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LOCAL GEOGRAPHICAL DISTRIBUTION OF ACUTE INVOLUNTARY PSYCHIATRIC ADMISSIONS IN SUBDISTRICTS IN AND AROUND UTRECHT, THE NETHERLANDS

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☐ **Abstract—Background: Acute involuntary psychiatric admissions (AIPA) tend to be applied more often in urban areas. Objective: The current study aims to describe AIPA prevalence differences between the subdistricts in an urban area, and to identify which district characteristics are associated with a higher AIPA district density. Methods: Information was collected on consecutive AIPAs over a 64-month period (2005–2010) in 49 subdistricts in and around the city of Utrecht, the Netherlands, including 1098 AIPAs. District characteristics included several demographic and economical factors and health care characteristics such as number of sheltered living facilities. Results: The AIPA density (mean 4.4/10,000 inhabitants/y) was four to five times higher in the most urbanized subdistrict (around 12) compared to the suburban subdistricts (2.5–3). On the district level, the main correlates with AIPA density per district were unemployment rate and small household size. Other correlates were percentage of non-Western immigrants and number of facilities of sheltered living. Conclusions: The considerable AIPA density variation between subdistricts in this urban environment reflects that people who are prone to psychiatric admissions live in economically less prosperous environments. Impaired social networks and economic concerns may also contribute to an environment representing social defeat, increased demoralization, or social fragmentation.**

☐ **Keywords—compulsory admission; involuntary admission; emergency detention; involuntary examinations; geographical**

Ethical standards: This study has been approved by the local ethics committee and has been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its later amendments.

INTRODUCTION

An acute involuntary psychiatric admission (AIPA) often represents a dramatic transition in which expectations of the patient are discarded in favor of the need to reduce immediate risk caused by a disturbed mental state. The past two decades have shown a gradual increase in the prevalence of the application of AIPAs in the Netherlands (1). Procedures to realize AIPAs generally follow the patterns of legal and moral habits and practices on both a national and local level. Social and environmental adversity is often at stake, and has consistently been shown to be related to the prevalence of psychiatric disorders (2). For example, being born or

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living in an urban environment is associated with a substantially higher relative risk of schizophrenia (3,4). Low socioeconomic status (SES) partially explains this effect of urbanicity (3). For example, urban districts with high unemployment rates showed high psychiatric admission rates in early sociological and epidemiological studies (5). Recent, sophisticated studies from Sweden demonstrate that high-risk individuals and their families are likely to be selected into densely populated, deprived areas (6). Another factor, related to urbanicity and social adversity, is being part of an ethnic minority (7).

With respect to the prevalence of application of AIPAs in the Netherlands, differences have been described between provinces and cities (8,9). AIPA rates are higher in the western, more urbanized provinces than in other regions in the country, with the exception of the southern, highly urbanized province of Limburg. The 1-year incidence of AIPAs ranges between 3.3 and 5.8 per 10,000 inhabitants (mean 4.6).

Accurate knowledge about the prevalence and more detailed geographical distribution of AIPAs may add to the understanding of organizing care for psychiatric emergencies. Which range of AIPA prevalences (i.e., occurrence per 10,000 inhabitants) can be expected across different geographical areas? Which district characteristics may help to identify those urban areas where AIPAs occur at a particularly higher rate?

Aims of the current study were threefold: 1) to describe the geographical distribution of AIPA rates on the level of postal code areas in the town and direct agglomeration of Utrecht, the fourth biggest city in the Netherlands, 2) to examine whether local social characteristics are associated with the geographical distribution of AIPA rates, and 3) to identify whether such a pattern depends on the main diagnosis, gender, or type of danger.

METHODS

The current retrospective study was initiated by the Utrecht Psychiatric Emergency Service (part of Altrecht Mental Health Care; Altrecht science research line "Schroeder van der Kolk," which is active in the city and suburbs of Utrecht, The Netherlands). The aim of this practice-based exploration was to disclose local patterns, which may be of relevance to optimize the close cooperation with the police in this region. AIPAs were defined as the application of an "Inbewaringstelling" (taking into mental health care custody). The "Inbewaringstelling" is requested on-site by a psychiatrist working for the outreaching psychiatric emergency service. The medical declaration receives an immediate judgment by the mayor or a deputy: thereafter, the patient is transferred to a psychiatric admission unit. Within 3 working days, a judge visits the patient on the psychiatric ward. The result of this court session can be either a continuation of the "Inbewaringstelling" for 3 weeks, or its cessation (10).

Consecutive AIPAs were included in the period between January 2005 and April 2010 (5 years, 4 months) in the municipalities Utrecht (about 310,000 inhabitants living in 10 districts, 33 subdistricts as defined by the first four digits of the postal code), Nieuwegein (60,000; 3 districts, 7 subdistricts), Maarssen (40,000; 4 districts, 6 subdistricts), and IJsselstein (35,000; 1 district, 3 subdistricts). This provided a relatively wide range of urban characteristics, such as unemployment levels and percentage of migrant inhabitants. Basic information on the AIPAs was derived using the Altrecht authorization of the computerized administrative system "BOPZ-online." In addition, data were inspected and completed using the Psychiatric Case Registry – Middle Netherlands (PCR-MN). In this registry, the diagnoses of in- and outpatients of all psychiatric services and related health care consumption in Utrecht city and surroundings are registered since 1999 (11). As the "BOPZ-online" system is computerized and fulfills juridical requirements, it is unlikely that there were missing data. In total, 1098 AIPAs were identified. Each AIPA was considered as a unique case with respect to district AIPA density. During the observation period, individual patients may have had more than one AIPA.

Most of the districts as defined by city councils and Statistics Netherlands comprised more than 20,000 inhabitants. As this would lead to a fairly low number of districts (n = 18), subdistricts were taken into account as well (n = 49), defined by area and first four digits of the postal code. AIPA density was computed by dividing the number of AIPAs in a subdistrict by its number of inhabitants, multiplied by 10,000 and divided by the numbers of years of the observation period (5.33).

Individual characteristics (age, sex, ethnicity, main diagnosis, and postal code) were derived from the BOPZ-online database, and were completed using the PCR-MN data, which also included data from two general hospitals with an emergency department and psychiatric admission units. The main diagnosis was categorized as: "non-affective psychosis," "mania," and "other" (including depressive or anxiety states, cognitive disorders, personality disorders, and substance abuse). For type of danger, PCR-MN completion was not feasible, because the detailed BOPZ-online information for the two general hospitals belonged to BOPZ-online accounts other than the account used by Altrecht Mental Health Care. The number of patients included in the analyses on danger is therefore somewhat lower

(n = 862). The main types of estimated danger used as justification of the AIPA were categorized as "suicide" or "aggression" (physical aggression towards others).

District characteristics were derived from national statistic resources (Statline, Statistics Netherlands, The Hague, Netherlands). Statistics Netherlands is responsible for collecting and processing data to publish statistics to be used in practice, by policymakers and for scientific research. Districts corresponded with postal codes, according to the customary classification used by the City of Utrecht as well as Statistics Netherlands. The following district characteristics were selected: number of inhabitants per district, population density, age composition (65+ years), household size (number of people), percentage of non-Western migrants, recorded criminality (Utrecht town only – source: Utrecht Police Management Office), mean income, unemployment rate, and number of psychiatric living facilities in the district (source: Sheltered Living Utrecht). The PCR-MN also provided figures on mental health care use per district. This was defined as the number of subjects recorded with a diagnosis of schizophrenia, bipolar disorder, depression, or personality disorder during the observation period (2005–2010), expressed as number of persons per 10,000 inhabitants for each of the districts under study.

Statistical Analysis

As a preliminary step, mean values and standard deviations (SDs) were calculated for all data on the individual level and for all district characteristics, including the distribution of the AIPA density across the subdistricts.

AIPA rates, and therefore AIPA density as well, were considered to be count variables. Therefore, associations between district characteristics and AIPA density were analyzed using bivariate Poisson regression models. To obtain an outcome variable without decimals, the values of AIPA density were multiplied by 100 and truncated. Multivariate analyses were not feasible because several district characteristics had close intercorrelations: including variables simultaneously would lead to inaccurate results due to collinearity. Total AIPA density per district served as outcome variable. Alternatively, the outcome was: AIPA density for unique individuals (first AIPA during the observation period), AIPA density for cases with psychosis or mania, AIPA density for male and female patients, and AIPA density for main type of danger, suicide or aggression. Because multiple comparisons were made with respect to this range in outcomes, a conservative level for significance was chosen, $\alpha = 0.01$.

RESULTS

Characteristics of the Sample

The 1098 AIPAs pertained to 861 unique patients. During the 64-month inclusion period, 686 patients (80%) were one time subjected to an AIPA, 133 patients (15%) twice—40 (30%) of these within a period of 4–6 weeks—and 42 patients (5%) three to six times.

Individual Patient Characteristics

Fifty-five percent of the patients were male. The mean age was 44 years (SD 17; 2% younger than 18; 12% older than 65 years). The percentage of non-Western migrants amounted to 33%. The major diagnostic categories were represented by psychotic states (43% of the AIPA), manic states (24%), depressive or anxiety states (11%), cognitive disorders (8%), personality disorders (8%), and substance abuse (6%). The main types of danger (based on the dataset without completion by the PCR-MN, n = 862) are shown in Table 1. About one-third of the AIPAs pertained to danger of suicide, and another third to danger of aggression to other people.

District Characteristics (Table 2)

The mean number of inhabitants per *sub*district, as defined by postal code, was 8624 (SD 3294; range 1360–16,200). The mean number of inhabitants per district, as used by city councils and Statistics Netherlands, was 23,512 (SD 13,175; range 1360–42,910). Several district characteristics showed considerable variation, such as population density per district, ethnic composition, unemployment rate, and number of sheltered living facilities.

Geographical Differences of AIPA Density Between Subdistricts

The mean AIPA density for the entire region under study (423,203 inhabitants) was 4.38/10,000/y, and 5.53/10,000/y for the municipality of Utrecht town. The subdistrict AIPA density values (total, first, by main diagnosis, by gender, and by danger) are shown in the lower panel of Table 2. AIPA density values did not show an entirely normal distribution across the subdistricts (skewness 0.90, SE 0.34, and kurtosis 0.42, SE 0.67).

Figure 1 illustrates considerable differences with respect to AIPA rates between the subdistricts. There was a four- to fivefold difference between semi-rural subdistricts with an AIPA density around 2.5–3/10,000/y for

Table 1. Main Types of Danger as Reason of Acute Involuntary Psychiatric Admission in 2005–2010 in the City of Utrecht and Some Surrounding Municipalities (N = 862)

Type of Danger	Male (%)	Female (%)	Total (%)
Suicide	24.9	40.9	31.8
Social downfall	1.4	3.7	2.4
Self-neglect	6.7	15.0	10.3
Evoking aggression	7.8	14.2	10.5
Aggression to other people	45.1	14.7	31.9
Psychological health of other people	2.9	1.3	2.2
Neglect of people under care	0.0	1.6	0.7
Public safety	11.2	8.6	10.1

villages (Vleuten, IJsselstein, Maarssen, and Oud Zuilen) and two large urban subdistricts in Utrecht Overvecht (an urban planning project dating from the 1960s), with the AIPA density amounting to 12/10,000 inhabitants/y. The AIPA density subdistrict differences pertaining to specific characteristics according to incidence of AIPA (first AIPA during the observation period), main diagnosis (psychosis, mania), gender, and danger (suicide, aggression) largely followed the same distribution pattern across the districts (results on request).

Associations Between the District Characteristics and AIPA District Density

As shown in Table 3, several district variables had significant associations with AIPA density: higher population density, smaller household size, non-Western ethnic density, higher number of unemployed, and higher number of sheltered living facilities. There was a close correspondence between use of mental health care in the district and AIPA density. The models for first AIPA, AIPA due to psychosis as first diagnosis, AIPA for male patients, and AIPA due to the danger of physical aggression (Tables 3 and 4) yielded similar results. However, none of the district characteristics had an association with AIPA due to mania as first diagnosis. Non-Western ethnic density was not associated with either AIPA for female patients or AIPA due to the danger of suicide. Except for AIPA due to mania, the strongest associations (according to Wald χ^2 values) and the most pervasive with respect to the subtypes of AIPA were found for small household size and unemployment.

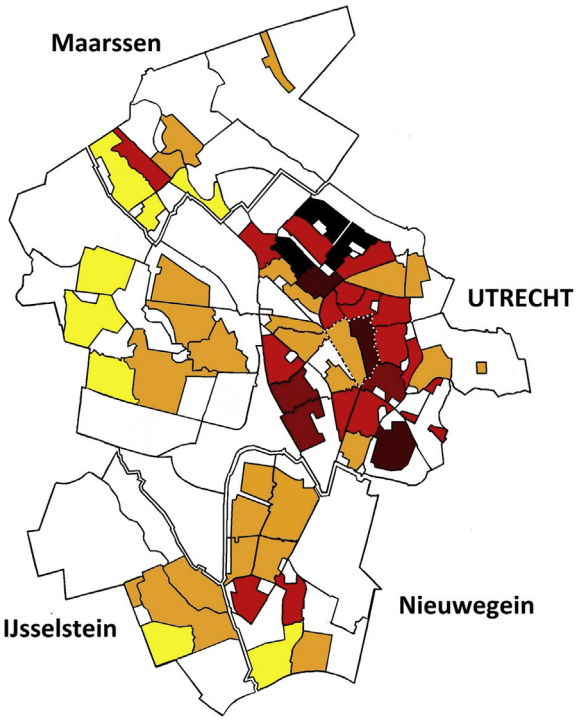
DISCUSSION

The current study aimed to provide a practice-based exploration of the local geographical distribution with

Table 2. District Characteristics of the Sample and Basic Statistic Characteristics of Acute Involuntary Psychiatric Admission (AIPA) Rate Density per District (per 10,000 per Year), Observed During 64 Months 2005–2010*

	Range (n or %)	Mean (SD)
District characteristics (n = 17)		
Demographic:		
Population density/hm^2	1.4–51.0	22.4 (13.4)
Age composition (65+ y)	5–21%	10.7% (3.9)
Household size (number of people)	1.4–2.7	2.1 (0.4)
Ethnic minority (non-Western)	1–43%	15.2% (11.8)
Criminality (Utrecht town only)/10,000	13.6–16.9	15.4 (1.2)
Economic:		
Mean disposable income/inhabitant (€/y)	11,300–17,600	14,256 (1755)
Unemployment/economically non active	11–39%	24.0% (8.5)
Care:		
Sheltered living facilities†	0–92.8	32.7 (30.9)
Patients receiving mental health care/10,000	286–1244	637 (287)
Patients receiving care for schizophrenia/10,000	31–202	85 (52)
Patients receiving care for bipolar disorder/10,000	19–75	41 (16)
Subdistrict (n = 49)		
AIPA density:‡		
Total	0.74–12.12	5.00 (2.60)
First	0.74–6.56	3.07 (1.49)
Main diagnosis: psychosis	0–6.14	2.12 (1.54)
Main diagnosis: mania	0–4.05	1.22 (0.87)
Male	0–9.64	2.74 (1.84)
Female	0–7.02	2.26 (1.32)
Main type of danger: suicide	0–3.03	1.26 (0.75)
Main type of danger: aggression	0–4.63	1.28 (0.94)

* Several specific types of AIPA were included (total, first, by diagnostic group, gender, and type of danger).
† Psychiatric sheltered living: number of individual facilities/10,000 inhabitants.
‡ Per 10,000 inhabitants per year during the 64-month period of inclusion.



Colour	AIPA district rate / 10,000 / y
	0 – 0.5
	0.5 – 2.5
	2.5 – 4.5
	4.5 – 6.5
	6.5 – 8.5
	8.5 – 10.5
	10.5– 12.5

Figure 1. Mean rate of acute involuntary psychiatric Admissions (AIPAs) per 10,000 inhabitants per year in the region of Utrecht, during a 64-month period (2005–2010), shown for (inhabited) postal code areas – uninhabited sectors (agricultural, industrial, parks, cemeteries) remain blank. White dotted area: Utrecht city center.

respect to the application of AIPA in the subdistricts of the city of Utrecht and three adjacent municipalities. In this urban region with about half a million inhabitants, the AIPA density shows considerable variation between the subdistricts. The AIPA density was over four times higher in the most urbanized district compared to the suburban districts, and was more substantial than the variation between regions in the country (factor 1.8). By and large, these differences reflect that people who are prone to psychiatric admissions live in economically less prosperous environments. This finding is in line with the literature (12). Furthermore, the results of the current study also demonstrate that application of AIPAs occurs more frequently in districts where psychiatric patients reside in sheltered living facilities as part of the mental health care system. Sheltered living facilities are often located in or between social housing areas.

In one way or the other, the living situation of patients in less prosperous areas could correspond with the "social drift" hypothesis, which has historically been described by Goldberg and Morrison in relation to patients with chronic mental illness tending to gravitate to lower socioeconomic status (13). Goldberg and Morrison found indications that this social downward drift is likely to start *prior to* a first admission. The current results may confirm this with respect to AIPAs: the results were practically identical when only the first AIPA in the observation period was included in the analyses.

The etiogenesis of first episodes of psychiatric disorders, as far as they present as an emergency, may also be related to urban factors in their own right (14,15). As conceptualized by Selten and colleagues, immigrant status, low socioeconomic status, other urban factors, or combinations of these may be understood as factors that represent social defeat (16). The social defeat hypothesis suggests that a marginalized, discriminated against, or otherwise stressful social position sensitizes the mesolimbic dopamine system. An increased baseline activity of this system is thought to increase the risk of schizophrenia. Social defeat as a risk factor for psychiatric disorders seems to represent a more explicit version of a position of low social integration ("egoistic") and low social regulation ("anomia"), as defined over 100 years ago by the sociologist Durkheim (17). Similarly, the term "social fragmentation" turns up in the recent epidemiological literature as a relevant explanatory factor of associations between urbanicity and incidence of psychotic disorders (18).

Whereas higher rates of involuntary psychiatric admissions are associated with low SES, Drukker and colleagues described a consistent, seemingly contrasting finding in the city of Maastricht in the Netherlands (19). Employing a design with a comprehensive set of district and individual characteristics, these authors demonstrated that low SES was associated with *lower* levels of outpatient service utilization (19). Therefore, a "substitution of care" mechanism has been proposed, with patients in low SES areas failing to seek ambulant mental health care timely, with an ultimate AIPA as a subsequent "substitute."

The ethnic composition of the district had a significant, but not the strongest, association with AIPA density in the current study for males, but not for females. On the one hand, male non-Western migrants may have a higher risk of developing psychotic disorders, and higher AIPA rates have been described in the largest Dutch cities: Rotterdam and Amsterdam (20–22). On the other hand, this risk may be attenuated by living in a district with a relatively high number of immigrants, also in the city of

Table 3. Results of Bivariate Poisson Regression Analyses, Testing Associations Between District Characteristics and Acute Involuntary Psychiatric Admission (AIPA) Rate Density per District (per 1,000,000 per Year to Enable Poisson Analyses), Observed During 64 Months 2005–2010

Subdistricts (n = 49) District Characteristics (n = 17)	Association with Acute Involuntary Psychiatric Admission (AIPA) Density/District											
	Total AIPA			First AIPA			Psychosis			Mania		
	B (SE)	Wald	*p*-Value	B (SE)	Wald	*p*-Value	B (SE)	Wald	*p*-Value	B (SE)	Wald	*p*-Value
Demographic:												
Population density/hm^2	0.02 (0.005)	13.2	0.000	0.02 (0.004)	21.9	0.000	0.03 (0.01)	10.3	0.001	0.02 (0.008)	4.3	0.037
Age composition (65+ y)	0.02 (0.03)	0.8	0.365	0.03 (0.02)	1.4	0.240	0.02 (0.04)	0.4	0.516	0.01 (0.05)	0.1	0.775
Household size (number of people)	−0.78 (0.18)	18.8	0.000	−0.73 (0.15)	23.3	0.000	−1.24 (0.27)	20.8	0.000	−0.63 (0.31)	4.3	0.039
Ethnic minority (non-Western)	0.02 (0.005)	9.4	0.002	0.02 (0.004)	13.4	0.000	0.02 (0.006)	10.2	0.001	0.02 (0.008)	5.1	0.023
Criminality (Utrecht town only)/10,000	−0.07 (0.07)	0.9	0.345	−0.05 (0.07)	0.4	0.515	−0.09 (0.11)	0.7	0.403	−0.14 (0.12)	1.3	0.256
Economic:												
Mean disposable income/inhabitant €/y	−0.10 (0.06)	2.6	0.106	−0.10 (0.06)	3.0	0.085	−0.12 (0.09)	1.5	0.218	−0.10 (0.08)	1.9	0.173
Unemployment/economically nonactive	0.04 (0.008)	22.6	0.000	0.04 (0.006)	38.2	0.000	0.06 (0.01)	28.7	0.000	0.03 (0.016)	3.9	0.049
Care:												
Sheltered living facilities*	0.01 (0.002)	8.8	0.003	0.01 (0.002)	10.4	0.001	0.01 (0.003)	13.0	0.000	0.003 (.003)	1.3	0.263
Mental health care use/10,000	0.11 (0.02)	21.6	0.000	0.11 (0.02)	39.3	0.000	0.90 (0.18)†	25.5	0.000	1.74 (0.66)	7.0	0.008‡

* Psychiatric sheltered living: number of individual facilities/10,000 inhabitants.
† Use of mental health care with diagnosis of schizophrenia/10,000 in district.
‡ Use of mental health care with diagnosis of bipolar disorder/10,000 in district.

Utrecht (23,24). In additional analyses, this attenuation could not be demonstrated for AIPA density in the current study.

Unemployment remained a prominent district correlate of AIPA density, particularly for male patients. This result is in line with findings from Florida, where Kessell and colleagues found a pervasive association over time between the regional fluctuation in claims for unemployment and involuntary examinations (25). The results of their sophisticated study primarily pertained to the application of coerced treatment of men perceived as threatening to others. Although the source of variation in the current study is not over time but across districts, a similar pattern of results is obtained. The main district correlate for female patients and for patients who were detained due to risk of suicide was (smaller) household size. When little network support can be mobilized, alternative care, such as a voluntary admission or intensive home treatment, is apparently not yet trusted to be sufficiently safe.

The AIPA rate due to a manic episode (affective psychosis) did not relate to any of the demographic or economic district characteristics in the current study. This finding is in line with other studies showing that incidence of affective psychosis, unlike nonaffective psychosis, does not relate to urbanicity (26).

In some of the relatively prosperous subdistricts (Utrecht Lunetten and Utrecht City-center-east), the yearly AIPA rates amounted to one per 1000, almost competing with the rates in the "banlieue" Utrecht Overvecht. The main explanation for the high AIPA rates in these subdistricts might be found in high numbers of mental health care facilities, especially sheltered housing, but also several types of long-stay departments.

Implications

An AIPA can be experienced as disempowering and stigmatizing by people with serious mental illness (27). However, as shown by Catalano and colleagues in the United States, the application of AIPAs may depend on characteristics and changes in the system of care (28). Making use of sheltered housing can be considered as part of the system of care. Perhaps an AIPA may meet with more understanding of the immediate environment due to the presence and involvement of staff members in sheltered living facilities. Another aspect of the organization of care pertains to the cooperation with the police. Almost half of the patients who finally are detained with an AIPA first had an encounter with the police (internal figures, Utrecht Psychiatric Emergency Service). For others, who were seen in their home situation, the police were called for assistance due to risk of escape or violent behavior. Current national and local initiatives aim to

Table 4. Results of Bivariate Poisson Regression Analyses, Testing Associations Between District Characteristics and Acute Involuntary Psychiatric Admission (AIPA) Rate Density per District (per 1,000,000 per Year to Enable Poisson Analyses), Observed During 64 Months 2005–2010

Subdistricts (n = 49) District Characteristics (n = 17)	Association with Acute Involuntary Psychiatric Admission (AIPA) Density/District											
	AIPA, Male Patients			AIPA, Female Patients			Danger: Suicide			Danger: Aggression		
	B (SE)	Wald	*p*-Value	B (SE)	Wald	*p*-Value	B (SE)	Wald	*p*-Value	B (SE)	Wald	*p*-Value
Demographic:												
Population density/hm^2	0.02 (0.007)	6.7	0.009	0.02 (0.006)	13.1	0.000	0.02 (0.006)	11.9	0.001	0.01 (0.008)	2.8	0.097
Age composition (65+ y)	0.05 (0.04)	2.3	0.132	−0.02 (0.02)	0.5	0.486	0.01 (0.02)	0.4	0.542	0.06 (0.04)	1.9	0.170
Household size (number of people)	−0.82 (0.22)	13.7	0.000	−0.74 (0.22)	11.6	0.001	−0.83 (0.22)	14.1	0.000	−0.67 (0.25)	7.1	0.008
Ethnic minority (non-Western)	0.02 (0.007)	11.5	0.001	0.01 (0.005)	1.2	0.266	0.01 (0.01)	0.5	0.466	0.03 (0.009)	8.2	0.004
Criminality (Utrecht town only)/10,000	−0.15 (0.11)	1.9	0.173	0.02 (0.07)	0.1	0.735	−0.01 (0.11)	0.0	0.963	−0.14 (0.12)	1.3	0.250
Economic:												
Mean disposable income/inhabitant €/y	−0.15 (0.08)	3.1	0.080	−0.04 (0.06)	0.5	0.460	−0.07 (0.06)	1.3	0.258	−0.13 (0.10)	1.8	0.175
Unemployment/economically nonactive	0.05 (0.01)	20.7	0.000	0.03 (0.01)	6.4	0.012	0.03 (0.01)	10.9	0.001	0.04 (0.01)	8.2	0.004
Care:												
Sheltered living facilities*	0.01 (0.002)	13.1	0.000	0.003 (.002)	2.0	0.145	0.002 (.003)	0.6	0.426	0.01 (.003)	6.4	0.011
Mental health care use/10,000	0.14 (0.03)	18.4	0.000	0.07 (0.02)	8.7	0.003	0.10 (0.03)	12.5	0.000	0.13 (0.04)	8.9	0.003

* Psychiatric sheltered living: number of individual facilities/10,000 inhabitants.

reduce the use of the police station (detention cells in particular) where about 1 out of 5 psychiatric patients is examined during emergency situations. On the one hand, the current results suggest that close cooperation with the police can be focused on districts with high a priori chance of AIPAs. On the other hand, outreaching psychiatric emergency services should anticipate that police officers in low-AIPA-density districts will develop little experience with patients in need of an AIPA and may need more coaching during the procedure and afterwards. In sheltered living facilities, crisis situations need immediate collaboration with psychiatric emergency services and (often) the police: collaboration protocols deserve regular check-ups. Adequate cooperation and feedback between psychiatric emergency services and the police may reduce the number of difficult and unsettling experiences for patients in crisis and relatives and others in their immediate environment.

Limitations

An evident limitation of the current study is that associations between AIPA density and district characteristics represent relationships on an ecological level. Interpretations for individuals or select groups, such as patients carrying risk for suffering psychiatric episodes, are therefore uncertain, and causal inferences are not justified. Another limitation is that psychiatric comorbidity or substance abuse was not further operationalized. Comorbidity may, however, be an important complicating factor, possibly decreasing the threshold to proceed to AIPA, especially in low SES areas. A third limitation pertains to the choice for the town of Utrecht. This medium-sized Dutch town carries typical urban problems, but in larger Dutch cities such as Rotterdam and Amsterdam, social inequalities may be more pronounced, and the variation among AIPA densities between subdistricts may even be larger. Comparison with larger cities, especially metropolitan areas in other countries, is desirable.

CONCLUSIONS

The current study offers a detailed geographic description of AIPA application in an urban and suburban agglomeration in the Netherlands, as well as ecological insights about the contextual relevance of several subdistrict characteristics. AIPAs occur four to five times more often in urban districts compared to semi-rural regions and villages. Districts with a high AIPA district density are characterized by less prosperity, such as unemployment and smaller household size, and by higher numbers of living facilities for psychiatric patients (sheltered living). The associations between district characteristics and AIPA density do not pertain to AIPAs involving manic episodes.

The findings may help to coordinate the cooperation with the local police. For example, proximity of the psychiatric emergency services as well as psychiatric admission wards to police stations is warranted in districts with a high AIPA density. Accurate and quick mutual consultation about where to see the patient may help to avoid delays with keeping patients detained in police stations, and may sometimes reduce the expensive deployment of ambulance services as part of the AIPA procedure.

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ARTICLE SUMMARY

1. Why is this topic important?

Acute involuntary psychiatric admissions (AIPAs) belong to the most drastic procedures of initiating psychiatric care. Descriptive, practice-based studies help to disentangle how patterns of prevalence of AIPAs interact with local geographic conditions.

2. What does this study attempt to show?

The study examines whether there are substantial differences in AIPA rates between urban and semi-rural districts and what type of district characteristics are associated with the AIPA district density.

3. What are the key findings?

AIPAs occur four to five times more often in urban districts compared to semi-rural regions and villages in this agglomeration of about half a million inhabitants. - Districts with a high AIPA district density per 10,000 are characterized by less prosperity (e.g., unemployment, smaller household size), and by higher number of living facilities for psychiatric patients (sheltered living). - The associations between district characteristics and AIPA density do not pertain to AIPAs involving affective psychosis (mania).

4. How is patient care impacted?

Close cooperation with the police can be focused to districts with high a priori chance of AIPAs. - Outreaching psychiatric emergency services should anticipate that police officers in low-AIPA-density districts will develop little experience with patients in need of an AIPA and may need more coaching during the procedure and afterwards. - In sheltered living facilities, crisis situations need immediate collaboration with psychiatric emergency services and (often) the police: collaboration protocols deserve regular check-ups.