychosis during the three-year period. All the mental health services of the catchment area were included in the study together with private psychiatric hospitals and after the recruitment period a leakage study was conducted in order to detect any missing cases. However this study is based on treated cases so that it is possible that we failed to detect those people affected by psychosis who did not look for psychiatric care. Ideally, population-based studies may lead to more accurate estimates of incidence rates.

Comparisons among other Italian epidemiological data are provided descriptively. However, a true comparison with other Italian cities should take into account the differences in the population structure across sites.

The present study replicate previous findings about migration being a risk factor for psychosis, however it does not allow to draw definite conclusions about psycho-social factors which potentially mediate the increase in risk.

4.5 Strengths

This work is the first epidemiological study into psychosis ever carried in Sicily. It provides data from the south of Italy, thus widening the information available on the different geographical distribution of psychotic disorder. The diagnosis in participants was performed by standardized methods which are directly comparable to the AESOP study. It provides data on psychosis other than schizophrenia which are less explored in the literature. Population denominator data were extracted by the 2011 census, the most reliable source of population information and the Post Enumeration survey run by the National Institute of Statistics in 2012 confirmed the accuracy of data [27].

5 Conclusions

This epidemiological study of psychosis, the first to be carried out in a large city from Southern Italy shows roughly similar incidence rates of psychosis to two studies from smaller cities and their surroundings in Northern Italy. As expected males and migrants

show increased rates. However, it is noticeable the incidence rates in all three Italian studies are much lower than those reported in the AESOP study which was carried out using similar methodology in the UK.

It is likely that the higher rates of migration into London contributes to the higher incidence there, as reported in the AESOP study, compared to Palermo. Another interesting question concerns the potential protective role of the family in psychosis onset and outcome. In this study we did not specifically examine this issue. However, in a subsample of about one third of our cases, 94.6% lived with someone else at the time of psychosis onset and only 5.4 % of cases lived alone. In Northern European countries, as for example in the AESOP study, people suffering their first episode of psychosis were more likely to live alone (43%) and to have few close relationships [28]. However, incidence rate differences among different countries are not likely to be explained by a single factor. It is more probable that multiple environmental factors such as social isolation, urbanicity, migration and substance consumption interact with biological and genetic factors in modulating the risk of psychoses. Multi-centric epidemiological and case control studies are needed to describe incidence patterns in Europe and to further explore the role of putative risk factors for psychotic disorders. Further studies to address the causes of these differences are urgently needed.

Acknowledgements

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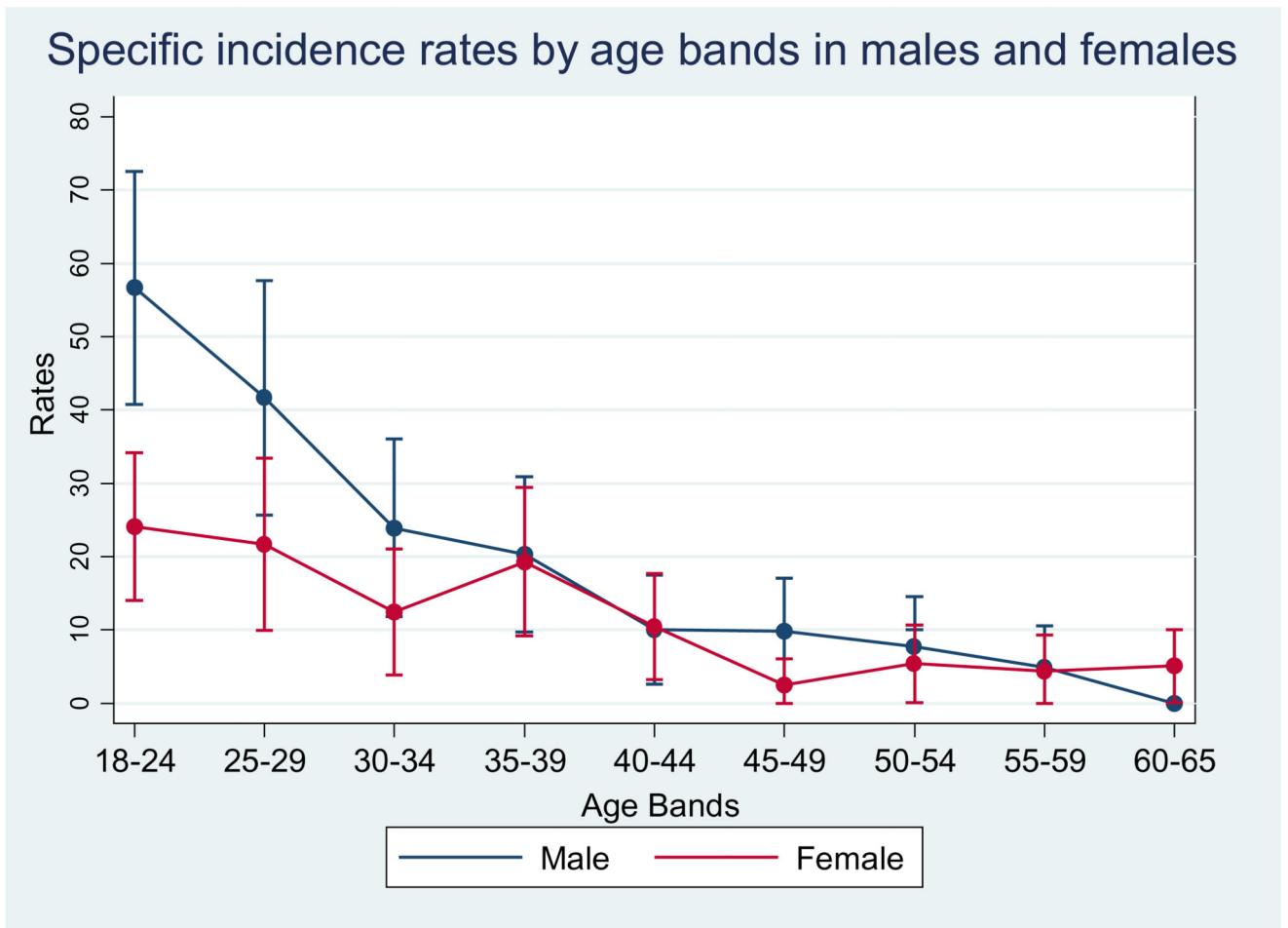
Figure 1.
Specific incidence rates and their 95% CI for overall psychotic disorders by age-bands and gender

Table 1

Socio-demographic features of cases

Cases	n (%)
Gender	
Males	126 (61.8)
Females	78 (38.2)
Migrant status	
Migrants	21 (10.3)
Native-born Italians	183 (89.7)
Level of education	
No qualification	2 (1.3)
Primary school	16 (10.7)
Junior high	55 (36.7)
Diploma	64 (42.7)
University	13 (8.7)
No details	54
Relationship status	
Single/separated/divorced	125 (72.7)
Steady relationship/marriage	47 (27.3)
No details	32
Employment status	
Unemployed	92 (54.1)
Employed	52 (30.6)
Student	24 (14.1)
Retired	2 (1.2)
No details	34
Living with someone	
Yes	139 (94.6)
No	8 (5.4)
No details	57

Table 2

Mean and median age of first contact of service (years) in cases for different diagnostic categories

Diagnostic category	Total	Male	Female	Mann Whitney statistic	p-value
All psychoses					
Median (IQR)	28 (22-38)	26.5 (22-35)	32.5 (24-40)	2.324	0.020
F20 Schizophrenia					
Median (IQR)	26 (21-35)	26 (20-35)	26.5 (21-37)	0.855	0.393
F30-33 Affective psychoses					
Median (IQR)	29 (22-35)	24 (20-29)	34 (30-37)	1.820	0.069
F21-29 Other non-affective psychoses					
Median (IQR)	33 (41-25)	31 (25-40)	38.5 (26.5-44.5)	1.678	0.093

Sd: standard deviation; IQR: inter-quartile range.

Table 3

Crude incidence rates, crude and adjusted incidence rate ratio (IRR) by gender and diagnostic category (rates are displayed per 100,000 persons per year)

Incidence rates	Crude rates (95% CI)	Crude IRR (95% CI) Males vs females	Adjusted IRR* (95% CI) Males vs females
All psychoses			
Total	15.9 (13.7-18.1)		
Male	20.4 (16.8-24)	1.74 (1.31-2.31)	1.67 (1.26-2.23)
Female	11.7 (9.1-14.3)		
Schizophrenia F20			
Total	9.6 (7.9-11.3)		
Male	13.1 (10.3-16)	2.08 (1.43-3.02)	1.99 (1.36-2.88)
Female	6.3 (4.4-8.2)		
Affective psychoses F30-33			
Total	1.5 (0.8-2.1)		
Male	1.8 (0.7-2.8)	1.48 (0.59-3.68)	1.43 (0.58-3.56)
Female	1.2 (0.4-2.0)		
Other psychoses F21-29			
Total	4.8 (3.6-6.0)		
Male	5.5 (3.7-7.4)	1.31 (0.79-2.16)	1.27 (0.77-2.11)
Female	4.2 (2.6-5.8)		

95% CI: 95% confidence interval; IRR: incidence rate ratio. IRR are adjusted by age and migration by Poisson Regression.

Table 4

crude incidence rates, crude and adjusted (by age and gender) incidence rate ratio (IRR) in native-born Italians and migrants for all psychosis and by diagnostic category.

Incidence rates	Crude rates (95% CI)	Crude IRR (95% CI)	IRR adjusted by age and gender* (95% CI)
All psychosis			
Native-born Italians	14.8 (12.6-16.9)	3.12 (1.99-4.91)	2.78 (1.76-4.39)
Migrants	46.2 (26.5-66)		
Schizophrenia F20			
Native-born Italians	8.6 (6.9-10.2)	4.37 (2.62-7.29)	4.02 (2.39-6.75)
Migrants	37.4 (19.6-55.2)		
Affective psychoses F30-33			
Native-born Italians	1.5 (0.8-2.1)	-	0
Migrants	0		
Other psychoses F21-29			
Native-born Italians	4.7 (3.5-5.9)	1.88 (0.68-5.18)	1.59 (0.58-4.42)
Migrants	8.8 (0.2-17.4)		

95% CI: 95% confidence interval; IRR: incidence rate ratio. IRR are adjusted by age and gender by Poisson Regression.