



# Predominant diagnoses, gender, and admission duration in an adult psychiatric inpatient hospital in United Kingdom

## Abstract

**Introduction:** The study objective was to epidemiologically analyse patients presenting at an adult and mixed-gender psychiatric inpatient unit in Essex, Kingswood Centre, UK, to report the predominant diagnoses, gender, and admission duration. **Method and material:** Meta-analysis and descriptive statistics analysed the year 2016 discharge data on Excel® for 162 patients. ICD-10 codes classified their mental illnesses. **Results:** Meta-analysis evidenced statistically significant heterogeneity in numbers admissions ( $I^2=95\%$ ;  $p\leq 0.001$ ), length ( $I^2=78\%$ ;  $p\leq 0.001$ ), and gender ( $I^2=76\%$ ;  $p\leq 0.001$ ). The prevailing diagnosis was borderline personality disorder (BPD) (rate, 95% CI=0.46 [0.38-0.54]). The longest admission was for schizoaffective disorder (mean duration, 95% CI=53 [22.65-83.34],  $p=0.001$ ). Gender presented a prevalence of male over female admissions for schizophrenia (OR, 95% CI=0.14 [0.05-0.35],  $p\leq 0.001$ ) and BPD with prevalence of female over male admissions (OR, 95% CI=2.79 [1.35-5.76],  $p=0.05$ ). **Conclusion:** Female patients with BPD were the most represented category in non-forensic psychiatric inpatient wards in the population studied. Male patients with schizophrenia represented the other gender highly represented. The longest admission was recorded for schizoaffective disorder due to the complexity to treat both mood and psychotic symptoms. It is likely that women with BPD will be the future recipients of psychiatric inpatient and outpatient healthcare services.

**Keywords:** Epidemiology. Borderline Personality Disorder. Schizophrenia.

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## Introduction

It has been reported that at least ten per cent (700 million) of people worldwide had mental illness in 2010.[1] Thus, the object of this current study that was conducted at an adult psychiatric inpatient unit in Essex, Kingswood Centre in Colchester, United Kingdom (UK), was to evaluate the psychiatric epidemiology of patients. Specifically, predominant diagnoses, gender, and admission duration were investigated. It is hoped that psychiatric epidemiology research will be able to assist policy-makers to design suitable strategies for the purposes of observation, identification, and remedial action in mental health.[2] This would allow the optimum allocation of human resources to ensure more integrated care. The National Healthcare System in Britain is going through periods of deep transformations that only in part depend on re-organisation or the internal policies. Indeed, socio-cultural changes in the entire population have affected enormously the way in which mental health services are approached and interpreted by the public. Moreover, with progressive unemployment of large strata of the population in several regions of UK, families have supported the burden of isolation while becoming the lightning rod of intolerable frustrations including lack of opportunities

of employment, education, and access to amenities. Other social pathologies also align with these transformations, like increased use of illicit substances with reflection into a higher number of drug-related psychoses especially in the male population. These events occur at the same time of closure of psychiatric day-centres in UK that were providing opportunities for supportive care, empathy, and social encounters, and were reducing the need for psychiatric admissions. As a consequence, more and more people rely on psychiatric hospitals to solve problems that are also 'social', like lack of organised time, of social networks, and of emotional supports. Hence, this research highlights recent epidemiology in inpatient psychiatry also with the intent to suggest a social lecture of the findings.

## Method

One hundred and sixty-two patients who presented at an acute admission and mixed-gender adult psychiatric ward in 2016 were included in the study. Following discharge, the patients' electronic data, inclusive of diagnosis, length of admission, and gender were collated in a Microsoft® Excel® spreadsheet. Single and unmatched group meta-analysis was used to find heterogeneity in the distributions and global

effect sizes. Data inputted in the meta-analysis were rates and their 95% confidence intervals (CIs). The World Health Organization's tenth revision of the International Statistical Classification of Diseases and Related Health Problems (ICD-10) codes were used for diagnosis.[3] Structured and unstructured interviews confirmed the diagnoses. Descriptive statistics were included, together with kurtosis and skewedness of the distributions for the analysis of length of admission. The following hypotheses were formulated about the epidemiology of psychiatric admissions and adult inpatients at the psychiatric unit:

### Hypothesis 1

There would be statistically significant differences in the diagnoses of patients admitted to an adult inpatient psychiatric unit.

### Hypothesis 2

There would be statistically significant differences pertaining to the admission duration of patients admitted to an adult inpatient psychiatric unit in accordance with the category of psychiatric diagnosis.

### Hypothesis 3

There would be statistically significant differences in the gender (females vs males) of patients with psychiatric disorders admitted to an adult psychiatric inpatient unit.

### Ethical clearance

Data used in the research were anonymous, stored on an electronic system, and accessible to the researchers as being employees of the unit. Therefore, the authorisation by the ethical committee was not required.

### Results

Meta-analysis for numbers of admission evidenced statistically significant heterogeneity ( $I^2=94.90\%$ ;  $p\leq 0.001$ ) (Table 1). The higher number of admissions was found for borderline personality disorder (BPD) (F60.3) (rate=0.46, 95% CI from 0.38 to 0.54). In comparison, the combined effect size for all other admissions was only 0.16 (95% CI from 0.14 to 0.19). Meta-analysis for lengths of admission evidenced a high heterogeneity ( $I^2=78.15\%$ ;  $p\leq 0.001$ ) (Table 2). The combined effect was for an average duration of 16.74 days (95% CI from 13.59 to 19.90,  $p\leq 0.001$ ). The longest admission was recorded for schizoaffective disorder (F25) lasting 53 days (95% CI from 22.65 to 83.34,  $p\leq 0.001$ ) while the shortest for acute stress reaction (F43) with five days (95% CI from 3.28 to 12.71,  $p=0.001$ ). However, the analysis of the distribution curve showed that BPD had a kurtosis of 20.40 and skewedness of 4.29 as some admissions lasted almost a year. Meta-analysis for gender at admission evidenced a high heterogeneity ( $I^2=76.32\%$ ;  $p\leq 0.001$ ) (Table 3) with prevalence of male over female admissions for schizophrenia (OR, 95% CI=0.14 [0.05-0.35],  $p\leq 0.001$ ) and BPD with prevalence of female over male admissions (OR, 95% CI = 2.79 [1.35-5.76],  $p=0.05$ ).

**Table 1:** Proportions of admission according to diagnoses

Diagnoses (ICD-10)	Untransformed proportions (95% CI) n=162
Schizophrenia (F20)	0.16 (0.11–0.23)
Delusional disorder (F22)	0.01 (0.05–0.02)
Schizoaffective disorder (F25)	0.06 (0.02–0.10)
Bipolar affective disorder (F31)	0.09 (0.05–0.14)
Depressive episode (F32)	0.07 (0.03–0.11)
Generalized anxiety disorder (F41)	0.03 (0.00–0.06)
Acute stress reaction (F43)	0.05 (0.02–0.09)
Dissocial personality disorder (F60.2)	0.02 (0.00–0.04)
Borderline personality disorder (F60.3)	0.46 (0.38–0.54)
Meta-analysis	
Combined effect size	0.16 (0.14–0.19)
Significance p for effect size	$\leq 0.001$
Tau <sup>2</sup>	0.05
Q [8df]	157.14
I <sup>2</sup>	78.15%
Significance p for heterogeneity	$\leq 0.001$

### Discussion

Our study findings suggest that differences existed for the adult population regarding predominant diagnoses, gender, and admission duration in a UK psychiatric unit.

The results also suggest a prevalence of female patients with BPD. Furthermore, local admission policies might have different degrees of tolerance regarding admission of female patients with BPD presenting with deliberate self-harm and suicidal ideation. This finding reinforces the importance of the utilisation of psychiatric epidemiologic data when planning mental health service policies and the provision of cost-effective services to the community, and when attempting to limit the number of unnecessary admissions.

Similar to our findings, it was suggested in another study that the incidence of BPD patients presenting at inpatient psychiatric wards was high.[4] Elsewhere, female BPD patients were shown to be the most represented of all adult psychiatric inpatients and to be associated with long-term admission.[5-7] The typology of patients admitted to psychiatric wards is also influenced by social factors, and includes homeless, isolated individuals seeking accommodation or company, and people with antisocial personality disorder hoping to secure a psychiatric diagnosis to avoid legal prosecution.[7]

The major psychiatric disorders identified in our study will be briefly discussed. Schizoaffective disorder (for which the longest admission duration was recorded in our study) has been reported to be a combination of the characteristics of schizophrenia and unipolar depression, resembling schizophrenia more closely, and affecting male patients more so than female ones.[8] An equally important group in our sample was male patients with drug-induced psychoses, mainly of a paranoid nature, who utilised cannabis for recreational purposes or to “self-medicate” their underlying

**Table 2:** Length of admission

Diagnoses (ICD-10)	Median length	Kurtosis	Skewedness	Mean length (95% CI) n=162	p value
F20-Schizophrenia	24	0.80	1.07	31 (21.20–40.79)	≤0.001
F22-Delusional disorder	25	0.00	0.00	25 (0.4–50.47)	0.05
F25-Schizoaffective disorder	47	0.60	1.27	53 (22.65–83.34)	0.001
F31-Bipolar affective disorder	16	2.0	1.50	33 (15.64–50.35)	≤0.001
F32-Depressive episode	25	0.10	0.59	26 (16.97–35.02)	≤0.001
F41-Generalized anxiety disorder	5	3.90	1.90	15 (1.69–31.69)	0.07
F43-Acute stress reaction	5	-1.00	0.70	8 (3.28–12.71)	0.001
F60.2-Dissocial personality disorder	12	-1.60	0.40	13 (3.06–22.93)	0.01
F60.3-Borderline personality disorder	10	20.40	4.29	22 (13.28–30.71)	≤0.001
Meta-analysis					
Combined effect size				16.74 (13.59-19.90)	
Significance p for effect size				≤0.001	
Tau <sup>2</sup>				99.63	
Q [8df]				36.62	
I <sup>2</sup>				78.15%	
Significance p for heterogeneity				≤0.001	

**Table 3:** Gender at admission

Diagnoses (ICD-10) n=162	Females (%)	Males (%)	OR (95% CI)	p value
F20-Schizophrenia	7.8	37.70	0.14 (0.05-0.35)*	≤0.001
F22-Delusional disorder	1.7	0.0	2.15 (0.10-45.74)	n.s.
F25-Schizoaffective disorder	9.6	0.0	10.77 (0.62-186.67)	n.s.
F31-Bipolar affective disorder	9.6	10	0.91 (0.30-2.80)	n.s.
F32-Depressive episode	7.0	8.3	0.83 (0.23-2.89)	n.s.
F41-Generalized anxiety disorder	5.2	0.0	5.81 (0.32-105.22)	n.s.
F43-Acute stress reaction	4.3	8.3	0.50 (0.12-1.96)	n.s.
F60.2-Dissocial personality disorder	0.8	6.2	0.13 (0.01-1.31)	n.s.
F60.3-Borderline personality disorder	53.0	29.0	2.79 (1.35-5.76)*	0.05
Meta-analysis				
Combined effect size				0.86 (0.57-1.31)
Significance p for effect size				n.s.
Tau <sup>2</sup>				1.48
Q [8df]				33.79
I <sup>2</sup>				76.32%
Significance p for heterogeneity				≤0.001

\*Statistically significant, n.s.=not significant

psychotic symptoms. However, although the use of cannabis is associated with psychoses, this association is described as bilateral because cannabis use only causes schizophrenia in two per cent of regular users, although it is recognised to have a multiplicative impact on those who are already genetically predisposed to develop schizophrenia.[9]

A diagnosis of bipolar affective disorder (BPAD) requires significant diagnostic attention because during the initial assessment, there is a risk of confusing it with cyclothymic disorder (mood dysregulation). The latter mostly affects patients with BPD. It was also confirmed that a diagnosis

of BPAD was mostly associated with female rather than male patients in our study. This carries several implications for the behavioural dysregulation of the female population with BPAD. It has been reported that patients with BPAD present with hypersexuality during manic and hypomanic episodes.[10] Such behaviour can lead to episodes of unauthorised sexual activities in psychiatric wards, unwanted pregnancies, and concerns about safeguarding.

The increased frequency of alcohol misuse in patients with BPAD is another cause for concern. Initially, alcohol is used to reduce distress. However, the initial resultant

gratifying effect leads to long-term consumption and the strengthening of undesirable emotions.[11] Acute stress reaction and adjustment disorder were associated with the shortest hospitalisation period in our study. In such cases, psychiatric wards become a place of respite, with the result that patients with these diagnoses recover soon. The usual presentation is mixed anxiety and a depressive reaction. Major causes for admission are often a marital crisis (unexpected divorce or separation), financial difficulties, job loss, estrangement from family, and university stress. In one study, adjustment disorder was associated with personality disorder, mostly perfectionistic in nature, in 56% of patients.[12] In our study, the low percentage of patients with dissocial personality disorder (DPD) was mostly the result of an active screening process to avoid admitting those wishing to secure a psychiatric diagnosis solely to escape legal prosecution. However, data from our other studies highlight the recent trend of a growing DPD inpatient population due to increasing socioeconomic poverty in a large section of the population. It has been shown that people who are unemployed, with a poor educational record, and who misuse substances are more likely to be diagnosed with DPD.[13]

As can be seen in this study, the application of modern psychiatry is facilitated by the rigorous use of epidemiological research and by the analysis of large volumes of electronic data that are collected in real time when patients present at psychiatric hospitals.[14] The rational use of epidemiology also promotes the classification, management, and integration of people with mental illness in the public health framework.[15] Furthermore, psychiatric epidemiology improves the ability to identify processes that link mental illnesses to non-communicable diseases, ensuring enhanced provision of healthcare plans for their prevention and management.[16]

More extensive studies, that include an outpatient population, are required to validate these research findings. A rapidly growing vulnerable population (low socioeconomic classes, unemployed people, deprived urban and suburban populations, and those who are socially and economically deprived owing to their geographic location) is responding to negative socioeconomic developments by acquiring mental disorders. Psychiatric hospitals are becoming the only remedy to problems that are not necessarily sourced in mental illness.[7] Further epidemiological research in this area will highlight how mental health is changing within the global scenario.

Limitations of this study were the small sample size and the absence of age as a parameter during the analysis. Also, the rate of relapse was not considered in terms of the psychiatric epidemiology and it should have been.[17]

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